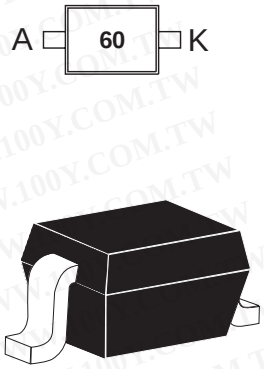
BAT60J

SMALL SIGNAL SCHOTTKY DIODE

FEATURES AND BENEFITS

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



SOD-323

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	tp=10ms	5	A
P_{tot}	Power Dissipation	Ta=25°C	310	mW
T_{stg}	Storage temperature range		- 65 to +150	°C
Tj	Maximum operating junction temperature *		150	°C
TL	Maximum temperature for soldering during 10s		260	°C

$* : \frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCE

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

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

STATIC ELECTRICAL CHARACTERISTICS

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

Pulse test: * tp = 380µs, δ < 2%
** tp = 5ms, δ < 2%

To evaluate the conduction losses the following equation:
$P = 0.38 \times I_{F(AV)} + 0.17\ I_{F^2(RMS)}$

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

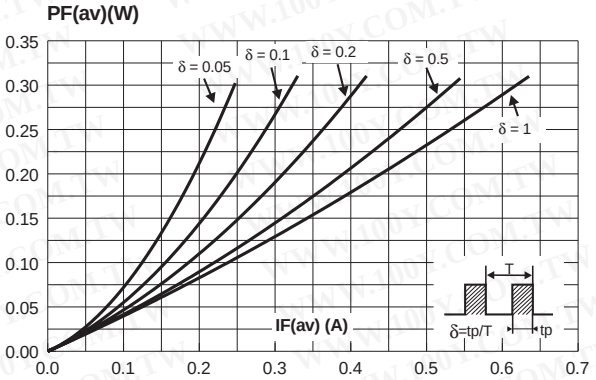


Fig. 2-1: Peak forward current versus ambient temperature (δ = 0.11).

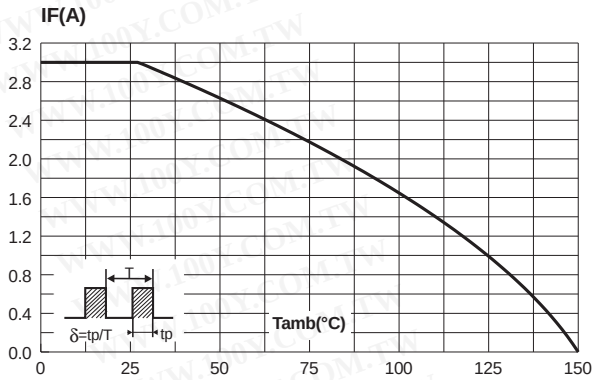


Fig. 2-2: Average forward current versus ambient temperature (δ = 0.5).

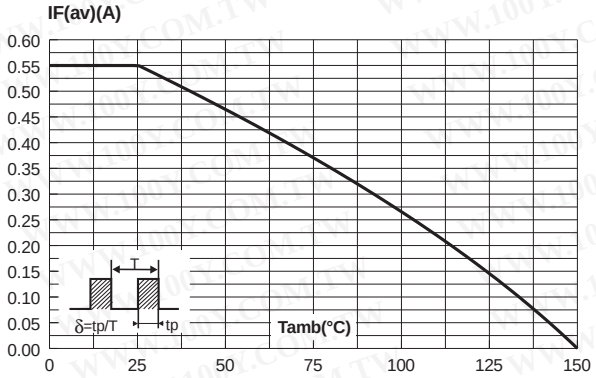


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

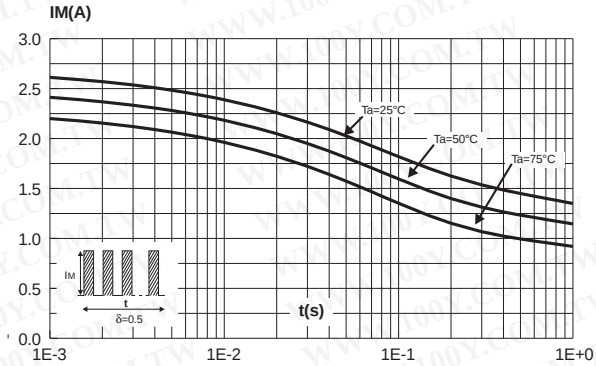


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4 with recommended pad layout).

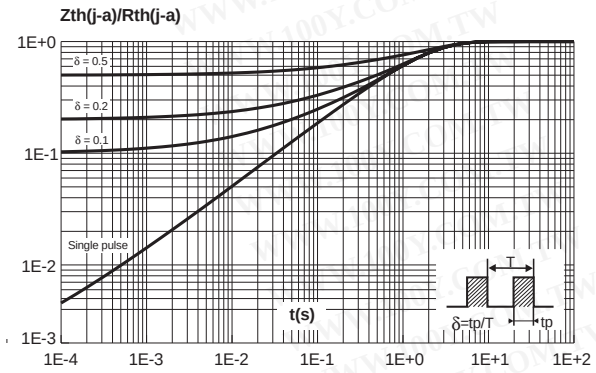


Fig. 5: Reverse leackage current versus reverse voltage applied (typical values).

