



# BAT54, A, C, S

## SMALL SIGNAL SCHOTTKY DIODE

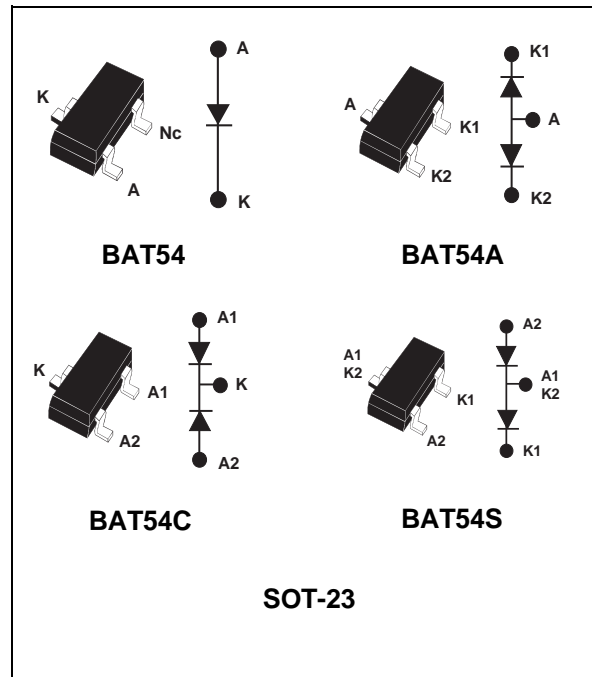
### FEATURES AND BENEFITS

- 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	$\mu\text{A}$
		$T_j = 100^{\circ}\text{C}$				100	

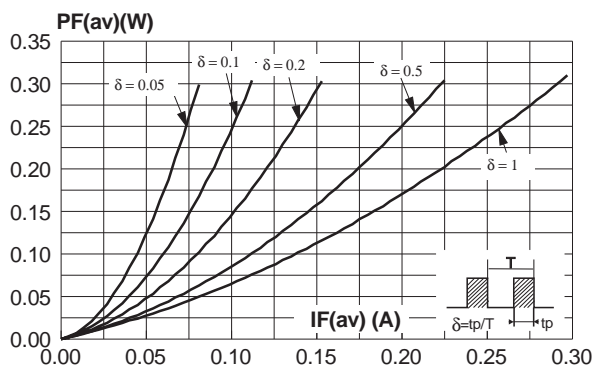
Pulse test : \*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

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

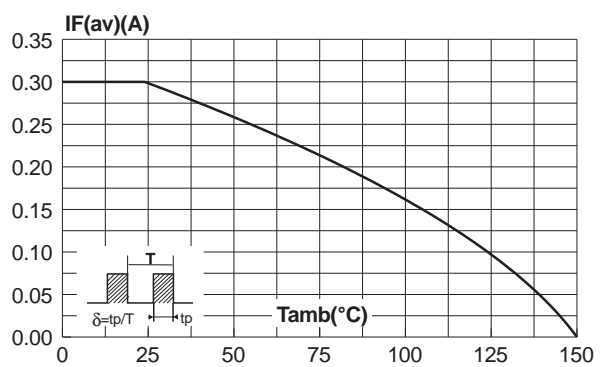
## DYNAMIC CHARACTERISTICS ( $T_j = 25^{\circ}\text{C}$ )

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	$I_F = 10 \text{ mA}$ $I_R = 10 \text{ mA}$ $T_j = 25^{\circ}\text{C}$ $I_{rr} = 1 \text{ mA}$ $R_L = 100 \Omega$			5	ns

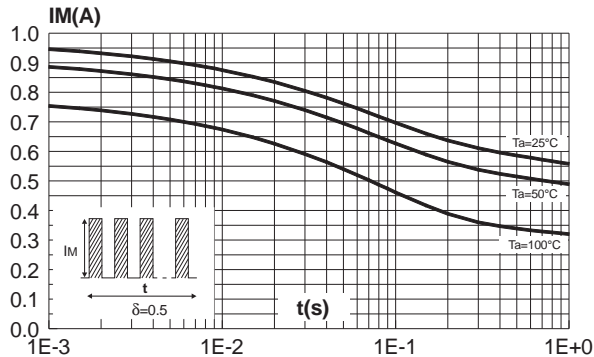
**Fig.1** : Average forward power dissipation versus average forward current.



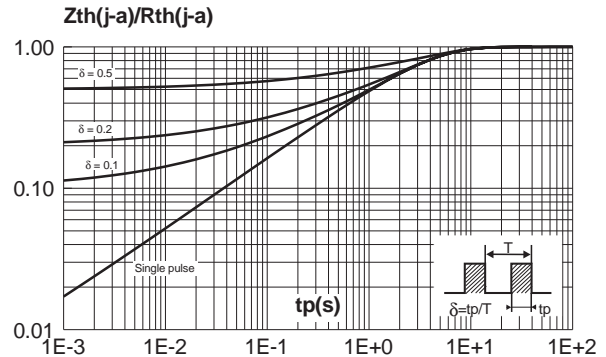
**Fig.2** : Average forward current versus ambient temperature ( $\delta = 1$ ).



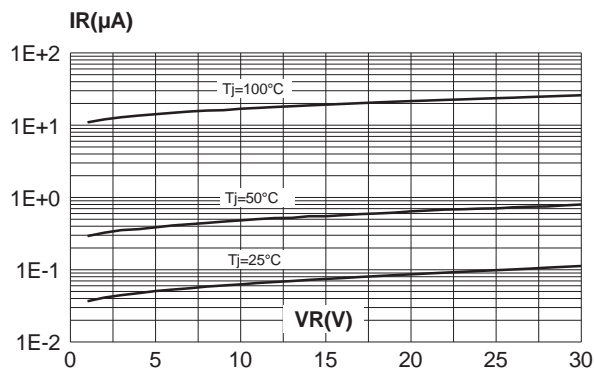
**Fig.3** : Non repetitive surge peak forward current versus overload duration (maximum values).



