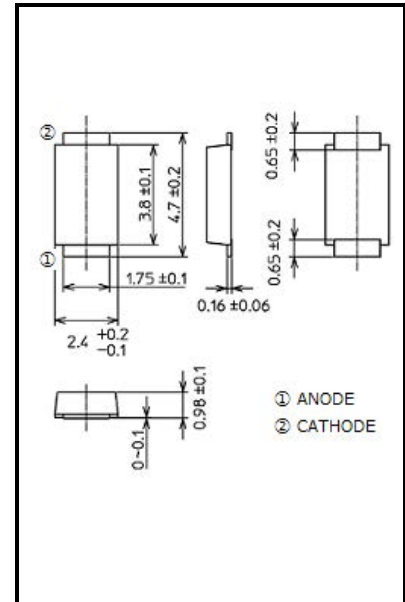


# CMF01

Switching Mode Power Supply Applications  
DC/DC Converter Applications

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

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	3-4E1A

Weight: 0.023 g (typ.)

## 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:  $T_a = 100^\circ\text{C}$  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).

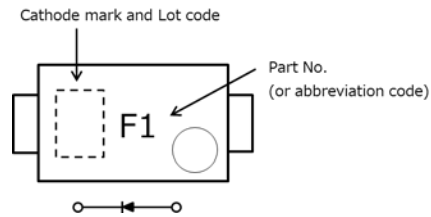
## Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	$V_{FM}$	$I_{FM} = 2\text{ A (pulse test)}$	—	1.4	2.0	V
Repetitive peak reverse current	$I_{RRM}$	$V_{RRM} = 600\text{ V (pulse test)}$	—	—	50	μA
Reverse recovery time	$t_{rr}$	$I_F = 1\text{ A, di/dt} = -30\text{ A/}\mu\text{s}$	—	—	100	ns
Forward recovery time	$t_{fr}$	$I_F = 1\text{ A}$	—	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	
		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	
Thermal resistance (junction to lead)	$R_{th(j-t)}$	—	—	—	16	°C/W

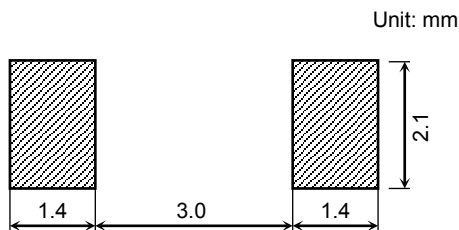
Start of commercial production  
2004-03

