

TPC8229-H

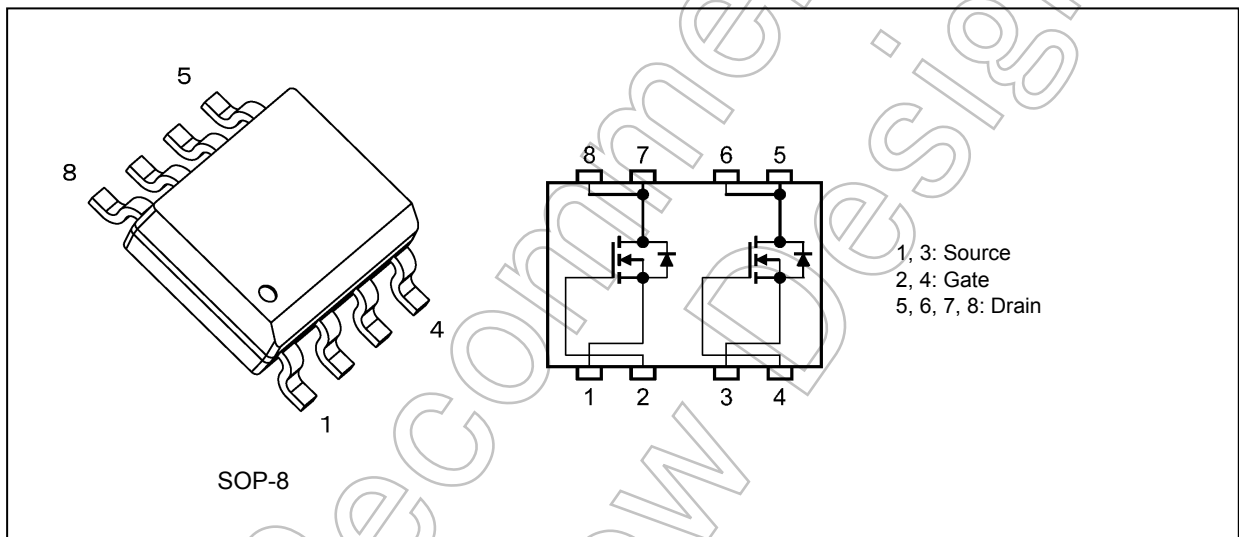
1. Applications

- DC-DC Converters
- CCFL Inverters

2. Features

- (1) High-speed switching
- (2) Small gate charge: $Q_{SW} = 2.4 \text{ nC (typ.)}$
- (3) Low drain-source on-resistance: $R_{DS(ON)} = 53 \text{ m}\Omega \text{ (typ.)}$
- (4) Low leakage current: $I_{DSS} = 10 \text{ }\mu\text{A (max) (}V_{DS} = 80 \text{ V)}$
- (5) Enhancement mode: $V_{th} = 1.3 \text{ to } 2.3 \text{ V (}V_{DS} = 10 \text{ V, } I_D = 0.1 \text{ mA)}$

3. Packaging and Internal Circuit



Start of commercial production

2012-05

4. Absolute Maximum Ratings (Note) ($T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DSS}	80	V
Gate-source voltage	V_{GSS}	± 20	
Drain current (DC) (Note 1)	I_D	3.2	A
Drain current (pulsed) (Note 1)	I_{DP}	12.8	
Power dissipation (single operation) ($t = 10\text{ s}$) (Note 2), (Note 4)	$P_{D(1)}$	1.5	W
Power dissipation (per device for dual operation) ($t = 10\text{ s}$) (Note 2), (Note 5)	$P_{D(2)}$	1.1	W
Power dissipation (single operation) ($t = 10\text{ s}$) (Note 3), (Note 4)	$P_{D(1)}$	0.75	W
Power dissipation (per device for dual operation) ($t = 10\text{ s}$) (Note 3), (Note 5)	$P_{D(2)}$	0.45	W
Single-pulse avalanche energy (Note 6)	E_{AS}	6.6	mJ
Avalanche current	I_{AR}	3.2	A
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to 150	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

5. Thermal Characteristics

Characteristics	Symbol	Max	Unit
Channel-to-ambient thermal resistance (single operation) ($t = 10\text{ s}$) (Note 2), (Note 4)	$R_{th(ch-a)(1)}$	83.3	$^\circ\text{C/W}$
Channel-to-ambient thermal resistance (per device for dual operation) ($t = 10\text{ s}$) (Note 2), (Note 5)	$R_{th(ch-a)(2)}$	113	
Channel-to-ambient thermal resistance (single operation) ($t = 10\text{ s}$) (Note 3), (Note 4)	$R_{th(ch-a)(1)}$	166	
Channel-to-ambient thermal resistance (per device for dual operation) ($t = 10\text{ s}$) (Note 3), (Note 5)	$R_{th(ch-a)(2)}$	277	

Note 1: Ensure that the channel temperature does not exceed $150\text{ }^\circ\text{C}$.

