BAT74

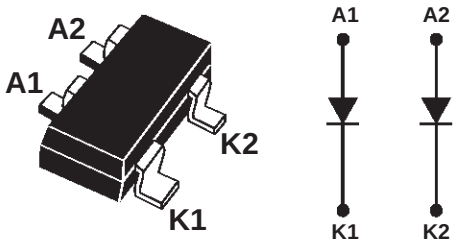
SMALL SIGNAL SCHOTTKY DIODE

FEATURES AND BENEFITS

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

DESCRIPTION

Two separate Schottky barrier diodes encapsulated in a SOT-143 small SMD package.



SOT-143

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
I_{FRM}	Repetitive peak forward current $\delta = 0.33$		0.5	A
I_{FSM}	Surge non repetitive forward current (tp=10ms sinusoidal)		1	A
P_{tot}	Power Dissipation (note 1)	$T_{amb} = 50°C$	250	mW
T_{stg}	Maximum storage temperature range		- 65 to +150	°C
Tj	Maximum operating junction temperature *		150	°C
TL	Maximum temperature for soldering during 10s		260	°C

Note 1: 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 (*)	400	°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.

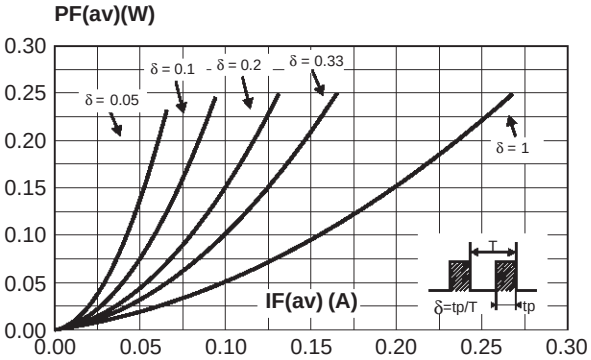


Fig.2 : Average forward current versus ambient temperature (δ = 0.33).

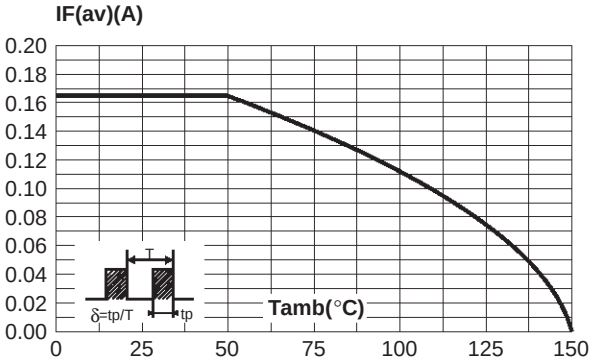


Fig.3 : Non repetitive surge peak forward current versus overload duration (maximum values).

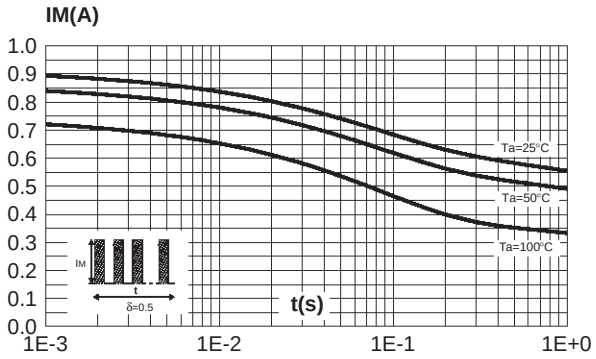


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).

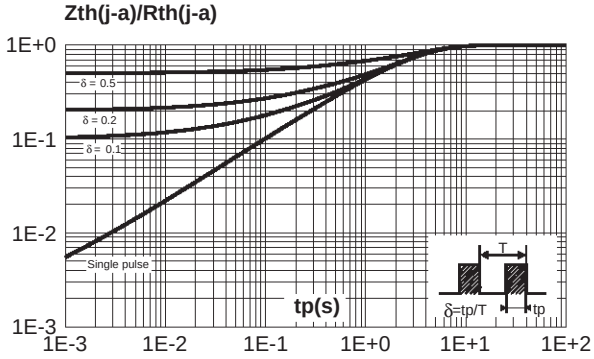


Fig.5 : Reverse leakage current versus reverse voltage applied (typical values).

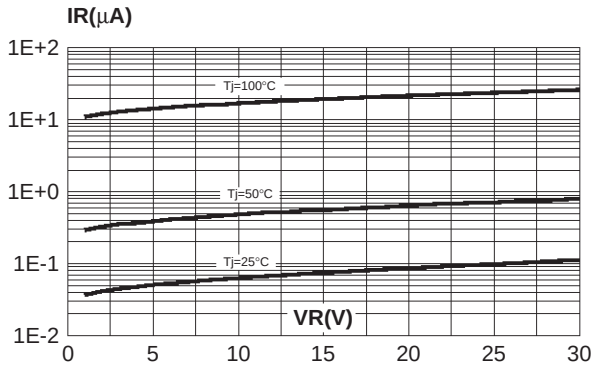


Fig.6 : Junction capacitance versus reverse voltage applied.

