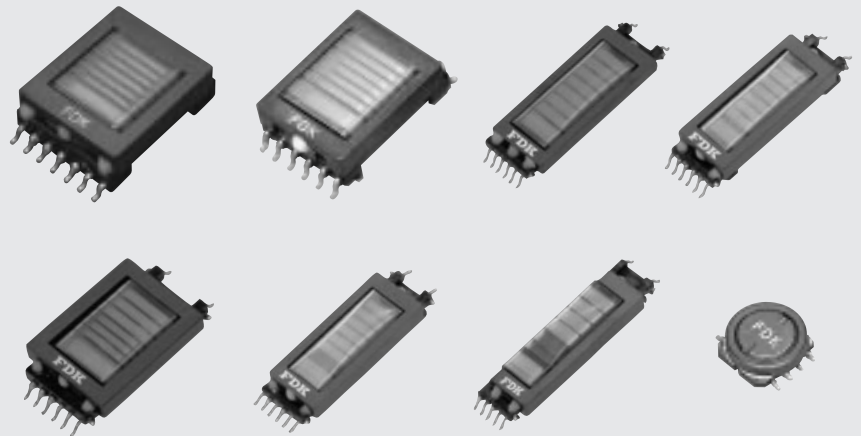
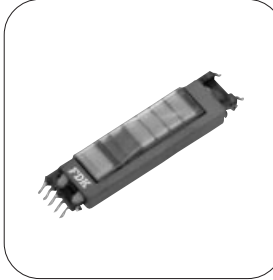
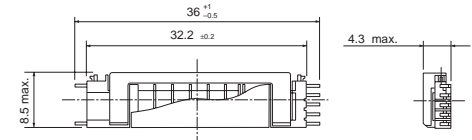

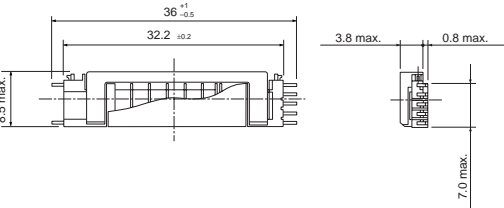
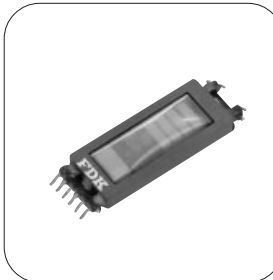
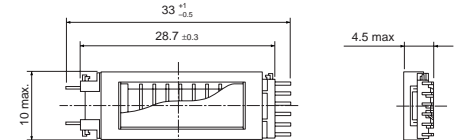
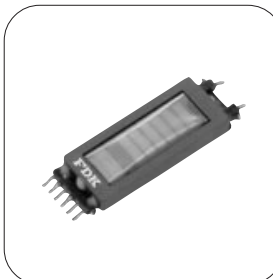
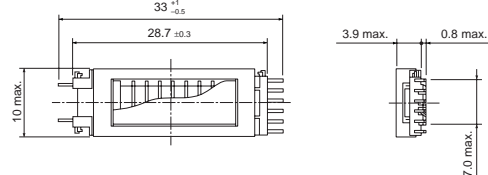
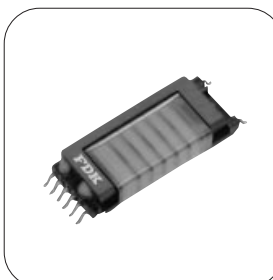
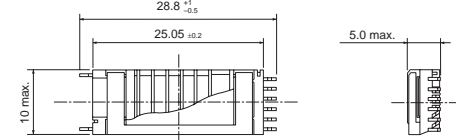
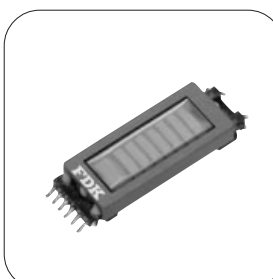
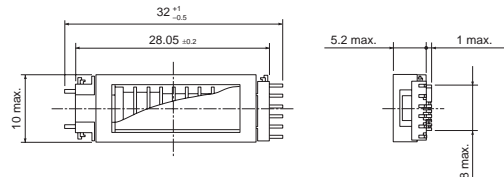


# INVERTER TRANSFORMERS FOR LCD BACKLIGHTING

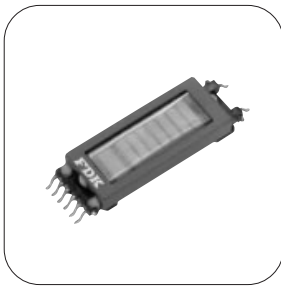
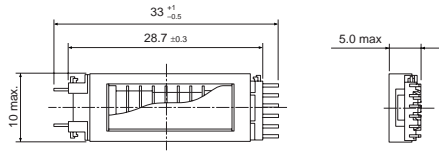

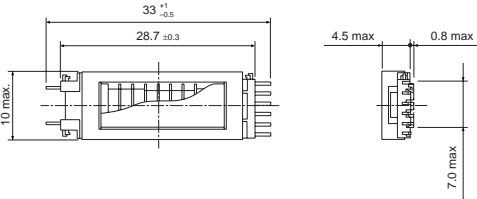

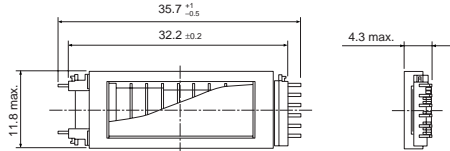

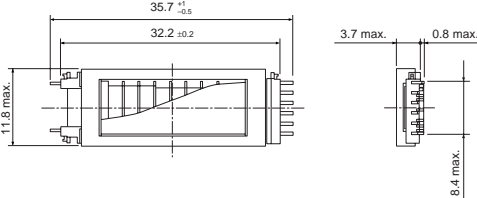
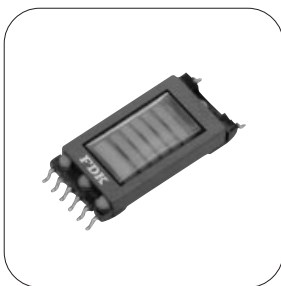
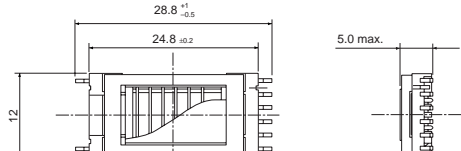
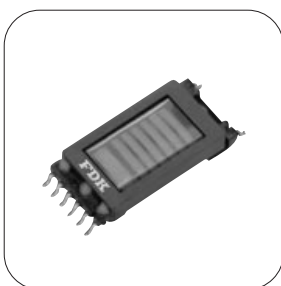
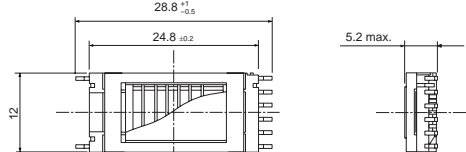


By applying its original ferrite technologies, FDK has created an unprecedented inverter transformer featuring a compact and flat body, high efficiency and high output power. These transformers enable the design of narrow-shaped but high-performing inverter units especially suitable for liquid crystal display (LCD) backlighting.


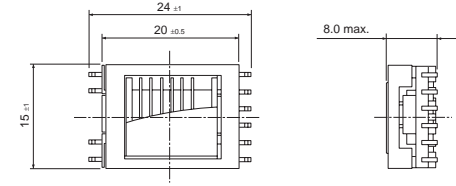

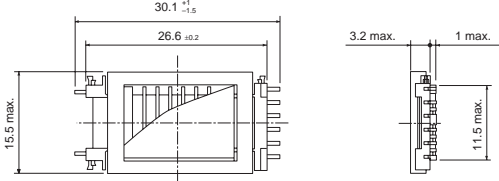
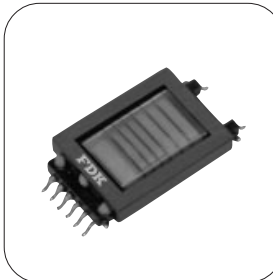
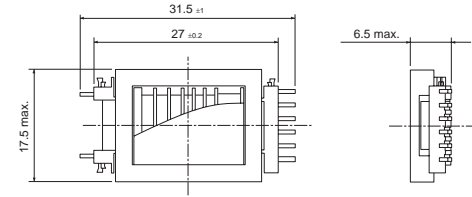
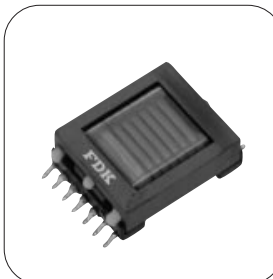
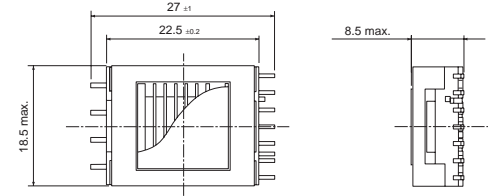
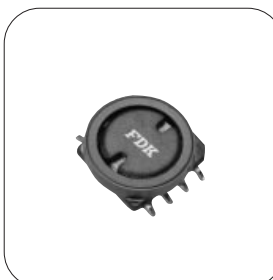
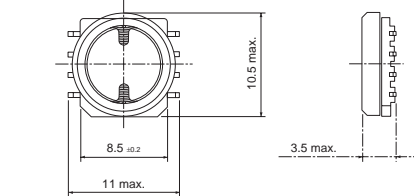
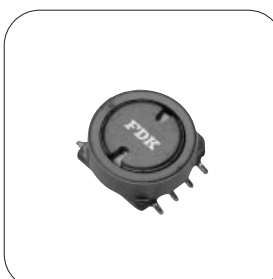
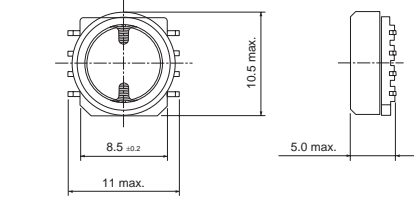
# Contents

|   | Type   | Input voltage | Output voltage    | Adaptive output | Adaptive frequency | Page |
|---|--|---------------|-------------------|-----------------|--------------------|------|
|    | <p><b>CD-T-0836 SMT 8.5mm width type</b><br/> <b>&lt; Separate excitation IC drive feasibility &gt;</b></p>     | 4~15V         | 1,600<br>Vo-Pmax. | 2.5W            | 40~200<br>kHz      | 7    |
|    | <p><b>CD-T-0836S SMT 8.5mm width type</b><br/> <b>&lt; Separate excitation IC drive feasibility &gt;</b></p>    | 4~15V         | 1,600<br>Vo-Pmax. | 2.5W            | 40~200<br>kHz      | 8    |
|   | <p><b>CD-T-1033A SMT 10mm width type</b><br/> <b>&lt; Separate excitation IC drive feasibility &gt;</b></p>   | 4~15V         | 2,000<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 9    |
|  | <p><b>CD-T-1033AS SMT 10mm width type</b><br/> <b>&lt; Separate excitation IC drive feasibility &gt;</b></p>  | 4~15V         | 2,000<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 10   |
|  | <p><b>CD-T-1029 SMT 10mm width type</b></p>   | 4~15V         | 2,000<br>Vo-Pmax. | 2.5W            | 60~200<br>kHz      | 11   |
|  | <p><b>CD-T-1032S SMT 10mm width type</b></p>    | 4~15V         | 2,450<br>Vo-Pmax. | 4.5W            | 40~200<br>kHz      | 12   |

# Contents

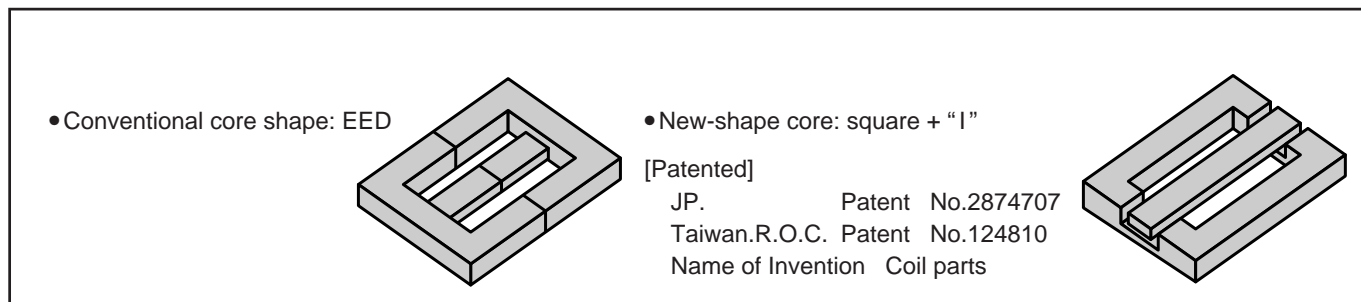
| Type   | Input voltage | Output voltage    | Adaptive output | Adaptive frequency | Page |
|--|---------------|-------------------|-----------------|--------------------|------|
|  <p><b>CD-T-1033 SMT 10mm width type</b></p>         | 4~15V         | 2,400<br>Vo-Pmax. | 3.5W            | 40~200<br>kHz      | 13   |
|  <p><b>CD-T-1033S SMT 10mm width type</b></p>        | 4~15V         | 2,400<br>Vo-Pmax. | 3.5W            | 40~200<br>kHz      | 14   |
|  <p><b>CD-T-1136 SMT 11.5mm width type</b></p>     | 4~15V         | 2,000<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 15   |
|  <p><b>CD-T-1136S SMT 11.5mm width type</b></p>  | 4~15V         | 2,300<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 16   |
|  <p><b>CD-T-1229 SMT 12mm width type</b></p>     | 4~15V         | 2,000<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 17   |
|  <p><b>CD-T-1229M SMT 12mm width type</b></p>    | 4~15V         | 2,300<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 18   |

# Contents

|   | Type   | Input voltage | Output voltage    | Adaptive output | Adaptive frequency | Page |
|---|--|---------------|-------------------|-----------------|--------------------|------|
|    | <p><b>CD-T-1524 SMT 15mm width type</b></p>   | 4~15V         | 2,400<br>Vo-Pmax. | 6W              | 30~200<br>kHz      | 19   |
|    | <p><b>CD-T-1530S SMT 15mm width type</b></p>                                        | 4~15V         | 2,300<br>Vo-Pmax. | 3W              | 40~200<br>kHz      | 20   |
|   | <p><b>CD-T-1731 SMT 17mm width type</b></p>                                        | 4~15V         | 2,450<br>Vo-Pmax. | 8W              | 30~200<br>kHz      | 21   |
|  | <p><b>CD-T-1827 SMT 18mm width type</b></p>                                       | 4~15V         | 2,600<br>Vo-Pmax. | 10W             | 30~200<br>kHz      | 22   |
|  | <p><b>CD-T-1111 SMT 11mm width type</b><br/>&lt; For flat tube lighting &gt;</p>  | 3~9V          | 2,100<br>Vo-Pmax. | 0.5W            | 15.75<br>kHz       | 23   |
|  | <p><b>CD-T-1112 SMT 11mm width type</b><br/>&lt; For flat tube lighting &gt;</p>  | 3~9V          | 2,300<br>Vo-Pmax. | 0.6W            | 15.75<br>kHz       | 24   |

## FDK's new-shape cores for transformers

### Compact high-performance transformers realized by new-shape cores!



### Thermal analysis and 3-D magnetic field analysis by CAE

Note 1 below explains what CAE is in concise terms. Using CAE, FDK has compared the flux density, leakage flux distribution and core loss distribution of two transformers. One incorporates a conventionally shaped core, while the other has a new-shape core. Despite their shape differences, both cores are made of the same ferrite material and have the same external dimensions.