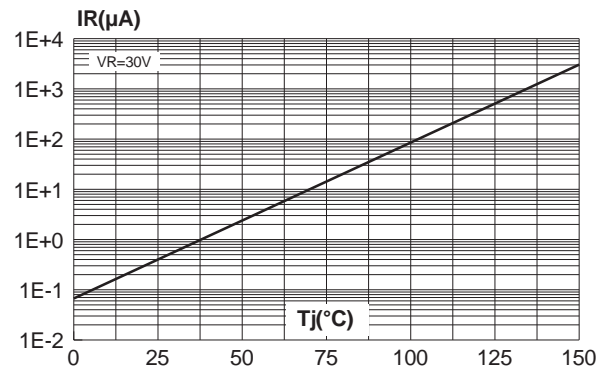
**Fig.4** : Relative variation of thermal impedance junction to ambient versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).



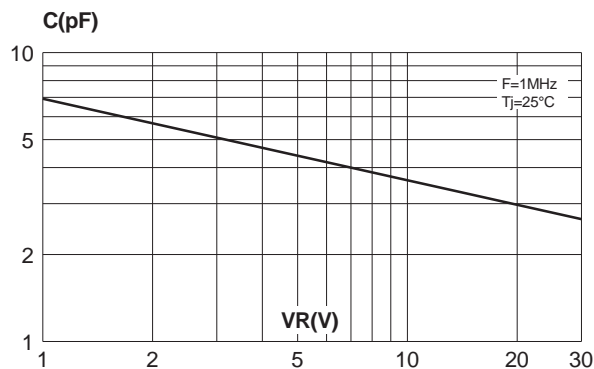
**Fig.5** : Reverse leakage current versus reverse voltage applied (typical values).



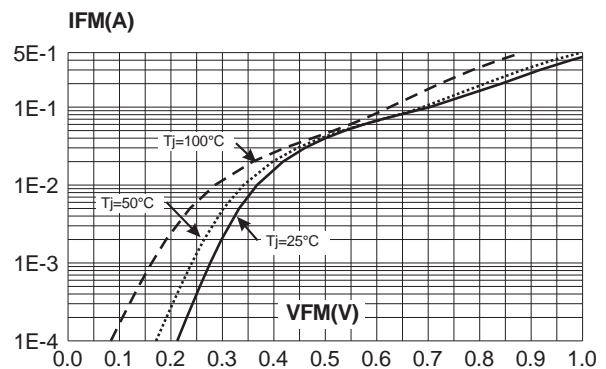
**Fig.6** : Reverse leakage current versus junction temperature.



**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

	DIMENSIONS				
	REF.	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	

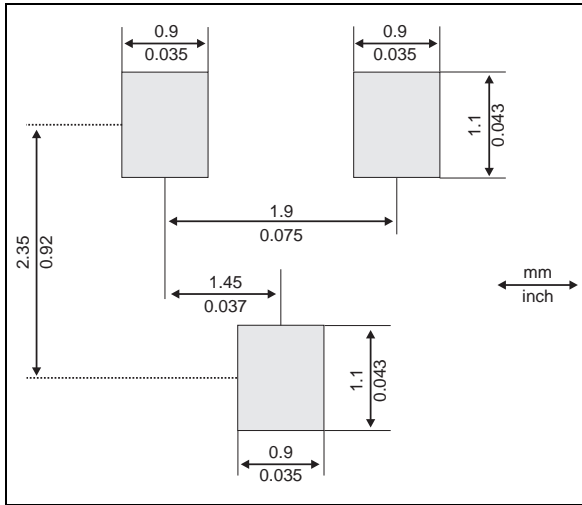
Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54FILM	D86	SOT-23	0.01g	3000	Tape & reel
BAT54AFILM	D84	SOT-23	0.01g	3000	Tape & reel
BAT54CFILM	D87	SOT-23	0.01g	3000	Tape & reel
BAT54SFILM	D88	SOT-23	0.01g	3000	Tape & reel

■ Epoxy meets UL94,V0

**FOOTPRINT DIMENSIONS**

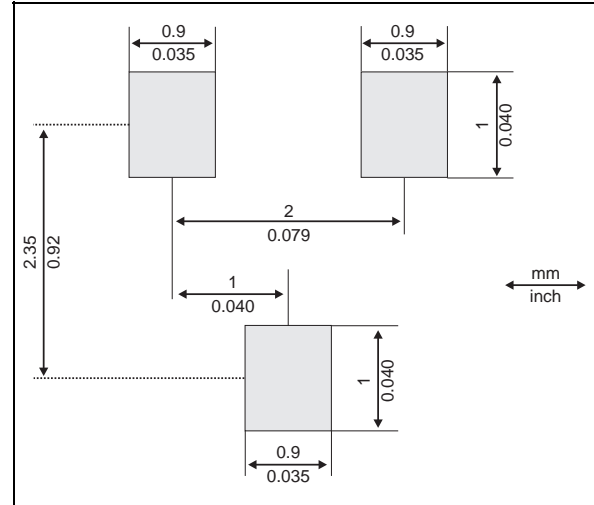
COMPATIBLE SOT-23 / SC-59

(in millimeters and inches)



**OPTIMIZED SOT-23 FOOTPRINT DIMENSIONS**

(in millimeters and inches)



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