



BAT54J / W / AW / CW / SW

SMALL SIGNAL SCHOTTKY DIODE

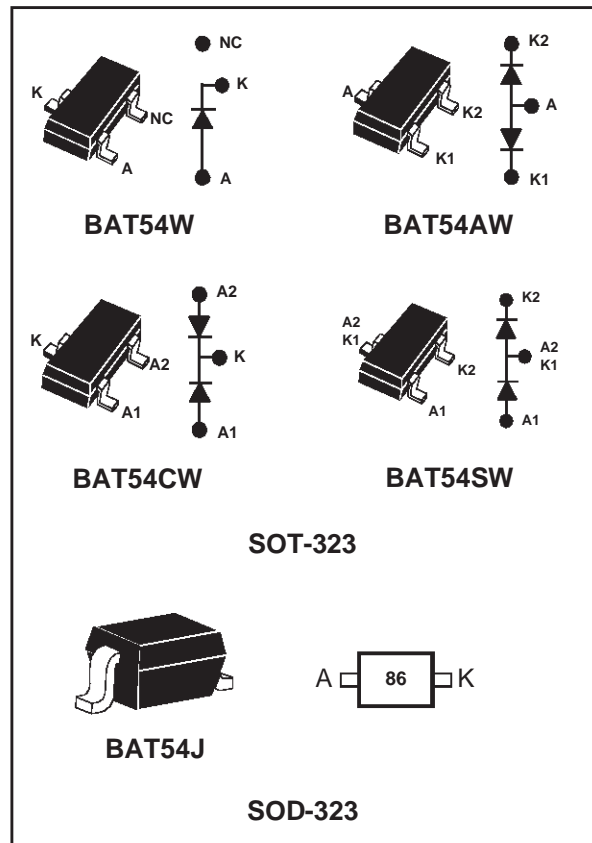
FEATURES AND BENEFITS

- 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_{RRM}	Repetitive peak reverse voltage		30	V
I_F	Continuous forward current		0.3	A
I_{FSM}	Surge non repetitive forward current	$t_p=10ms$ sinusoidal	1	A
P_{tot}	Power dissipation (note 1) $T_{amb} = 25^\circ C$	SOD-323	230	mW
		SOT-323		
T_{stg}	Maximum storage temperature range		- 65 to +150	$^\circ C$
T_j	Maximum operating junction temperature *		150	$^\circ C$
T_L	Maximum temperature for soldering during 10s		260	$^\circ C$

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

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THERMAL RESISTANCE

Symbol	Parameters		Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	SOD-323	550	°C/W
		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	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. 1-1: Forward voltage drop versus forward current (typical values, low level).

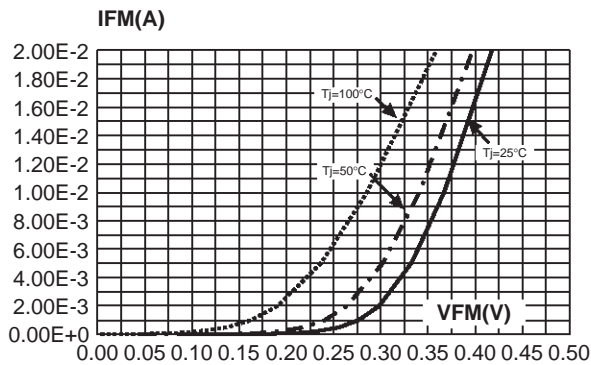


Fig. 1-2: Forward voltage drop versus forward current (typical values, high level).

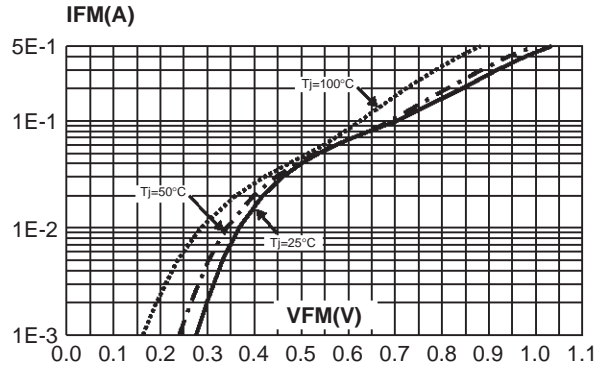


Fig. 2: Reverse leakage current versus reverse voltage applied (typical values).