Fig. 1 shows a CAE illustration of the two transformer's flux density and leakage flux distribution. In the conventional transformer (right), leakage fluxes are generated from the core joint and hollow areas. In the new transformer (left), however, leakage fluxes are generated sparsely and evenly along the entire core frame, minimizing the adverse effects of leakage fluxes on external devices.

Fig. 2 shows a CAE analysis of core loss distribution. The new transformer sustains much less core loss than a conventional transformer, because in the first transformer the core jointing efficiency is improved so that only a low level of flux density is required to generate the same amount of output power (low-excitation power). Consequently, by assuming the same amount of transformer loss, the new-shape core can be downsized.

\*Note 1: CAE (computer-aided engineering) is one technology that characterizes FDK. With the input of conditions and data, simulation or imaginary experiments are performed inside a supercomputer, and simulation data that are close to measured data are obtained. CAE is capable of carrying out structural, fluid, electromagnetic field and many other analyses. Field analysis, for example, yields simulation data on inductance, mutual inductance, leakage flux, DC overlap, flux density distribution, core loss, and the heat generation state.

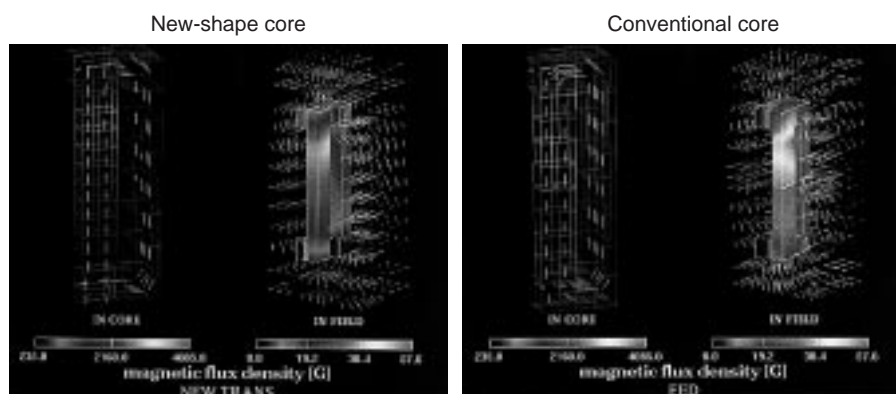


Fig. 1 : Flux density and leakage flux distribution of a transformer

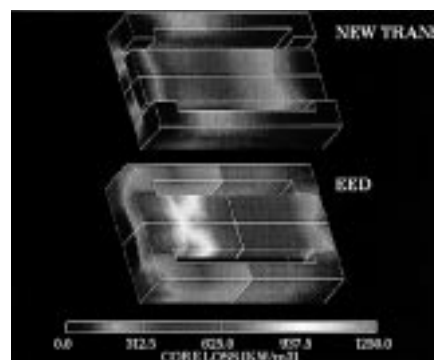
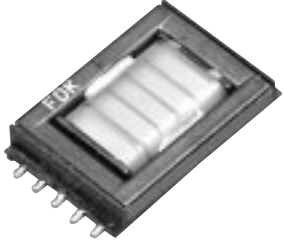
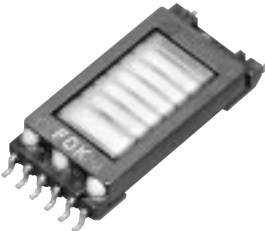
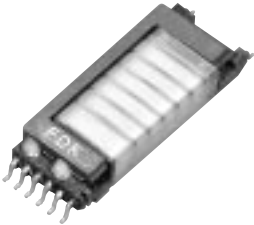
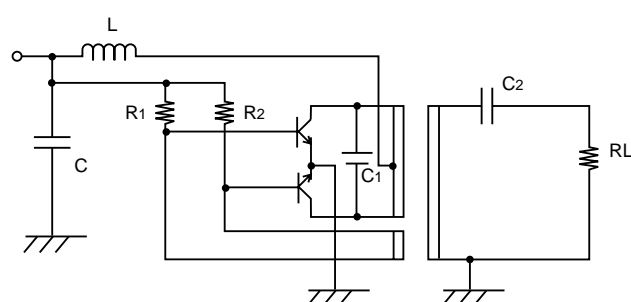


Fig. 2 : Ferrite core loss

## Comparison of new-shape and conventional transformers

|   |               | <CD-T-1727><br>Conventional transformers  | <CD-T-1229><br>New-shape transformers  | <CD-T-1029><br>New-shape transformers   |
|---|---------------|---|--|---|
|   |               |  |  |  |
| Core used                               |               | CD-T-1727-088   | CD-T-1229-079  | CD-T1029-113  |
| Winding specification                   | P1            | $\phi$ 0.25 10turns   | $\phi$ 0.20 11turns  | $\phi$ 0.20 11turns   |
|   | P2            | $\phi$ 0.25 10turns   | $\phi$ 0.20 11turns  | $\phi$ 0.20 11turns   |
|   | P3            | $\phi$ 0.25 3turns  | $\phi$ 0.10 3turns   | $\phi$ 0.10 3turns  |
|   | S1            | $\phi$ 0.05 2000turns   | $\phi$ 0.04 1800turns  | $\phi$ 0.04 1800turns   |
| Coupling coefficient (in voltage ratio) |               | 85%   | 98%  | 96%   |
| Core loss                               |               | 0.10W   | 0.08W  | 0.17W   |
| Invertor efficiency                     |               | 82.0%   | 82.3%  | 79.7%   |
| Transformer dimensions & weight         |               | 17(w) × 27(ℓ) × 5(h) mm<br>4.7g   | 12(w) × 29(ℓ) × 5(h) mm<br>3.6g  | 10(w) × 29(ℓ) × 5(h) mm<br>2.9g   |
| Projection area                         |               | 100%  | 76%  | 63%   |
| Width ratio                             |               | 100%  | 70%  | 59%   |
| Weight ratio                            |               | 100%  | 77%  | 62%   |
| Conditions                              | Input voltage | 4.18V   | 4.46V  | 4.44V   |
|   | Inputcurrent  | 700mA   | 654mA  | 678mA   |
|   | Frequency     | 48.1KHz   | 46KHz  | 50.6KHz   |
|   |               | Open voltage : 1,250V <sub>rms</sub>  | Output current : 5.0mA   | Output power : 2.4W   |

### Test circuit



|        |       |
|--------|-------|
| R1, R1 | 560Ω  |
| C      | 220μF |
| L      | 100μH |
| C1     | 0.1μF |
| C2     | 33pF  |
| RL     | 96KΩ  |

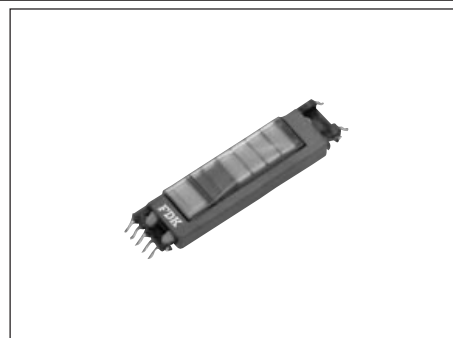
# T-0836 SMT 8.5mm-width type (Separate excitation IC drive feasibility)

## Features

- Compact high-output transformer with a small width and height (4.3mm high) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.
- Reflow soldering feasibility.
- Outstanding efficiency possible by using separate excitation IC.

## Applications

- Notebook PCs with a large slim LCD of up to 12 inches
- PDA
- Video camera with an LCD

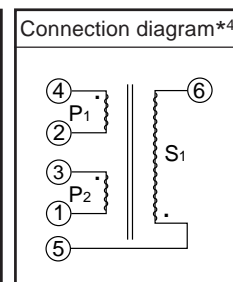


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Applicable IC | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|---------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |               |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-0836 customize             | —                                   | —             | 2.5 *1<br>(3.5)          | 40~200             | 0.5 min. *2  | 0.5 min.                      | 90 *1             |
| T-0836-520                   | 8~22                                | MP1010        |                          |                    |  |                               |                   |
| T-0836-545                   | Typ. 5                              | MP1012        |                          |                    |  |                               |                   |

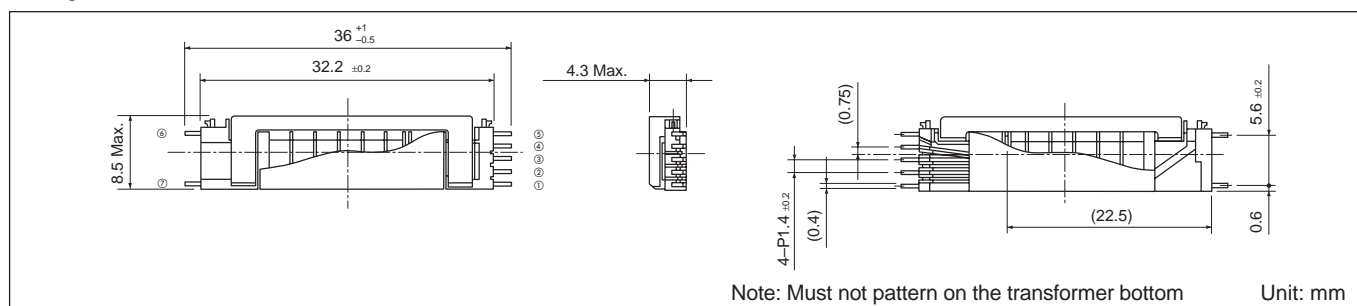
| Part No.<br>(typical models) | Winding: No. of turns |    |       | S1 inductance<br>at 1kHz[mH] | S1 leakage<br>inductance<br>at 50kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----|-------|------------------------------|--|-------------|
|                              | P1                    | P2 | S1    |                              |  |             |
| T-0836 customize             | —                     | —  | —     | —                            | —  | —*3         |
| T-0836-520                   | 25                    | —  | 2,400 | 1,450                        | 280                                      | 0           |
| T-0836-545                   | 20                    | —  |       |                              |  |             |

| *3 Gap(3Item)vs. AL |                         |
|---------------------|-------------------------|
| Gap [mm]            | AL [nH/N <sup>2</sup> ] |
| 0                   | 200                     |
| 0.10                | 75                      |
| 0.15                | 65                      |
| Standard gap: 0mm   |                         |

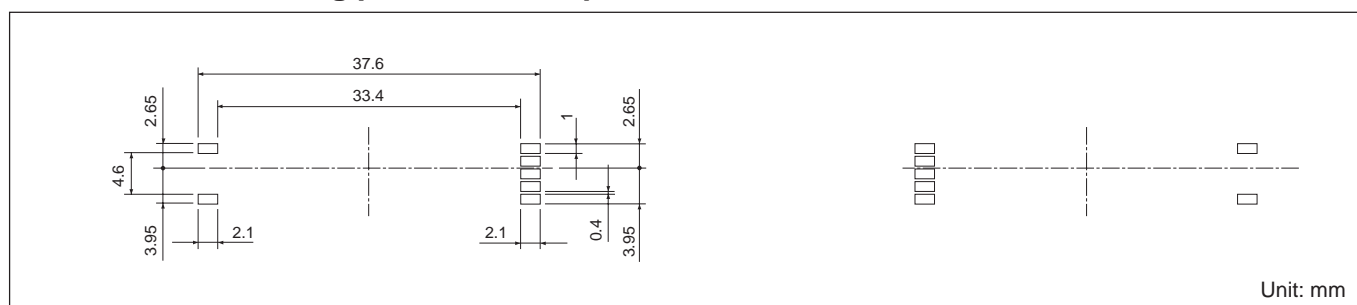


\* **Notes:** To match your exact needs, please contact us for information on T-0836 customization. The T-0836 cannot be used in a floating type circuit. Be sure to ground the No.5\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 3.5 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 1,600Vo-p output voltage permitted.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



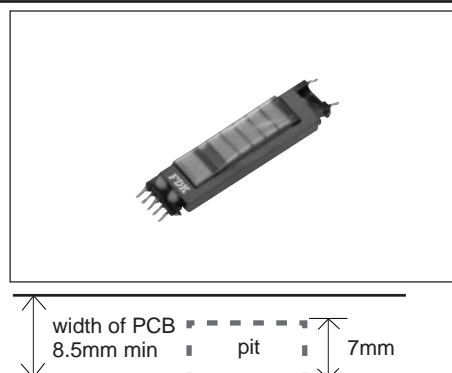
# T-0836S SMT 8.5mm-width type (Separate excitation IC drive feasibility)

## Features

- Compact high-output transformer with a small width and height (4.3mm high\*) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.  
\*Actual height on circuit board is 3.8mm and actual width is 8.5mm due to a pit in the circuit board.
- Reflow soldering feasibility.
- Outstanding efficiency possible by using separate excitation IC.

## Applications

- Notebook PCs with a large slim LCD of up to 12 inches
- PDA
- Video camera with an LCD

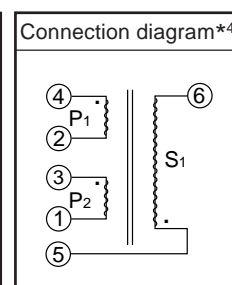


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Applicable IC | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                            | Efficiency<br>[%] |
|------------------------------|-------------------------------------|---------------|--------------------------|--------------------|--|----------------------------|-------------------|
|                              |                                     |               |                          |                    | Between 1st & 2nd windings                               | Between 2nd winding & core |                   |
| T-0836S customize            | —                                   | —             | 2.5 *1<br>(3.5)          | 40~200             | 0.5 min. *2  | 0.5 min.                   | 90 *1             |
| T-0836S-520                  | 8~22                                | MP1010        |                          |                    |  |                            |                   |
| T-0836S-545                  | Typ. 5                              | MP1012        |                          |                    |  |                            |                   |

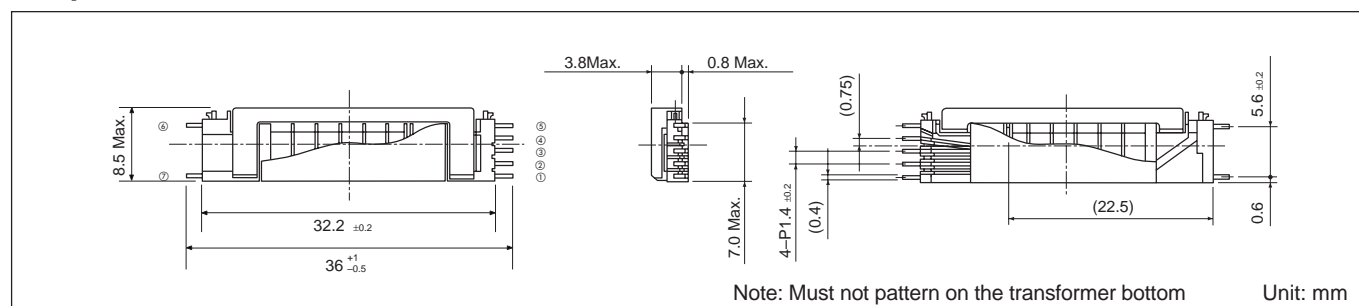
| Part No.<br>(typical models) | Winding: No. of turns |    |       | S1 inductance<br>at 1kHz[mH] | S1 leakage<br>inductance<br>at 50kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----|-------|------------------------------|--|-------------|
|                              | P1                    | P2 | S1    |                              |  |             |
| T-0836S customize            | —                     | —  | —     | —                            | —  | —*3         |
| T-0836S-520                  | 25                    | —  | 2,400 | 1,450                        | 280                                      | 0           |
| T-0836S-545                  | 20                    | —  |       |                              |  |             |

| *3 Gap(3Item)vs. AL |                         |
|---------------------|-------------------------|
| Gap [mm]            | AL [nH/N <sup>2</sup> ] |
| 0                   | 200                     |
| 0.10                | 75                      |
| 0.15                | 65                      |
| Standard gap: 0mm   |                         |

