



# BAT54J / W / AW / CW / SW

## SMALL SIGNAL SCHOTTKY DIODE

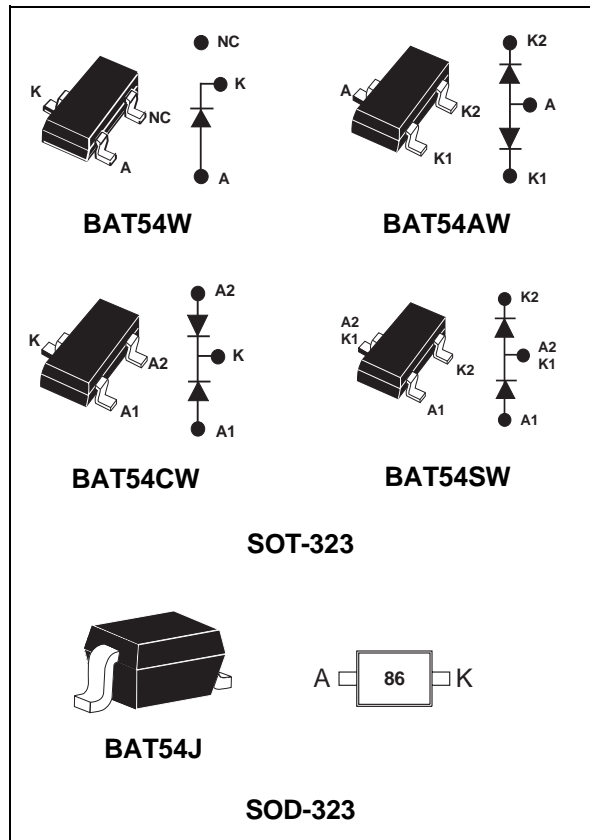
### FEATURES AND BENEFITS

- 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 <sub>th(j-a)</sub>	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 <sub>F</sub> *	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 0.1 mA			240	mV
			I <sub>F</sub> = 1 mA			320	
			I <sub>F</sub> = 10 mA			400	
			I <sub>F</sub> = 30 mA			500	
			I <sub>F</sub> = 100 mA			900	
I <sub>R</sub> **	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = 30 V			1	μA
		T <sub>j</sub> = 100°C				100	

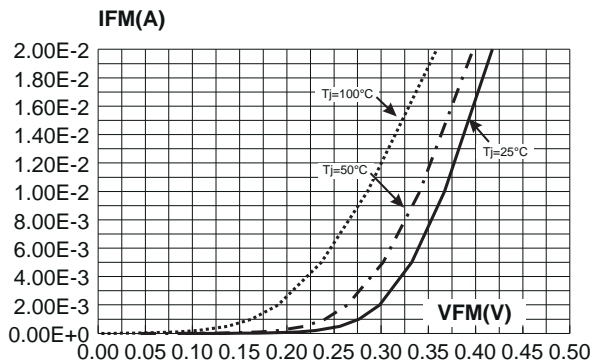
Pulse test : \* t<sub>p</sub> = 380 μs, δ < 2%

\*\* t<sub>p</sub> = 5 ms, δ < 2%

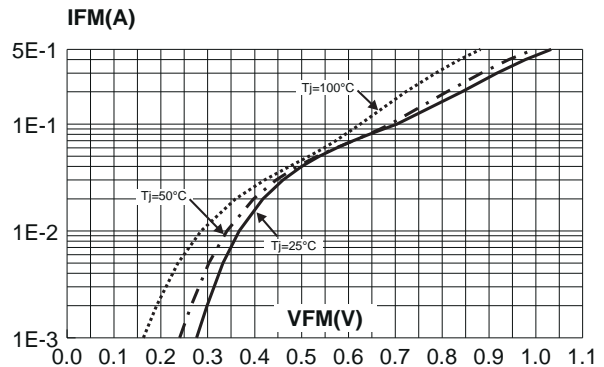
## DYNAMIC CHARACTERISTICS (T<sub>j</sub> = 25 °C)

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	T <sub>j</sub> = 25°C V <sub>R</sub> = 1 V F = 1 MHz			10	pF
t <sub>rr</sub>	Reverse recovery time	I <sub>F</sub> = 10 mA I <sub>R</sub> = 10 mA T <sub>j</sub> = 25°C I <sub>rr</sub> = 1 mA R <sub>L</sub> = 100 Ω			5	ns

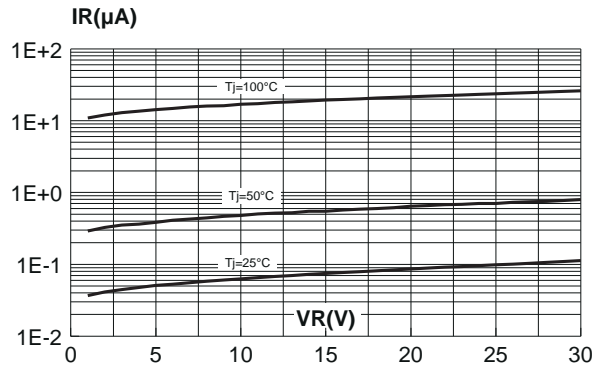
**Fig. 1-1:** Forward voltage drop versus forward current (typical values, low level).



