

TOSHIBA Compound Device Silicon-Diffused Type

## TPC6K01

### ○ General-Purpose Rectifier Applications

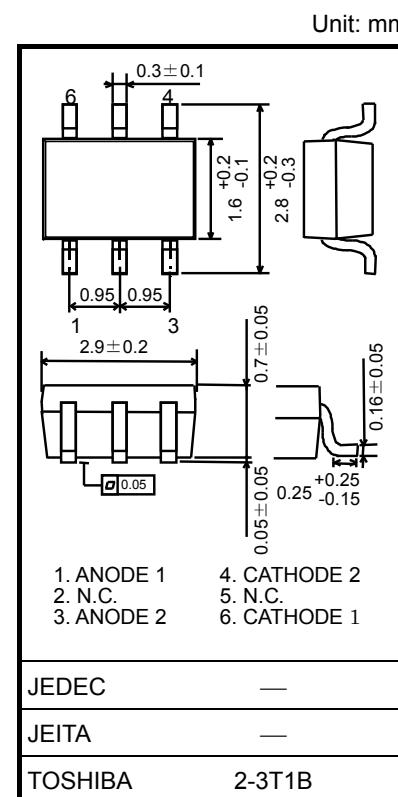
- Forward voltage:  $V_{FM} = 1.1 \text{ V (max)}$
- Average forward current:  $I_F (AV) = 0.3 \text{ A}$
- Two diodes are housed in a small, thin package suitable for high-density mounting:  
VS-6 (Toshiba package name)
- Each of the two diodes supports identical absolute maximum ratings and electrical characteristics.

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

Characteristics	Symbol	Rating	Unit
Repetitive peak reverse voltage	$V_{RRM}$	400	V
Average forward current	$I_F (AV)$	0.3 (Note 1)	A
Non-repetitive peak surge current	$I_{FSM}$	3 (50 Hz)	A
Junction temperature	$T_j$	$-55 \sim 150$	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$

Note 1:  $T_a = 75^\circ\text{C}$  (single-device operation)  
Device mounted on a glass-epoxy board  
Board size:  $25.4 \text{ mm} \times 25.4 \text{ mm}$   
Board thickness:  $0.8 \text{ t}$

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).

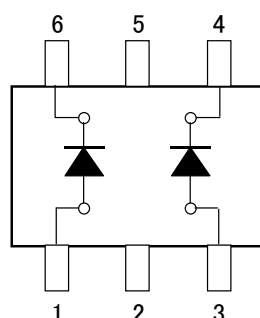


Weight:  $0.011 \text{ g (typ.)}$

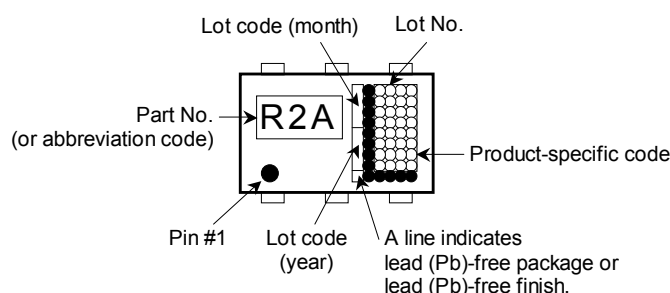
### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Test Condition	Min	Typ.	Max
Peak forward voltage	$V_{FM}$	$I_F = 0.3 \text{ A}$	—	1.1	V
Peak repetitive reverse current	$I_{RRM}$	$V_{RRM} = 400 \text{ V}$	—	10	$\mu\text{A}$

### Circuit Configuration



### Marking

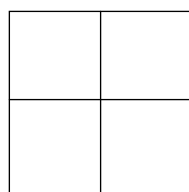


The round black marking "●" located on the lower left of the parts number marking "R2A" indicates terminal No. 1.

