

SMALL SIGNAL SCHOTTKY DIODE

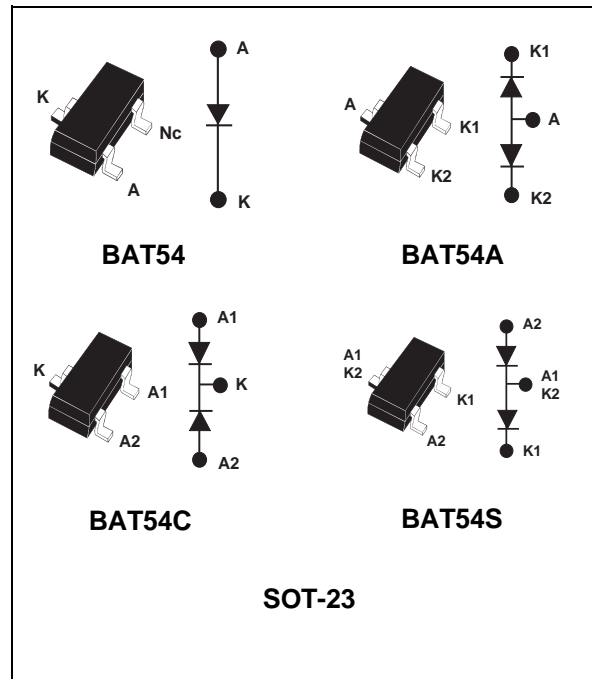
FEATURES AND BENEFITS

- 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	tp=10ms sinusoidal	1	A
P_{tot}	Power dissipation (note 1)	$T_{amb} = 25^\circ\text{C}$	250	mW
T_{stg}	Maximum storage temperature range		- 65 to +150	$^\circ\text{C}$
T_j	Maximum operating junction temperature *		150	$^\circ\text{C}$
T_L	Maximum temperature for soldering during 10s		260	$^\circ\text{C}$

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

BAT54, A, C, S

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	500	°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 : * $t_p = 380\ \mu\text{s}$, $\delta < 2\%$

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

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.

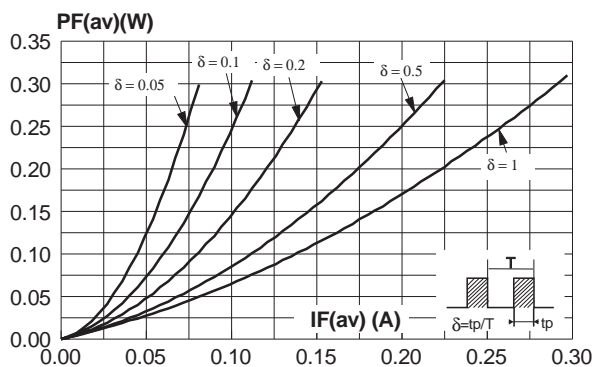


Fig.2 : Average forward current versus ambient temperature ($\delta = 1$).

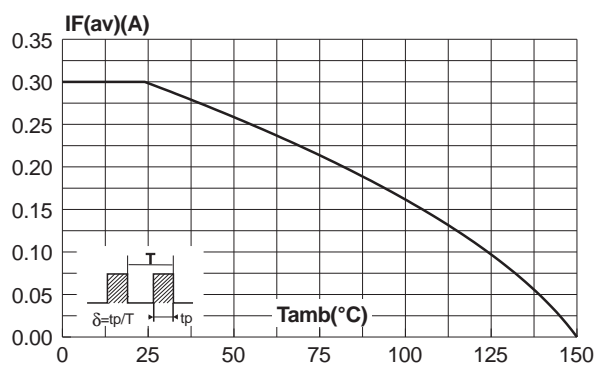


Fig.3 : Non repetitive surge peak forward current versus overload duration (maximum values).

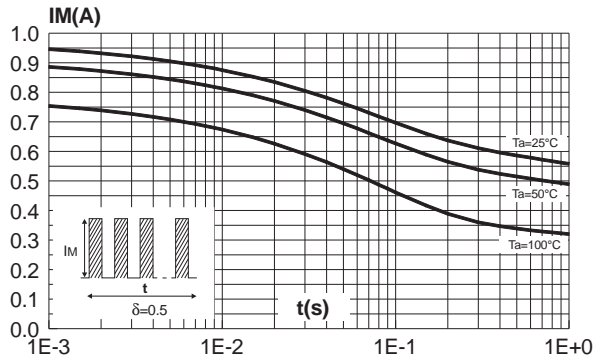


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).

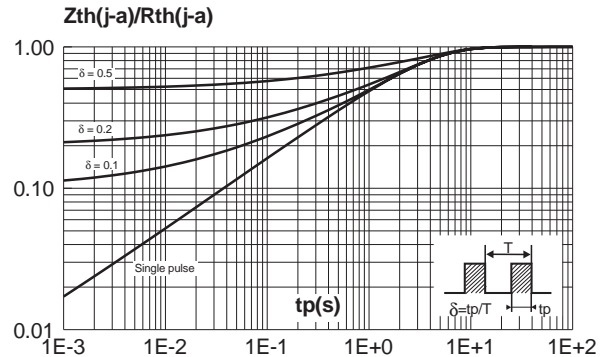


Fig.5 : Reverse leakage current versus reverse voltage applied (typical values).

