

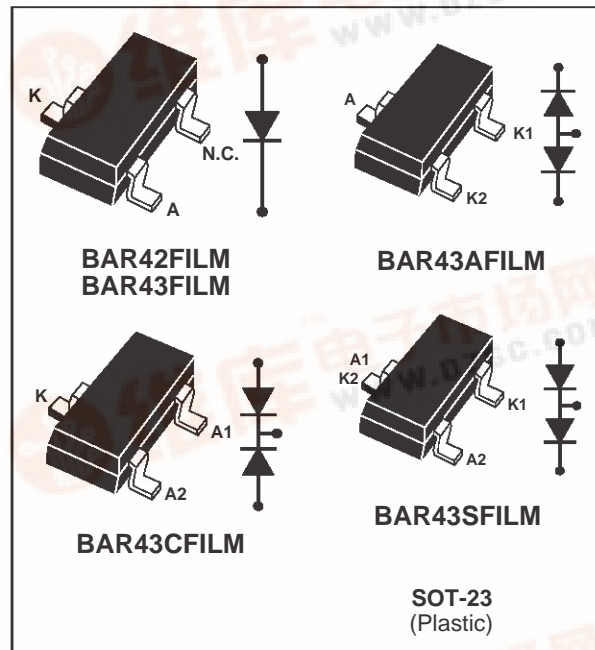


# BAR42FILM BAR43/A/C/SFILM

## 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 <sub>R</sub> RM	Repetitive peak reverse voltage		30	V
I <sub>F</sub>	Continuous forward current		100	mA
I <sub>F</sub> SM	Surge non repetitive forward current	tp=10ms sinusoidal	750	mA
P <sub>tot</sub>	Power dissipation (note 1)	T <sub>amb</sub> = 25°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
T <sub>L</sub>	Maximum temperature for soldering during 10s		260	°C

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

### THERMAL RESISTANCE

Symbol	Test conditions	Value	Unit
R <sub>th(j-a)</sub>	Junction-ambient *	500	°C/W

\* Mounted on epoxy board with recommended pad layout.

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## 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 42FILM	$I_F = 10\text{ mA}$	0.35	0.4	V
			$I_F = 50\text{ mA}$	0.5	0.65	
		BAR 43FILM	$I_F = 2\text{ mA}$	0.26	0.33	
			$I_F = 15\text{ mA}$		0.45	
		All	$I_F = 100\text{ mA}$		1	
$I_R^{**}$	$T_j = 25^\circ\text{C}$	$V_R = 25\text{V}$			500	nA
	$T_j = 100^\circ\text{C}$				100	$\mu\text{A}$

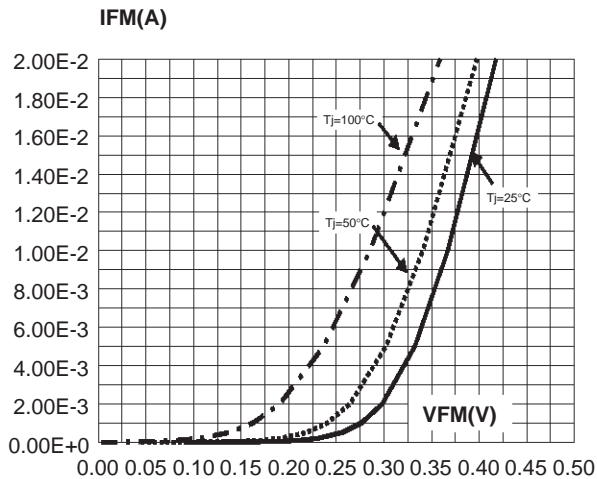
Pulse test: \*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

### DYNAMIC CHARACTERISTICS

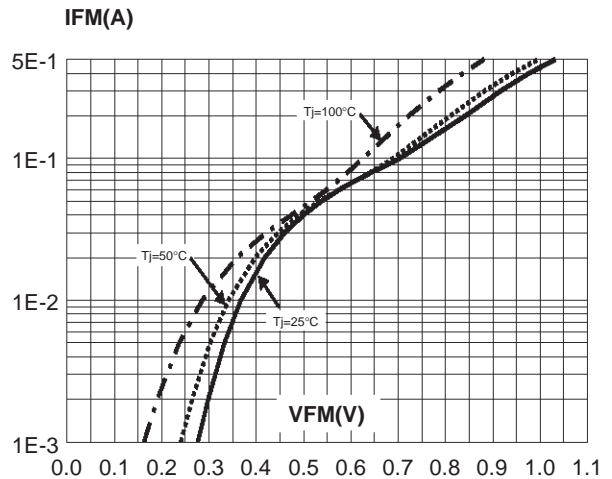
Symbol	Test Conditions		Min.	Typ.	Max.	Unit
C	$T_j = 25^\circ\text{C}$	$V_R = 1\text{V}$ $F = 1\text{MHz}$		7		pF
$t_{rr}$	$T_j = 25^\circ\text{C}$ $I_{rr} = 1\text{mA}$	$I_F = 10\text{ mA}$ $R_L = 100\ \Omega$			5	ns
$\eta^*$	$T_j = 25^\circ\text{C}$ $F = 45\text{Mhz}$	$R_L = 50\text{ K}\Omega$ $V_i = 2\text{V}$	80			%

