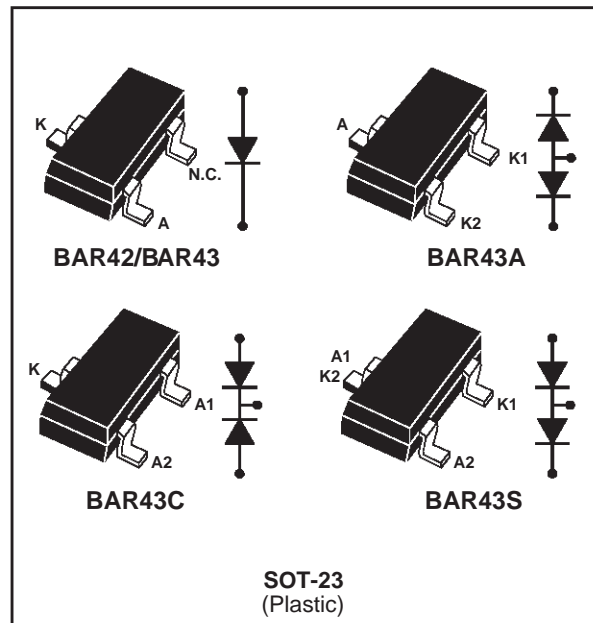


## SMALL SIGNAL SCHOTTKY DIODES

### DESCRIPTION

General purpose metal to silicon diodes featuring very low turn-on voltage and fast switching.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		30	V
$I_F$	Continuous forward current		100	mA
$I_{FSM}$	Surge non repetitive forward current	$t_p=10ms$ sinusoidal	750	mA
$P_{tot}$	Power dissipation (note 1)	$T_{amb} = 25^\circ C$	250	mW
$T_{stg}$	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 power dissipation of both diodes.

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

### THERMAL RESISTANCE

Symbol	Test conditions	Value	Unit
$R_{th(j-a)}$	Junction-ambient *	500	$^\circ C/W$

\* Mounted on epoxy board with recommended pad layout.

# BAR 42/BAR 43, A, C, S

## ELECTRICAL CHARACTERISTICS

### STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit	
$V_{BR}$	$T_j = 25^\circ\text{C}$	$I_R = 100\mu\text{A}$	30			V	
$V_F^*$	$T_j = 25^\circ\text{C}$	BAR 42	$I_F = 10\text{ mA}$		0.35	0.4	V
			$I_F = 50\text{ mA}$		0.5	0.65	
		BAR 43	$I_F = 2\text{ mA}$	0.26		0.33	
			$I_F = 15\text{ mA}$			0.45	
$I_R^{**}$	$T_j = 25^\circ\text{C}$	$V_R = 25\text{V}$			500	nA	
	$T_j = 100^\circ\text{C}$				100	$\mu\text{A}$	

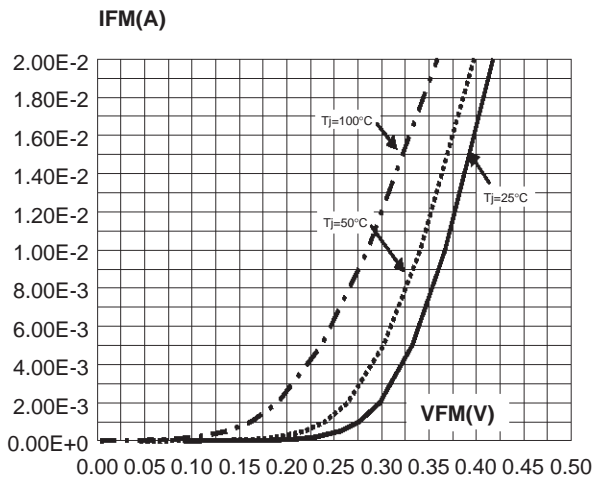
Pulse test: \*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