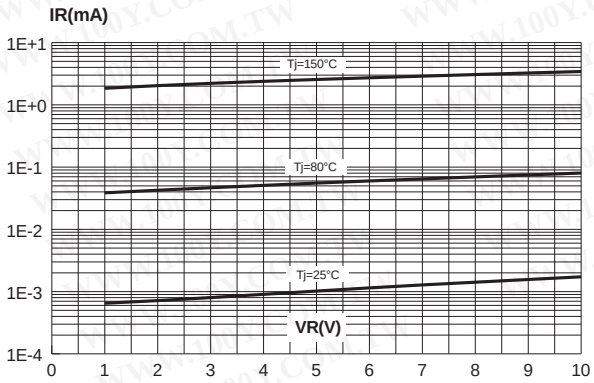


Fig. 6: Reverse leackage current versus junction temperature (typical values).

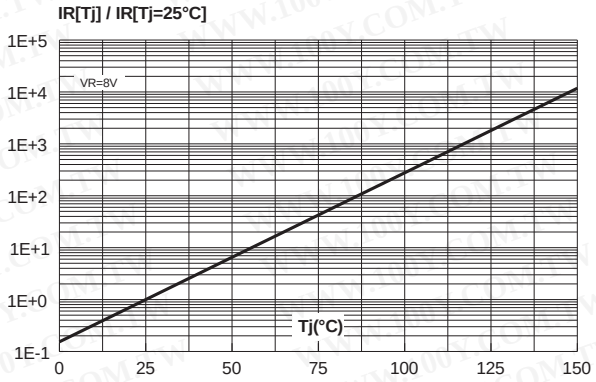


Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

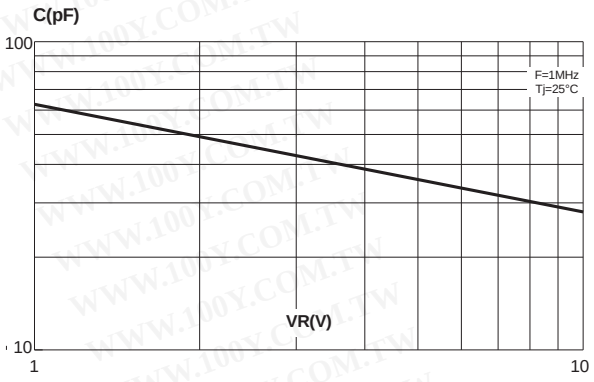


Fig. 8-1: Forward voltage drop versus forward current (High level).

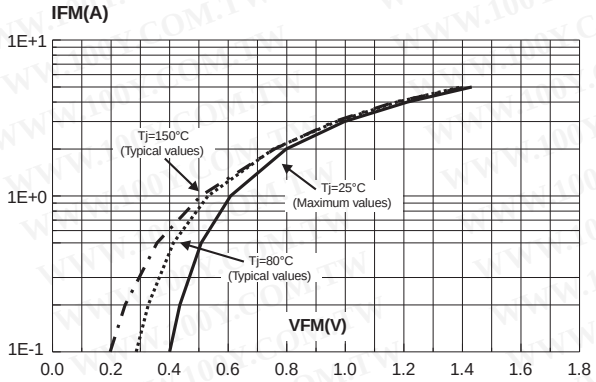


Fig. 8-2: Forward voltage drop versus forward current (Low level).

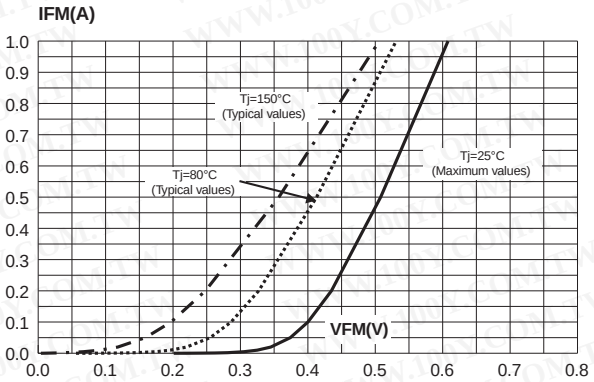
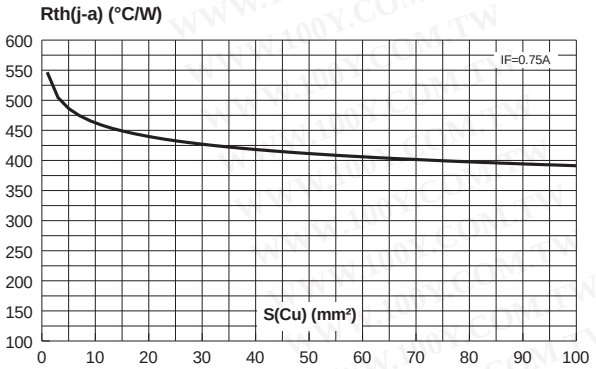
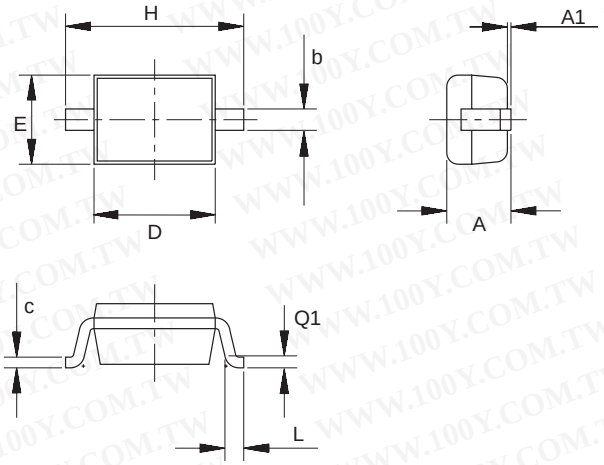


Fig. 9: Thermal resistance junction to ambient versus copper surface (epoxy printed circuit board FR4, copper thickness: 35µm).



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