## Thermal Characteristics

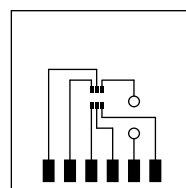
Characteristics		Symbol	Max	Unit
Thermal resistance (junction to ambient)  (Note 1a)	Single-device operation (Note 2a)	$R_{th(j-a)}(1)$	195	°C/W
	Single-device value at dual operation (Note 2a)	$R_{th(j-a)}(2)$	273	
Thermal resistance (junction to ambient)  (Note 1b)	Single-device operation (Note 2a)	$R_{th(j-a)}(1)$	517	°C/W
	Single-device value at dual operation (Note 2a)	$R_{th(j-a)}(2)$	793	

Note 1: (a) Device mounted on a glass-epoxy board (a) (b) Device mounted on a glass-epoxy board (b)



(a)

FR-4  
25.4 × 25.4 × 0.8  
(Unit: mm)

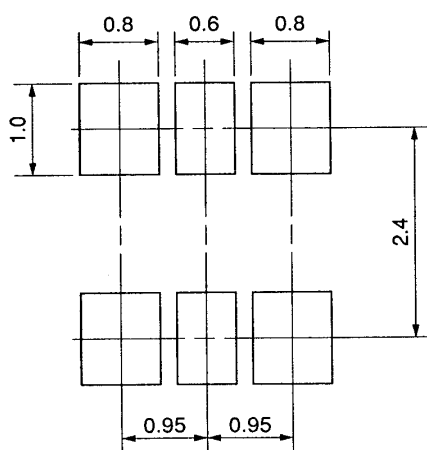


(b)

FR-4  
25.4 × 25.4 × 0.8  
(Unit: mm)

Note 2: a) The power dissipation and thermal resistance values shown are for a single device.  
(During single-device operation, power is applied only to one device.)  
b) The power dissipation and thermal resistance values shown are for a single device.  
(During dual operation, power is evenly applied to both devices.)

## Standard Soldering Pad (Unit: mm)



## Handling Precautions

The absolute maximum ratings denote the absolute maximum ratings, which are rated values that must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend for when designing a circuit incorporating 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. Take this temperature coefficient into account when designing a device for operation at low temperatures.