## Marking

Abbreviation Code	Part No.
F1	CMF01



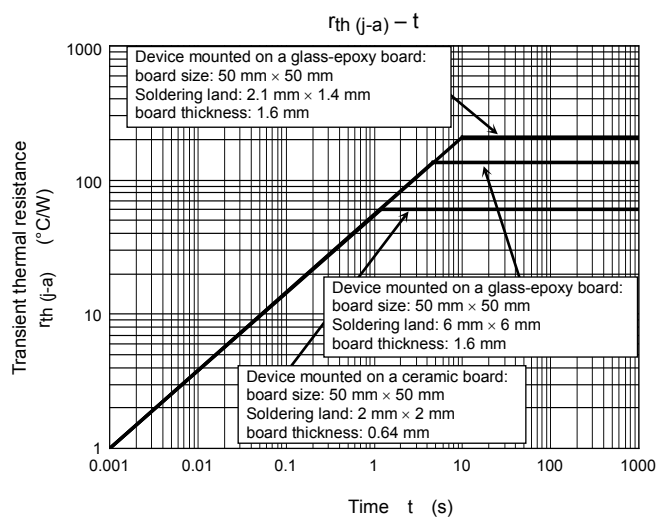
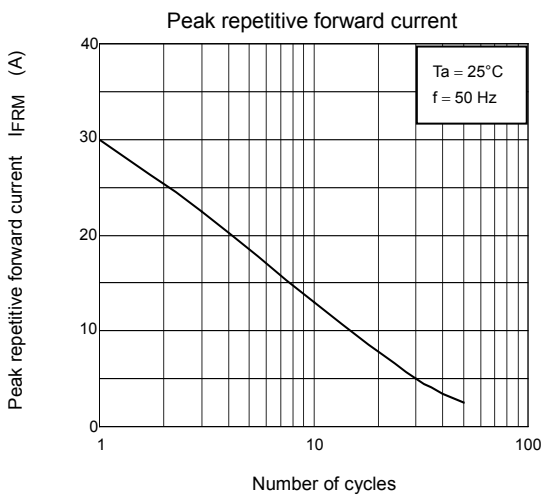
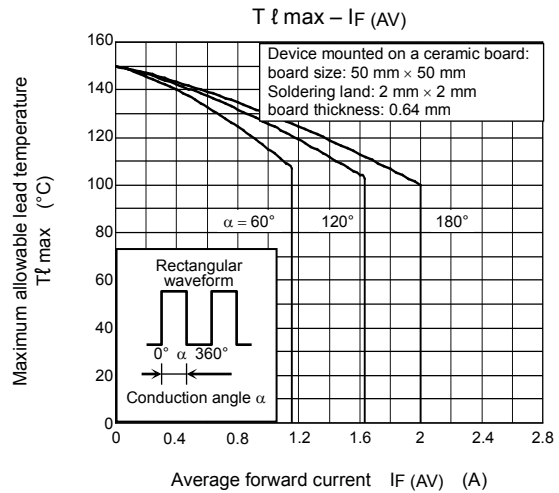
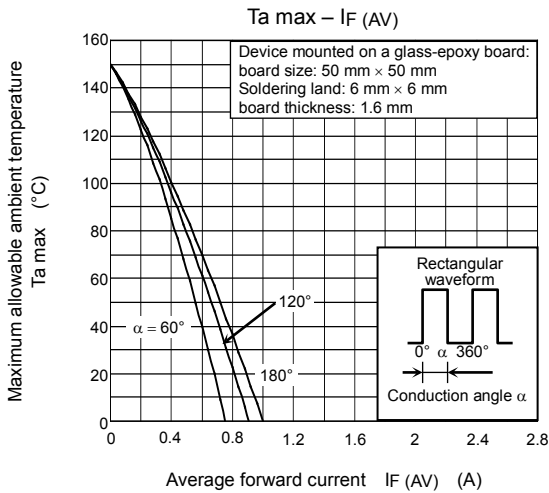
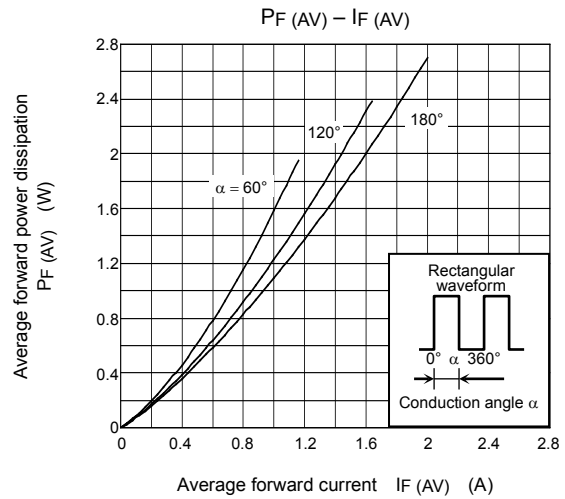
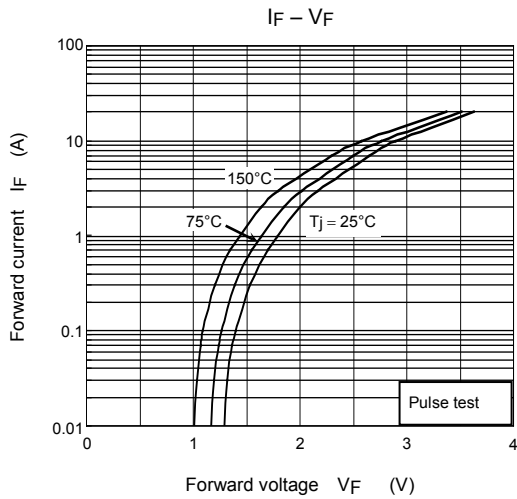
## Land pattern dimensions for reference only



## Handling Precaution

- 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%/°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.
- 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).
- For other design considerations, see the Rectifiers databook or the Toshiba website.



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