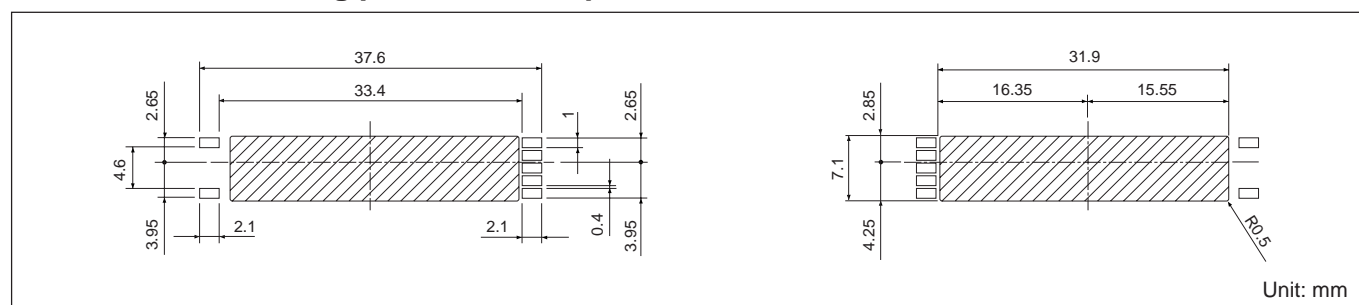


\* **Notes:** To match your exact needs, please contact us for information on T-0836S customization. The T-0836S cannot be used in a floating type circuit. Be sure to ground the No.5\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 3.5 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 1,600Vo-p output voltage permitted.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions





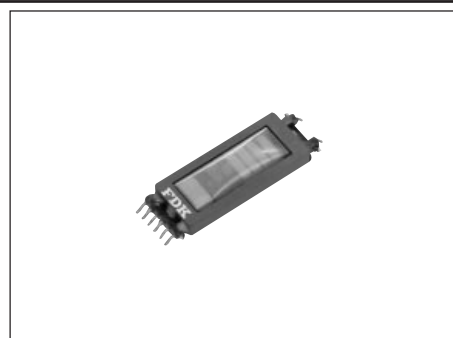
# T-1033A SMT 10mm-width type (Separate excitation IC drive feasibility)

## Features

- Compact high-output transformer with a small width and height (4.5mm high) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.
- Reflow soldering feasibility.
- Outstanding efficiency possible by using separate excitation IC.

## Applications

- Notebook PCs with a large slim LCD of up to 14 inches
- PDA
- Video camera with an LCD



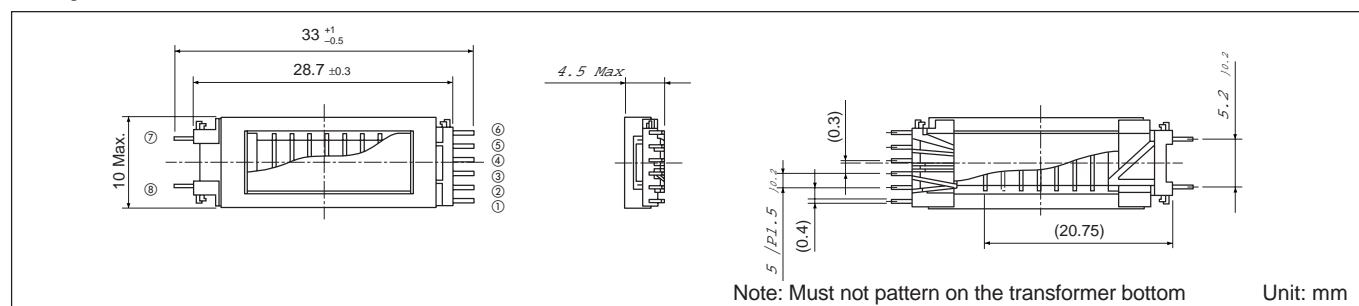
## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Applicable IC | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|---------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |               |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1033A customize            | —                                   | —             | 3.0 *1<br>(5)            | 40~200             | 0.5 min. *2  | 0.5 min.                      | 92 *1             |
| T-1033A-541                  | 8~22                                | MP1010        |                          |                    |  |                               |                   |
| T-1033A-546                  | Typ. 5                              | MP1012        |                          |                    |  |                               |                   |
| T-1033A-540                  | Typ. 5                              | OZ965         |                          |                    |  |                               |                   |

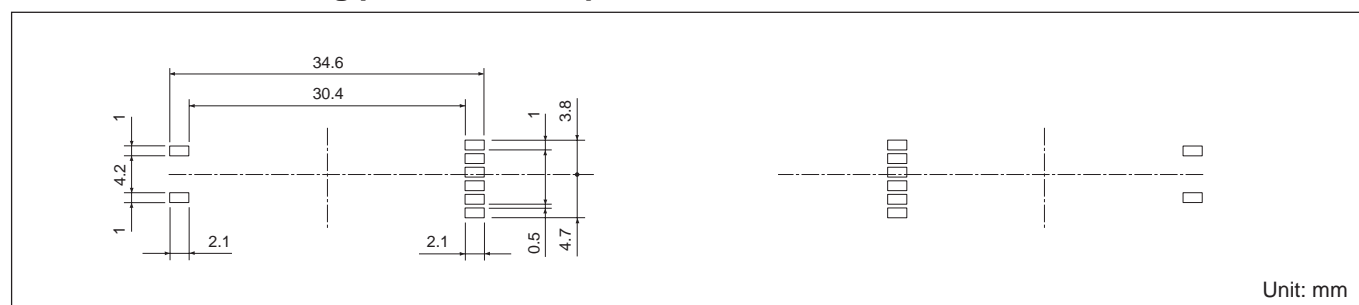
| Part No.<br>(typical models) | Winding: No. of turns |    |       | S1 inductance<br>at 1kHz[mH] | S1 leakage<br>inductance<br>at 1kHz[mH] | Gap<br>[mm] | *3 Gap(3Item)vs. AL |                         | Connection diagram*4 |
|------------------------------|-----------------------|----|-------|------------------------------|---|-------------|---------------------|-------------------------|----------------------|
|                              | P1                    | P2 | P3    |                              |   |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1033A customize            | —                     | —  | —     | —                            | —                                       | —*3         | 0                   | 280                     |                      |
| T-1033A-541                  | 16                    | —  | 1,880 | 1,000                        | 280                                     | 0           | 0.10                | 110                     |                      |
| T-1033A-546                  | 22                    | —  | —     | —                            | —                                       | —           | 0.15                | 90                      |                      |
| T-1033A-546                  | 18                    | —  | 1,900 | 335                          | 140                                     | 0.10        | Standard gap: 0mm   |                         |                      |
|                              |                       |    |       |                              |   |             |                     |                         |                      |

\* **Notes:** To match your exact needs, please contact us for information on T-1033A customization. The T-1033A cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 3.5 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 2,000Vo-p output voltage permitted.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



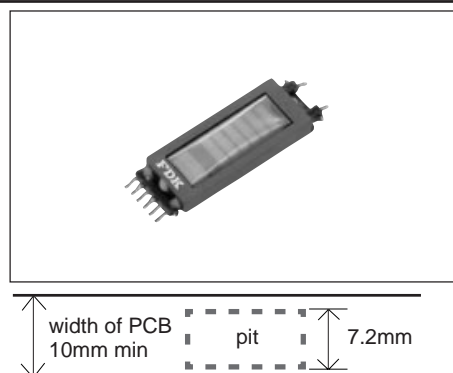
# T-1033AS SMT 10mm-width type (Separate excitation IC drive feasibility)

## Features

- Compact high-output transformer with a small width and height (4.5mm high\*) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.  
\*Actual height on circuit board is 3.9mm and actual width is 10mm due to a pit in the circuit board.
- Reflow soldering feasibility.
- Outstanding efficiency possible by using separate excitation IC.

## Applications

- Notebook PCs with a large slim LCD of up to 14 inches
- Video camera with an LCD
- PDA



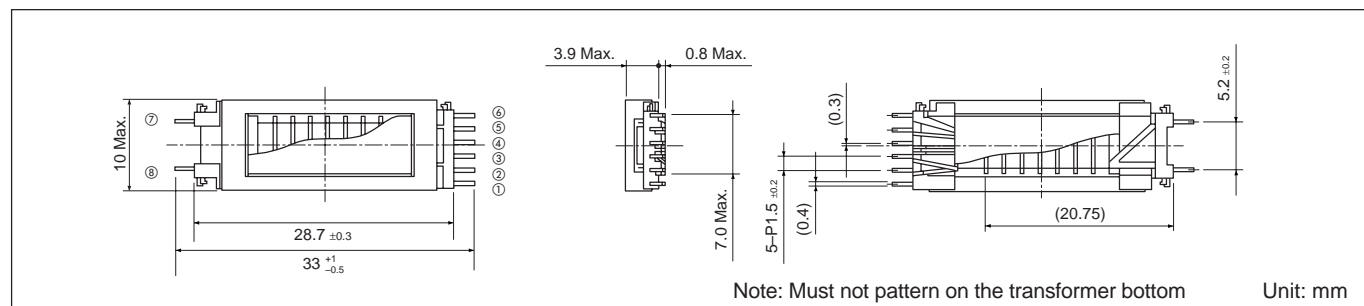
## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Applicable IC | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|---------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |               |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1033AS customize           | —                                   | —             | 3.0 *1<br>(5)            | 40~200             | 0.5 min. *2  | 0.5 min.                      | 92 *1             |
| T-1033AS-541                 | 8~22                                | MP1010        |                          |                    |  |                               |                   |
| T-1033AS-546                 | Typ. 5                              | MP1012        |                          |                    |  |                               |                   |
| T-1033AS-540                 | Typ. 5                              | OZ965         |                          |                    |  |                               |                   |

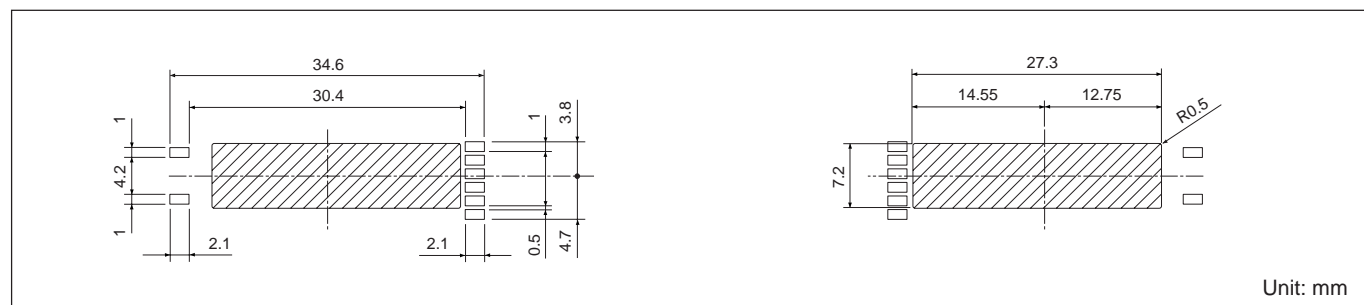
| Part No.<br>(typical models) | Winding: No. of turns |    |       | S1 inductance<br>at 1kHz[mH] | S1 leakage<br>inductance<br>at 1kHz[mH] | Gap<br>[mm] | *3 Gap(3Item)vs. AL |                         | Connection diagram*4 |
|------------------------------|-----------------------|----|-------|------------------------------|---|-------------|---------------------|-------------------------|----------------------|
|                              | P1                    | P2 | S1    |                              |   |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1033AS customize           | —                     | —  | —     | —                            | —                                       | —*3         | 0                   | 280                     |                      |
| T-1033AS-541                 | 16                    | —  | 1,880 | 1,000                        | 280                                     | 0           | 0.10                | 110                     |                      |
| T-1033AS-546                 | 22                    | —  | —     | 335                          | 140                                     | 0.10        | 0.15                | 90                      |                      |
| T-1033AS-546                 | 18                    | —  | 1,900 | —                            | —                                       | —           | Standard gap: 0mm   |                         |                      |

\* **Notes:** To match your exact needs, please contact us for information on T-1033AS customization. The T-1033AS cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 5 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 2,000Vo-p output voltage permitted.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



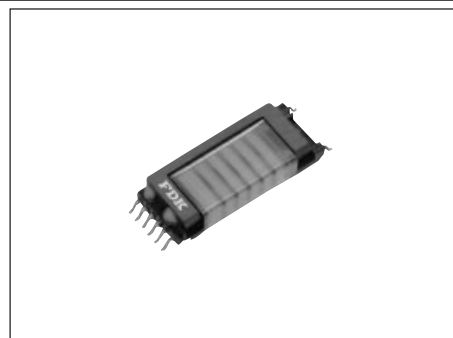
# T-1029 SMT 10mm-width type

## Features **A 30% cut in the mounting surface area (10×29mm)**

- A low-loss ferrite and a new-shape core give birth to a super compact inverter transformer (10mm wide, 5mm high) suitable for narrow and flat inverter units.
- Easy surface mounting and compatible with reflow soldering.
- Resistance to wire breakage boosted by twisted secondary winding terminals.
- Boasts an outstanding 96% coupling coefficient (in voltage ratio).

