

TOSHIBA RECTIFIER SILICON DIFFUSED TYPE

CMC02

For Strobe Discharge Circuit

Unit: mm

- Repetitive peak reverse voltage: $V_{RRM} = 400$ V
- Average forward current: $I_F (AV) = 1.0$ A
- Low forward voltage: $V_{FM} = 1.0$ V (max.)
- Repetitive peak forward current: $I_{FRM} = 150$ A (Note 2)
- Small surface-mount package, the "M-FLATTM" (Toshiba package name)

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

Characteristic	Symbol	Rating	Unit
Repetitive peak reverse voltage	V_{RRM}	400	V
Average forward current	$I_F (AV)$	1.0 (Note 1)	A
Peak one-cycle surge forward current (non-repetitive)	I_{FSM}	30 (50 Hz)	A
Repetitive peak forward current (Note 2)	I_{FRM}	150	A
Junction temperature	T_j	-40~150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40~150	$^\circ\text{C}$

Note 1: $T_a = 92^\circ\text{C}$

Device mounted on a ceramic board

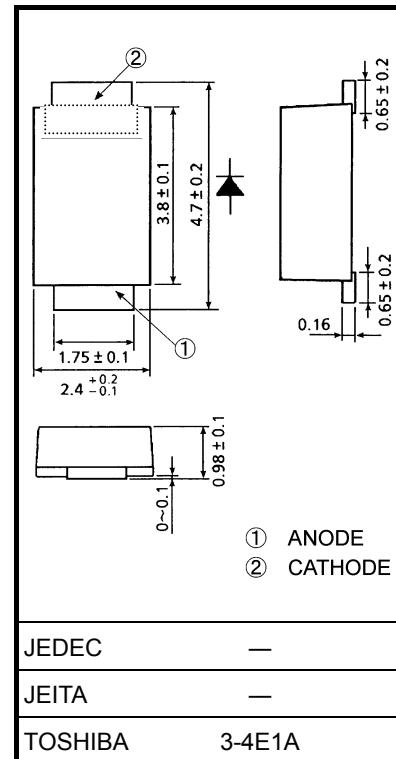
Board size: 50 mm \times 50 mmSoldering land: 2 mm \times 2 mm

Board thickness: 0.64t

Note 3: 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.).

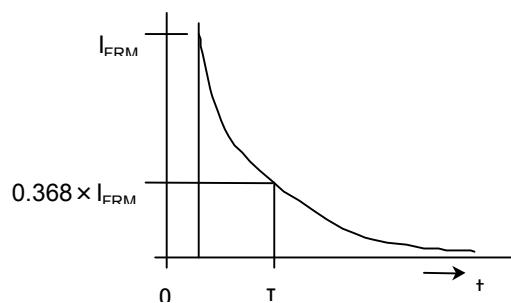


Weight: 0.023 g (typ.)

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

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	V_{FM} (1)	$I_{FM} = 1.0$ A (pulse test)	—	0.88	1.0	V
Peak repetitive reverse current	I_{RRM}	$V_{RRM} = 400$ V (pulse test)	—	—	10	μA
Thermal resistance (junction to ambient)	R_{th} (j-a)	Device mounted on a ceramic board (board size: 50 mm \times 50 mm) (soldering land: 2 mm \times 2 mm) (board thickness: 0.64 t)	—	—	60	$^\circ\text{C}/\text{W}$
		Device mounted on a glass-epoxy board (board size: 50 mm \times 50 mm) (soldering land: 6 mm \times 6 mm) (board thickness: 1.6 t)	—	—	110	
		Device mounted on a glass-epoxy board (board size: 50 mm \times 50 mm) (soldering land: 2.1 mm \times 1.4 mm) (board thickness: 1.6 t)	—	—	180	
Thermal resistance (junction to lead)	R_{th} (j-l)	—	—	—	16	$^\circ\text{C}/\text{W}$

