

TOSHIBA Schottky Barrier Diode

CMS17

Switching Mode Power Supply Applications

Portable Equipment Battery Applications

- Forward voltage: $V_{FM} = 0.48 \text{ V (max)}$
- Average forward current: $I_F (AV) = 2.0 \text{ A}$
- Repetitive peak reverse voltage: $V_{RRM} = 30 \text{ V}$
- Suitable for compact assembly due to a small surface-mount package:
“M-FLAT™” (Toshiba package name)”

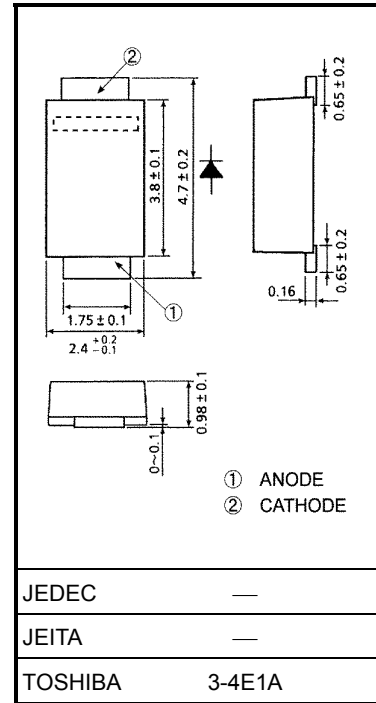
Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Repetitive peak reverse voltage	V_{RRM}	30	V
Average forward current	$I_F (AV)$	2.0 (Note)	A
Nonrepetitive peak surge current	I_{FSM}	30 (50 Hz)	A
Junction temperature	T_j	-40~150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40~150	$^\circ\text{C}$

Note: $T_a = 77^\circ\text{C}$

- Device mounted on a ceramic board
- Board size: 50 mm × 50 mm
- Soldering size: 2 mm × 2 mm
- Board thickness: 0.64 t
- Rectangular waveform ($\alpha = 180^\circ$), $V_R = 15 \text{ V}$

Unit: mm



Weight: 0.023 g (typ.)

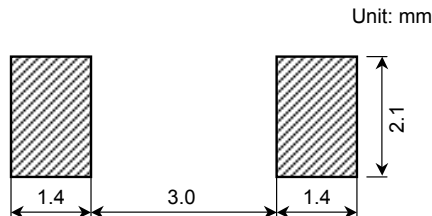
Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	$V_{FM} (1)$	$I_{FM} = 1.0 \text{ A (pulse test)}$	—	0.42	—	V
	$V_{FM} (2)$	$I_{FM} = 2.0 \text{ A (pulse test)}$	—	0.45	0.48	
Peak repetitive reverse current	$I_{RRM} (1)$	$V_{RRM} = 5 \text{ V (pulse test)}$	—	0.8	—	μA
	$I_{RRM} (2)$	$V_{RRM} = 30 \text{ V (pulse test)}$	—	10	100	
Junction capacitance	C_j	$V_R = 10 \text{ V, } f = 1.0 \text{ MHz}$	—	90	—	pF
Thermal resistance (junction to ambient)	$R_{th} (j-a)$	Device mounted on a ceramic board (board size: 50 mm × 50 mm) (soldering land: 2 mm × 2 mm) (board thickness: 0.64 t)	—	—	60	$^\circ\text{C/W}$
		Device mounted on a glass-epoxy board (board size: 50 mm × 50 mm) (soldering land: 6 mm × 6 mm) (board thickness: 1.6 t)	—	—	135	
		Device mounted on a glass-epoxy board (board size: 50 mm × 50 mm) (soldering land: 2.1 mm × 1.4 mm) (board thickness: 1.6 t)	—	—	210	
Thermal resistance (junction to lead)	$R_{th} (j-l)$	—	—	—	16	$^\circ\text{C/W}$