## Applications **A value-added option in downsizing**

- Notebook PCs having a large LCD(up to 12-inch screen)
- Car navigation and PC displays with parallel specifications for increased brightness.
- Video cameras equipped with an LCD
- PDA

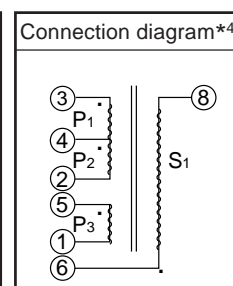


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1029 customize             | —                                   | 2,000 max.                          | 2.5 *1                   | 60~200             | 0.5 min. *2  | 1.5 min.                      | 78 *1             |
| T-1029-113                   | Typ. 7.0 (8.0 max.)                 | Typ. 1,760                          | (3.5)                    |                    |  |                               |                   |

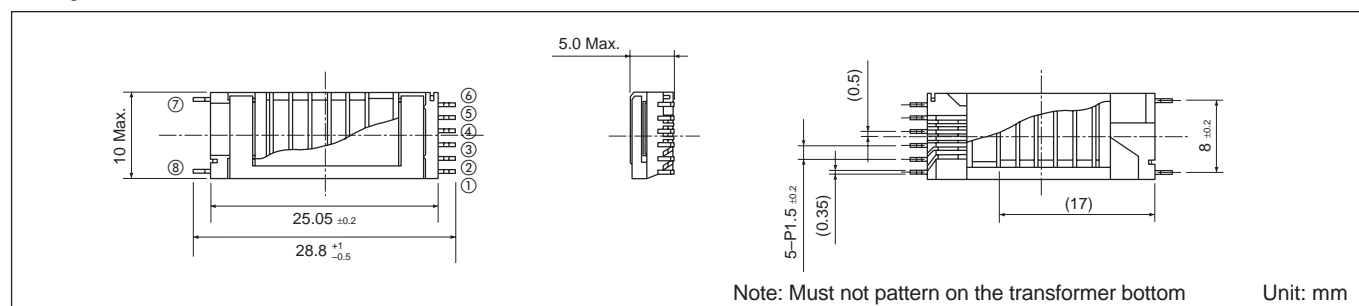
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1029 customize             | —                     | 3              | 1,800          | —                            | —*3         |
| T-1029-113                   | 8                     | 3              | 1,800          | 280                          | 0.15        |

| *3 Gap(3Item)vs. AL  |                         |
|----------------------|-------------------------|
| Gap [mm]             | AL [nH/N <sup>2</sup> ] |
| 0.1                  | 105                     |
| 0.15                 | 85                      |
| 0.2                  | 80                      |
| Standard gap: 0.15mm |                         |

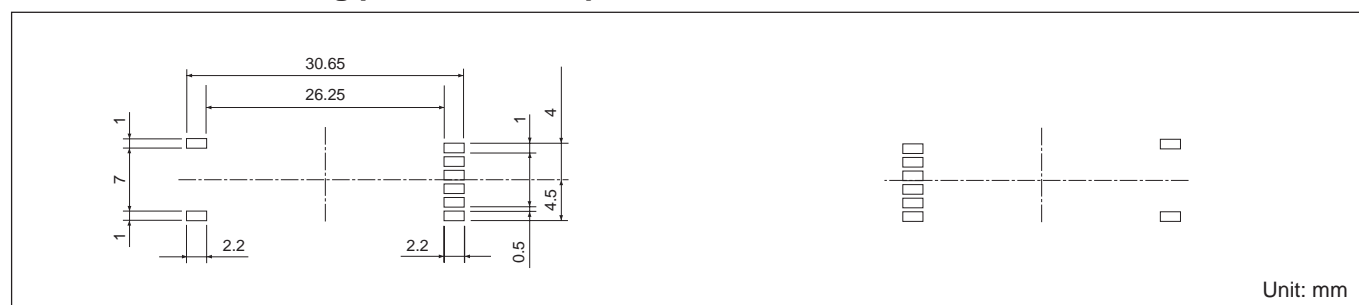


\* **Notes:** To match your exact needs, please contact us for information on T-1029 customization. The T-1029 cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 3.5 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



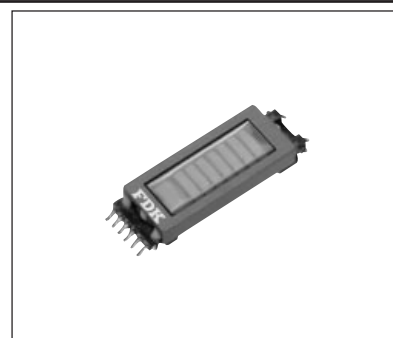
# T-1032S SMT 10mm-width Type

## Features

- A low-loss ferrite and a new-shape core give rise to a super compact and high-output inverter transformer (6mm high\*) suitable for designing narrow and flat inverter units.  
\* Although the maximum height is 6.0mm, the actual height on the circuit board is 5.2mm since T-1032 is partly dropped into the board. Also, because its drop width is 7.0mm, the minimum width of the circuit board for T-1032 is 10mm.
- Compatible with reflow soldering.
- Boasts an impressive 94% coupling coefficient (in voltage ratio).

## Applications A springboard for product differentiation

- Notebook PCs having a large LCD
- LCD monitor
- Car navigators and game machines with parallel specifications for high luminance

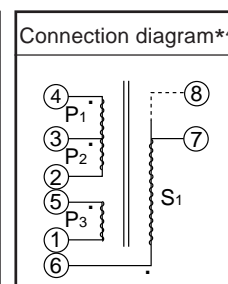


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W]  | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|---------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                           |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1032 customize             | —                                   | 2,450 max.*                         | 4.5 * <sup>1</sup><br>(6) | 40~200             | 0.5 min. * <sup>2</sup>                                  | 0.5 min.                      | 81 * <sup>1</sup> |
| T-1032-207                   | Typ. 5.5 (7.4 max.)                 | Typ. 1,800                          |                           |                    |  |                               |                   |
| T-1032-195                   | Typ. 6.0 (8.2 max.)                 | Typ. 1,800                          |                           |                    |  |                               |                   |
| T-1032-202                   | Typ. 7.5 (10.4 max.)                | Typ. 1,800                          |                           |                    |  |                               |                   |

| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm]     |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-----------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |                 |
| T-1032 customize             | —                     | —              | —              | —                            | —* <sup>3</sup> |
| T-1032-207                   | 10                    | 3              | 2,200          | 330                          | 0.2             |
| T-1032-195                   | 11                    |                |                |                              |                 |
| T-1032-202                   | 14                    |                |                |                              |                 |

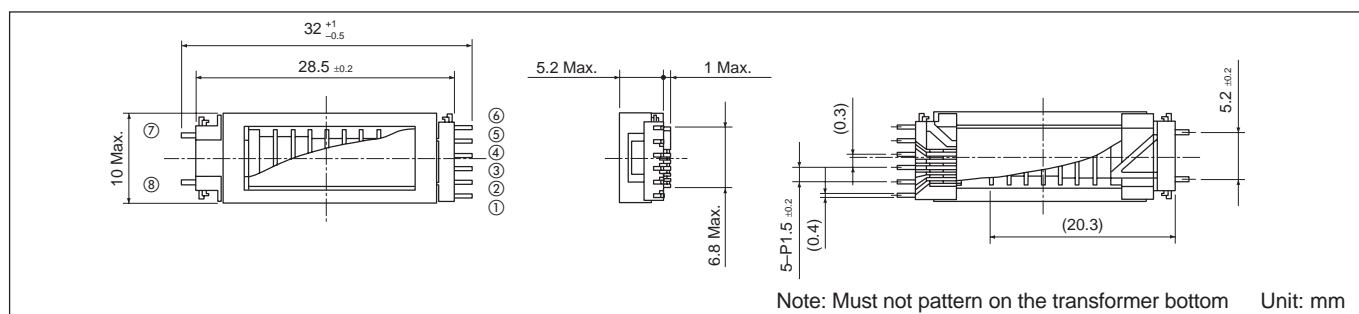
| * <sup>3</sup> Gap(3Item)vs. AL |                         |
|---------------------------------|-------------------------|
| Gap [mm]                        | AL [nH/N <sup>2</sup> ] |
| 0.15                            | 75                      |
| 0.2                             | 68                      |
| 0.3                             | 62                      |
| Standard gap: 0.2mm             |                         |



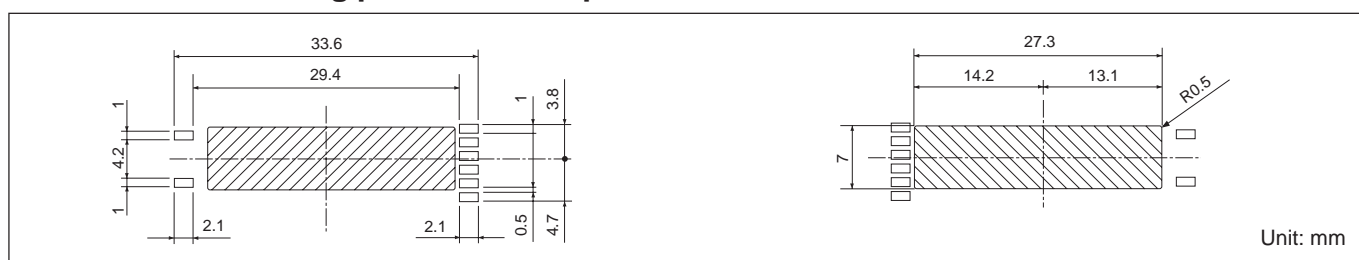
\* **Notes:** To match your exact needs, please contact us for information on T-1032S customization. The T-1032S cannot be used in a floating type circuit. Be sure to ground the No.6\*<sup>4</sup> pin of the secondary winding. The maximum output (6W) and efficiency\*<sup>1</sup> vary according to operating conditions. The withstand voltage between the primary and secondary windings\*<sup>2</sup> varies according to the number of primary winding turns. There are three choices in gap dimension\*<sup>3</sup>.

\*<sup>4</sup>: Up to 2,600V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



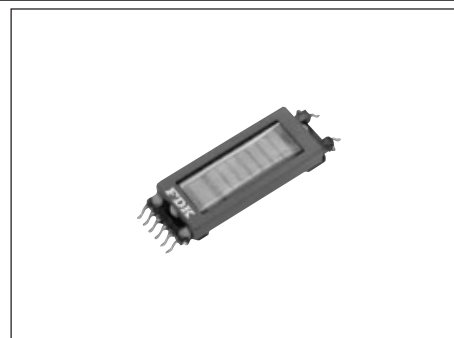
# T-1033 SMT 10mm-width type

## Features

- Compact high-output transformer with a small width and height (5.0mm high) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.
- Reflow soldering feasibility.
- Coupling coefficient of 95% (in voltage ratio).

## Applications

- Notebook PCs with a large slim LCD of up to 14 inches
- PDA
- Video camera with an LCD

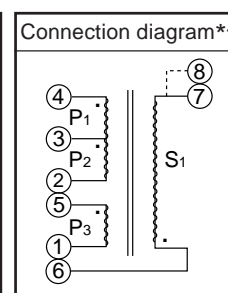


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1033 customize             | —                                   | 2,400 max.*                         | 3.5 *1<br>(4)            | 40~200             | 0.5 min. *2  | 0.5 min.                      | 80 *1             |
| T-1033-502                   | Typ. 5.5 (7.7 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |
| T-1033-503                   | Typ. 6.0 (8.5 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |
| T-1033-504                   | Typ. 6.5 (9.2 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |

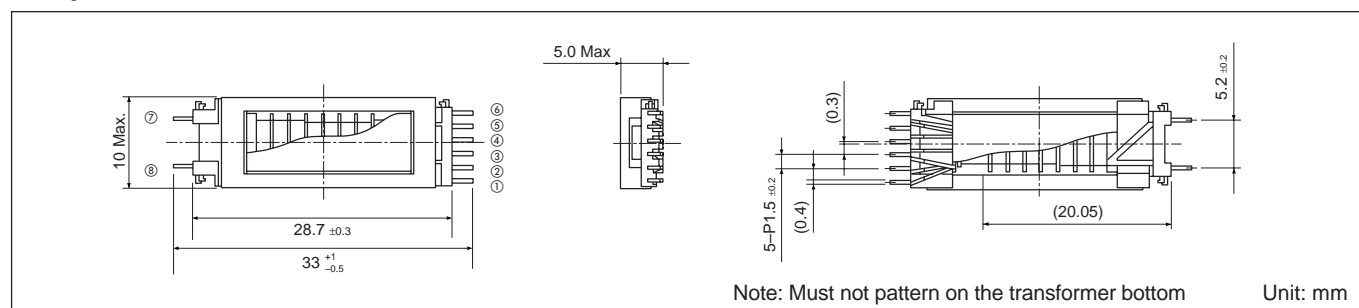
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1033 customize             | —                     | —              | —              | —                            | —*3         |
| T-1033-502                   | 9                     | 3              | 1,880          | 260                          | 0.15        |
| T-1033-503                   | 10                    |                |                |                              |             |
| T-1033-504                   | 11                    |                |                |                              |             |

| *3 Gap(3Item)vs. AL  |                         |
|----------------------|-------------------------|
| Gap [mm]             | AL [nH/N <sup>2</sup> ] |
| 0.10                 | 100                     |
| 0.15                 | 80                      |
| 0.30                 | 70                      |
| Standard gap: 0.15mm |                         |

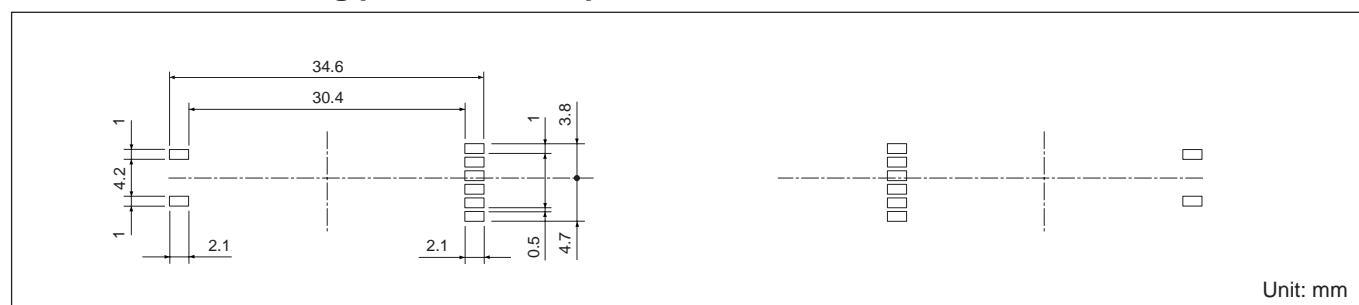


\* **Notes:** To match your exact needs, please contact us for information on T-1033 customization. The T-1033 cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 4 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 2,500V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



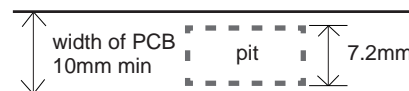
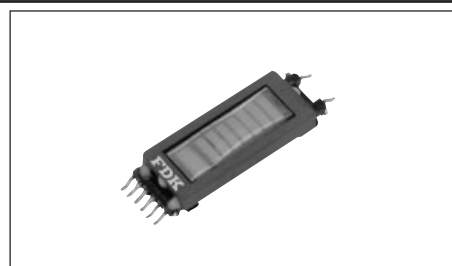
# T-1033S SMT 10mm-width type

## Features

- Compact high-output transformer with a small width and height (5.0mm high\*) enabled by a low-loss ferrite and new-shaped core. Suitable for slim and flat inverter designs.  
\*Actual height on circuit board is 4.5mm and actual width is 10.0mm due to a pit in the circuit board.
- Reflow soldering feasibility.
- Coupling coefficient of 95% (in voltage ratio).

