

SMALL SIGNAL SCHOTTKY DIODE

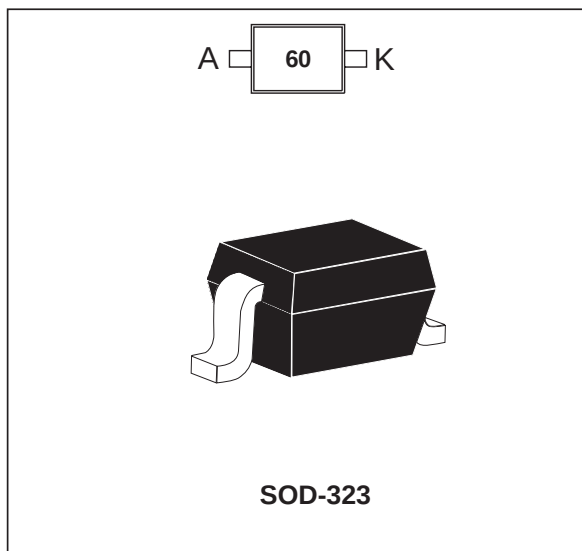
FEATURES AND BENEFITS

- 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.

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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	μA
		$T_j = 25^\circ\text{C}$	$V_R = 8\text{ V}$		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.

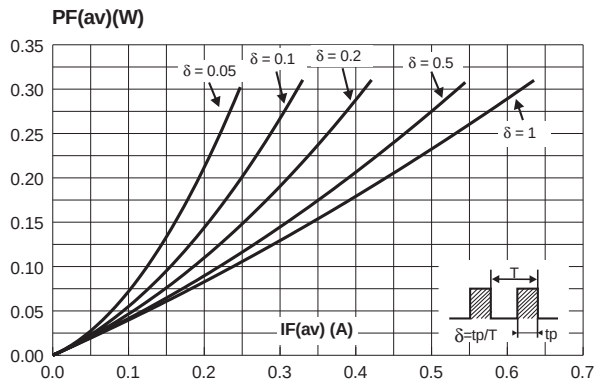


Fig. 2-1: Peak forward current versus ambient temperature ($\delta = 0.11$).

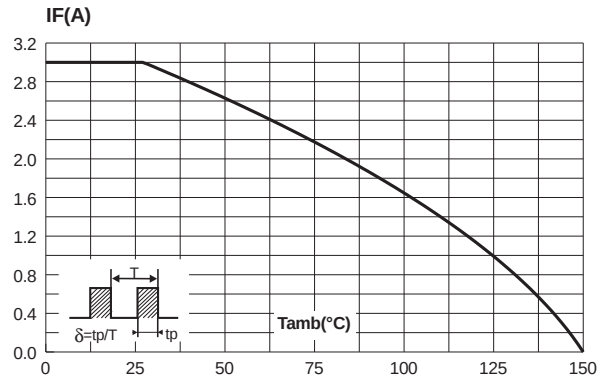


Fig. 2-2: Average forward current versus ambient temperature ($\delta = 0.5$).

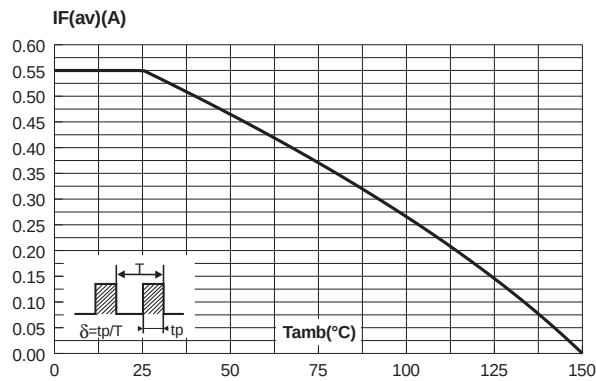


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

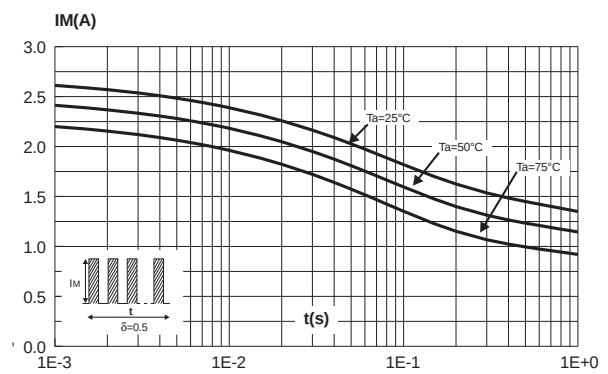


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4 with recommended pad layout).