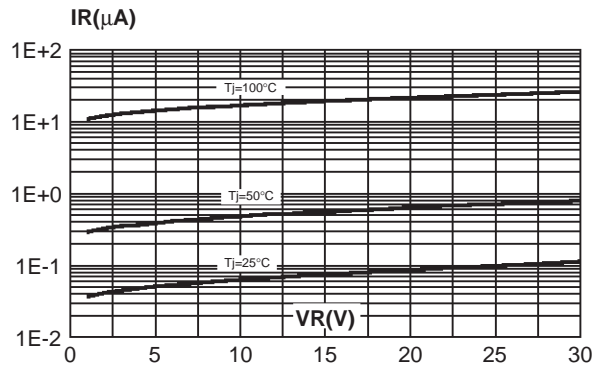


Fig. 3: Reverse leakage current versus junction temperature.

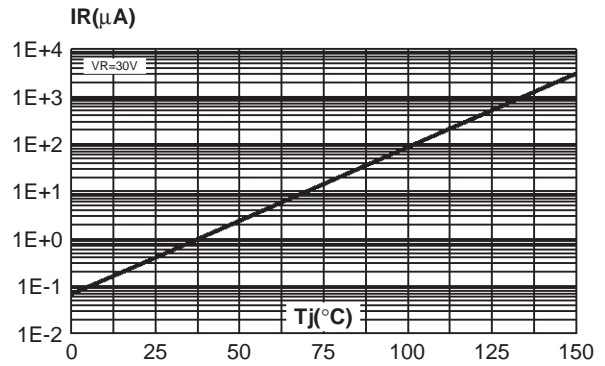


Fig. 4: Junction capacitance versus reverse voltage applied (typical values).

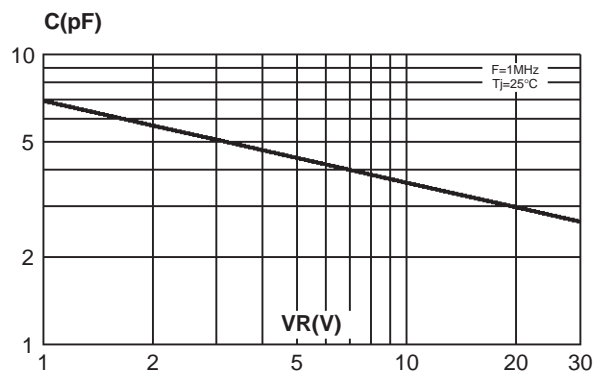


Fig. 5: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout, $e(Cu) = 35\mu m$)

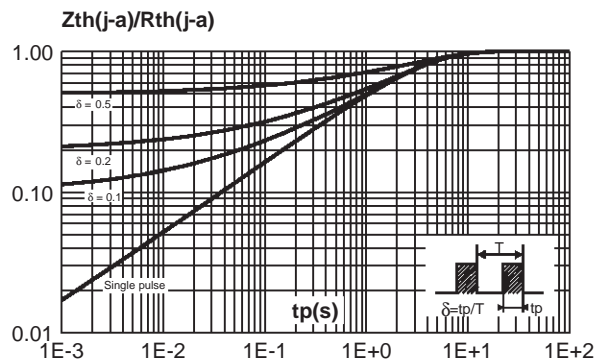
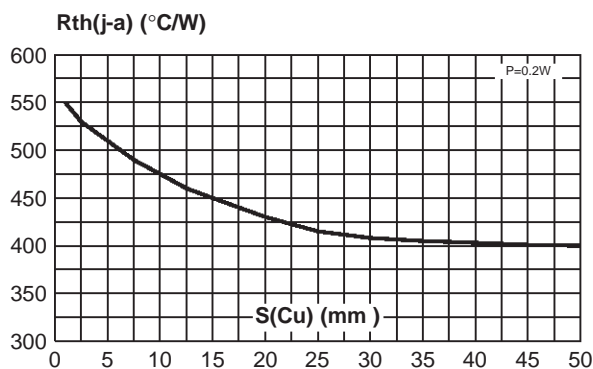
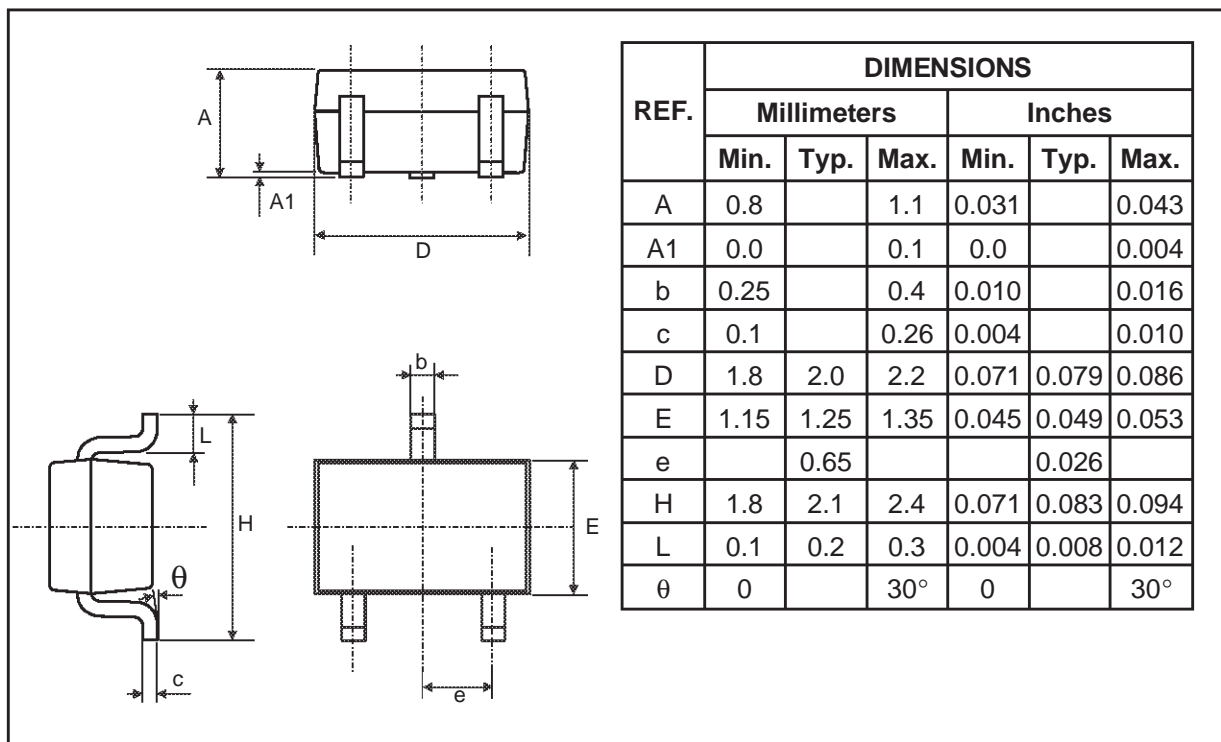