## Applications

- Notebook PCs with a large slim LCD of up to 14 inches
- Video camera with an LCD
- PDA

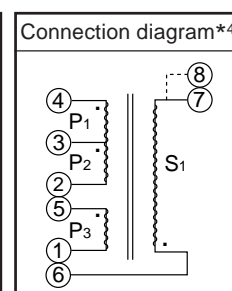


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1033S customize            | —                                   | 2,400 max.*                         | 3.5 *1<br>(4.0)          | 40~200             | 0.5 min. *2  | 0.5 min.                      | 80 *1             |
| T-1033S-502                  | Typ. 5.5 (7.7 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |
| T-1033S-503                  | Typ. 6.0 (8.5 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |
| T-1033S-504                  | Typ. 6.5 (9.2 max.)                 | Typ. 1,650                          |                          |                    |  |                               |                   |

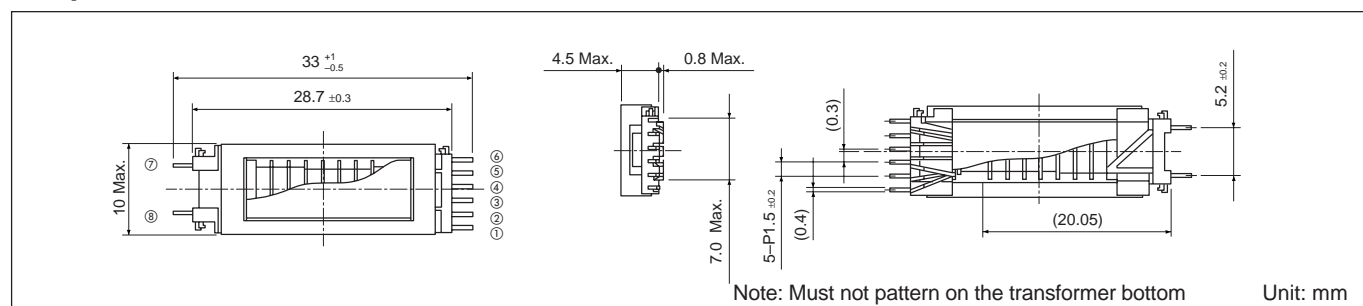
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1033S customize            | —                     | —              | —              | —                            | —*3         |
| T-1033S-502                  | 9                     | 3              | 1,880          | 260                          | 0.15        |
| T-1033S-503                  | 10                    |                |                |                              |             |
| T-1033S-504                  | 11                    |                |                |                              |             |

| *3 Gap(3Item)vs. AL  |                         |
|----------------------|-------------------------|
| Gap [mm]             | AL [nH/N <sup>2</sup> ] |
| 0.10                 | 100                     |
| 0.15                 | 80                      |
| 0.30                 | 70                      |
| Standard gap: 0.15mm |                         |

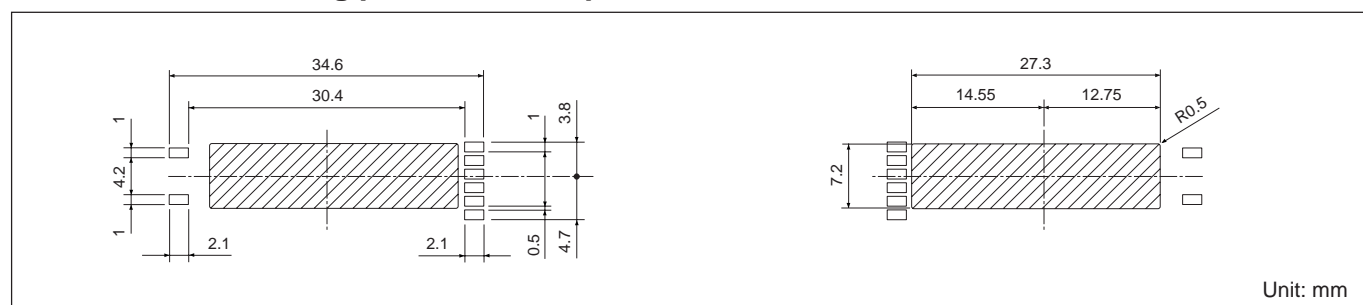


\* **Notes:** To match your exact needs, please contact us for information on T-1033S customization. The T-1033S cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 4 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 2,500V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



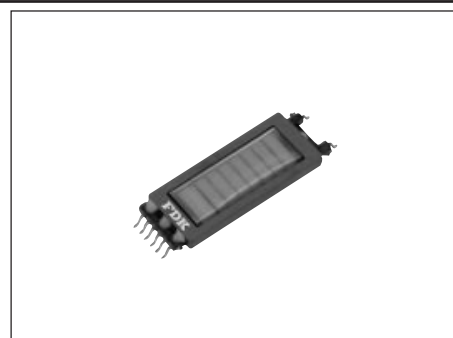
# T-1136 SMT 11.5mm-width type

## Features

- Compact high-output transformer with a small width and height (4.3mm high) enabled by an original low-loss "6H40" ferrite and new-shaped core. Suitable for slim and flat inverter designs.
- Reflow soldering feasibility.
- Coupling coefficient of 90% (in voltage ratio).

## Applications (for use in highly different ated products)

- Notebook PCs with a large slim LCD, PDA
- Thin LCD

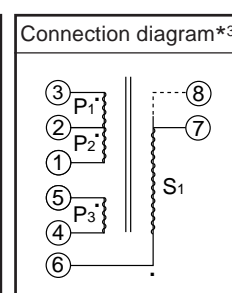


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1136 customize             | —                                   | 2,400 max.*                         | 3.5 *1<br>(4)            | 40~200             | 0.5 min. *2  | 0.5 min.                      | 80 *1             |
| T-1136-443                   | Typ. 5.0 (7.7 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |
| T-1136-444                   | Typ. 5.5 (8.5 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |
| T-1136-445                   | Typ. 6.0 (9.2 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |

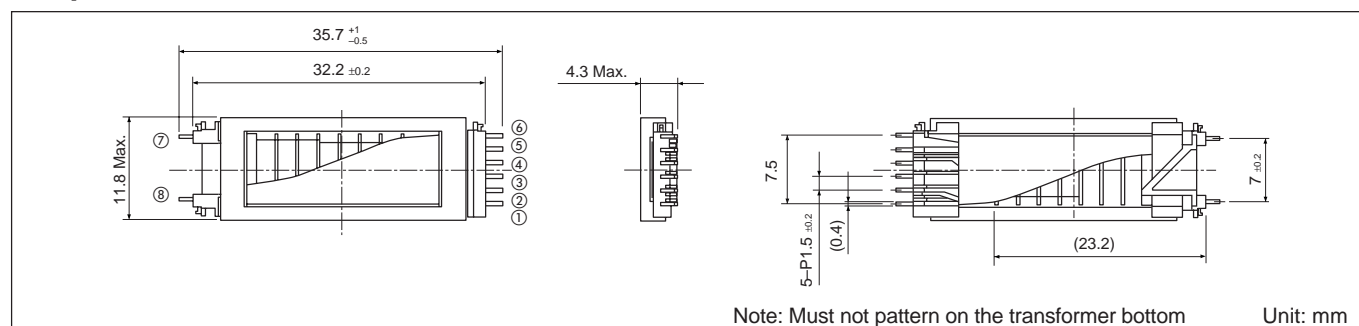
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1136 customize             | —                     | 4              | 2,000          | —                            | —*2         |
| T-1136-443                   | 10                    |                |                | 300                          | 0.2         |
| T-1136-444                   | 11                    |                |                | 300                          |             |
| T-1136-445                   | 12                    |                |                | 300                          |             |

| *3 Gap(3Item)vs. AL |                         |
|---------------------|-------------------------|
| Gap [mm]            | AL [nH/N <sup>2</sup> ] |
| 0.15                | 90                      |
| 0.2                 | 80                      |
| 0.3                 | 70                      |
| Standard gap: 0.2mm |                         |

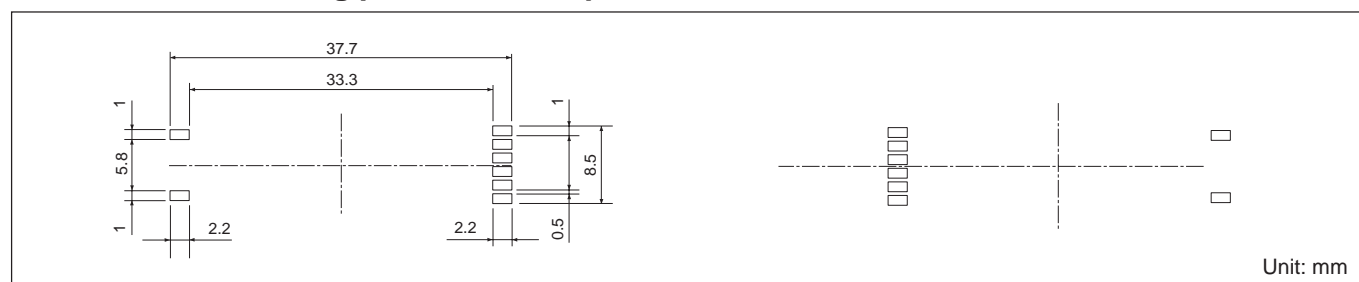


\* **Notes:** To match your exact needs, please contact us for information on T-1136 customization. The T-1136 cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum open voltage The maximum output (up to 4 W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3. Up to 2,500V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



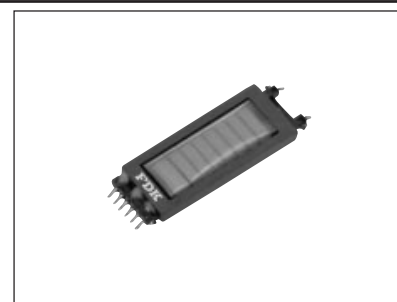
## Recommended landing pattern and drop dimensions



# T-1136S SMT 11.5mm-width Type

## Features

- A super low-loss ferrite (6H40) developed by ourselves and a new shape core give rise to a super thin and high-output inverter transformer (4.3mm high\*) suitable for designing super slim and flat inverter units.
- \* Although the maximum height is 4.3mm, the actual height on the circuit board is 3.7mm since T-1136S is partly dropped into the board. Also, because its drop width is 8mm, the minimum width of the circuit board for T-1136S is 12mm.
- Compatible with reflow soldering.
- Boasts an impressive 90% coupling coefficient (in voltage ratio).

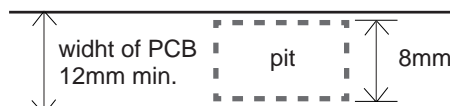


## Applications A springboard for product differentiation

- Notebook PCs having a large and slim LCD, PDA
- Slim LCD monitor



height on the board  
3.7mm max  
board



## Electrical characteristics

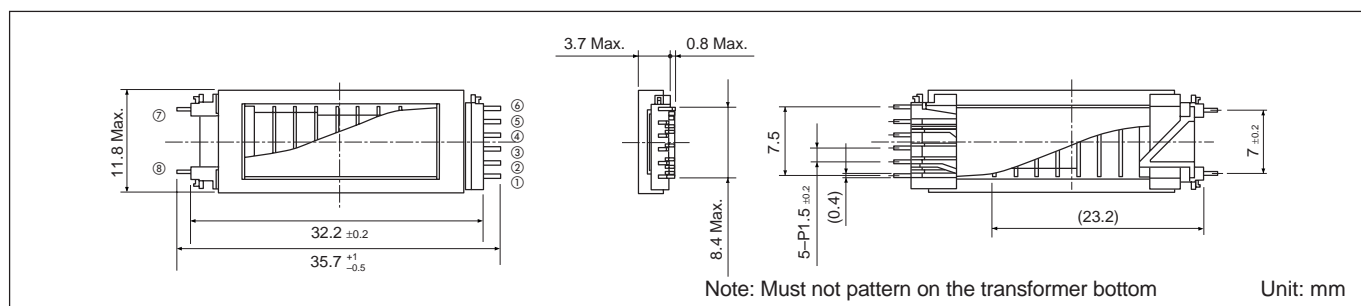
| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1136S customize            | —                                   | 2,400 max.*                         | 3.5 *1<br>(4)            | 40~200             | 0.5 min. *2  | 0.5 min.                      | 80 *1             |
| T-1136S-443                  | Typ. 5.0 (7.7 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |
| T-1136S-444                  | Typ. 5.5 (8.5 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |
| T-1136S-445                  | Typ. 6.0 (9.2 max.)                 | Typ. 1,450                          |                          |                    |  |                               |                   |

| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] | *3 Gap(3Item)vs. AL |                         | Connection diagram*3 |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|---------------------|-------------------------|----------------------|
|                              | P <sub>1, 2</sub>     | P <sub>3</sub> | S <sub>1</sub> |                              |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1136S customize            | —                     | 4              | 2,000          | —                            | —*3         | 0.15                | 90                      |                      |
| T-1136S-443                  | 10                    |                |                | 300                          | 0.2         | 0.2                 | 80                      |                      |
| T-1136S-444                  | 11                    |                |                | 300                          | 0.2         | 70                  |                         |                      |
| T-1136S-445                  | 12                    |                |                | 300                          | 0.2         | Standard gap: 0.2mm |                         |                      |

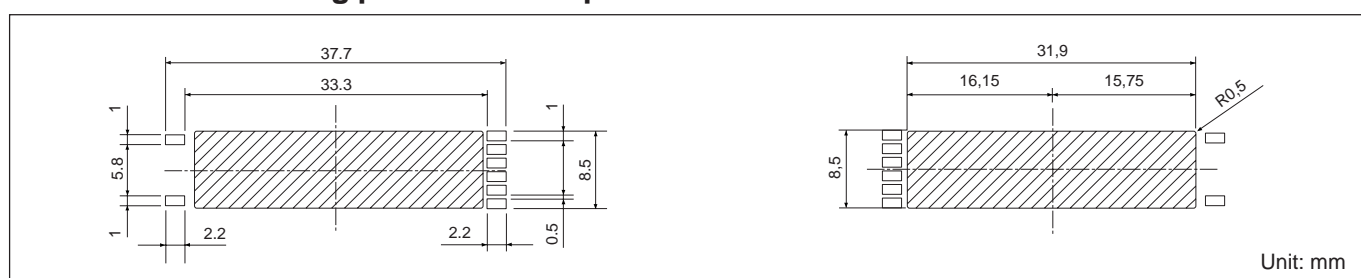
\* **Notes:** To match your exact needs, please contact us for information on T-1136S customization. The 1136S cannot be used in a floating type circuit. Be sure to ground the No.6\*3 pin of the secondary winding. The maximum output (4W) and efficiency\*1 vary according to operating conditions. There are three choices in gap dimension\*2

\*2: Up to 2,500V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions





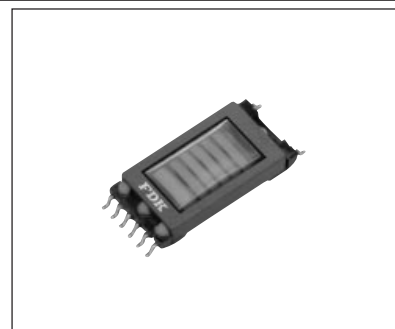
# T-1229 SMT 12mm-width type

## Features A 24% reduction in the mounting surface area (12 × 29mm)

- A low-loss ferrite and new-shape core realize a super compact inverter transformer (12mm wide, 5mm high) suitable for narrow and flat inverter units.
- Easy surface mounting and compatible with reflow soldering.
- Resistance to wire breakage increased by the twisted secondary wind-ing terminals.
- Boasts an outstanding 96% coupling coefficient (in voltage ratio).

