



# BAT74

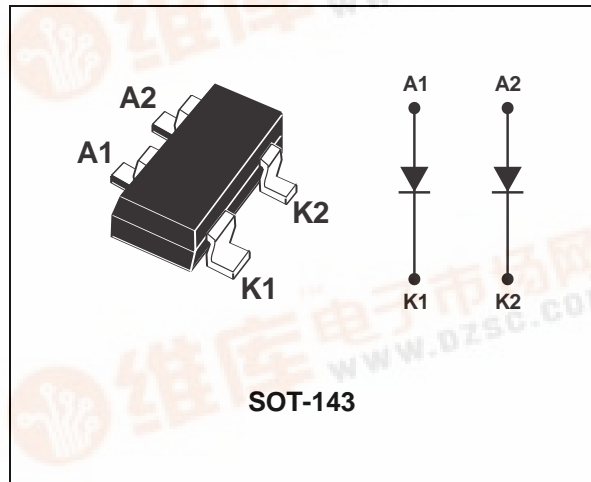
## SMALL SIGNAL SCHOTTKY DIODE

### 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.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		30	V
I <sub>FRM</sub>	Repetitive peak forward current δ = 0.33		0.5	A
I <sub>FSM</sub>	Surge non repetitive forward current (tp=10ms sinusoidal)		1	A
P <sub>tot</sub>	Power Dissipation (note 1)	T <sub>amb</sub> = 50°C	250	mW
T <sub>stg</sub>	Maximum storage temperature range		- 65 to +150	°C
T <sub>j</sub>	Maximum operating junction temperature *		150	°C
TL	Maximum temperature for soldering during 10s		260	°C

Note 1: P<sub>tot</sub> 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 (*)	400	$^{\circ}\text{C/W}$

(\*) 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	

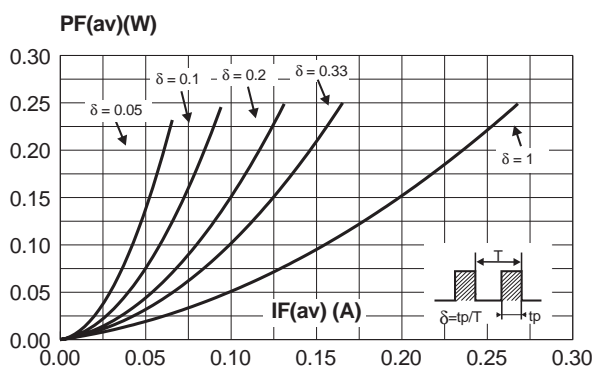
Pulse test: \*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

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

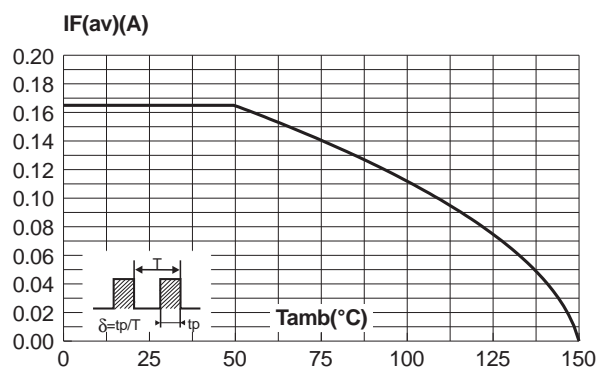
### DYNAMIC CHARACTERISTICS ( $T_j = 25^{\circ}\text{C}$ )

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

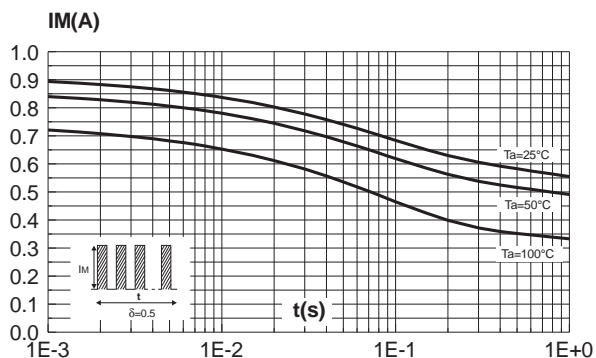
**Fig.1** : Average forward power dissipation versus average forward current.



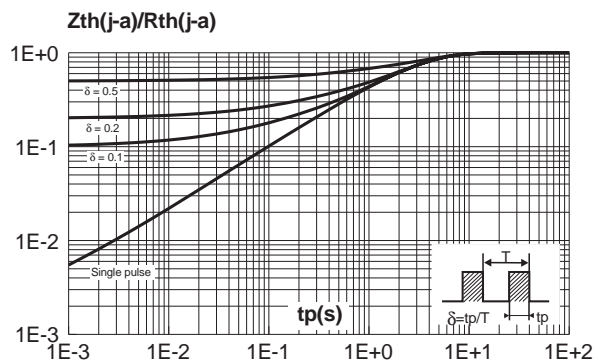
**Fig.2** : Average forward current versus ambient temperature ( $\delta = 0.33$ ).