Marking

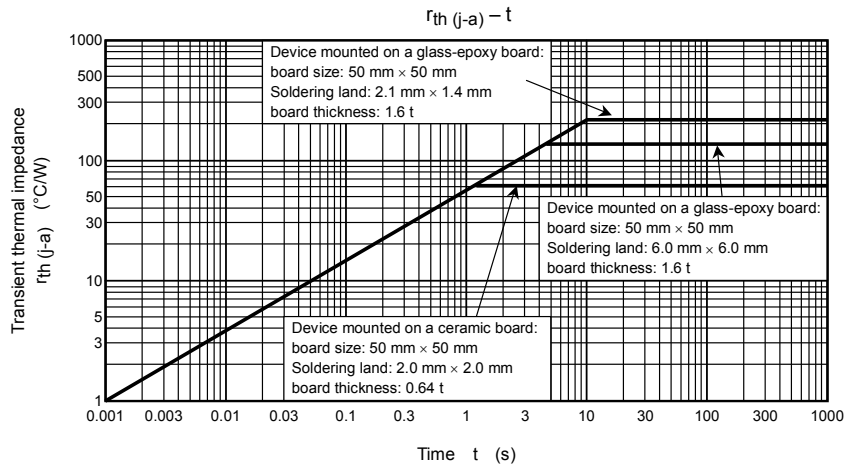
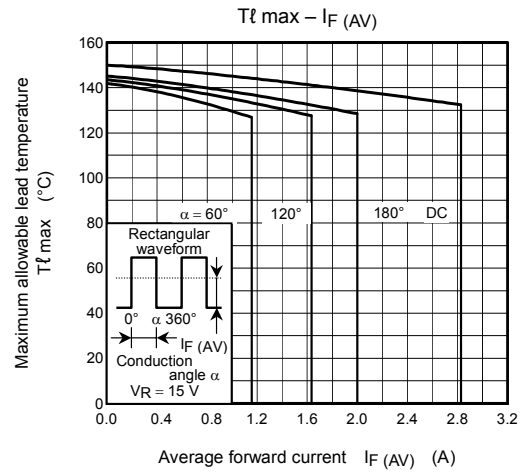
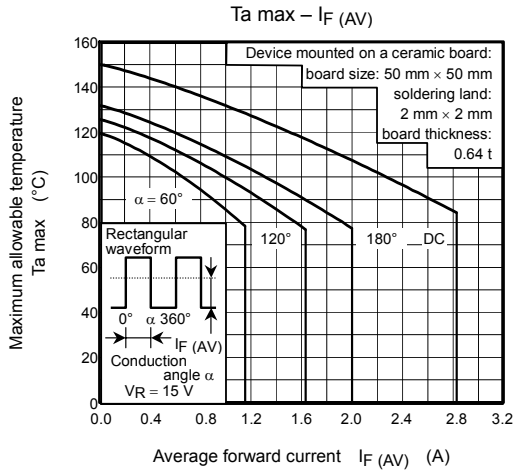
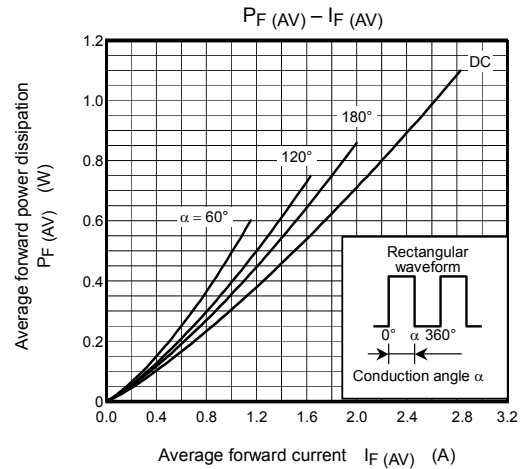
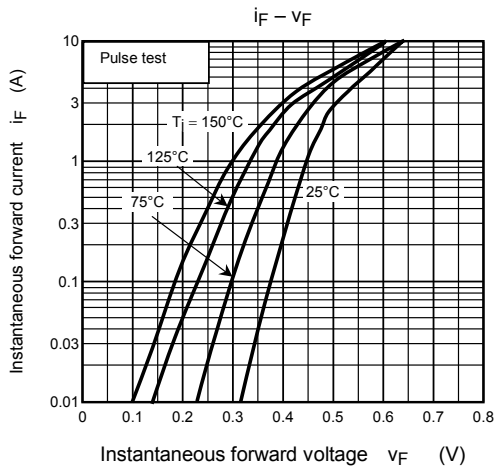
Abbreviation Code	Part No.
SG	CMS17