## Applications A value-added option in differentiation

- Notebook PCs having a large LCD(up to 13-inch screen)
- Car navigation and PC displays with parallel specifications for increased brightness
- Video cameras equipped with an LCD

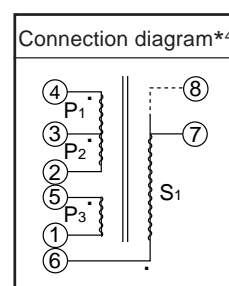


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1229 customize             | —                                   | 2,000 max.                          | 3 *1<br>(4)              | 40~200             | 0.5 min. *2  | 1.5 min.                      | 80 *1             |
| T-1229-085                   | Typ. 4.5 (5.0 max.)                 | Typ. 1,730                          |                          |                    |  |                               |                   |
| T-1229-081                   | Typ. 6.5 (7.4 max.)                 | Typ. 1,760                          |                          |                    |  |                               |                   |
| T-1229-079                   | Typ. 7.0 (8.0 max.)                 | Typ. 1,760                          |                          |                    |  |                               |                   |

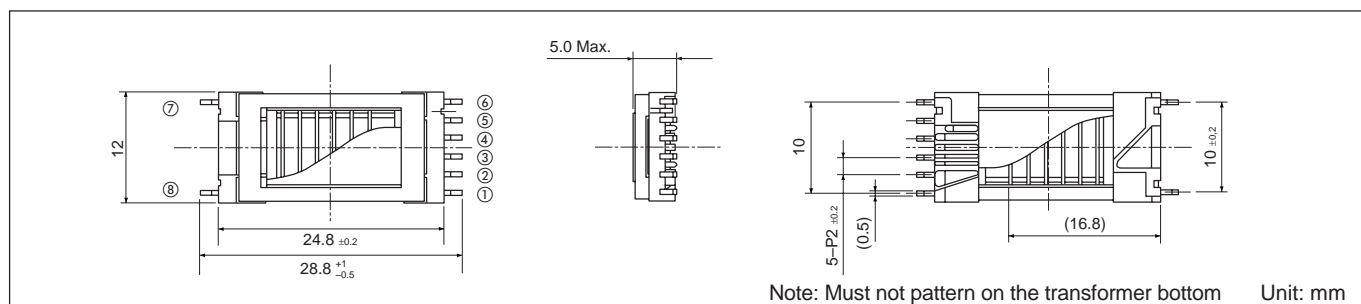
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1229 customize             | —                     | —              | —              | —                            | —*3         |
| T-1229-085                   | 7                     | 3              | 1,800          | 320                          | 0.15        |
| T-1229-081                   | 10                    |                |                |                              |             |
| T-1229-079                   | 11                    |                |                |                              |             |

| *3 Gap(3Item)vs. AL  |                         |
|----------------------|-------------------------|
| Gap [mm]             | AL [nH/N <sup>2</sup> ] |
| 0.1                  | 120                     |
| 0.15                 | 100                     |
| 0.2                  | 90                      |
| Standard gap: 0.15mm |                         |

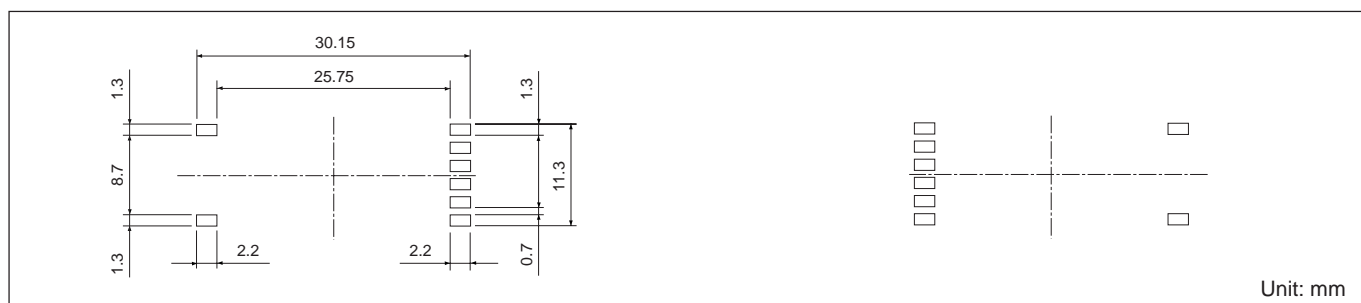


\* **Notes:** To match your exact needs, please contact us for information on T-1229 customization. The T-1229 cannot not be used in a floating type circuit. Be sure to ground the No.6\*4 pin (first pin of the secondary winding). The maximum output (up to 4W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap width\*3.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



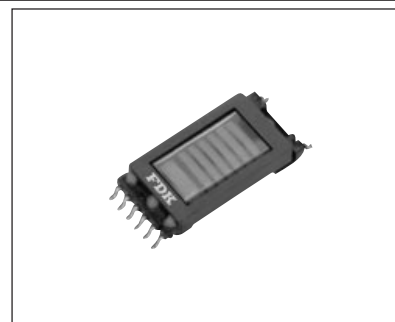
# T-1229M SMT 12mm-width Type

**Features** High voltage withstand (300V<sub>o-p</sub> higher than T-1229) Mounting area (12 x 29mm) cut by 24%

- A low-loss ferrite and a new-shape core has realized a super compact and high-output inverter transformer (max. height of 5.2mm) for designing narrow and flat inverter units.
- Particularly suitable for large LCD due to high withstand voltage specifications.
- Suitable also for large-sized LCDs, thanks to a high withstand voltage.
- Compatible with reflow soldering.
- Resistance to wire breakage boosted by twisted secondary winding terminals.
- An outstanding 94% coupling coefficient (in voltage ratio).

**Applications** For achieving LCD differentiation

- Notebook PCs having a large LCD (up to 13-inch screen)
- Car navigators and game machines with parallel specifications for high luminance



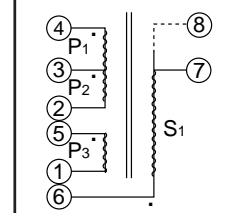
## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1229M customize            | —                                   | 2,300 max.*                         | Typ. 3 *1<br>(4)         | 40~200             | 0.5 min. *2  | 0.5 min.                      | 80 *1             |
| T-1229M-197                  | Typ. 4.5 (5.6 max.)                 | Typ. 1,730                          |                          |                    |  |                               |                   |
| T-1229M-192                  | Typ. 5.7 (7.2 max.)                 | Typ. 1,760                          |                          |                    |  |                               |                   |
| T-1229M-194                  | Typ. 7.0 (8.8 max.)                 | Typ. 1,760                          |                          |                    |  |                               |                   |

| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             |
| T-1229M customize            | —                     | —              | —              | —                            | —*3         |
| T-1229M-197                  | 7                     | 3              | 1,800          | 320                          | 0.15        |
| T-1229M-192                  | 9                     |                |                |                              |             |
| T-1229M-194                  | 11                    |                |                |                              |             |

| *3 Gap(3Item)vs. AL  |                         |
|----------------------|-------------------------|
| Gap [mm]             | AL [nH/N <sup>2</sup> ] |
| 0.1                  | 120                     |
| 0.15                 | 100                     |
| 0.2                  | 90                      |
| Standard gap: 0.15mm |                         |

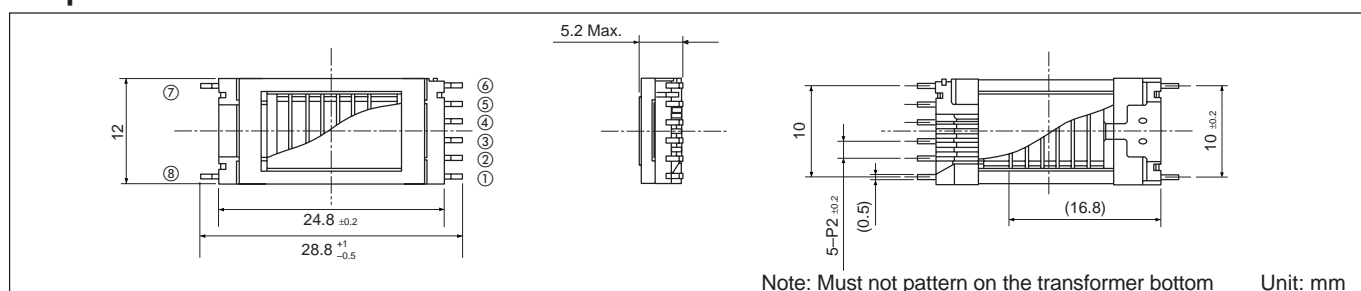
Connection diagram\*4



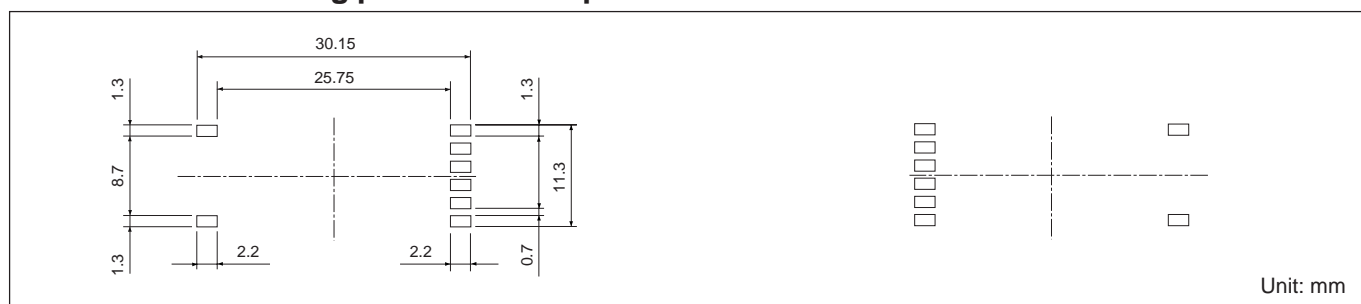
\* **Notes:** To match your exact needs, please contact us for information on T-1229M customization. The T-1229M cannot be used in a floating type circuit. Be sure to ground the No.6\*4 pin of the secondary winding. The maximum output (4W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns. There are three choices in gap dimension\*3.

\*: Up to 2,410V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



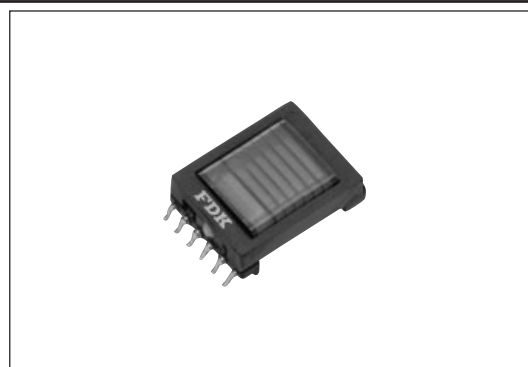
# T-1524 SMT 15mm-width Type

## Features

- A low-loss ferrite and a new-shape core give birth to a super compact and high-performance inverter transformer boasting an excellent withstand voltage and output power.
- Answering the higher open voltage requirement resulting from the downsizing of cold-cathode tubes.
- Compatible with reflow soldering.
- Resistance to wire breakage boosted by twisted secondary winding terminals.
- A high 92% coupling coefficient (in voltage ratio).

## Applications For marking very differentiated LCDs

- Notebook PCs having a large LCD
- Scanners
- Large LCD units

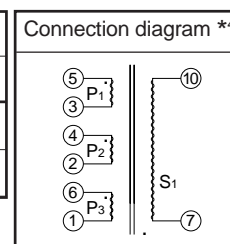


## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1524 customize             | —                                   | 2,400 max.*                         | Typ. 6 *1<br>(8)         | 30~200             | 0.5 min. *2<br>(1.25)min.                                | 1.25 min.                     | 84 *1             |
| T-1524-189                   | Typ. 7.0 (10.0 max.)                | Typ. 1,550                          |                          |                    |  |                               |                   |
| T-1524-301                   | Typ. 8.5 (11.5 max.)                | Typ. 1,750                          |                          |                    |  |                               |                   |

| Part No.<br>(typical models) | Winding: No. of turns |    |       | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] |
|------------------------------|-----------------------|----|-------|------------------------------|-------------|
|                              | P1,2                  | P3 | S1    |                              |             |
| T-1524 customize             | —                     | —  | —     | —                            | —*3         |
| T-1524-189                   | 13                    | 3  | 2,000 | 300                          | 0.3         |
| T-1524-301                   | 14                    | —  | —     | 260                          | 0.5         |

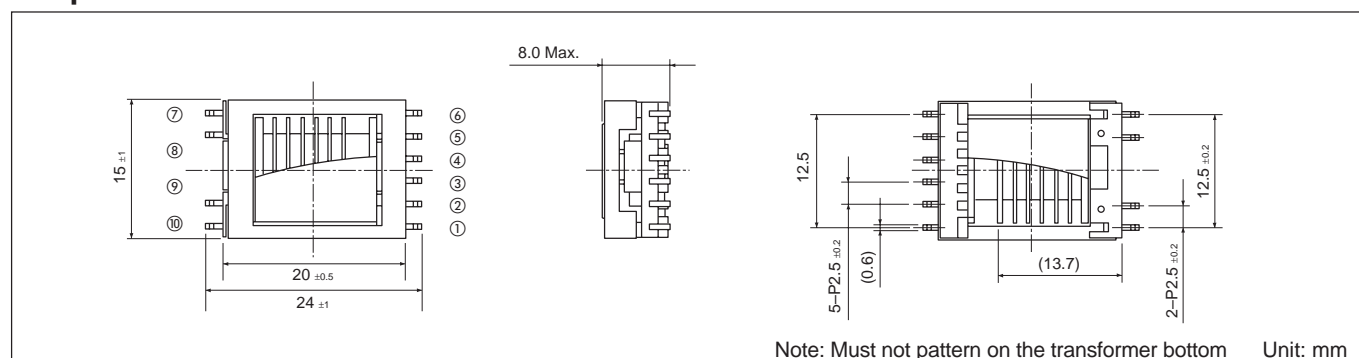
| *3 Gap(2Item)vs. AL |                         |
|---------------------|-------------------------|
| Gap [mm]            | AL [nH/N <sup>2</sup> ] |
| 0.3                 | 75                      |
| 0.5                 | 65                      |



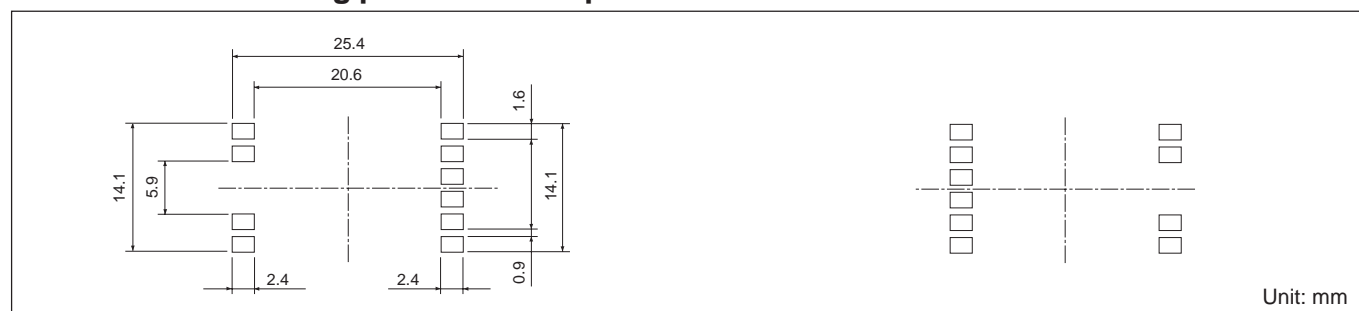
\* **Notes:** To match your exact needs, please contact us for information on T-1524 customization. The T-1524 cannot be used in a floating type circuit. Be sure to ground the No.10\*4 pin of the secondary winding. The maximum output (8W) and efficiency\*1 vary according to operating conditions. The withstand voltage between the primary and secondary windings\*2 varies according to the number of primary winding turns (in the case of floating circuits, the withstand voltage is 1.25kVrms min.). There are two choices in gap dimension\*3.

