TOSHIBA Fast Recovery Diode Silicon Diffused Type

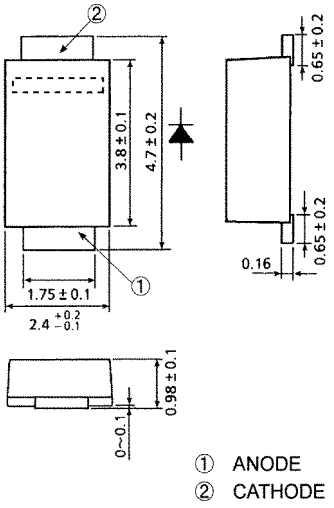
CMF04

High Speed Rectifier Applications (Fast Recovery)

Switching Mode Power Supply Applications
DC/DC Converter Applications

- Repetitive peak reverse voltage: V_{RRM} = 800 V
- Average forward current: $I_{F\ (AV)}$ = 0.5 A
- Forward voltage: V_{FM} = 2.5 V (max)
- Very fast reverse-recovery time: t_{rr} = 100 ns (max.)
- Suitable for compact assembly due to small surface-mount package "M−FLAT™" (Toshiba package name)

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}	800	V
Average forward current	$I_{F\ (AV)}$	0.5 (Note 1)	A
Peak one-cycle surge forward current (non-repetitive)	I_{FSM}	10 (50 Hz) (Note 3)	A
Junction temperature	T_j	−40~150	°C
Storage temperature range	T_{stg}	−40~150	°C

Note 1: T_ℓ = 127°C
Rectangular waveform (α = 180°)

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).

Note3: 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.

Electrical Characteristics (Ta = 25°C)

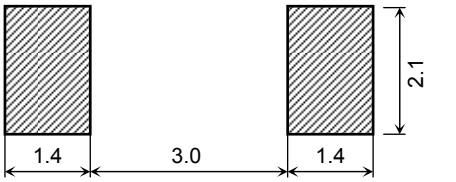
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	V_{FM}	I_{FM} = 0.5 A (pulse test)	—	—	2.5	V
Repetitive peak reverse current	I_{RRM}	V_{RRM} = 800 V (pulse test)	—	—	50	μA
Reverse recovery time	trr	I_F = 1 A, di/dt = -30 A/μs	—	—	100	ns
Forward recovery time	tfr	I_F = 1 A	—	550	—	ns
Thermal resistance	$R_{th\ (j\text{-}a)}$	Device mounted on a ceramic board (board size: 50 mm × 50 mm) (soldering land: 2 mm × 2 mm) (board thickness: 0.64 t)	—	—	60	°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)	$R_{th\ (j\text{-}\ell)}$	—	—	—	16	°C/W

Marking

Abbreviation Code	Part No.
F4	CMF04

Standard Soldering Pad

Unit: mm

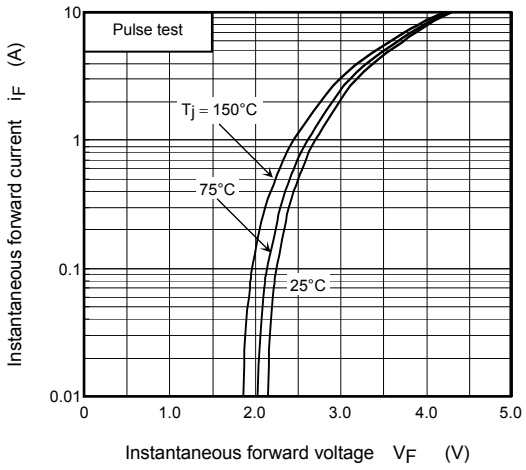


Handling Precautions

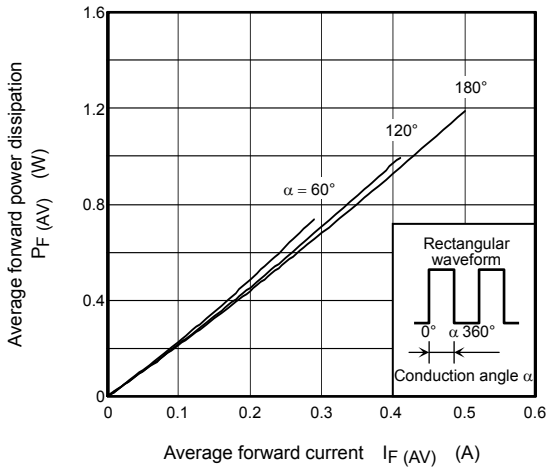
Thermal resistance between junction and ambient fluctuates depending on the mounting condition of the device. When using the device, be sure to design the circuit board and soldering land size to match the appropriate thermal resistance value.