Note 2: Device mounted on a glass-epoxy board (a), Figure 5.1

Note 3: Device mounted on a glass-epoxy board (b), Figure 5.2

Note 4: Power dissipation and thermal resistance values per device with the other device being off (During single operation, power is supplied to only one of the two devices.)

Note 5: Power dissipation and thermal resistance values per device for dual operation (During dual operation, power is evenly supplied to both devices.)

Note 6: $V_{DD} = 24\text{ V}$, $T_{ch} = 25\text{ }^\circ\text{C}$ (initial), $L = 1.0\text{ mH}$, $I_{AR} = 3.2\text{ A}$

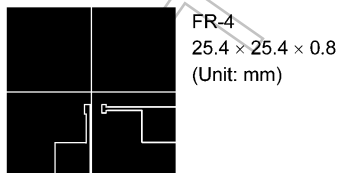


Fig. 5.1 Device Mounted on a Glass-Epoxy Board (a)

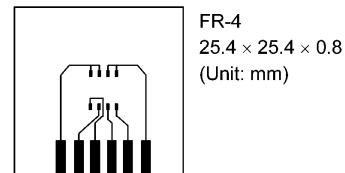


Fig. 5.2 Device Mounted on a Glass-Epoxy Board (b)

Note: This transistor is sensitive to electrostatic discharge and should be handled with care.

7. Marking (Note)

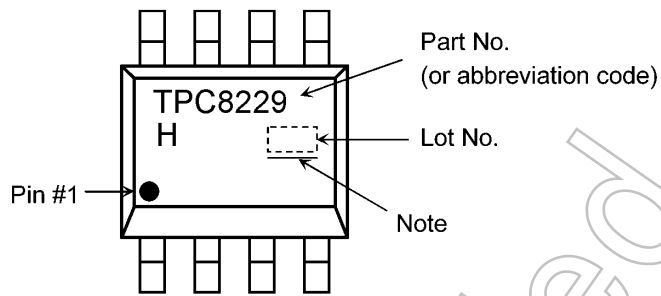


Fig. 7.1 Marking

Note: A line under a Lot No. identifies the indication of product Labels.

Not underlined: [[Pb]]/INCLUDES > MCV

Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Not Recommended for New Design