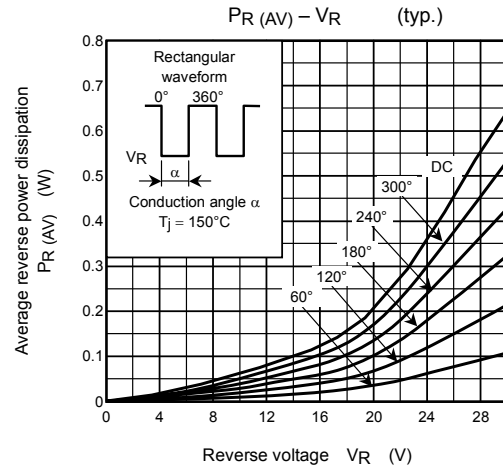
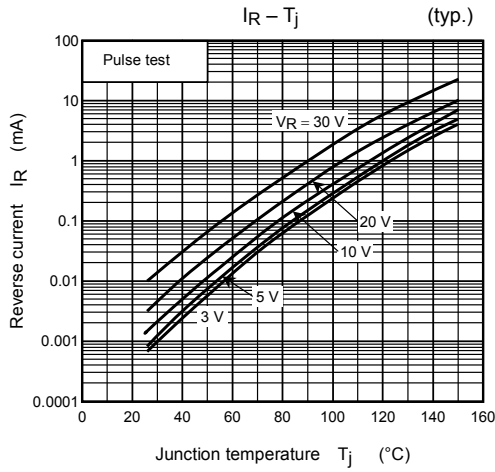
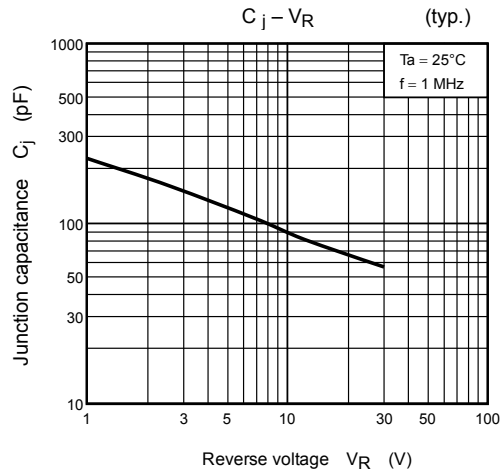
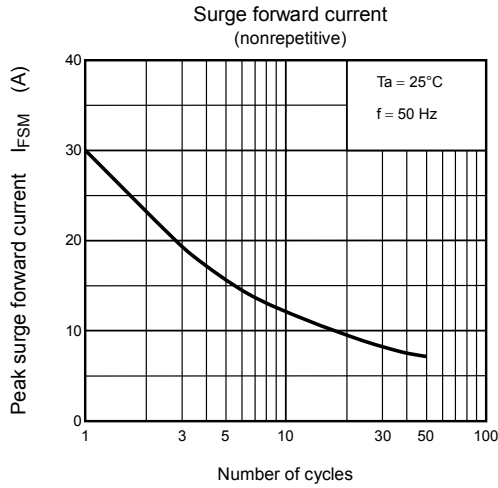
Standard Soldering Pad



Handling Precaution

- 1) Schottky barrier diodes have reverse current characteristics compared to other diodes. SBDs can cause thermal runaway when used under high temperature or high voltage conditions. Be sure to take forward and reverse loss into consideration during design.
- 2) The maximum ratings denote the absolute maximum ratings, which are rated values that must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend for designing a circuit incorporating this device.
 - VRRM: Use this rating with reference to (1) above. VRRM has a temperature coefficient of 0.1%/°C. Take this temperature coefficient into account when designing a device for operation at low temperature.
 - IF (AV): We recommend that the worst case current be no greater than 80% of the maximum rating of IF (AV) and that T_j be below 120°C. When using this device, take the margin into consideration by using an allowable Tamax-IF (AV) curve.
 - IFSM: This rating specifies the nonrepetitive peak current. This is applied only for abnormal operation, which seldom occurs during the lifespan of the device.
 - T_j: Derate this rating when using the device to ensure high reliability. We recommend that the device be used at a T_j of below 120°C.
- 3) Thermal resistance between junction and ambient fluctuates depending on the mounting condition of the device. When using the device, design the circuit board and soldering land size to match the appropriate thermal resistance value.
- 4) Refer to the Rectifiers databook for further information.





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