



BAT54, A, C, S

SMALL SIGNAL SCHOTTKY DIODE

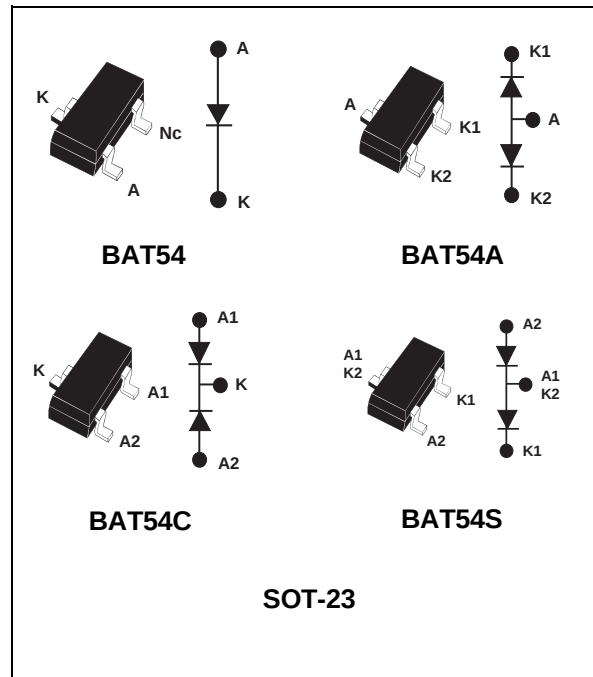
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNT DEVICE

DESCRIPTION

Schottky barrier diodes encapsulated in a SOT-23 small SMD packages.

Double diodes with different pinning are available.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
I_F	Continuous forward current		0.3	A
I_{FSM}	Surge non repetitive forward current	$t_p=10ms$ sinusoidal	1	A
P_{tot}	Power dissipation (note 1)	$T_{amb} = 25^{\circ}C$	250	mW
T_{stg}	Maximum storage temperature range		- 65 to +150	$^{\circ}C$
T_j	Maximum operating junction temperature *		150	$^{\circ}C$
T_L	Maximum temperature for soldering during 10s		260	$^{\circ}C$

Note 1: for double diodes, P_{tot} is the total dissipation of both diodes.

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

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THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	500	$^{\circ}\text{C/W}$

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 0.1\text{ mA}$		240	mV
			$I_F = 1\text{ mA}$		320	
			$I_F = 10\text{ mA}$		400	
			$I_F = 30\text{ mA}$		500	
			$I_F = 100\text{ mA}$		900	
I_R^{**}	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = 30\text{ V}$		1	μA
		$T_j = 100^{\circ}\text{C}$			100	

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

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

DYNAMIC CHARACTERISTICS ($T_j = 25^{\circ}\text{C}$)

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	$T_j = 25^{\circ}\text{C}$ $V_R = 1\text{ V}$ $F = 1\text{ MHz}$			10	pF
t_{rr}	Reverse recovery time	$I_F = 10\text{ mA}$ $I_R = 10\text{ mA}$ $T_j = 25^{\circ}\text{C}$ $I_{rr} = 1\text{ mA}$ $R_L = 100\text{ }\Omega$			5	ns

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

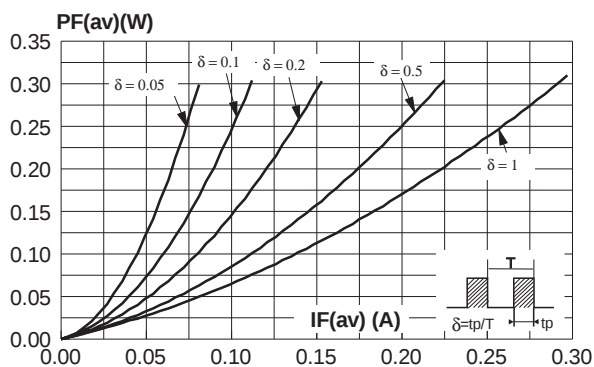


Fig.2 : Average forward current versus ambient temperature ($\delta = 1$).

