

## SMALL SIGNAL SCHOTTKY DIODE

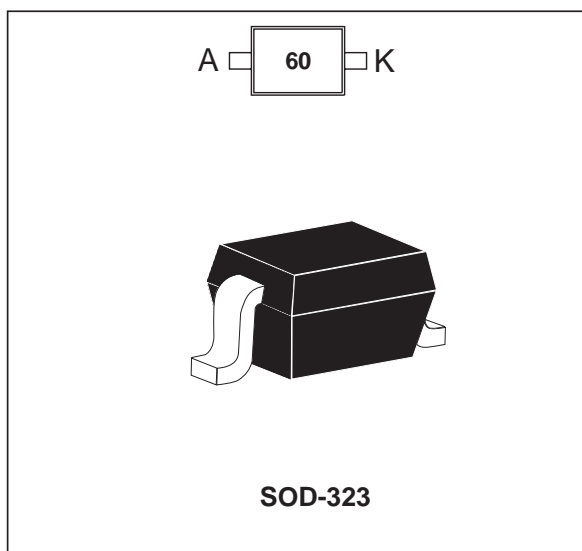
### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- EXTREMELY FAST SWITCHING
- SURFACE MOUNTED DEVICE

### DESCRIPTION

Schottky barrier diode encapsulated in a SOD-323 small SMD package.

This device is intended for use in portable equipments. It is suited for DC to DC converters, step-up conversion and power management.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		10	V
$I_F$	Peak forward current	$\delta = 0.11$	3	A
$I_{FSM}$	Surge non repetitive forward current	$t_p=10ms$	5	A
$P_{tot}$	Power Dissipation	$T_a=25^\circ C$	310	mW
$T_{stg}$	Storage temperature range		- 65 to +150	$^\circ C$
$T_j$	Maximum operating junction temperature *		150	$^\circ C$
TL	Maximum temperature for soldering during 10s		260	$^\circ C$

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$  thermal runaway condition for a diode on its own heatsink

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	400	$^\circ C/W$

(\*) Mounted on epoxy board with recommended pad layout.

## BAT60J

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests conditions		Min.	Typ.	Max.	Unit
$V_F$ *	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ mA}$		0.28	0.32	V
			$I_F = 100\text{ mA}$		0.35	0.40	
			$I_F = 1\text{ A}$		0.53	0.58	
$I_R$ **	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = 5\text{ V}$		1	3	$\mu\text{A}$
		$T_j = 25^\circ\text{C}$	$V_R = 8\text{ V}$		1.3	4	
		$T_j = 25^\circ\text{C}$	$V_R = 10\text{ V}$		2	6	
		$T_j = 25^\circ\text{C}$	$V_R = 12\text{ V}$		2.5	7.5	
		$T_j = 80^\circ\text{C}$	$V_R = 8\text{ V}$		73	150	

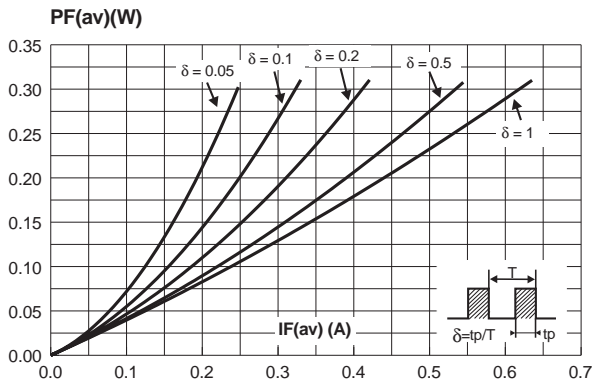
Pulse test: \*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$

\*\*  $t_p = 5\text{ms}$ ,  $\delta < 2\%$

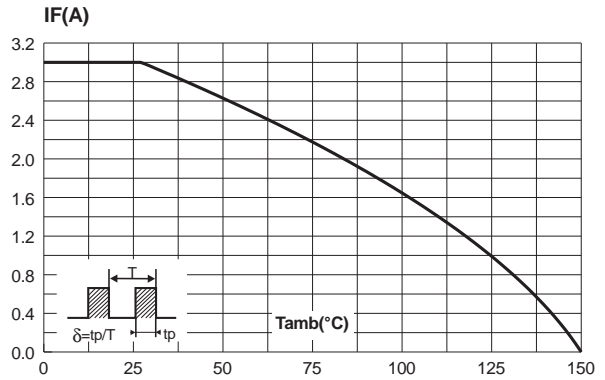
To evaluate the conduction losses the following equation:

$$P = 0.38 \times I_{F(AV)} + 0.17 I_{F(RMS)}^2$$

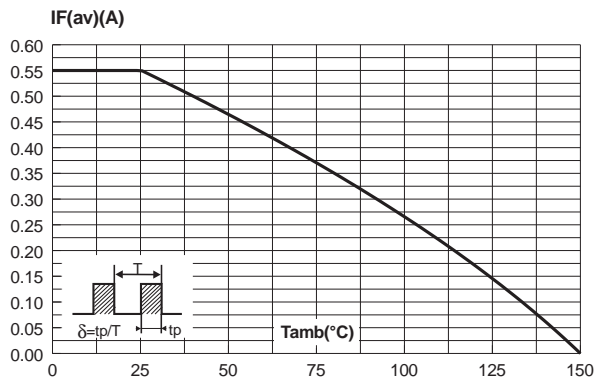
**Fig. 1:** Average forward power dissipation versus average forward current.



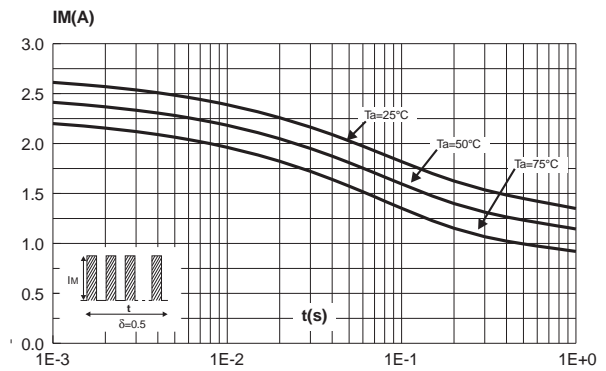
**Fig. 2-1:** Peak forward current versus ambient temperature ( $\delta = 0.11$ ).



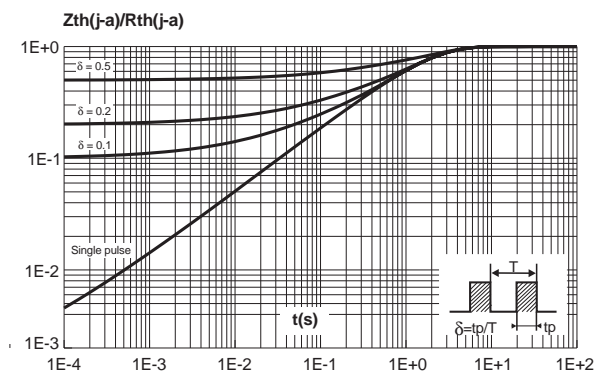
**Fig. 2-2:** Average forward current versus ambient temperature ( $\delta = 0.5$ ).



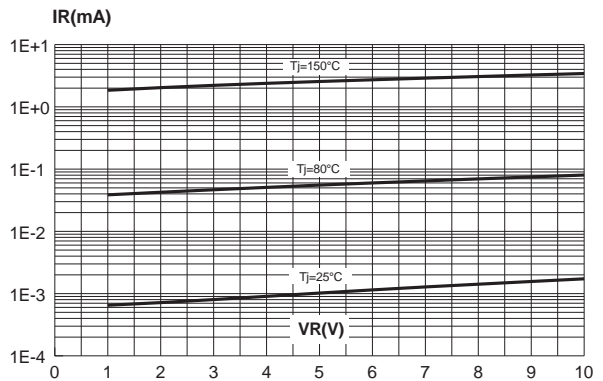
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).



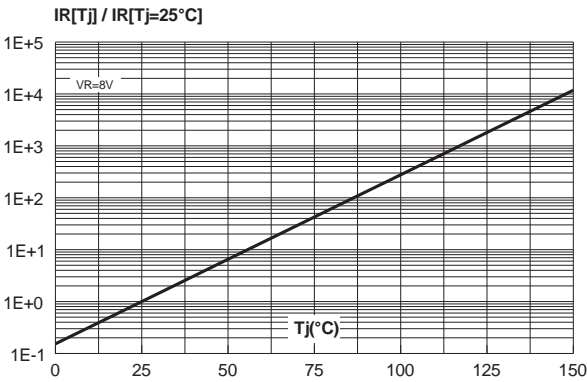
**Fig. 4:** Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4 with recommended pad layout).