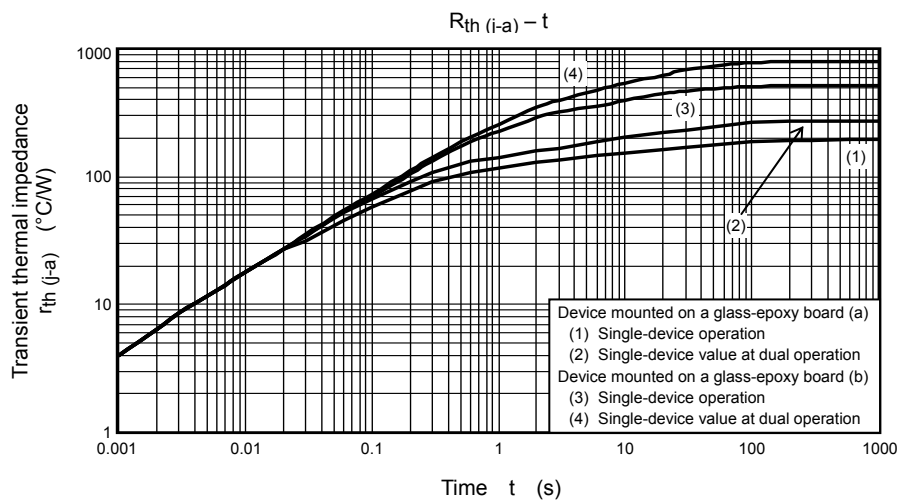
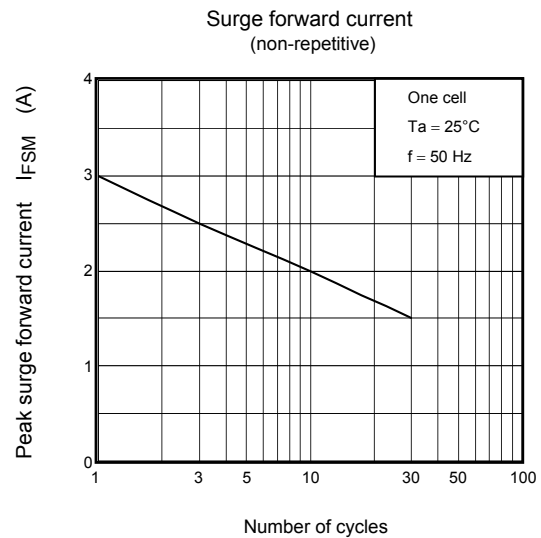
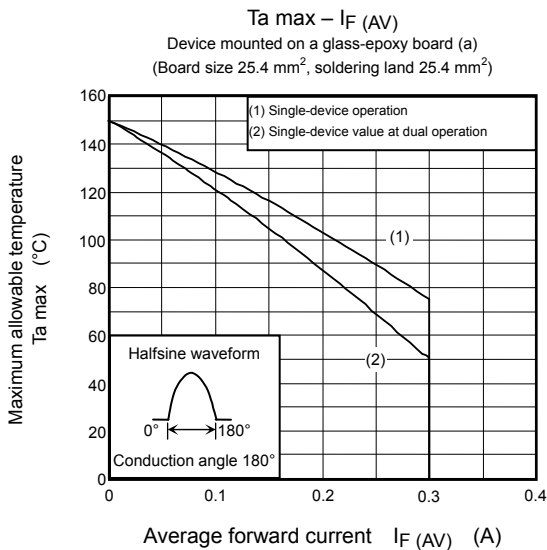
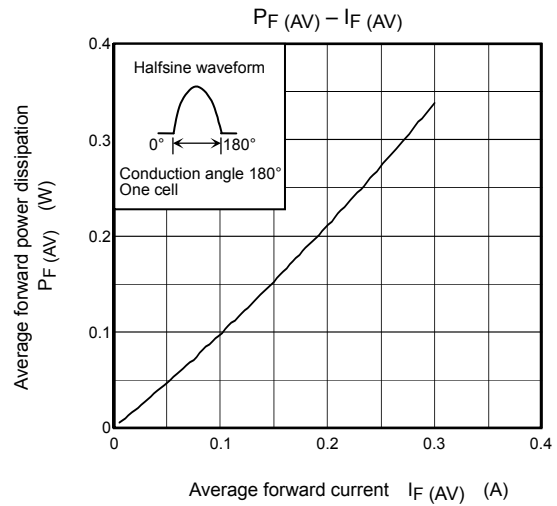
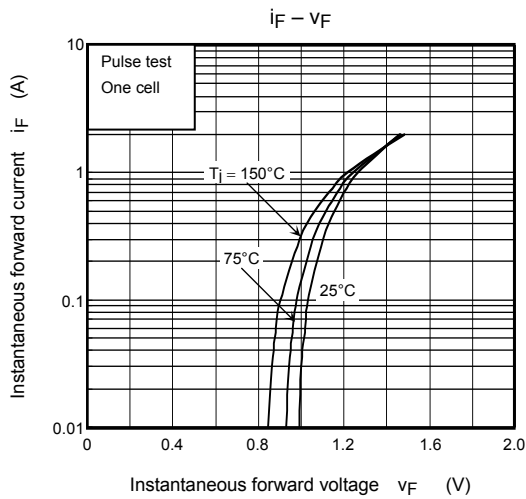
$IF(AV)$ : We recommend that the worst case current be no greater than 80% of the absolute maximum rating of  $IF(AV)$ . Carry out adequate heat design. If it is not possible to design a circuit with excellent heat radiation, set the margin by using an allowable  $T_{max}$ - $IF(AV)$  curve.

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

We recommend that a device be used at 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, design the circuit board and soldering land size to match the appropriate thermal resistance value.

Refer to the databook on Rectifiers for further information.



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