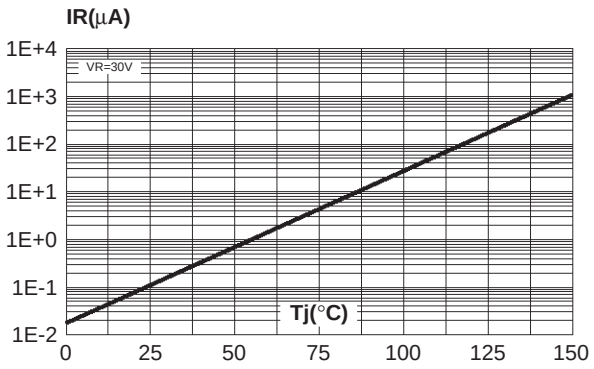


Fig.7 : Junction capacitance versus reverse voltage applied (typical values).

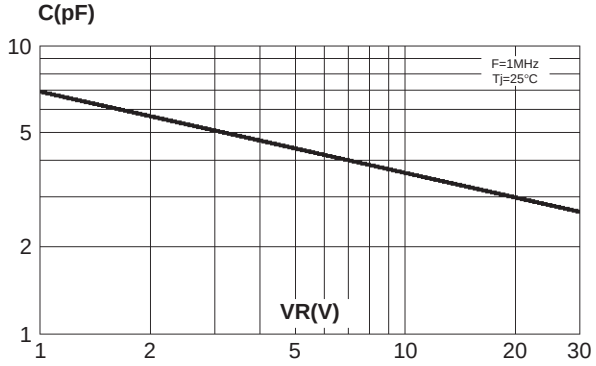
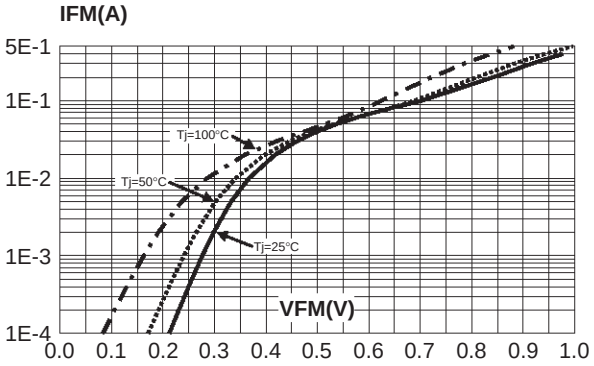
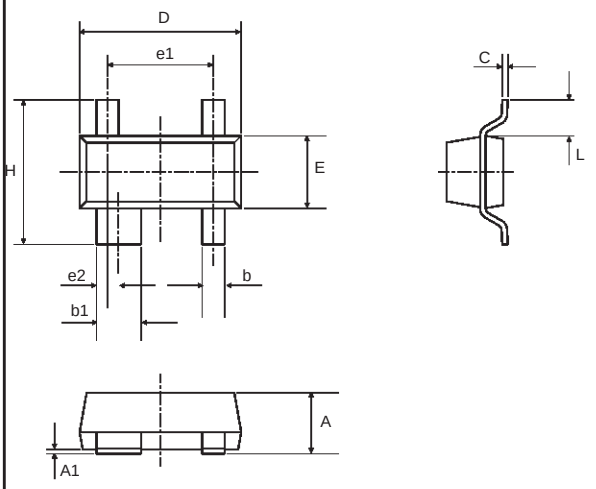


Fig.8 : Forward voltage drop versus forward current (typical values).



PACKAGE MECHANICAL DATA

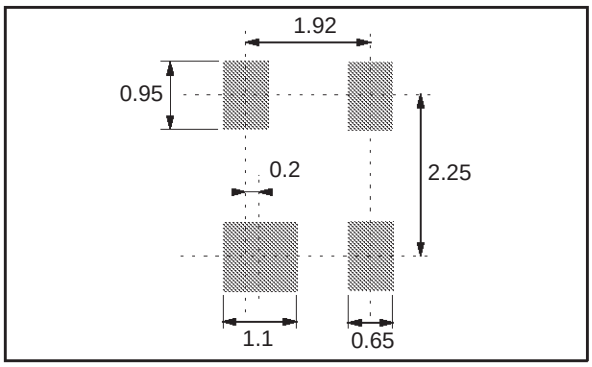
SOT-143



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.89		1.12	0.350		0.441
A1	0.013		0.1	0.005		0.039
B	0.76		0.94	0.299		0.370
B1	0.37		0.51	0.146		0.201
C	0.085		0.18	0.033		0.071
D	2.8		3.04	1.102		1.197
E	1.2		1.4	0.472		0.551
e1	1.92 BSC			0.756 BSC		
e2	0.2 BSC			0.0787 BSC		
H	2.1		2.64	0.827		1.039
S	0.55 ref			0.217 ref		

FOOTPRINT DIMENSIONS

(in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT74	D89	SOT-143	0.01g	3000	Tape & reel

■ Epoxy meets UL94,V0