### DYNAMIC CHARACTERISTICS

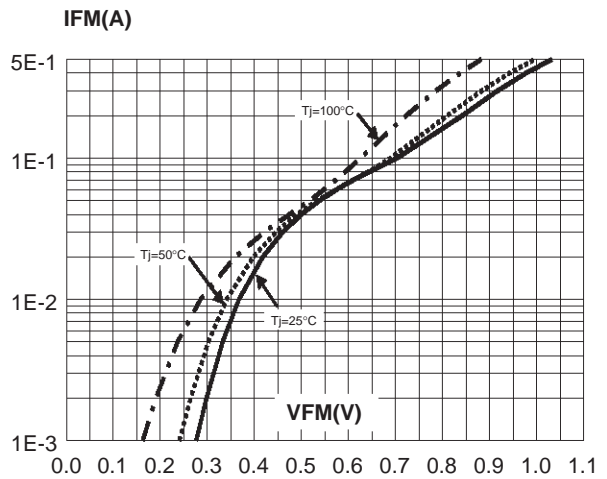
Symbol	Test Conditions			Min.	Typ.	Max.	Unit
C	$T_j = 25^\circ\text{C}$	$V_R = 1\text{V}$	$F = 1\text{MHz}$		7		pF
$t_{rr}$	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ mA}$ $I_{rr} = 1\text{ mA}$	$R_L = 100\ \Omega$			5	ns
$\eta^*$	$T_j = 25^\circ\text{C}$	$R_L = 50\ \text{K}\Omega$ $V_i = 2\text{V}$	$C_L = 300\ \text{pF}$ for BAR 43	80			%

\* Detection efficiency.

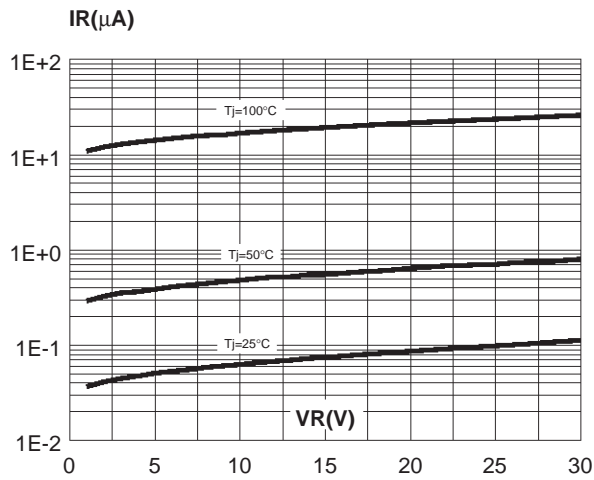
**Fig. 1-1:** Forward voltage drop versus forward current (typical values, low level).



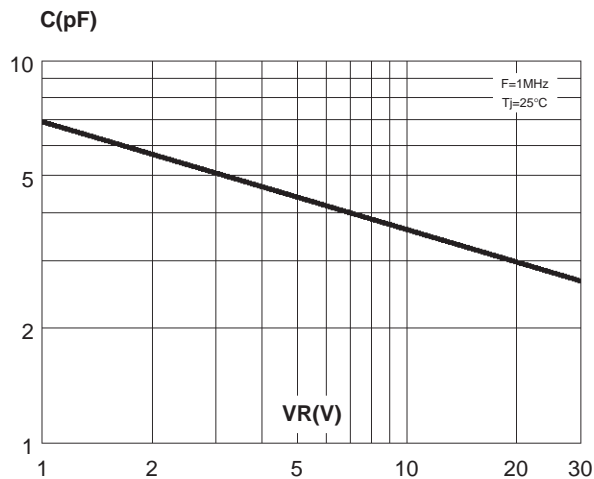
**Fig. 1-2:** Forward voltage drop versus forward current (typical values, high level).



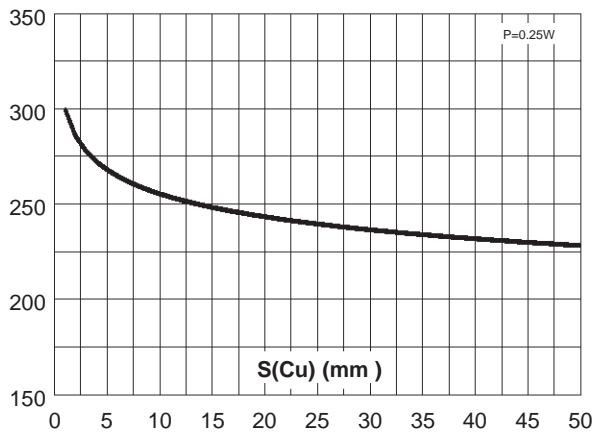
**Fig. 2:** Reverse leakage current versus reverse voltage applied (typical values).



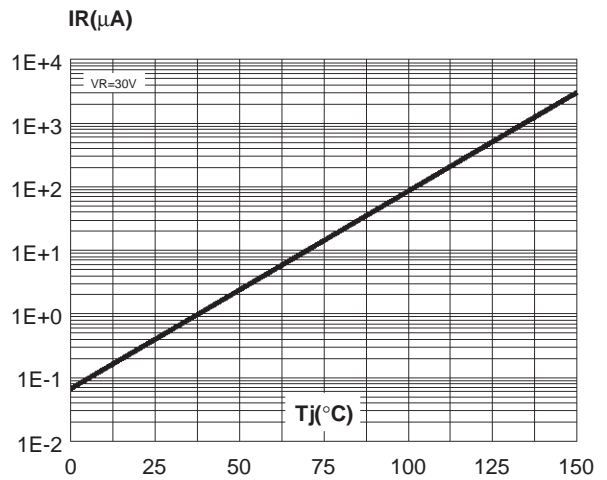
**Fig. 4:** Junction capacitance versus reverse voltage applied (typical values).