\*: Up to 2,600Vo-p permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



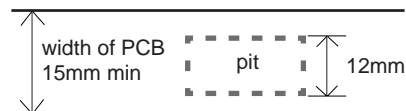
# T-1530S SMT 15mm-width Type

## Features 4mm High super thin and high performance inverter transformer

- A low-loss ferrite and a new shape core give rise to a super thin and high-output inverter transformer (4mm high\*) suitable for designing super slim and flat inverter units.
- \* Although the maximum height is 4mm, the actual height on the circuit board is 3.2mm since T-1530 is partly dropped into the board. Also, because its drop width is 12mm, the minimum width of the circuit board for T-1530 is 15mm.
- Compatible with reflow soldering.
- Boasts an impressive 96% coupling coefficient (in voltage ratio).

## Applications A springboard for product differentiation

- Notebook PCs having a slim LCD, PDA, LCD monitor.
- Car navigators with parallel specification for high luminance.



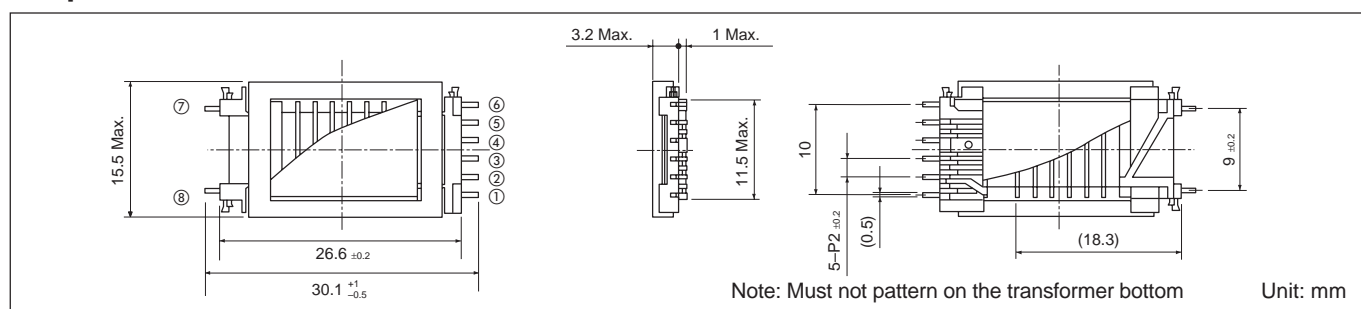
## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1530S customize            | —                                   | 2,300 max.*                         | 3 *1<br>(4)              | 40~200             | 0.5 min.   | 0.5 min.                      | 80 *1             |
| T-1530S-234                  | Typ. 5.5 (7.2 max.)                 | Typ. 1,700                          |                          |                    |  |                               |                   |
| T-1530S-235                  | Typ. 6.1 (8.0 max.)                 | Typ. 1,700                          |                          |                    |  |                               |                   |
| T-1530S-236                  | Typ. 6.7 (8.8 max.)                 | Typ. 1,700                          |                          |                    |  |                               |                   |

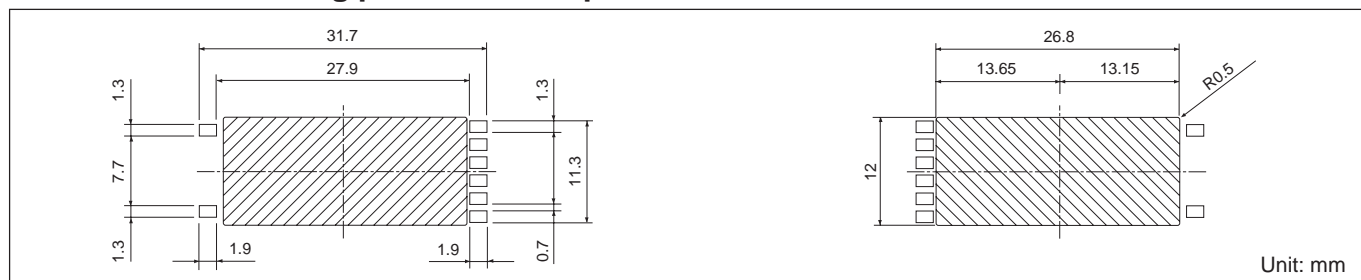
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] | *2 Gap(3Item)vs. AL |                         | Connection diagram*3 |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|---------------------|-------------------------|----------------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1530S customize            | —                     | 3              | 1,800          | —                            | —*2         | 0.15                | 100                     |                      |
| T-1530S-234                  | 9                     |                |                | 320                          | 0.15        | 90                  |                         |                      |
| T-1530S-235                  | 10                    |                |                | 80                           |             |                     |                         |                      |
| T-1530S-236                  | 11                    |                |                | Standard gap: 0.15mm         |             |                     |                         |                      |

\* **Notes:** Notes: To match your exact needs, please contact us for information on T-1530S customization. The 1530S cannot be used in a floating type circuit. Be sure to ground the No.6\*3 pin of the secondary winding. The maximum output (4W) and efficiency\*1 vary according to operating conditions. There are three choices in gap dimension\*2  
 \*: Up to 2,410V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



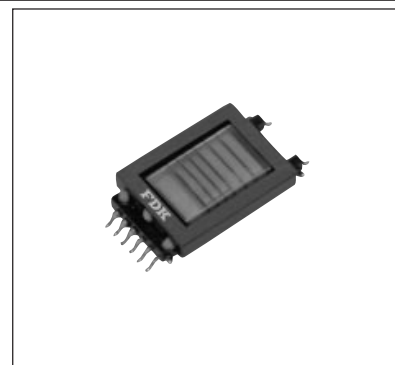
# T-1731 SMT 17mm-width Type

## Features

- A low-loss ferrite and a new-shape core give birth to a slim and high-performance inverter transformer boasting an excellent withstand voltage and output power.
- Corresponds with large LCD backlighting of more than 15 inches (One transformer enable three cold-cathode tube lighting)
- Compatible with reflow soldering
- Boasts an impressive 95% coupling coefficient (in voltage ratio)

## Applications

- Large LCD monitor
- Car navigators with high luminance
- Large liquid crystal TVs



## Electrical characteristics

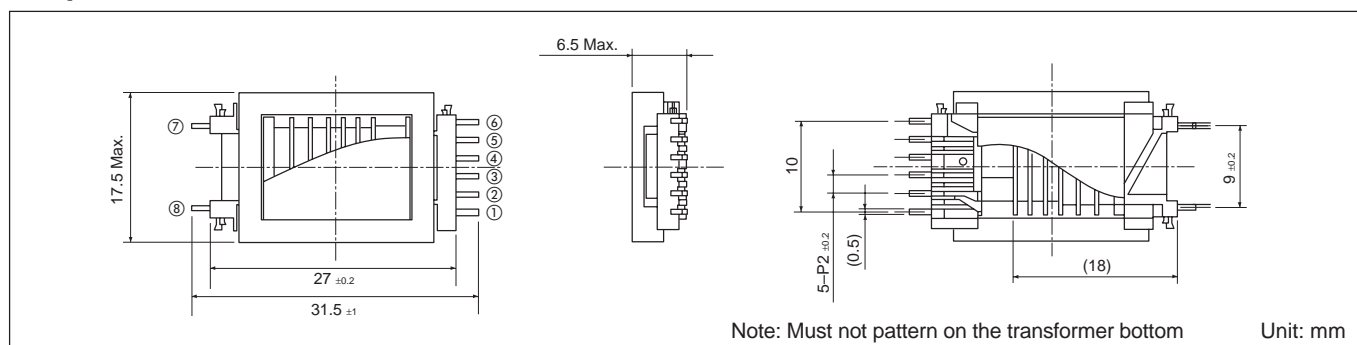
| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                               | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|-------------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st<br>& 2nd windings                            | Between 2nd<br>winding & core |                   |
| T-1731 customize             | —                                   | 2,450 max.*                         | 8*1                      | 30~200             | 0.5 min.   | 0.5 min.                      | 84                |
| T-1731-472                   | Typ. 8.0 (12.0 max.)                | Typ. 1,100                          | (12)                     |                    |  |                               |                   |
| T-1731-487                   | Typ. 8.9 (13.3 max.)                | Typ. 1,100                          |                          |                    |  |                               |                   |

| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] | *2 Gap(3Item)vs. AL |                         | Connection diagram*3 |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|---------------------|-------------------------|----------------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1731 customize             | —                     | 2              | 1,200          | —                            | —*2         | 0.15                | 100                     |                      |
| T-1731-472                   | 9                     |                |                | 130                          | 0.2         | 0.2                 | 90                      |                      |
| T-1731-487                   | 10                    |                |                | 130                          | 0.2         | 75                  |                         |                      |
|                              |                       |                |                |                              |             | Standard gap: 0.2mm |                         |                      |

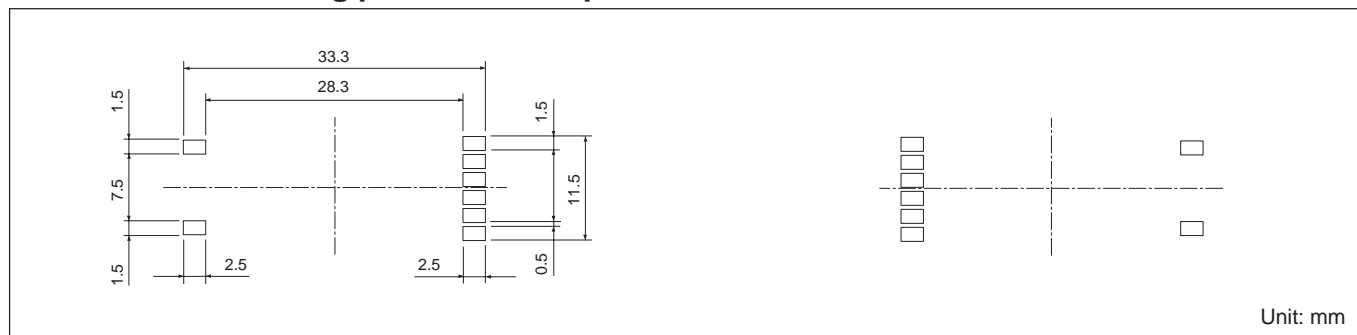
\* **Notes:** To match your exact needs, please contact us for information on T-1731 customization. The T-1731 cannot be used in a floating type circuit. Be sure to ground the No.6\*3 pin of the secondary winding. The maximum output (12W) and efficiency\*1 vary according to operating conditions. There are three choices in gap dimension\*2

\*: Up to 2,600Vo-p permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



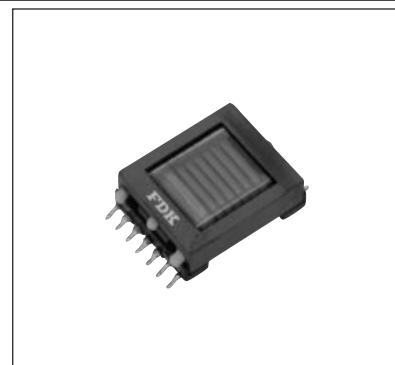
# T-1827 SMT 18mm-width Type

## Features

- A low-loss ferrite and a new-shape core give birth to a super compact and high-performance inverter transformer boasting an excellent withstand voltage and output power.
- Compatible with high open voltage [2,600V o-p max.] and high output power [15W max.] for large LCD backlighting of more than 15 inch.
- Compatible with reflow soldering
- Boasts an impressive 92% coupling coefficient (in voltage ratio)
- One transformer enable three cold-cathode tube lighting

## Applications

- Large LCD monitor, Display, Large liquid crystal TVs
- Scanner with multifunction
- Amusement



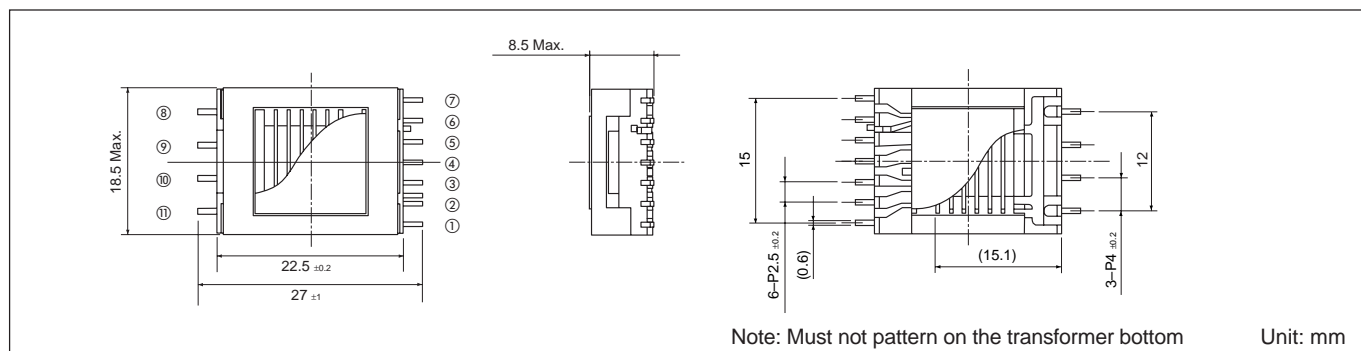
## Electrical characteristics

| Part No.<br>(typical models) | Input voltage<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>o-p</sub> ] | Max. output power<br>[W] | Frequency<br>[kHz] | Withstand voltage<br>(AC60Hz, 1min.)[kV <sub>rms</sub> ] |                            | Efficiency<br>[%] |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------|--|----------------------------|-------------------|
|                              |                                     |                                     |                          |                    | Between 1st & 2nd windings                               | Between 2nd winding & core |                   |
| T-1827 customize             | —                                   | 2,600 max.*                         | 10 *1<br>(15)            | 30~200             | 0.5 min.   | 0.5 min.                   | 85 *1             |
| T-1827-459                   | Typ. 7.7 (11.2 max.)                | Typ. 1,600                          |                          |                    |  |                            |                   |
| T-1827-460                   | Typ. 8.3 (12.6 max.)                | Typ. 1,600                          |                          |                    |  |                            |                   |
| T-1827-461                   | Typ. 9.5 (14.0 max.)                | Typ. 1,600                          |                          |                    |  |                            |                   |

