

TOSHIBA Fast Recovery Diode Silicon Diffused Type

CMF01

Switching Mode Power Supply Applications

DC/DC Converter Applications

Unit: mm

- Repetitive peak reverse voltage : V_{RRM} = 600 V
- Average forward current : I_F (AV) = 2 A
- Peak forward voltage : V_{FM} = 2 V (max)
- Very fast reverse-recovery time : t_{rr} = 100 ns (max)
- Suitable for high-density board assembly due to the use of a small surface-mount package, M-FLAT™

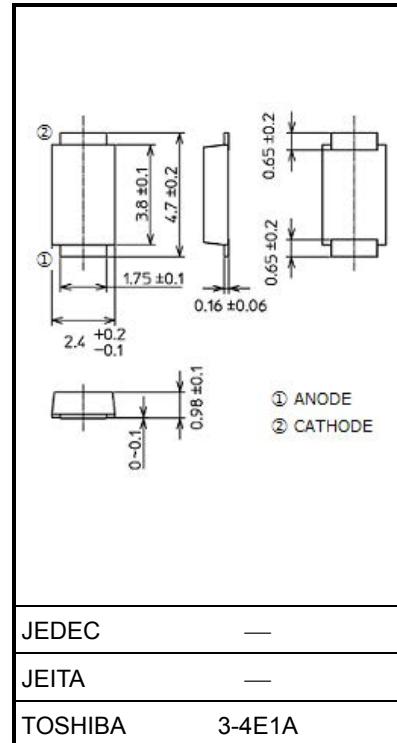
Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Repetitive peak reverse voltage	V _{RRM}	600	V
Average forward current	I _F (AV)	2 (Note 1)	A
Non-repetitive peak forward surge current	I _{FSM}	30 (50 Hz)	A
Junction temperature	T _j	-40 to 150	°C
Storage temperature range	T _{stg}	-40 to 150	°C

Note1: Ta = 100°C Device mounted on a ceramic board
 board size : 50 mm × 50 mm
 soldering land size : 2 mm × 2 mm
 board thickness : 0.64mm
 Rectangular waveform : $\alpha = 180^\circ$

Note 2: 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.)

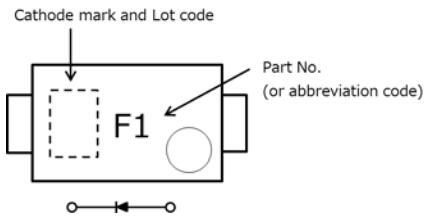
Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	V _{FM}	I _{FM} = 2 A (pulse test)	—	1.4	2.0	V
Repetitive peak reverse current	I _{RRM}	V _{RRM} = 600 V (pulse test)	—	—	50	μA
Reverse recovery time	t _{rr}	I _F = 1 A, di/dt = -30 A/μs	—	—	100	ns
Forward recovery time	t _f	I _F = 1 A	—	270	—	ns
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: 0.64mm	—	—	60	°C/W
		Device mounted on a glass-epoxy board board size: 50 mm × 50 mm soldering land: 6 mm × 6 mm board thickness: 1.6mm	—	—	135	°C/W
		Device mounted on a glass-epoxy board board size: 50 mm × 50 mm soldering land: 2.1 mm × 1.4 mm board thickness: 1.6mm	—	—	210	°C/W
Thermal resistance (junction to lead)	R _{th} (j-t)	—	—	—	16	°C/W

Start of commercial production
2004-03

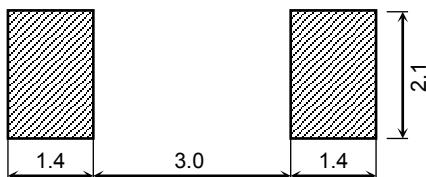
Marking

Abbreviation Code	Part No.
F1	CMF01



Land pattern dimensions for reference only

Unit: mm



Handling Precaution

- 1) The absolute maximum ratings are rated values that must not be exceeded during operation, even for an instant. The following are the recommended general derating methods for designing a circuit board using this device.