Note 2: Repetitive peak forward current waveform



$\tau = 1\text{ms}$

1pulse/3s (7000 cycle)

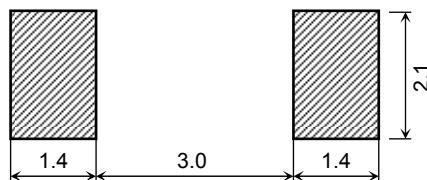
$I_{FPM} = 150\text{ A}$ ($C_M = 500\mu\text{F}$)

Marking

Type code	Product No.
C2	CMC02

Standard Soldering Pad

Unit: mm



Handling Precautions

The absolute maximum ratings denote the absolute maximum ratings, which are rated values and must not be exceeded during operation, even for an instant. The following are the general derating methods we recommend for designing a circuit using this device.

V_{RRM}: We recommend that the worst case voltage, including surge voltage, be no greater than 80% of the absolute maximum rating of V_{RRM} for a DC circuit, and no greater than 50% of that of V_{RRM} for an AC circuit.

V_{RRM} has a temperature coefficient of 0.1%/°C. Be sure to take this temperature coefficient into account when designing a device for use at low temperature.

I_F (AV): We recommend that the worst case current be no greater than 80% of the absolute maximum rating of I_F (AV). Carry out sufficient heat design. If it is not possible to design a circuit with excellent heat radiation, set a margin by using an allowable Tamax- I_F (AV) curve.