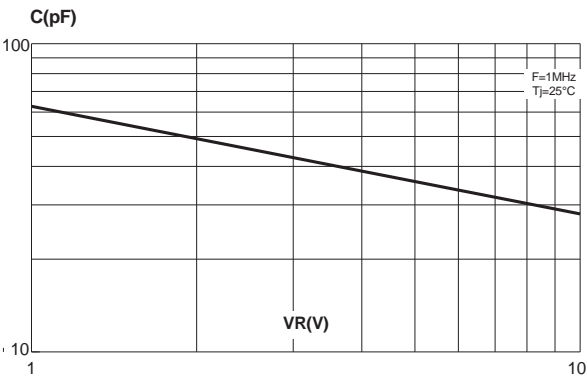
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).



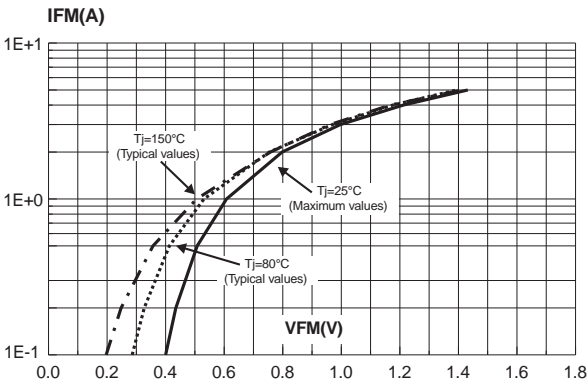
**Fig. 6:** Reverse leakage current versus junction temperature (typical values).



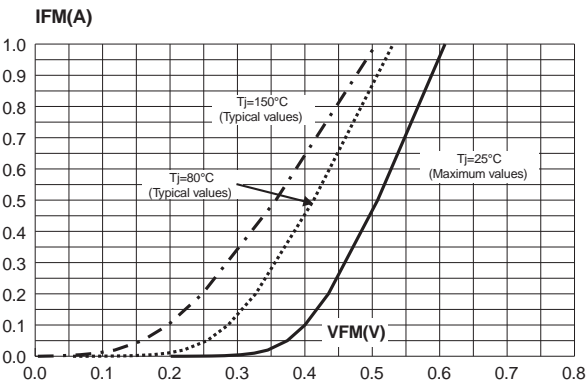
**Fig. 7:** Junction capacitance versus reverse voltage applied (typical values).



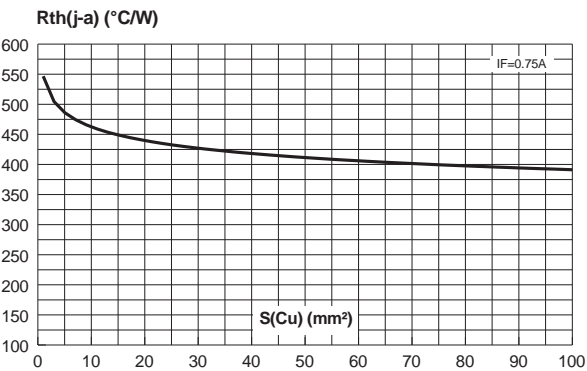
**Fig. 8-1:** Forward voltage drop versus forward current (High level).



**Fig. 8-2:** Forward voltage drop versus forward current (Low level).



**Fig. 9:** Thermal resistance junction to ambient versus copper surface (epoxy printed circuit board FR4, copper thickness: 35μm).



**PACKAGE MECHANICAL DATA**  
**SOD-323**

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1	0	0.1	0	0.004
b	0.25	0.44	0.01	0.017
c	0.1	0.25	0.004	0.01
D	1.52	1.8	0.06	0.071
E	1.11	1.45	0.044	0.057
H	2.3	2.7	0.09	0.106
L	0.1	0.46	0.004	0.02
Q1	0.1	0.41	0.004	0.016

**MARKING**

Type	Marking	Package	Weight	Base qty	Delivery mode
BAT60JFILM	60	SOD-323	0.005 g.	3000	Tape & reel

- Epoxy meets UL94V-0

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