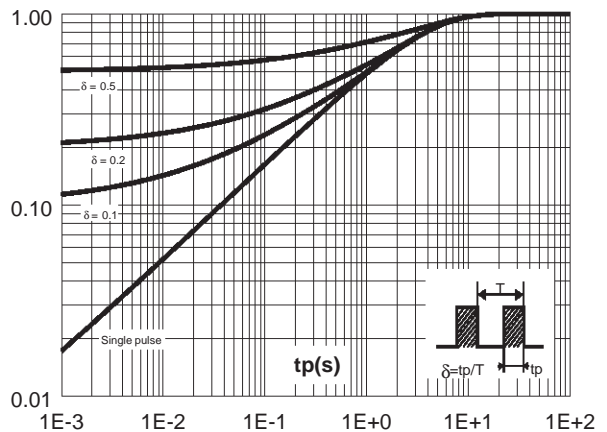
**Fig. 6:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness:  $35\mu m$ ).  
 $R_{th}(j-a)$  ( $^\circ C/W$ )



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



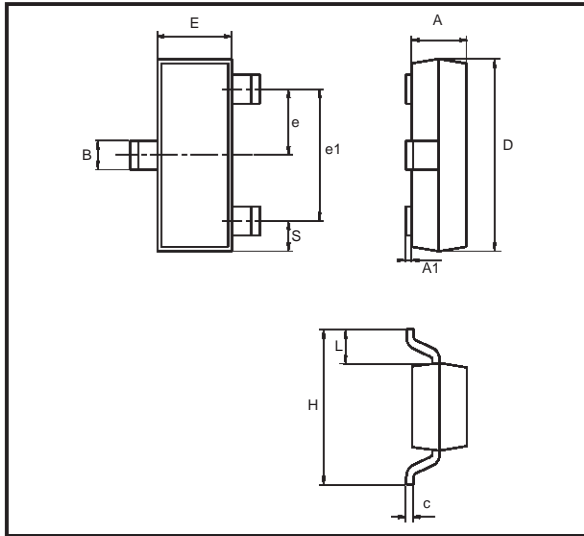
**Fig. 5:** Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout,  $e(Cu) = 35\mu m$ ).  
 $Z_{th}(j-a)/R_{th}(j-a)$



## BAR 42/BAR 43, A, C, S

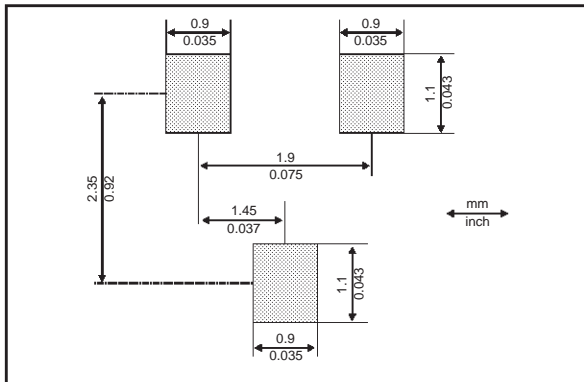
### PACKAGE MECHANICAL DATA

SOT 23 (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.89	1.4	0.035	0.055
A1	0	0.1	0	0.004
B	0.3	0.51	0.012	0.02
c	0.085	0.18	0.003	0.007
D	2.75	3.04	0.108	0.12
e	0.85	1.05	0.033	0.041
e1	1.7	2.1	0.067	0.083
E	1.2	1.6	0.047	0.063
H	2.1	2.75	0.083	0.108
L	0.6 typ.		0.024 typ.	
S	0.35	0.65	0.014	0.026

### FOOT PRINT DIMENSIONS



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAR42	D94	SOT-23	0.01g	3000	Tape & reel
BAR43	D95	SOT-23	0.01g	3000	Tape & reel
BAR43S	DB1	SOT-23	0.01g	3000	Tape & reel
BAR43C	DB2	SOT-23	0.01g	3000	Tape & reel
BAR43S	DA5	SOT-23	0.01g	3000	Tape & reel

Epoxy meets UL94, V0

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