8. Characteristics Curves (Note)

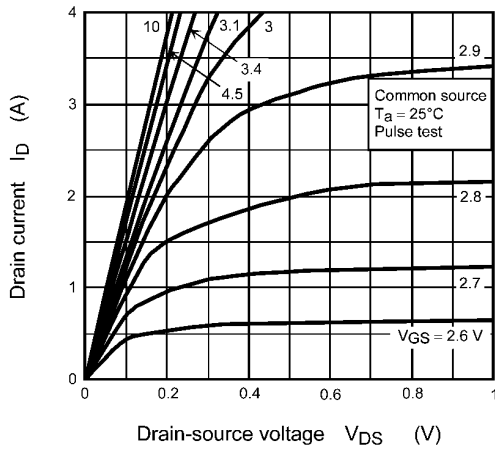


Fig. 8.1 $I_D - V_{DS}$

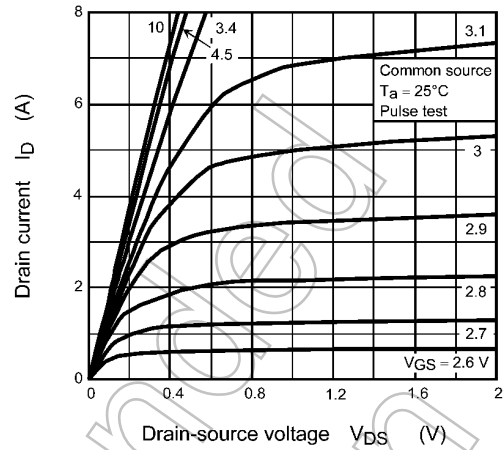


Fig. 8.2 $I_D - V_{DS}$

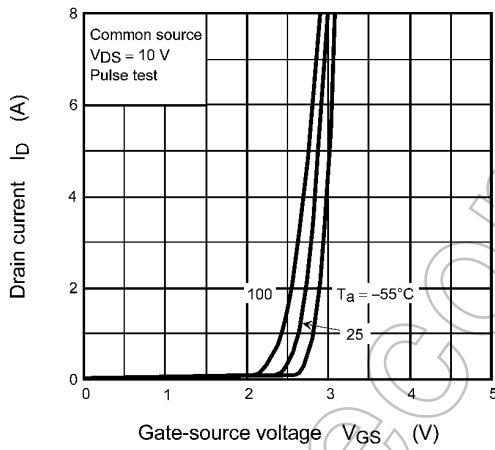


Fig. 8.3 $I_D - V_{GS}$

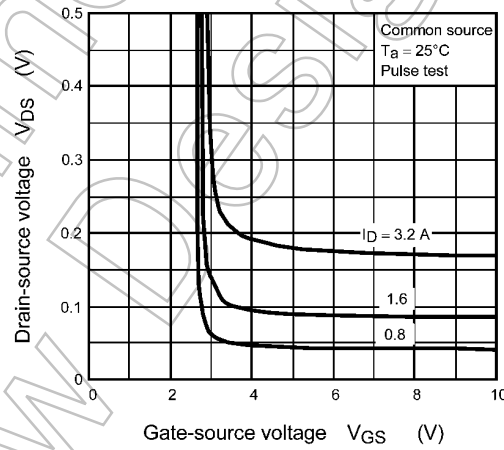


Fig. 8.4 $V_{DS} - V_{GS}$

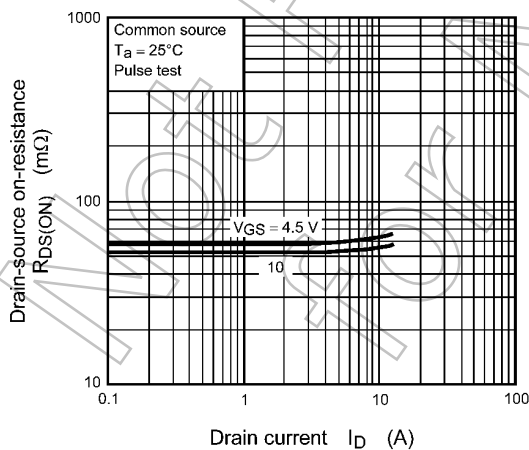


Fig. 8.5 $R_{DS(ON)} - I_D$

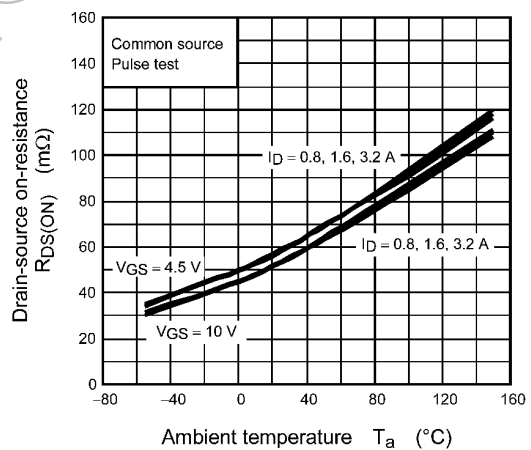


Fig. 8.6 $R_{DS(ON)} - T_a$