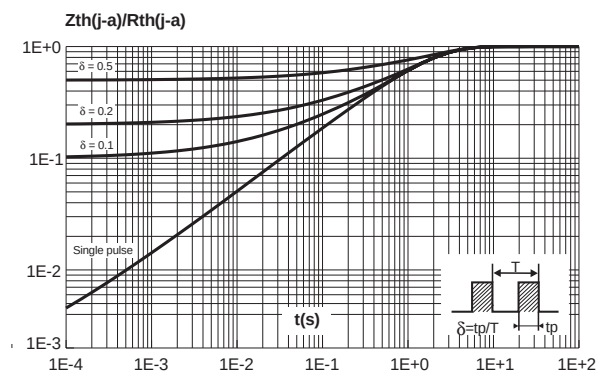
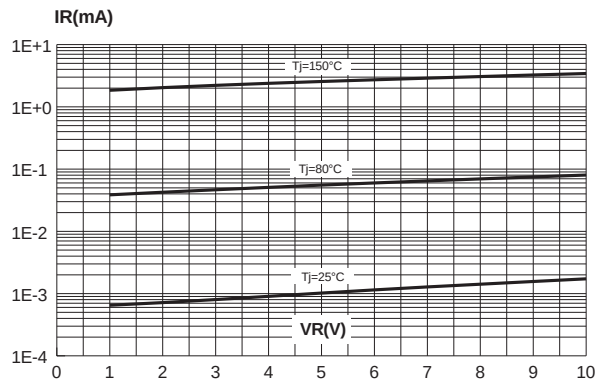


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).



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

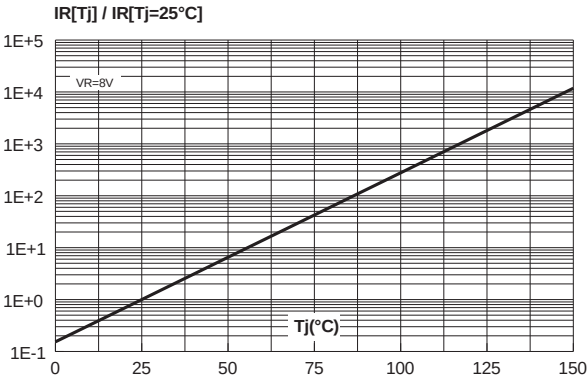


Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

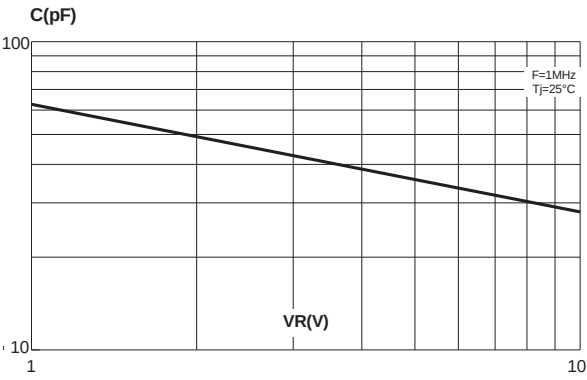


Fig. 8-1: Forward voltage drop versus forward current (High level).

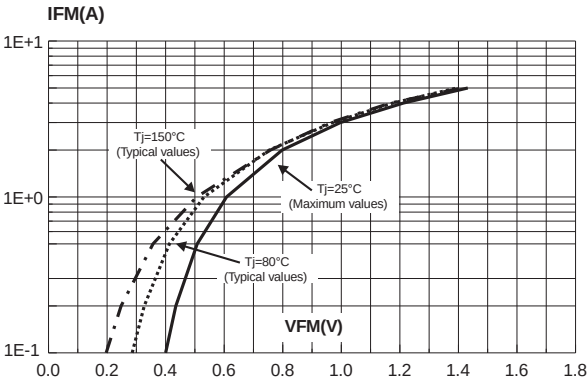


Fig. 8-2: Forward voltage drop versus forward current (Low level).

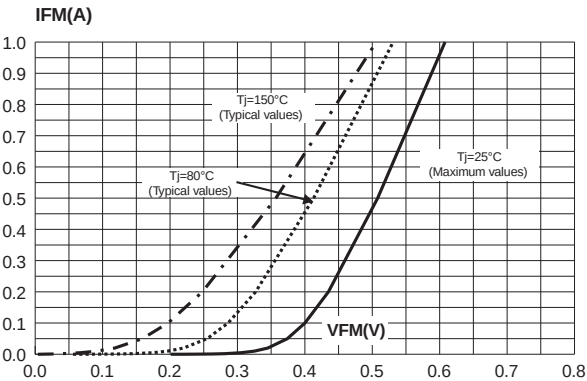
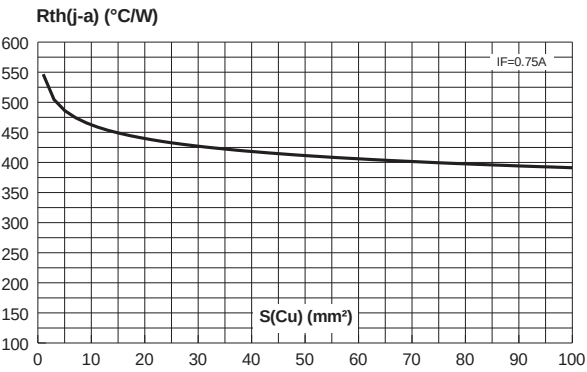


Fig. 9: Thermal resistance junction to ambient versus copper surface (epoxy printed circuit board FR4, copper thickness: 35µm).



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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