



# BAT54J / W / AW / CW / SW

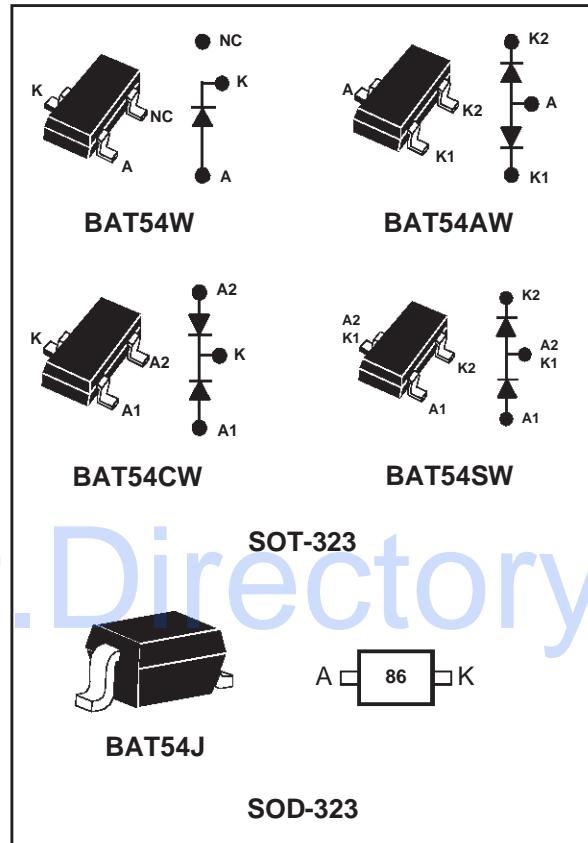
## SMALL SIGNAL SCHOTTKY DIODE

### FEATURES AND BENEFITS

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

### DESCRIPTION

Schottky barrier diodes encapsulated either in SOT-323 or SOD-323 small SMD packages.  
Single and double diodes with different pinning are available.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage	30	V
I <sub>F</sub>	Continuous forward current	0.3	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> = 25°C	SOD-323 230	mW
	SOT-323		
T <sub>stg</sub>	Maximum storage temperature range	- 65 to +150	°C
T <sub>j</sub>	Maximum operating junction temperature *	150	°C
T <sub>L</sub>	Maximum temperature for soldering during 10s	260	°C

Note 1: for double diodes, P<sub>tot</sub> is the total dissipation of both diodes

$$* : \frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)} \text{ thermal runaway condition for a diode on its own heatsink}$$

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### THERMAL RESISTANCE

Symbol	Parameters	Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	SOD-323	550
		SOT-323	°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	

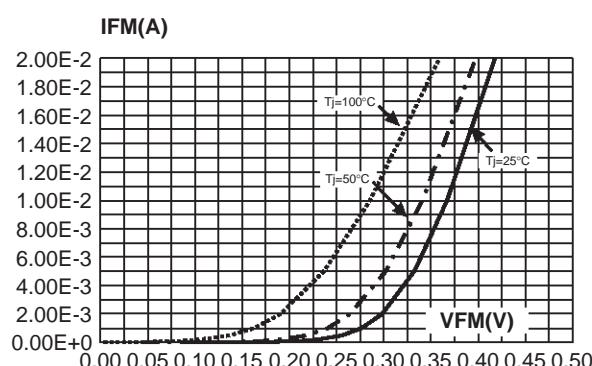
Pulse test : \*  $t_p = 380 \mu\text{s}, \delta < 2\%$

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

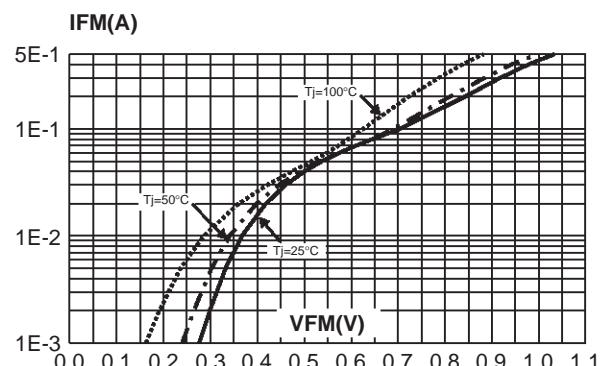
### DYNAMIC CHARACTERISTICS ( $T_j = 25^\circ\text{C}$ )