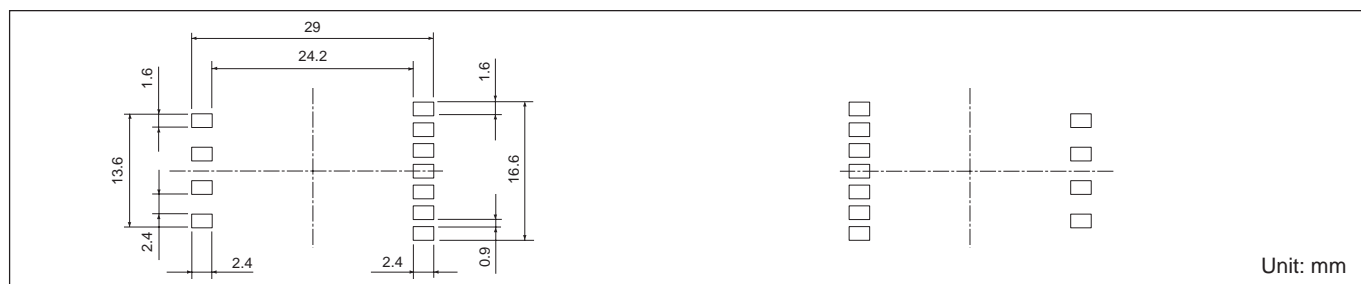
| Part No.<br>(typical models) | Winding: No. of turns |                |                | S1 inductance<br>at 1kHz[mH] | Gap<br>[mm] | *2 Gap(3Item)vs. AL |                         | Connection diagram*3 |
|------------------------------|-----------------------|----------------|----------------|------------------------------|-------------|---------------------|-------------------------|----------------------|
|                              | P <sub>1,2</sub>      | P <sub>3</sub> | S <sub>1</sub> |                              |             | Gap [mm]            | AL [nH/N <sup>2</sup> ] |                      |
| T-1827 customize             | —                     | 2              | 1,200          | —                            | —*2         | 0.15                | 145                     |                      |
| T-1827-459                   | 8                     |                |                | 140                          | 0.3         | 0.2                 | 125                     |                      |
| T-1827-460                   | 9                     |                |                | 100                          | 0.3         | 0.3                 | 100                     |                      |
| T-1827-461                   | 10                    |                |                | Standard gap: 0.3mm          |             |                     |                         |                      |

\* **Notes:** To match your exact needs, please contact us for information on T-1827 customization. The T-1827 cannot be used in a floating type circuit. Be sure to ground the No.6\*3 pin of the secondary winding. The maximum output (15W), efficiency, and coupling coefficient\*1 vary according to operating conditions. There are three choices in gap dimension\*2  
 \*: Up to 2,800V<sub>o-p</sub> permitted for duration of 3 sec. or less.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



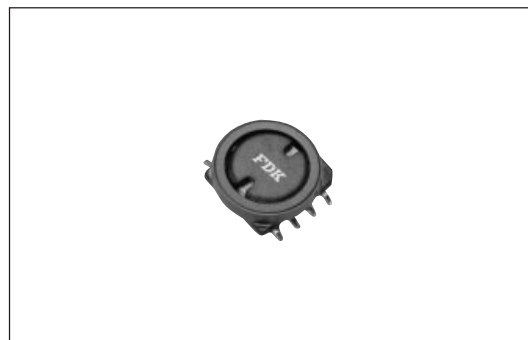
# T-1111 SMT 11mm width type

## Features

- Compact and low profile (max. height of 5mm)
- Leakage fluxes minimized by the use of drum and ring cores
- Reflow soldering mounting
- Embossed tapes (24mm wide, 330mm reel diameter, and 600-piece holding capacity) available for automatic mounting

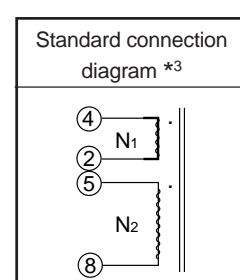
## Applications

- View finders for video cameras, etc. (up to 0.6-inch screen)
- Small liquid crystal TVs



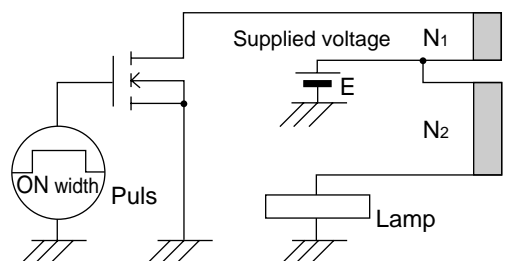
## Electrical characteristics

| Part No.<br>(typical models) | Supplied voltage E<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>O-P</sub> ] | ON width<br>[μS] | Pulse-adjustable frequency<br>[kHz] | Max. output power<br>[W] | Withstand voltage between N2 lines<br>[kV <sub>O-P</sub> ] |
|------------------------------|--|-------------------------------------|------------------|-------------------------------------|--------------------------|--|
| T-1111 customize             | —  | 2,100 max.                          | —                | 15.75                               | 0.5 *1                   | 2.3 min.   |
| T-1111-150                   | —  | 2,100 max.                          | —                |                                     | (0.7)                    | *2   |



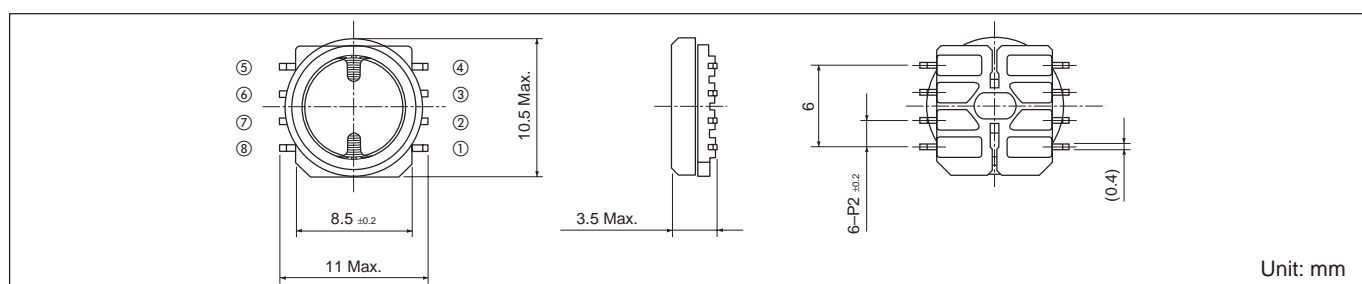
| Part No.<br>(typical models) | Winding: No. of turns [Terns] |                | Inductance at 1kHz  |                     |
|------------------------------|-------------------------------|----------------|---------------------|---------------------|
|                              | N <sub>1</sub>                | N <sub>2</sub> | N <sub>1</sub> [μH] | N <sub>2</sub> [mH] |
| T-1111 customize             | —                             | STD. 350       | —                   | 9.4                 |
| T-1111-150                   | 18                            | 350            | 34                  |                     |

## Basic circuit

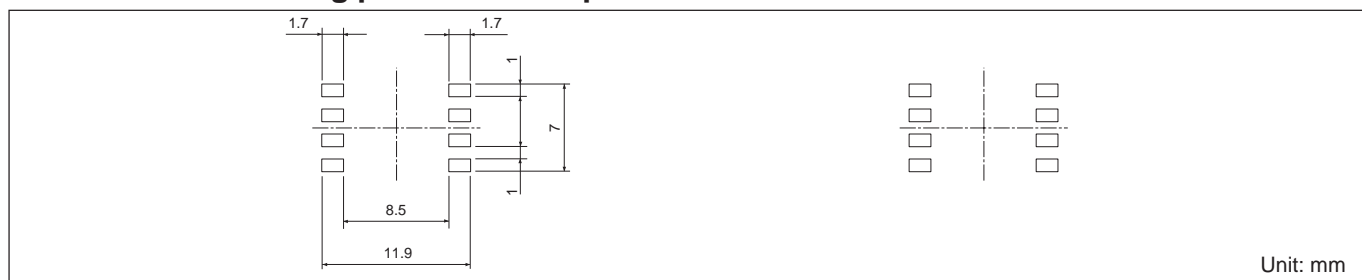


\* **Notes:** To suit your exact needs, please contact us for information on T-1111 customization. The T-1111 is a separate excitation flyback transformer. Be sure to connect the No.5\*3 pin (first pin of the N2 winding) in the downstream direction. Maximum output power\*1 (up to 0.7W) and efficiency change according to operating conditions. Withstand voltage\*2 between the N2 lines is measured by an impulse tester.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions



# T-1112 SMT 12mm width type (for flat tube lighting)

## Features

- Compact and low profile (max. height of 5mm)
- Leakage fluxes minimized by the use of drum and ring cores
- Reflow soldering mounting
- Automated mounting feasibility.
- Embossed tapes available (24mm wide, 330mm reel diameter, 600-piece holding capacity).

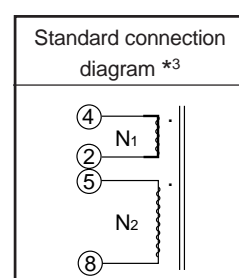
## Applications

- View finders for video cameras, etc.
- Small liquid crystal TVs



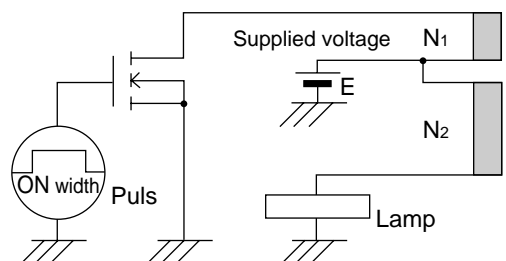
## Electrical characteristics

| Part No.<br>(typical models) | Supplied voltage E<br>[V <sub>dc</sub> ] | Open voltage<br>[V <sub>O-P</sub> ] | ON width<br>[μS] | Pulse-adjustable frequency<br>[kHz] | Max. output power<br>[W] | Withstand voltage between N2 lines<br>[kV <sub>O-P</sub> ] |
|------------------------------|--|-------------------------------------|------------------|-------------------------------------|--------------------------|--|
| T-1112 customize             | —  | 2,300 max.                          | —                | 15.75                               | 0.6 *1                   | 2.5 min.   |
| T-1112-059                   | Typ. 5                                   | Typ. 2,100                          | 10               |                                     | (1)                      | *2   |



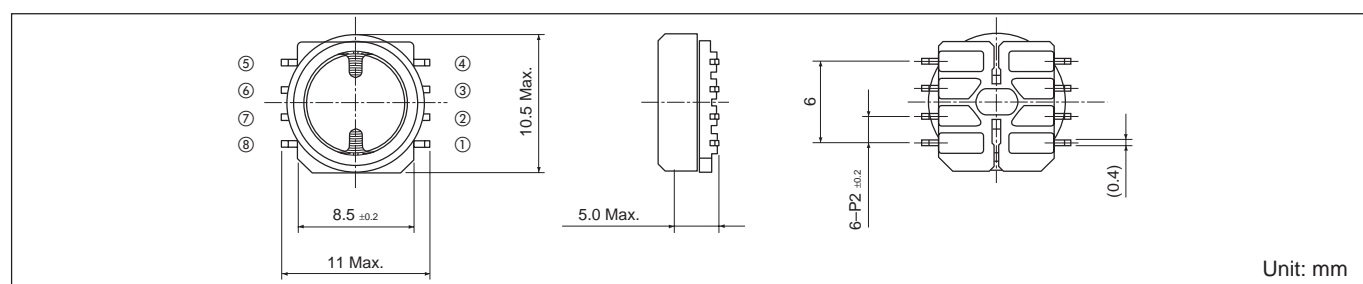
| Part No.<br>(typical models) | Winding: No. of turns |                | Inductance at 1kHz  |                     |
|------------------------------|-----------------------|----------------|---------------------|---------------------|
|                              | N <sub>1</sub>        | N <sub>2</sub> | N <sub>1</sub> [μH] | N <sub>2</sub> [mH] |
| T-1112 customize             | —                     | STD. 470       | —                   | 14.6                |
| T-1112-059                   | 25                    | 470            | 46                  |                     |

## Basic circuit

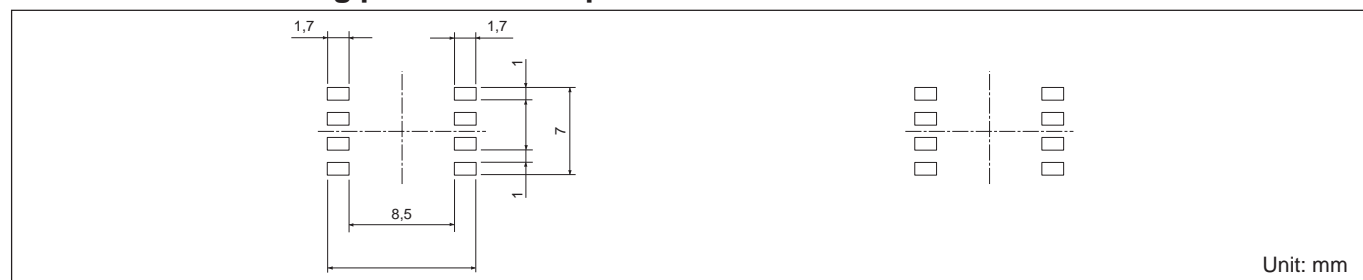


\* **Notes:** To suit your exact needs, please contact us for information on T-1112 customization. The T-1112 is a separate excitation flyback transformer. Be sure to connect the No.5\*3 pin (first pin of the N2 winding) in the downstream direction. Maximum output power\*1 (up to 1W) and efficiency change according to operating conditions. Withstand voltage\*2 between the N2 lines is measured by an impulse tester.

## Shapes and dimensions



## Recommended landing pattern and drop dimensions





## Your desired transformer data for sample production

|                |        |       |
|----------------|--------|-------|
| Your company : | TEL :  | FAX : |
| Section :      | Name : |       |

1) Host equipment \_\_\_\_\_

2) Similar equipment type \_\_\_\_\_

3) Circuit & winding formats

\* Please provide a rough plan of the system that includes your desired transformer.

\* If you have a specific winding plan (e.g., number of winding turns, wire diameter, inductance and pin locations), indicate your plan.

\* If you are planning to use specific circuit components, indicate which ones.

4) Specification

|                       | Items                              | Specifications                        | Comments   | Data entry   |
|-----------------------|------------------------------------|---------------------------------------|--|--|
| Ambience              | Operating temp. range              | °C ~ °C                               |  | △ △  |
|                       | Temperature rise                   | °C max.                               |  | △ △  |
|                       | Component rated temp.              | °C                                    |  | △ △  |
| Input                 | Input voltage (range)              | AC, DC V ( V~ V)                      |  | ● ●  |
|                       | Input current                      | A max. (at V input)                   |  | △ △  |
|                       | Oscillation frequency              | kHz ~ kHz                             |  | ● ●  |
|                       | ON width (duty)                    | μS ( %)                               |  | △ ●  |
| Output                | Output voltage (open)              | V <sub>rms, O-P</sub>                 |  | ● ●  |
|                       | Output current mA                  |                                       |  | △ △  |
|                       | Output current range               | mA ~ mA                               |  | △ △  |
|                       | Output power                       | W                                     |  | ● ●  |
| Load                  | Load                               |                                       |  | △ △  |
|                       | Equivalent resistance (circuit)    |                                       |  | △ △  |
| Withstand voltage     | Primary-secondary                  | AC, DC V                              |  | △ △  |
|                       | Primary-core                       | AC, DC V                              |  | △ △  |
|                       | Secondary-core                     | AC, DC V                              |  | △ △  |
|                       | Line-to-line                       | V <sub>O-P</sub>                      |  | △ △  |
| Other                 | Shape (W*L*H*)                     |                                       |  | △ △  |
|                       | Conversion efficiency              | % max.                                |  | △ △  |
|                       | Inductance (tolerance)             |                                       |  | △ △  |
|                       | Brightness (brightness efficiency) |                                       |  | △ △  |
|                       | Dimming                            | Needed / Not needed (voltage/ duty/ ) |  | ● ●  |
|                       | Safety standard                    |                                       |  | △ △  |
| Specific requirements | _____<br>_____<br>_____            |                                       | ● : Be sure to provide data.<br>△ : Provide data if possible.<br>× : You may or may not specify your requirements. | ● Self-excitation transformer<br>● Separate excitation transformer |



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