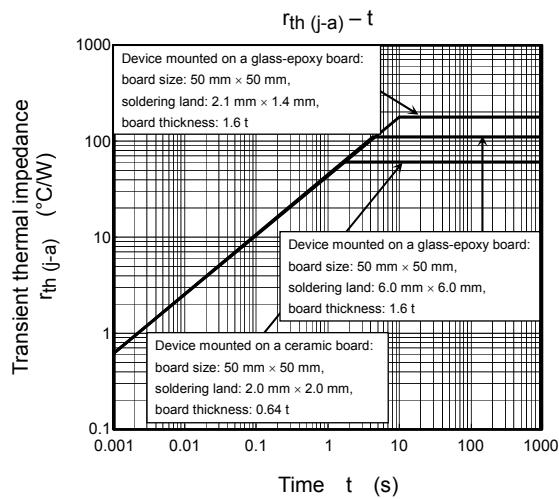
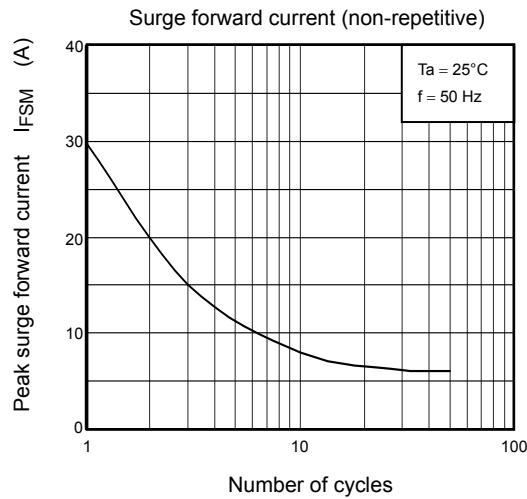
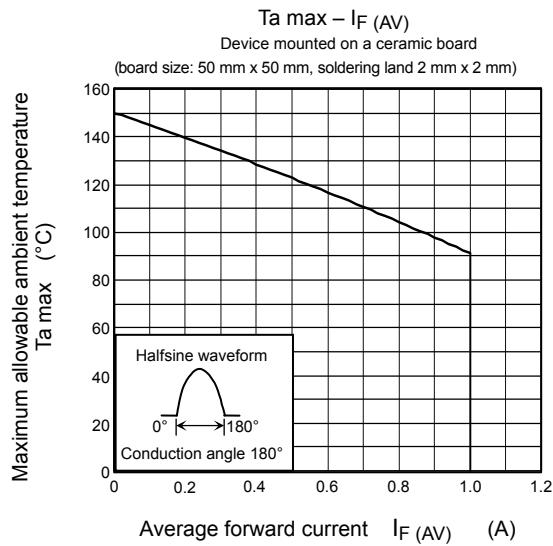
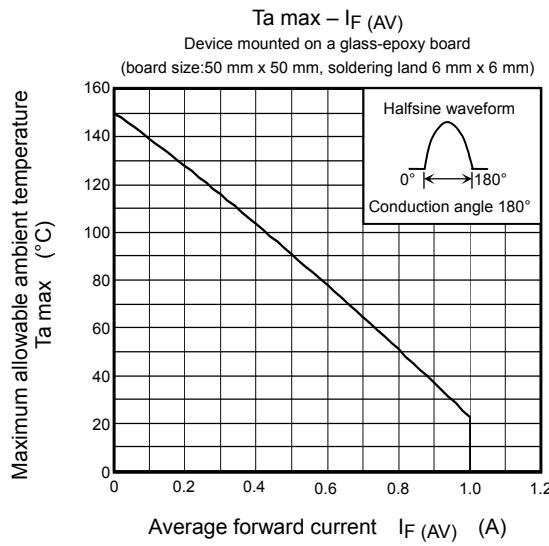
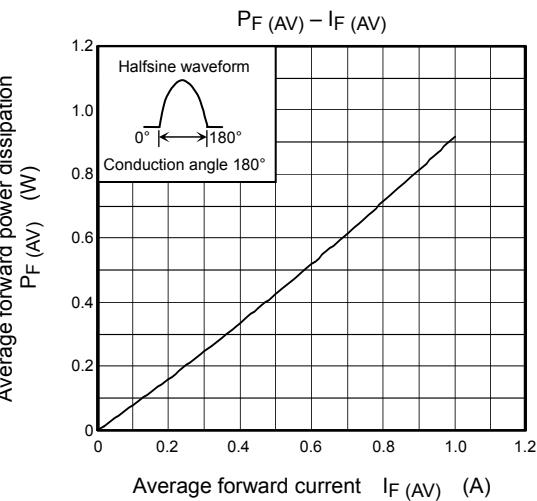
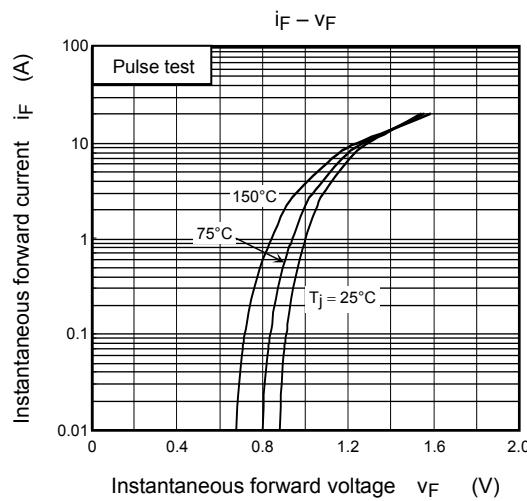
This rating applies only to a strobe flash circuit. We recommend that the worst case current be kept within the absolute maximum rating of I_{FRM}. The total number of repetitive currents should not exceed 7000 within the lifespan of the device.

This rating specifies the non-repetitive peak current in one cycle of a 50 Hz sine wave, condition angle 180°. Therefore the rating applies only to abnormal operation, which seldom occurs during the lifespan of a device.

For this device, we recommend a T_j of below 120°C under the worst load and heat radiation conditions.

Thermal resistance between junction and ambient fluctuates depending on the mounting condition of the device. When using the device, be sure to design the circuit board and soldering land size to match the appropriate thermal resistance value.

Refer to the Rectifier databook for further information.



RESTRICTIONS ON PRODUCT USE

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