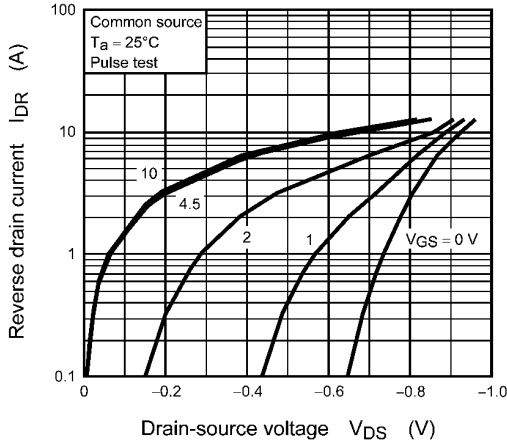


Fig. 8.7 $I_{DR} - V_{DS}$

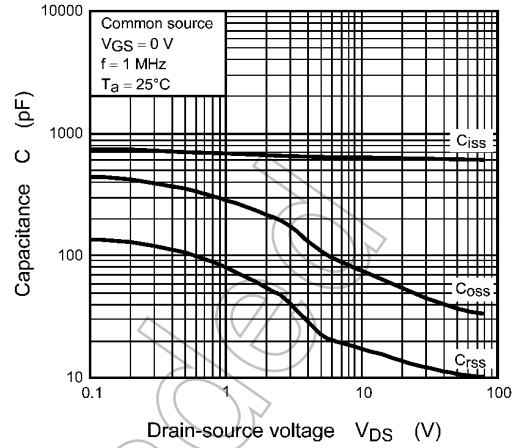


Fig. 8.8 Capacitance - V_{DS}

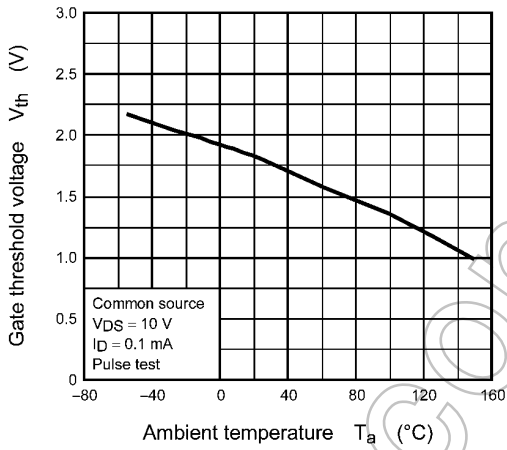


Fig. 8.9 $V_{th} - T_a$

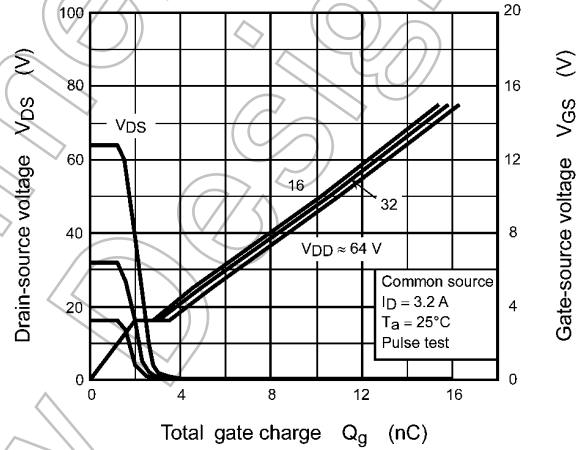
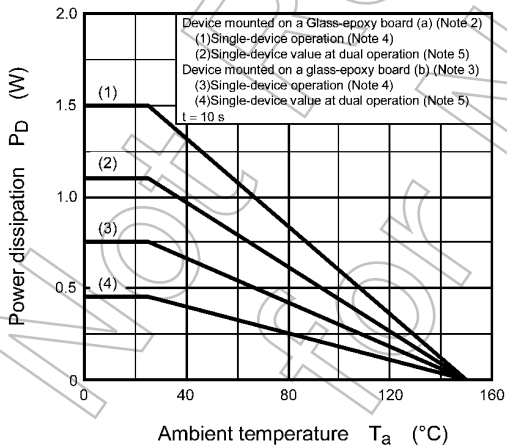


Fig. 8.10 Dynamic Input/Output Characteristics



**Fig. 8.11 $P_D - T_a$
 (Guaranteed Maximum)**

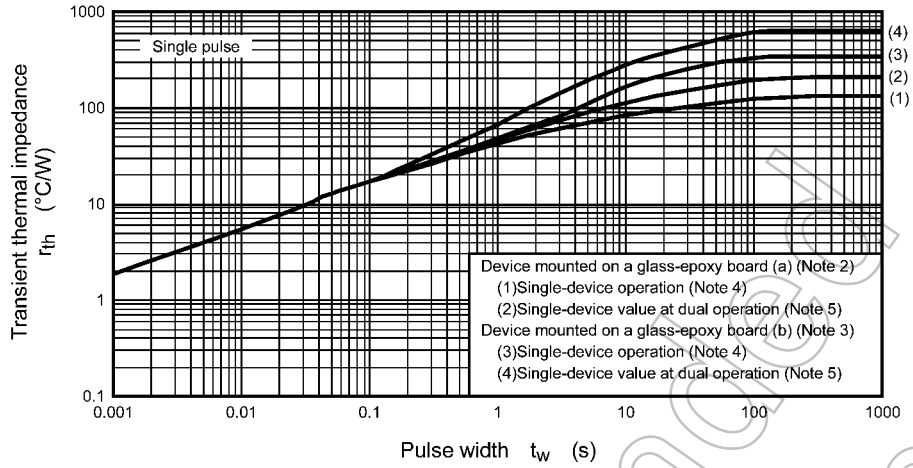


Fig. 8.12 $r_{th} - t_w$
(Guaranteed Maximum)