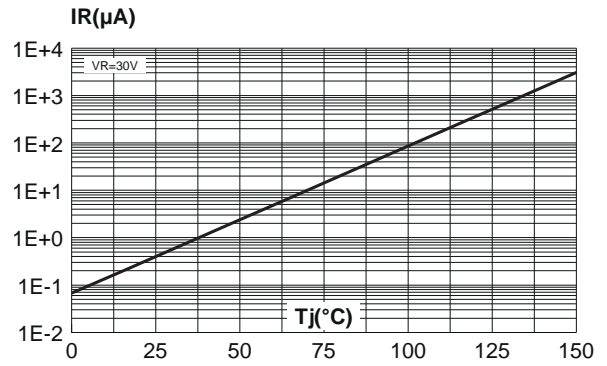
**Fig. 1-2:** Forward voltage drop versus forward current (typical values, high level).



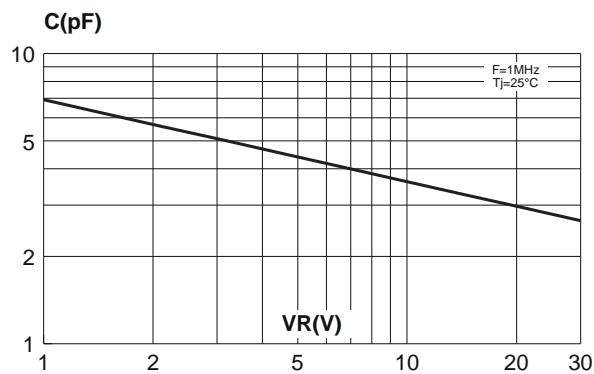
**Fig. 2:** Reverse leakage current versus reverse voltage applied (typical values).



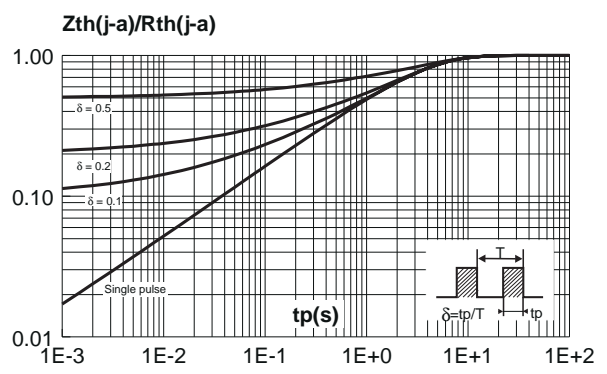
**Fig. 3:** Reverse leakage current versus junction temperature.



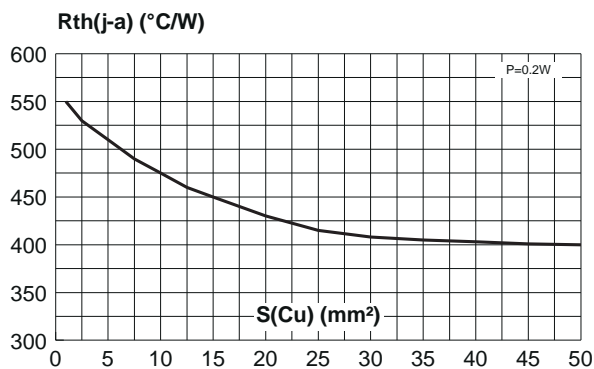
**Fig. 4:** Junction capacitance versus reverse voltage applied (typical values).



