BAT54, A, C, S

SMALL SIGNAL SCHOTTKY DIODE

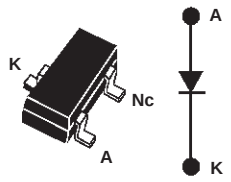
FEATURES AND BENEFITS

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

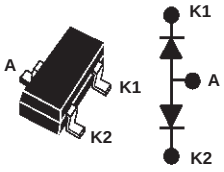
DESCRIPTION

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

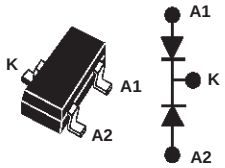
Double diodes with different pining are available.



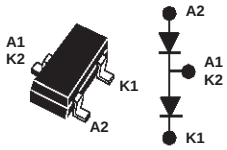
BAT54



BAT54A



BAT54C



BAT54S

SOT-23

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°C	250	mW
T_{stg}	Maximum storage temperature range		- 65 to +150	°C
Tj	Maximum operating junction temperature *		150	°C
T_L	Maximum temperature for soldering during 10s		260	°C

Note 1: for double diodes, Ptot is the total dissipation of both diodes.

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

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to ambient (*)	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	Tj = 25°C	I_F = 0.1 mA			240	mV
			I_F = 1 mA			320	
			I_F = 10 mA			400	
			I_F = 30 mA			500	
			I_F = 100 mA			900	
I_R **	Reverse leakage current	Tj = 25°C	V_R = 30 V			1	µA
		Tj = 100°C				100	

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

DYNAMIC CHARACTERISTICS (Tj = 25 °C)

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	Tj = 25°C V_R = 1 V F = 1 MHz			10	pF
t_{rr}	Reverse recovery time	I_F = 10 mA I_R = 10 mA Tj = 25°C I_{rr} = 1 mA R_L = 100 Ω			5	ns

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

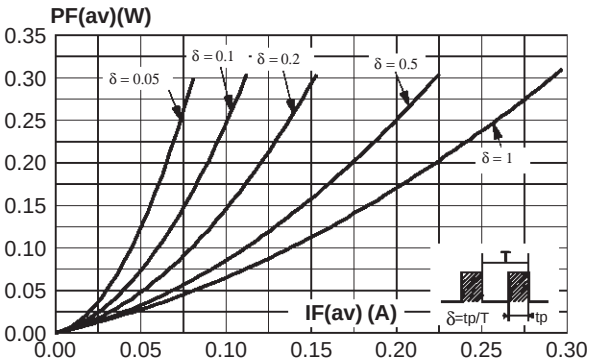


Fig.2 : Average forward current versus ambient temperature (δ = 1).

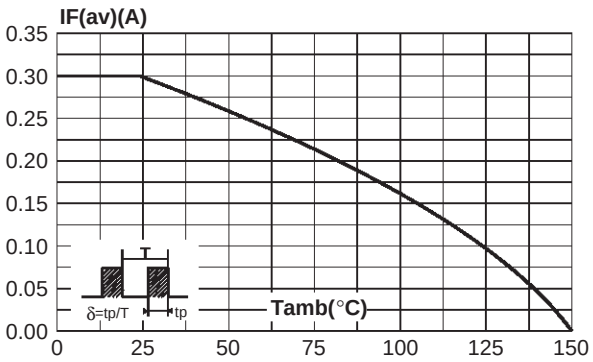


Fig.3 : Non repetitive surge peak forward current versus overload duration (maximum values).

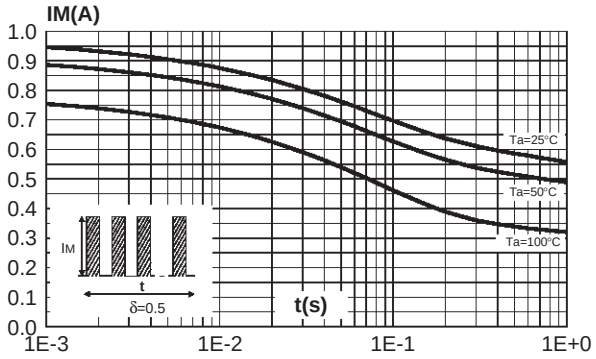


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).

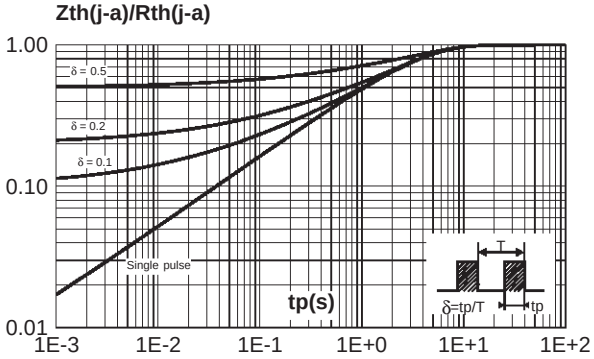


Fig.5 : Reverse leakage current versus reverse voltage applied (typical values).

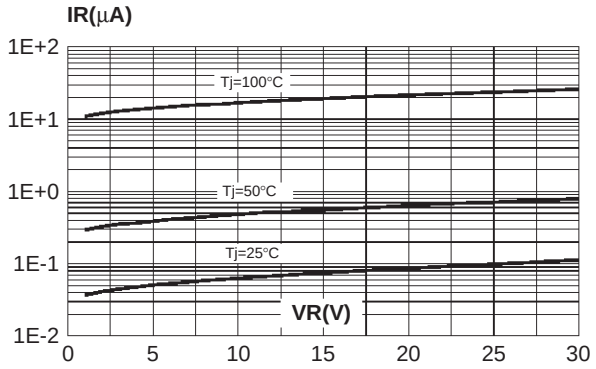


Fig.6 : Reverse leakage current versus junction temperature.