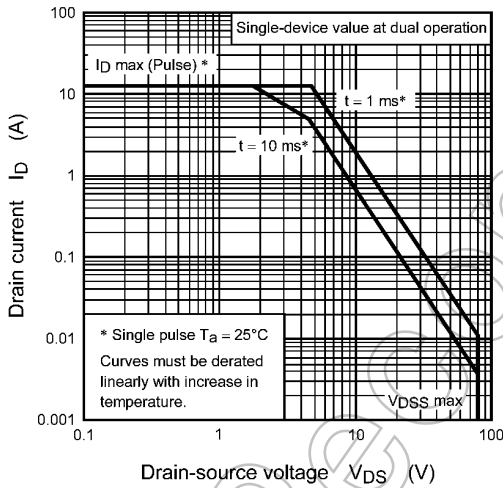
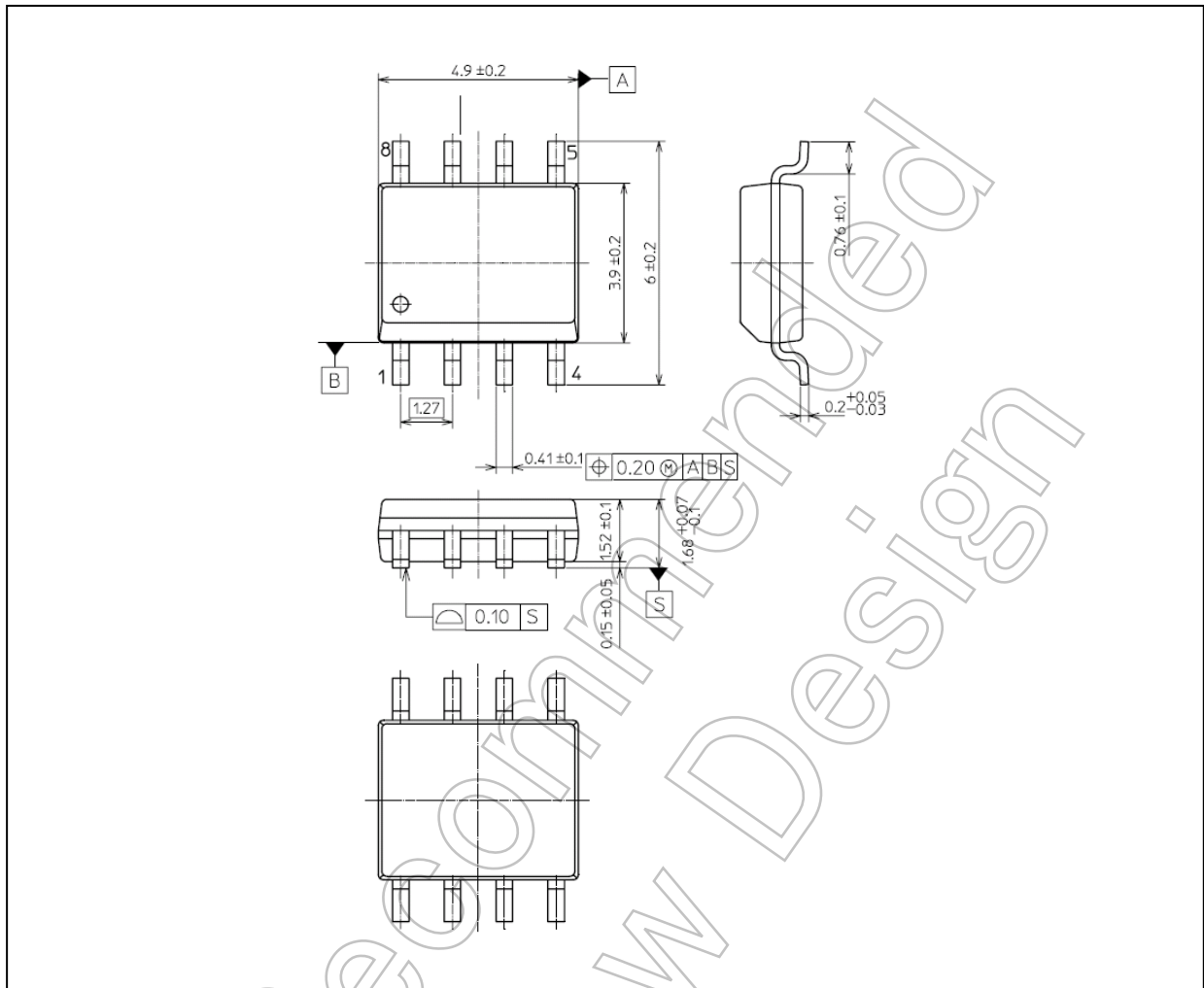


Fig. 8.13 Safe Operating Area
(Guaranteed Maximum)

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 0.085 g (typ.)

Package Name(s)
TOSHIBA: 2-5R1S
Nickname: SOP-8

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