

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# 2SC5086F

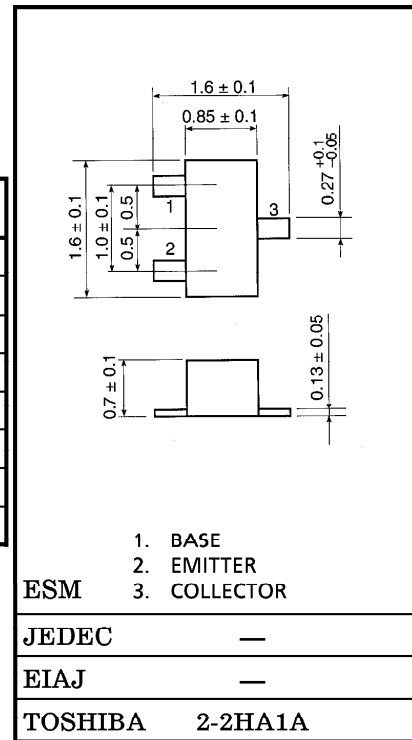
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

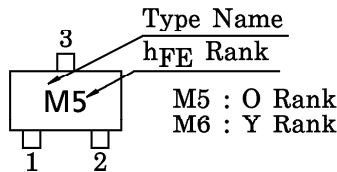
- Low Noise Figure, High Gain.
- $NF = 1.1dB, |S_{21e}|^2 = 11dB (f = 1GHz)$

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC              | SYMBOL           | RATING  | UNIT |
|-----------------------------|------------------|---------|------|
| Collector-Base Voltage      | V <sub>CB0</sub> | 20      | V    |
| Collector-Emitter Voltage   | V <sub>CEO</sub> | 12      | V    |
| Emitter-Base Voltage        | V <sub>EB0</sub> | 3       | V    |
| Base Current                | I <sub>B</sub>   | 40      | mA   |
| Collector Current           | I <sub>C</sub>   | 80      | mA   |
| Collector Power Dissipation | P <sub>C</sub>   | 100     | mW   |
| Junction Temperature        | T <sub>j</sub>   | 125     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -55~125 | °C   |



MARKING



Weight : 2.3mg

MICROWAVE CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC       | SYMBOL                              | TEST CONDITION                                           | MIN. | TYP. | MAX. | UNIT |
|----------------------|-------------------------------------|----------------------------------------------------------|------|------|------|------|
| Transition Frequency | f <sub>T</sub>                      | V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA             | 5    | 7    | —    | GHz  |
| Insertion Gain       | S <sub>21e</sub>   <sup>2</sup> (1) | V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA, f = 500MHz | —    | 16.5 | —    | dB   |
|                      | S <sub>21e</sub>   <sup>2</sup> (2) | V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA, f = 1GHz   | 7.5  | 11   | —    |      |
| Noise Figure         | NF (1)                              | V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA, f = 500MHz  | —    | 1    | —    | dB   |
|                      | NF (2)                              | V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA, f = 1GHz    | —    | 1.1  | 2    |      |

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC               | SYMBOL                   | TEST CONDITION                                                  | MIN. | TYP. | MAX. | UNIT |
|------------------------------|--------------------------|-----------------------------------------------------------------|------|------|------|------|
| Collector Cut-off Current    | I <sub>CBO</sub>         | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0                       | —    | —    | 1    | μA   |
| Emitter Cut-off Current      | I <sub>EBO</sub>         | V <sub>EB</sub> = 1V, I <sub>C</sub> = 0                        | —    | —    | 1    | μA   |
| DC Current Gain              | h <sub>FE</sub> (Note 1) | V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA                    | 80   | —    | 240  | —    |
| Output Capacitance           | C <sub>ob</sub>          | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz<br>(Note 2) | —    | 1.0  | —    | pF   |
| Reverse Transfer Capacitance | C <sub>re</sub>          |                                                                 | —    | 0.65 | 1.15 | pF   |

(Note 1) : h<sub>FE</sub> Classification O : 80~160, Y : 120~240

(Note 2) : C<sub>re</sub> is measured by 3 terminal method with capacitance bridge.

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