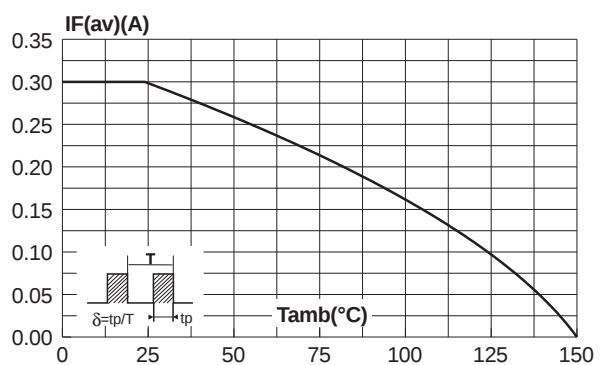


Fig.3 : Non repetitive surge peak forward current versus overload duration (maximum values).

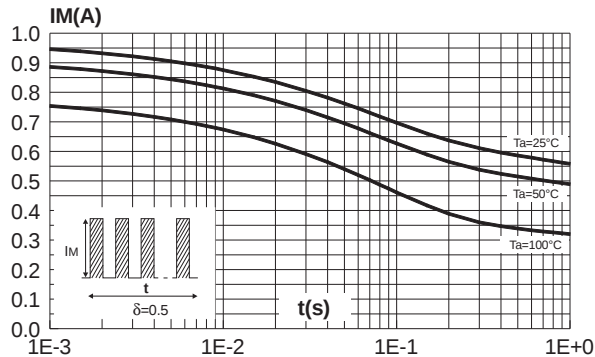


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).

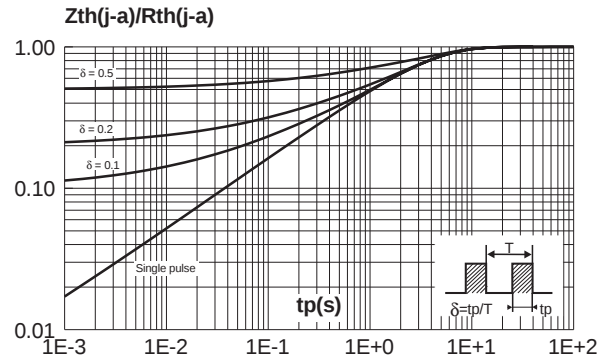


Fig.5 : Reverse leakage current versus reverse voltage applied (typical values).

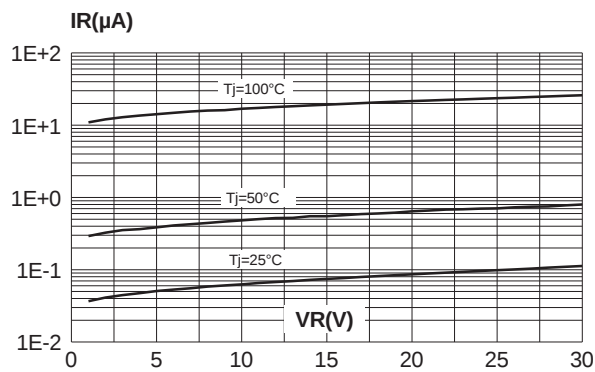


Fig.6 : Reverse leakage current versus junction temperature.

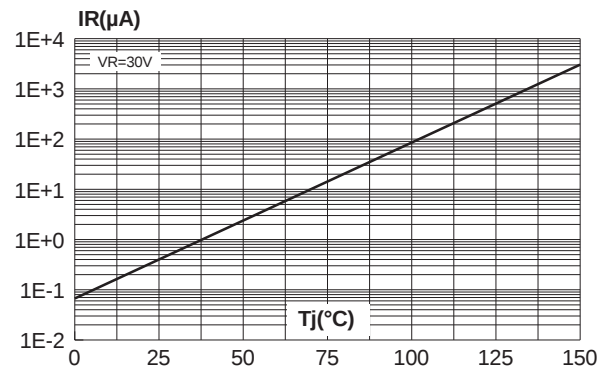


Fig.7 : Junction capacitance versus reverse voltage applied (typical values).