Fig. 6: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: $35\mu m$.)

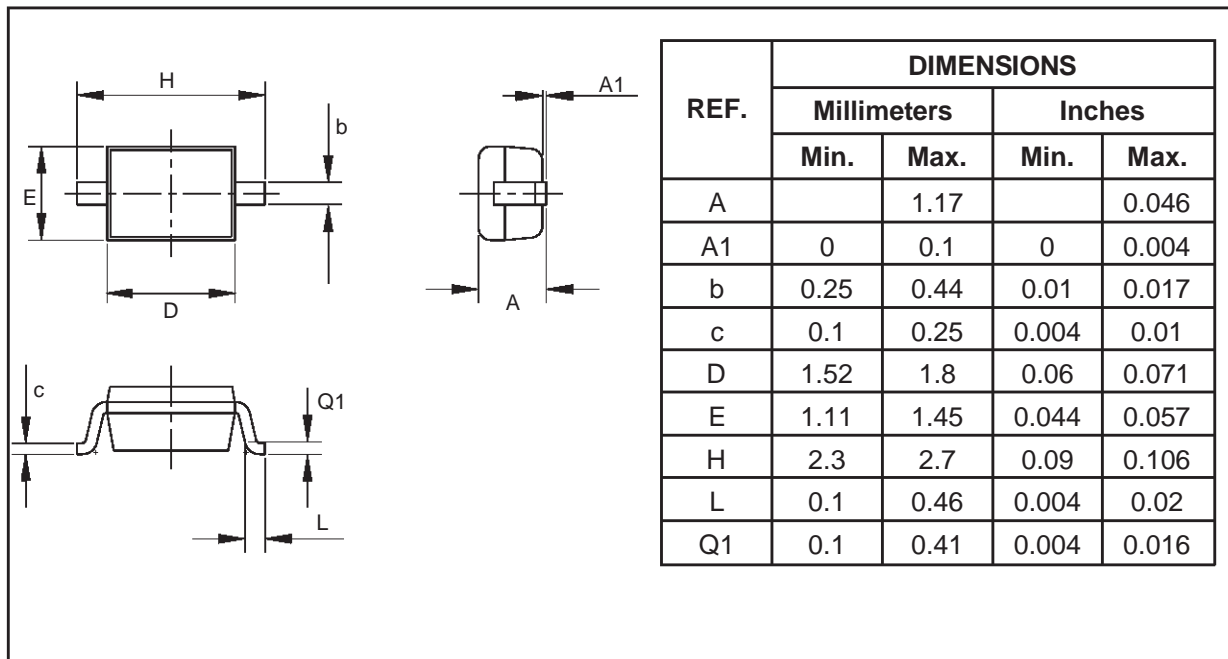


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PACKAGE MECHANICAL DATA
SOT-323



PACKAGE MECHANICAL DATA
SOD-323



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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