Refer to the Rectifier databook for further information.

$i_F - v_F$

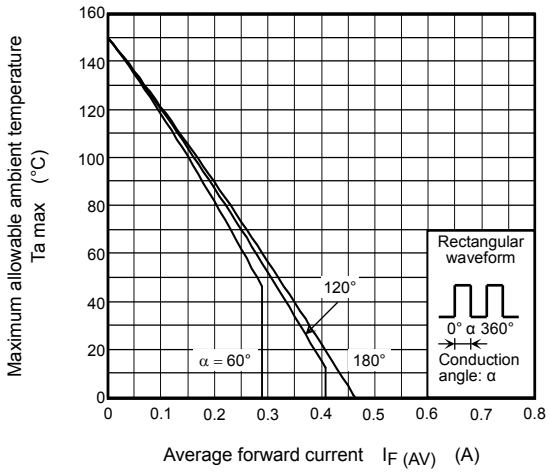


$P_{F\ (AV)} - I_{F\ (AV)}$

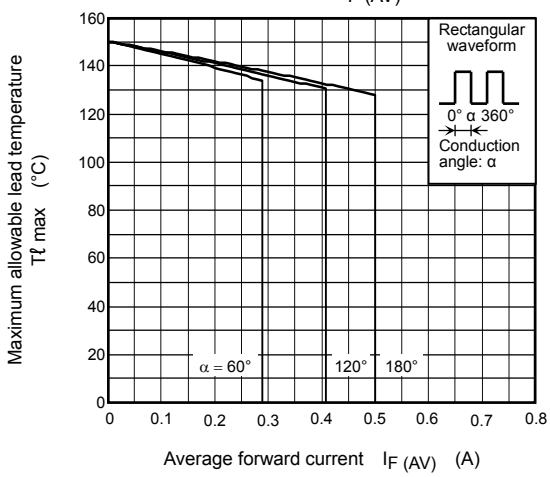


Ta max – $I_{F\ (AV)}$

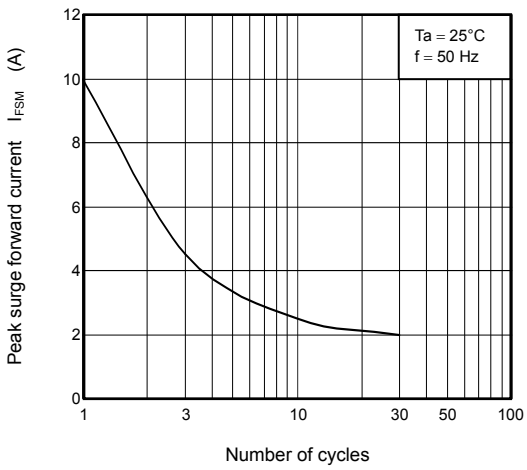
Device mounted on a glass-epoxy board
(board size: 50 mm × 50 mm, land size: 6 mm × 6 mm)



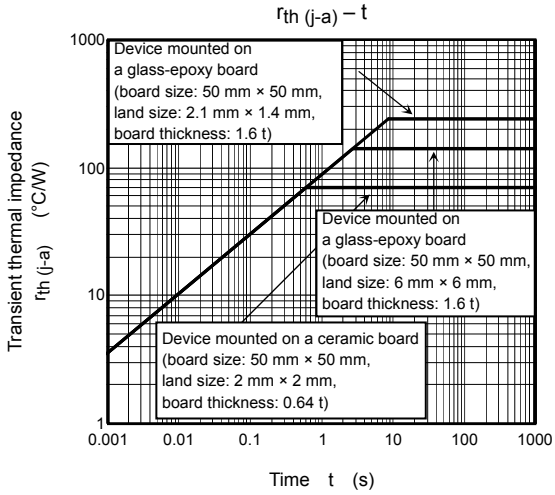
$T\ell$ max – $I_{F\ (AV)}$



Surge forward current
(non-repetitive)



$r_{th\ (j-a)} - t$



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