

TOSHIBA Fast Recovery Diode Silicon Diffused Type

TVR4J,TVR4N

High-Speed Rectifier Applications (fast recovery)

- Repetitive Peak Reverse Voltage: $V_{RRM} = 600, 1000 \text{ V}$
- Average Forward Current: $I_F (AV) = 1.2 \text{ A}$ ($T_a = 55^\circ\text{C}$)
- Reverse Recovery Time: $t_{rr} = 20 \mu\text{s}$
- Plastic Mold Type

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

Characteristics	Symbol	Rating	Unit
Repetitive peak reverse voltage	TVR4J	V_{RRM}	V
	TVR4N		
Average forward current ($T_a = 55^\circ\text{C}$)	$I_F (AV)$	1.2	A
Peak one cycle surge forward current (non-repetitive)	I_{FSM}	100 (50 Hz)	A
Junction temperature	T_j	-40 to 150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 to 150	$^\circ\text{C}$

Note: 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.).

Unit: mm

JEDEC	—
JEITA	—
TOSHIBA	3-4B1A

Weight: 0.47 g (typ.)

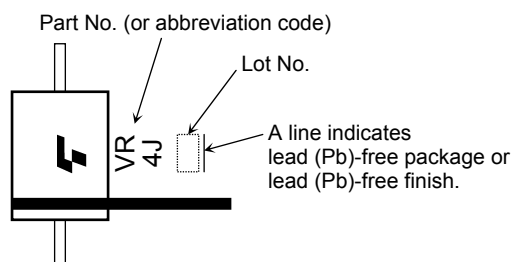
Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak forward voltage	V_{FM}	$I_{FM} = 5 \text{ A}$	—	—	1.2	V
Repetitive peak reverse current	I_{RRM}	$V_{RRM} = \text{Rated}$	—	—	10	μA
Reverse recovery time	t_{rr}	$I_F = 20 \text{ mA}, I_R = 1 \text{ mA}$	—	—	20	μs
Thermal resistance (junction to ambient)	$R_{th(j-a)}$	DC	—	—	80	$^\circ\text{C/W}$

Note 1: Soldering: 5 mm is the minimum to be kept between the case and the soldered part.

Note 2: Lead bending: 5 mm is the minimum to be kept from the case when bending lead wires.

Marking



Abbreviation Code	Part No.
VR4J	TVR4J
VR4N	TVR4N

Handling Precaution

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 that we recommend when you design a circuit with a 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). Carry out adequate heat design. If you can't design a circuit with excellent heat radiation, set the margin by using an allowable Tamax-IF(AV) curve.

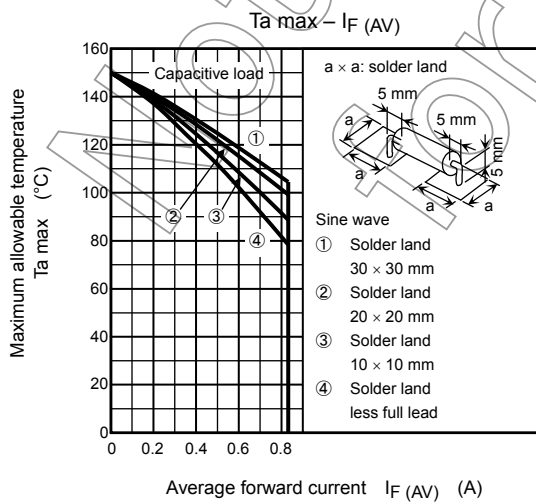
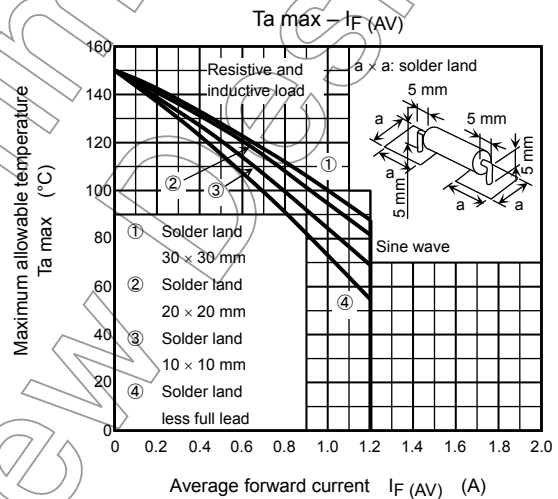
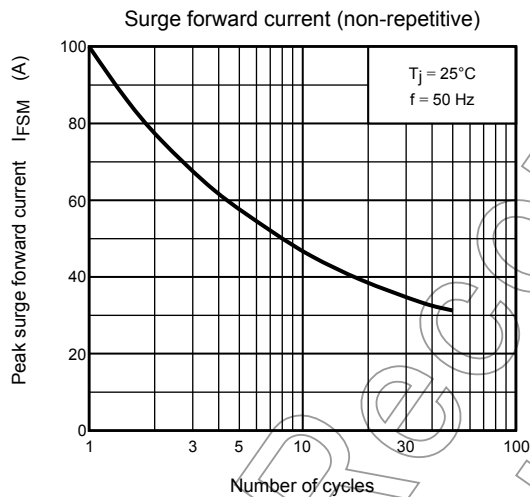
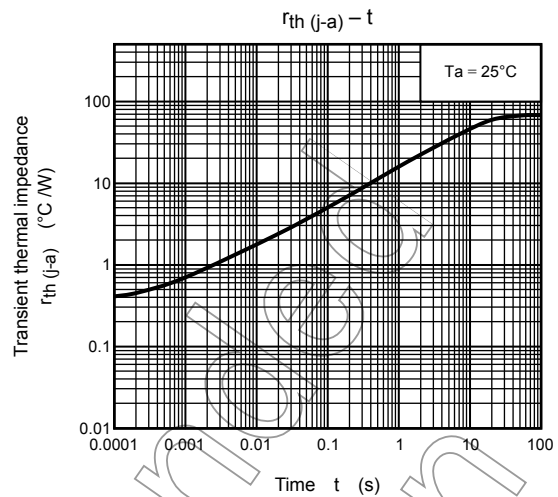
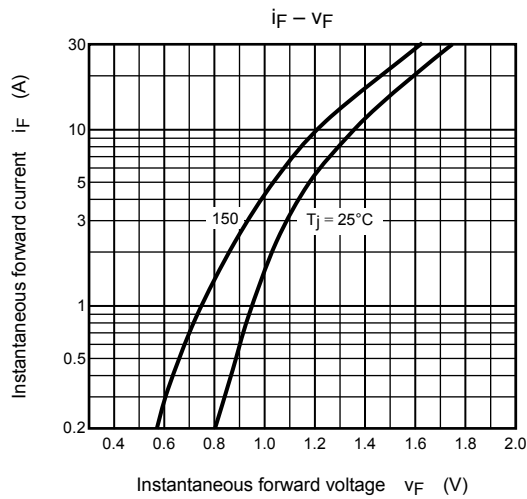
This rating specifies the non-repetitive peak current in one cycle of a 50-Hz sine wave, condition angle 180. Therefore, this is only applied for an abnormal operation, which seldom occurs during the lifespan of the device.

We recommend that a device be used at a Tj of below 120°C under the worst load and heat radiation conditions.

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

Organic silicon is used as encapsulation material for this product, which is resin seal product. Therefore, it is difficult to seal siloxane coming from silicone completely in this product. When using this product, please consider above.

Please refer to the Rectifiers databook for further information.



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