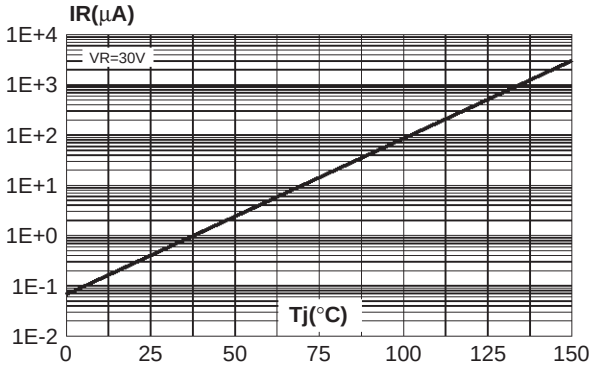


Fig.7 : Junction capacitance versus reverse voltage applied (typical values).

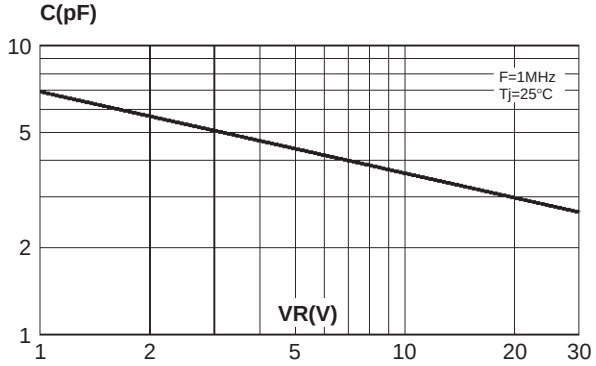
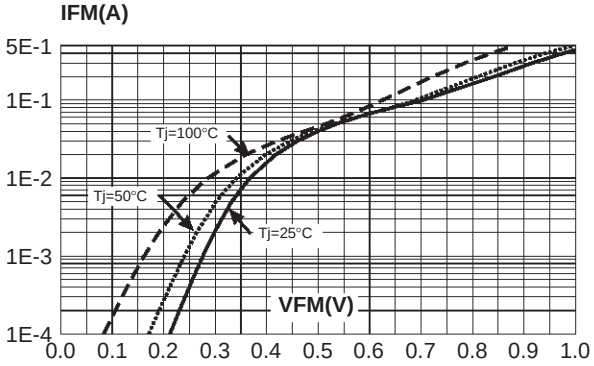
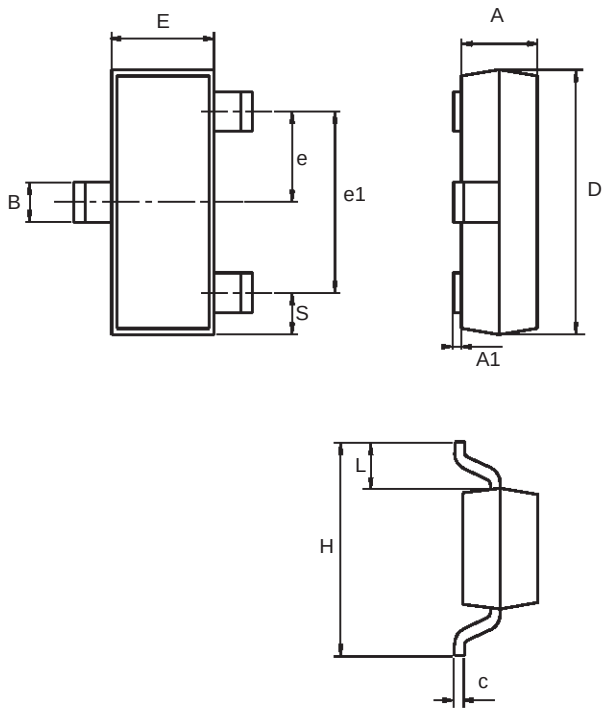


Fig.8 : Forward voltage drop versus forward current (typical values).



PACKAGE MECHANICAL DATA

SOT-23



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

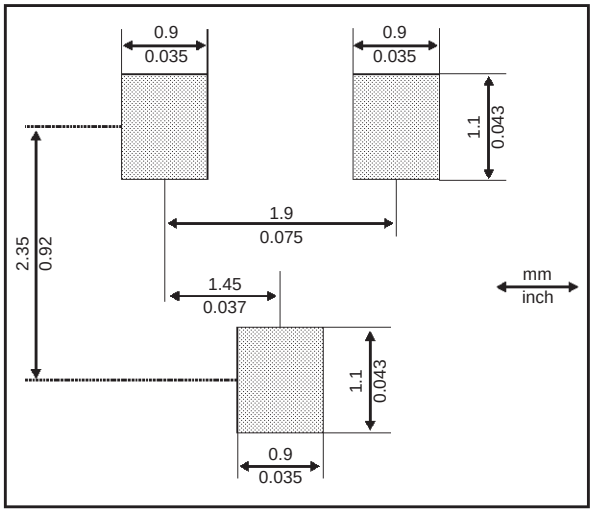
Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54FILM	D86	SOT-23	0.01g	3000	Tape & reel
BAT54AFILM	D84	SOT-23	0.01g	3000	Tape & reel
BAT54CFILM	D87	SOT-23	0.01g	3000	Tape & reel
BAT54SFILM	D88	SOT-23	0.01g	3000	Tape & reel

- Epoxy meets UL94,V0

FOOTPRINT DIMENSIONS

COMPATIBLE SOT-23 / SC-59

(in millimeters and inches)



OPTIMIZED SOT-23 FOOTPRINT DIMENSIONS

(in millimeters and inches)