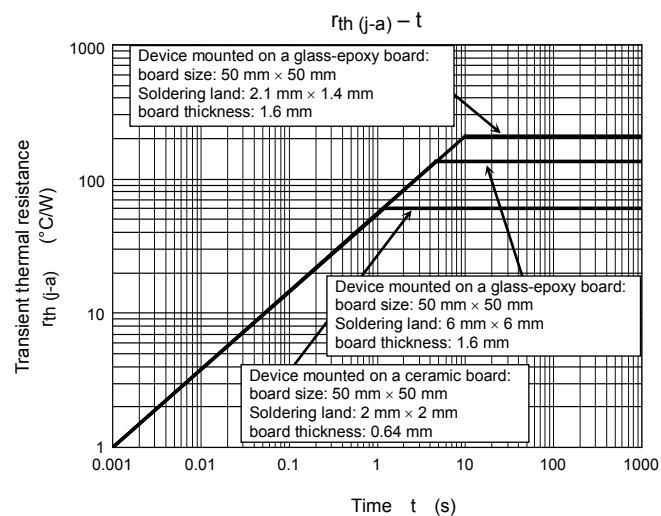
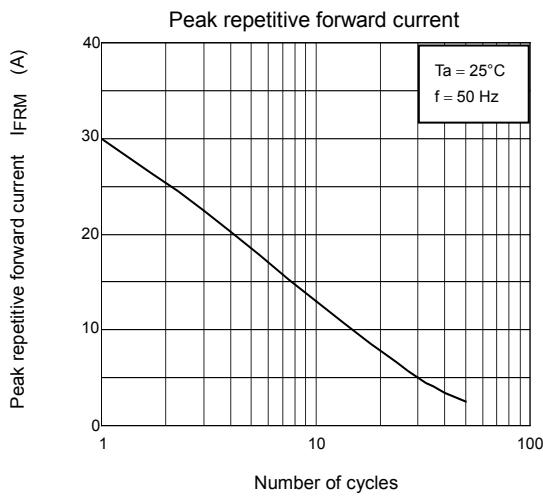
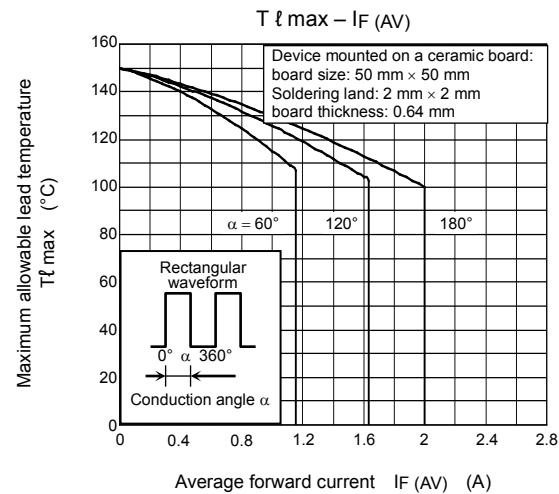
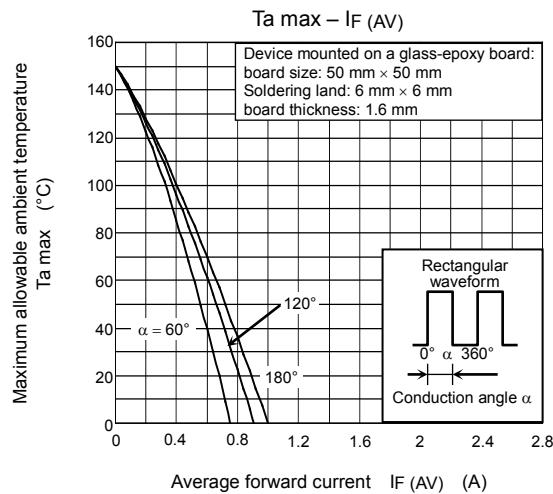
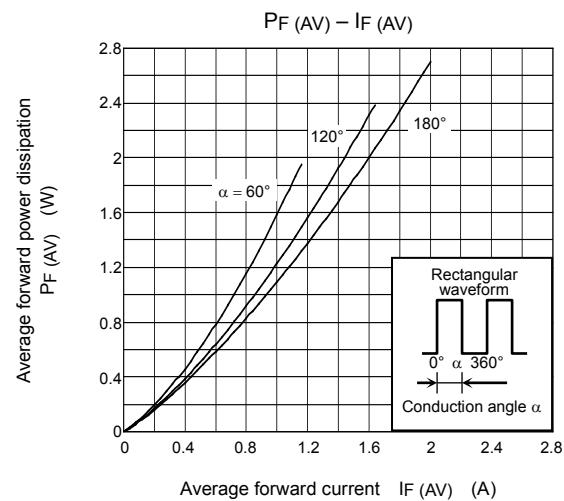
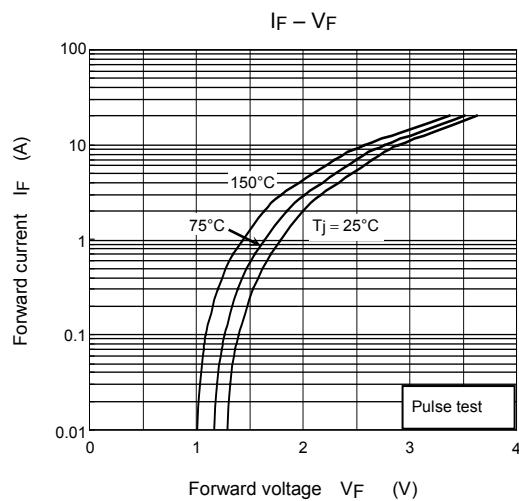
VRRM : We recommend that the worst case voltage, including surge voltage, be no greater than 80% of the absolute maximum rating of VRRM for a DC circuit and be no greater than 50% of that of VRRM for an AC circuit. VRRM has a temperature coefficient of $0.1\text{%/}^{\circ}\text{C}$. Take this temperature coefficient into account designing a device at low temperature.

IF (AV) :We recommend that the worst case current be no greater than 80% of the absolute maximum rating of IF (AV) and T_j be below 120°C . When using this device, take the margin into consideration by using an allowable T_a max-IF (AV) curve.

IFSM :This rating specifies peak non-repetitive forward surge current. This only applies to an abnormal operation, which seldom occurs during the lifespan of a device.

T_j :Derate device parameters in proportion to this rating in order to ensure high reliability. We recommend that the junction temperature (T_j) of a device be kept below 120°C .

- 2) Thermal resistance (junction-to-ambient) varies with the mounting conditions of a device on a circuit board. An appropriate thermal resistance value should be used, considering the circuit board design and land pattern dimensions (provided for reference only).
- 3) For other design considerations, see the Rectifiers databook or the Toshiba website.



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