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	$T_j = 25^\circ\text{C} \quad V_R = 1 \text{ V} \quad F = 1 \text{ MHz}$			10	pF
$t_{rr}$	Reverse recovery time	$I_F = 10 \text{ mA} \quad I_R = 10 \text{ mA} \quad T_j = 25^\circ\text{C}$ $I_{rr} = 1 \text{ mA} \quad R_L = 100 \Omega$			5	ns

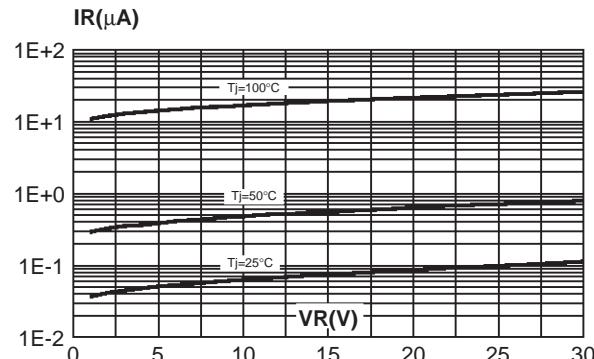
**Fig. 1-1:** Forward voltage drop versus forward current (typical values, low level).



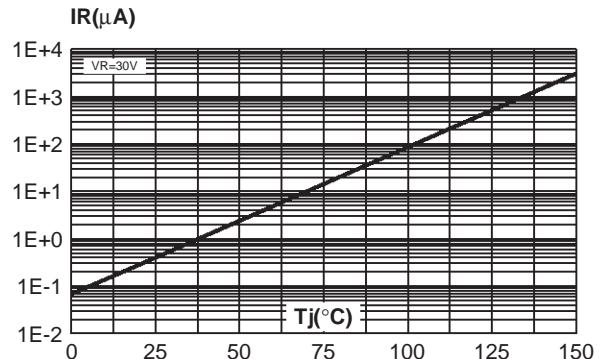
**Fig. 1-2:** Forward voltage drop versus forward current (typical values, high level).



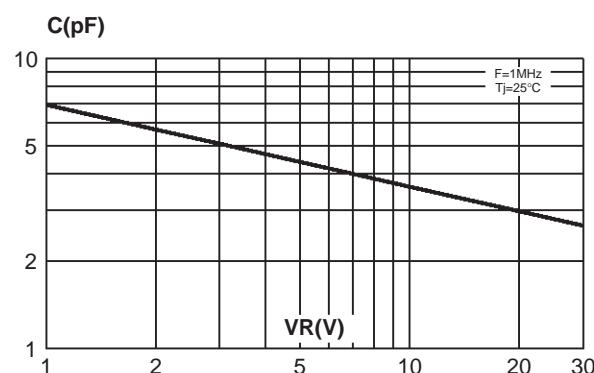
**Fig. 2:** Reverse leakage current versus reverse voltage applied (typical values).



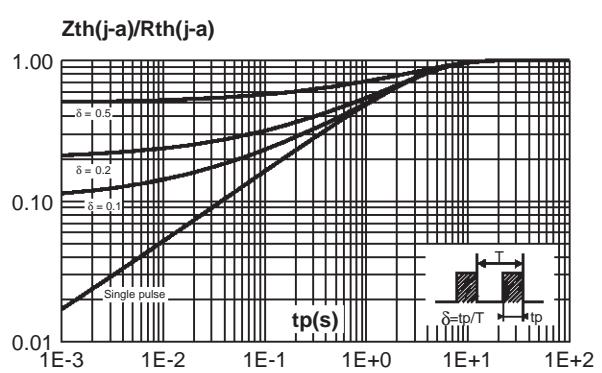
**Fig. 3:** Reverse leakage current versus junction temperature.