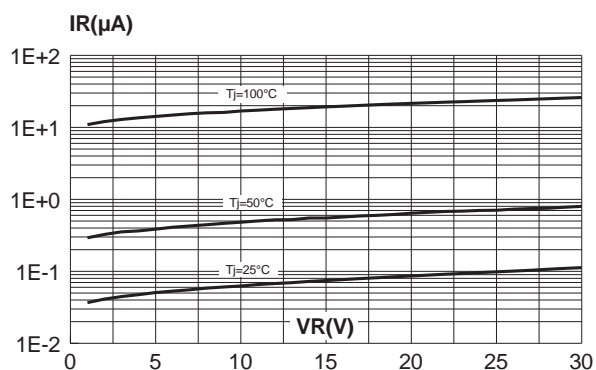
**Fig.3** : Non repetitive surge peak forward current versus overload duration (maximum values).



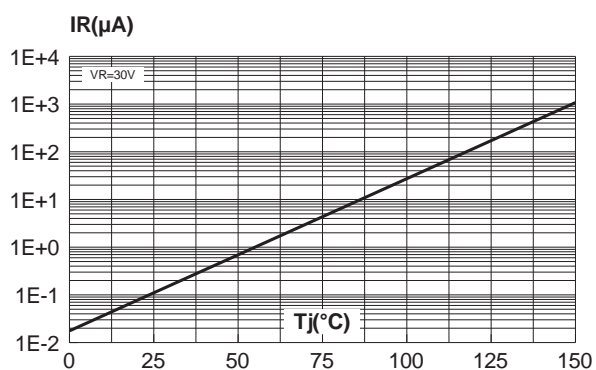
**Fig.4** : Relative variation of thermal impedance junction to case versus pulse duration (alumine substrate 10mm x 8mm x 0.5mm).



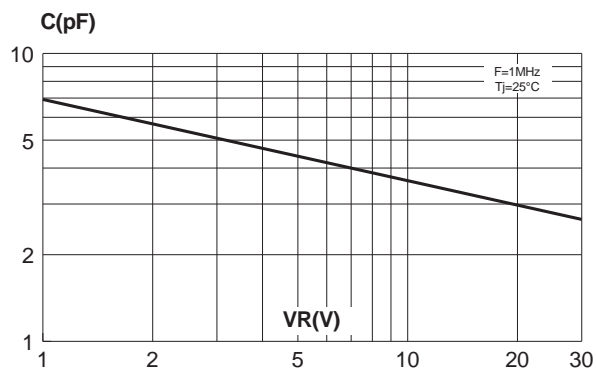
**Fig.5** : Reverse leakage current versus reverse voltage applied (typical values).



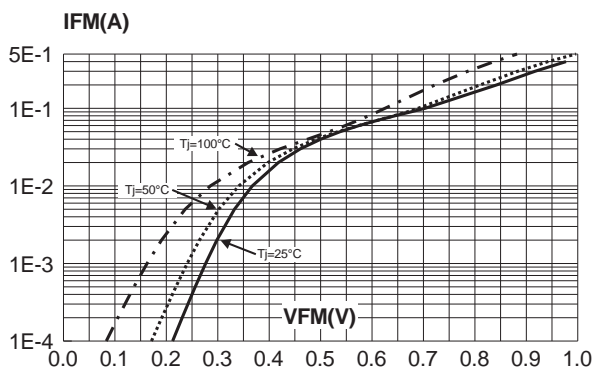
**Fig.6** : Junction capacitance versus reverse voltage applied.



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



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



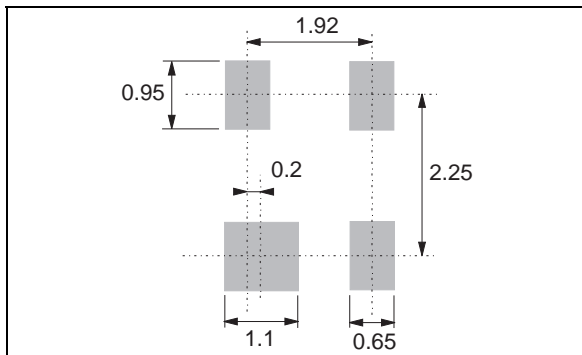
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### PACKAGE MECHANICAL DATA SOT-143

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

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