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

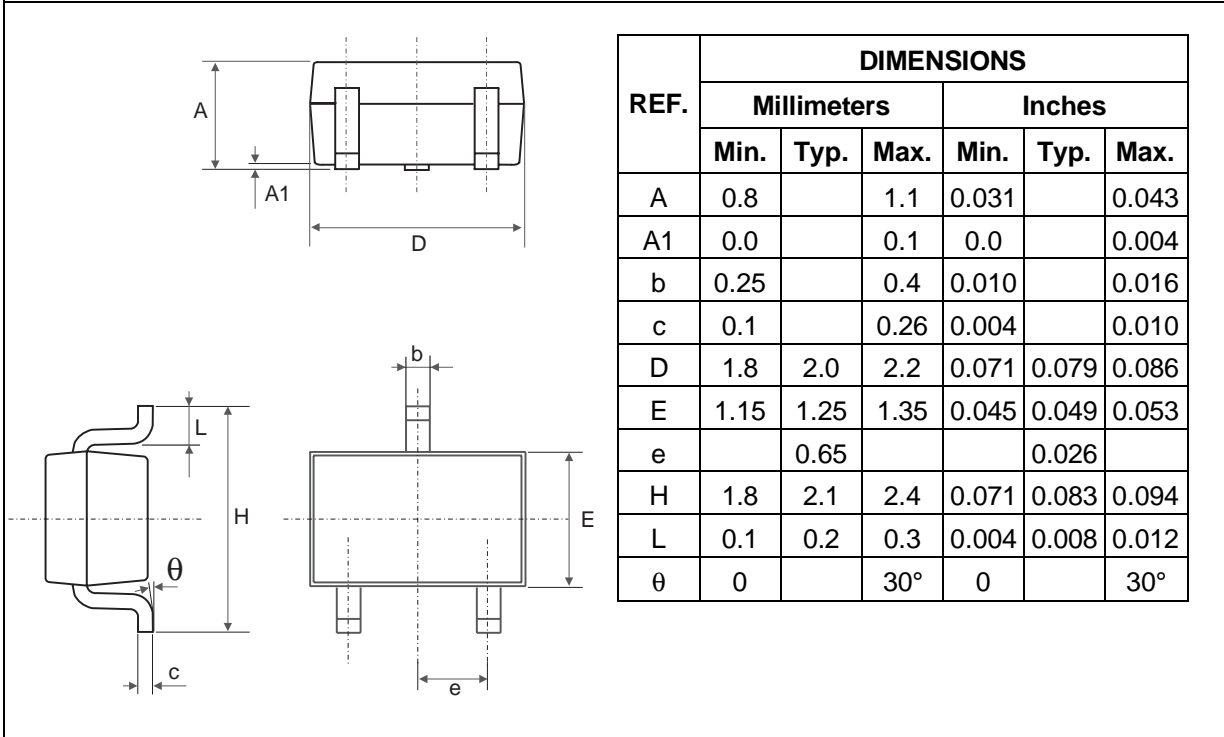


**Fig. 6:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness:  $35\mu m$ .)

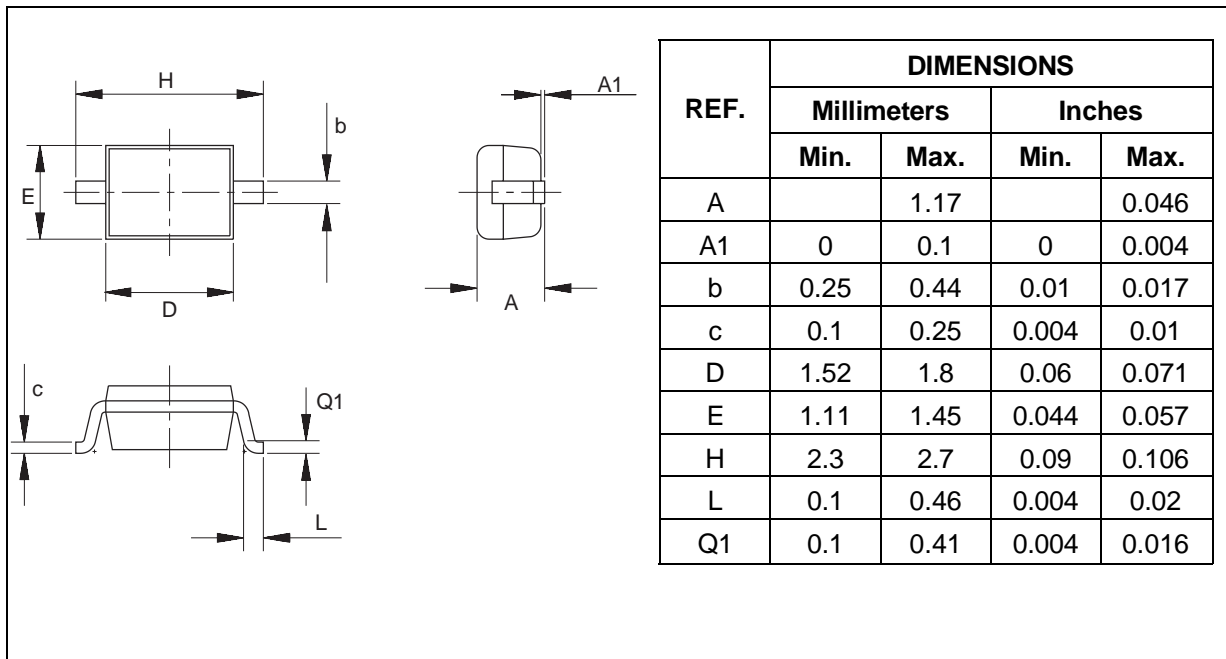


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**PACKAGE MECHANICAL DATA**  
SOT-323



**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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