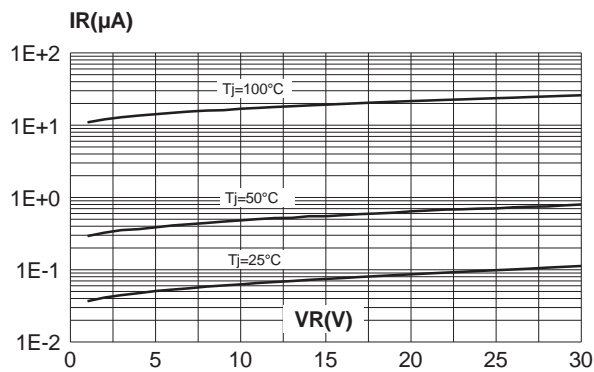


Fig.6 : Reverse leakage current versus junction temperature.

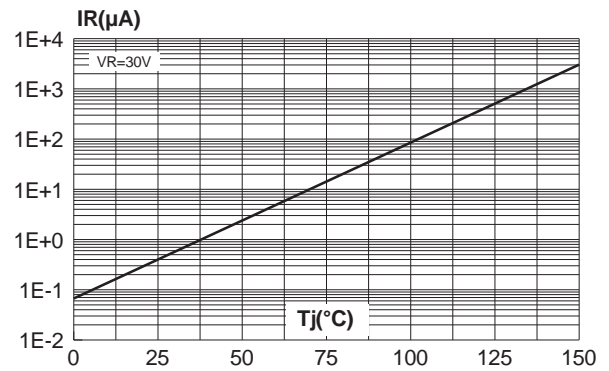


Fig.7 : Junction capacitance versus reverse voltage applied (typical values).

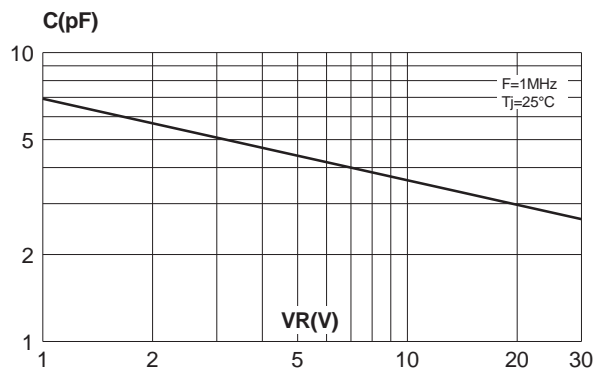
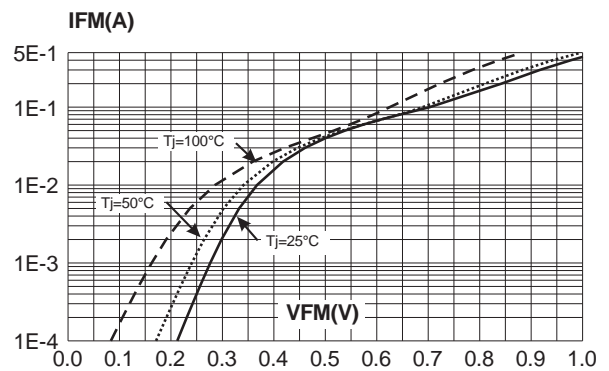


Fig.8 : Forward voltage drop versus forward current (typical values).



BAT54, A, C, S

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	

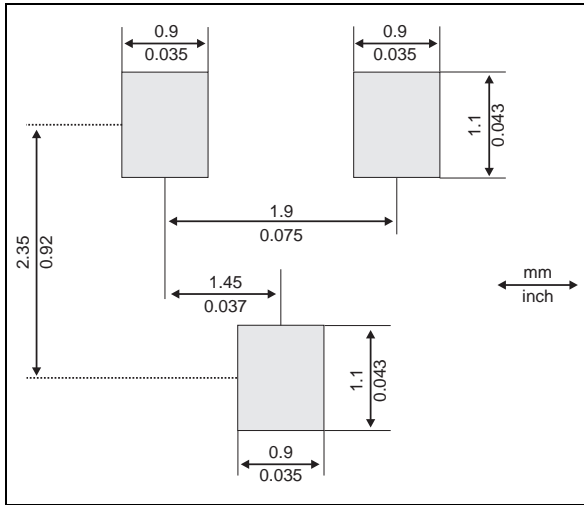
Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54FILM	D86	SOT-23	0.01g	3000	Tape & reel
BAT54AFILM	D84	SOT-23	0.01g	3000	Tape & reel
BAT54CFILM	D87	SOT-23	0.01g	3000	Tape & reel
BAT54SFILM	D88	SOT-23	0.01g	3000	Tape & reel

■ Epoxy meets UL94,V0

FOOTPRINT DIMENSIONS

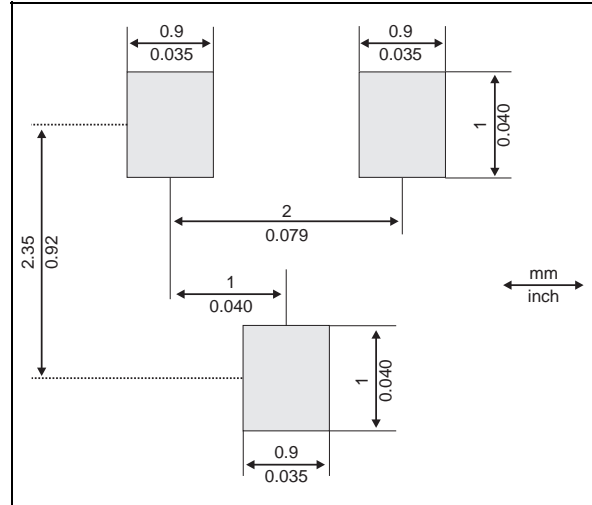
COMPATIBLE SOT-23 / SC-59

(in millimeters and inches)



OPTIMIZED SOT-23 FOOTPRINT DIMENSIONS

(in millimeters and inches)



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