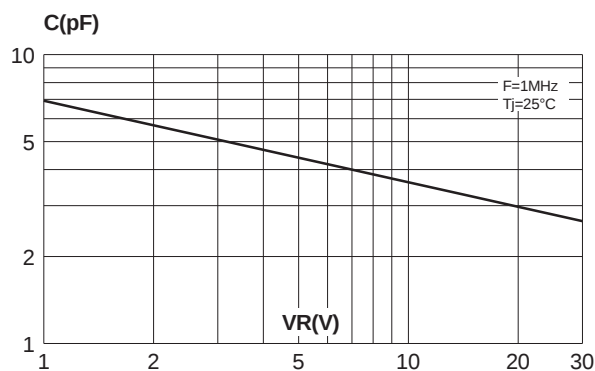
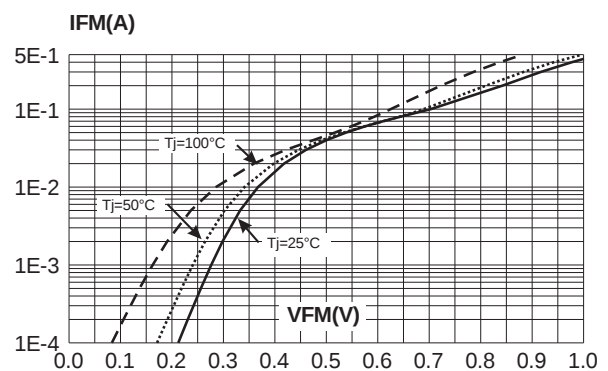


Fig.8 : Forward voltage drop versus forward current (typical values).



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PACKAGE MECHANICAL DATA SOT-23

The image displays three views of an SOT-23 package with the following dimensions labeled:

- Top View:** Shows dimensions E (width), B (lead width), e (lead pitch), e1 (total lead length), and S (lead thickness).
- Side View:** Shows dimensions A (body width), A1 (lead thickness), and D (body height).
- Cross-sectional View:** Shows dimensions H (total height), L (lead height), and C (lead thickness).

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.89	1.4	0.035	0.055
A1	0	0.1	0	0.004
B	0.3	0.51	0.012	0.02
c	0.085	0.18	0.003	0.007
D	2.75	3.04	0.108	0.12
e	0.85	1.05	0.033	0.041
e1	1.7	2.1	0.067	0.083
E	1.2	1.6	0.047	0.063
H	2.1	2.75	0.083	0.108
L	0.6 typ.		0.024 typ.	
S	0.35	0.65	0.014	0.026

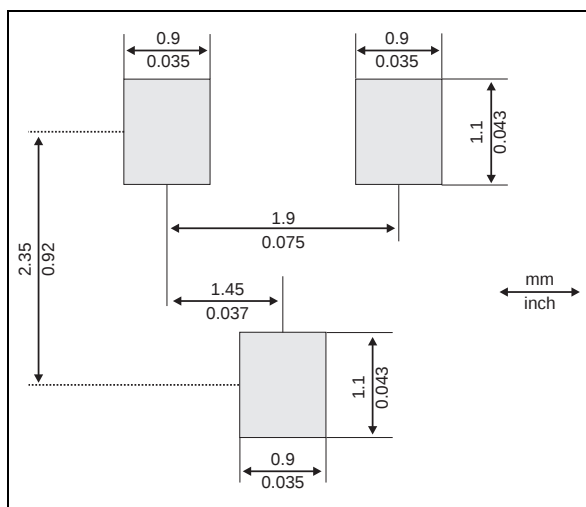
Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54FILM	D86	SOT-23	0.01g	3000	Tape & reel
BAT54AFILM	D84	SOT-23	0.01g	3000	Tape & reel
BAT54CFILM	D87	SOT-23	0.01g	3000	Tape & reel
BAT54SFILM	D88	SOT-23	0.01g	3000	Tape & reel

■ Epoxy meets UL94,V0

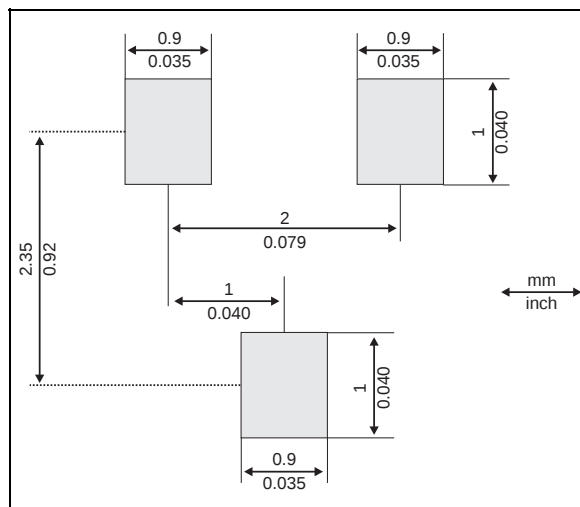
FOOTPRINT DIMENSIONS

COMPATIBLE SOT-23 / SC-59

(in millimeters and inches)

**OPTIMIZED SOT-23 FOOTPRINT DIMENSIONS**

(in millimeters and inches)



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