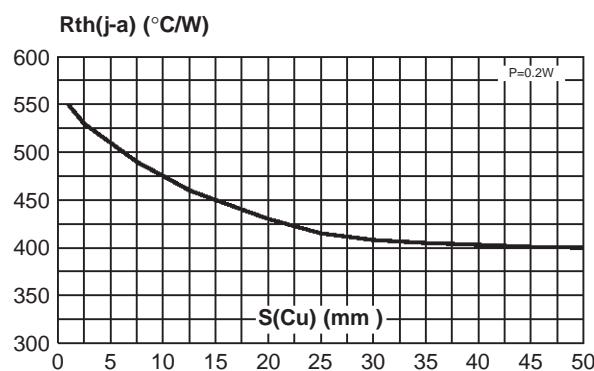
**Fig. 4:** Junction capacitance versus reverse voltage applied (typical values).



**Fig. 5:** Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout,  $e(Cu)=35\mu m$ )



**Fig. 6:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35μm.)

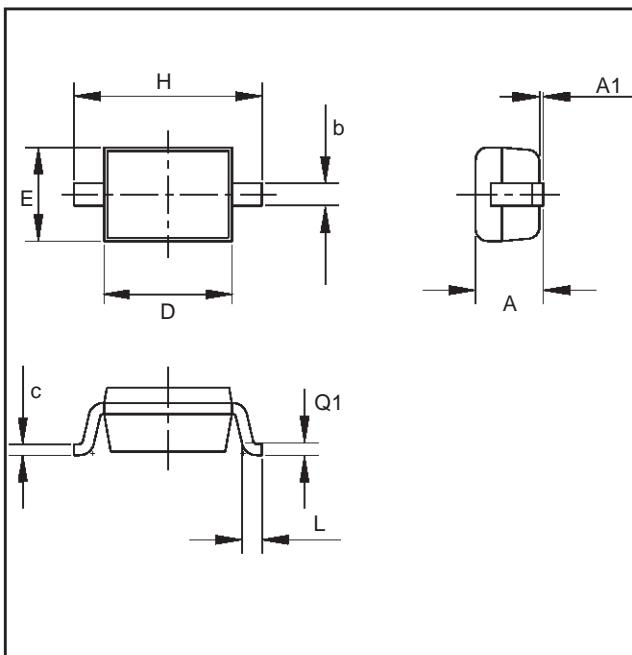


## BAT54J / W / AW / CW / SW

### PACKAGE MECHANICAL DATA SOT-323

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.8		1.1	0.031		0.043
A1	0.0		0.1	0.0		0.004
b	0.25		0.4	0.010		0.016
c	0.1		0.26	0.004		0.010
D	1.8	2.0	2.2	0.071	0.079	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e		0.65			0.026	
H	1.8	2.1	2.4	0.071	0.083	0.094
L	0.1	0.2	0.3	0.004	0.008	0.012
θ	0		30°	0		30°

**PACKAGE MECHANICAL DATA**  
SOD-323



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1	0	0.1	0	0.004
b	0.25	0.44	0.01	0.017
c	0.1	0.25	0.004	0.01
D	1.52	1.8	0.06	0.071
E	1.11	1.45	0.044	0.057
H	2.3	2.7	0.09	0.106
L	0.1	0.46	0.004	0.02
Q1	0.1	0.41	0.004	0.016

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54W	D73	SOT-323	0.006g	3000	Tape & reel
BAT54AW	D74	SOT-323	0.006g	3000	Tape & reel
BAT54CW	D77	SOT-323	0.006g	3000	Tape & reel
BAT54SW	D78	SOT-323	0.006g	3000	Tape & reel
BAT54J	86	SOD-323	0.005g	3000	Tape & reel

■ Epoxy meets UL94,V0

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