\* Detection efficiency

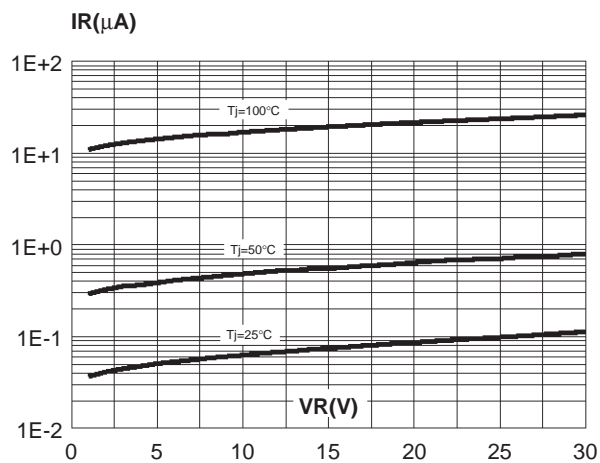
**Fig. 1-1:** Forward voltage drop versus forward current (typical values, low level).



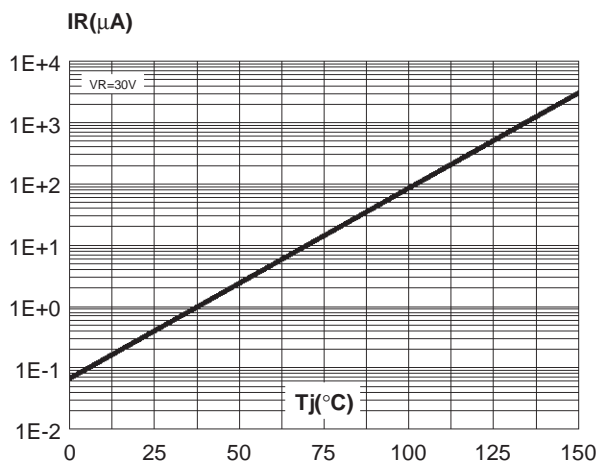
**Fig. 1-2:** Forward voltage drop versus forward current (typical values, high level).



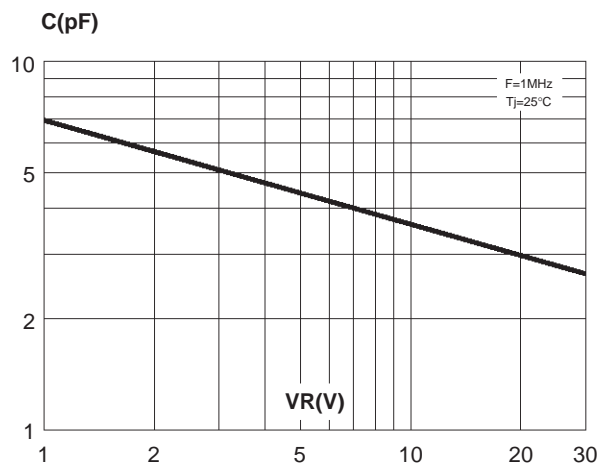
**Fig. 2:** Reverse leakage current versus reverse voltage applied (typical values).



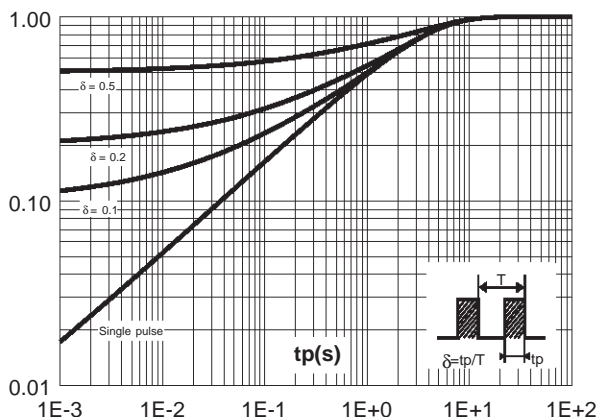
**Fig. 3:** Reverse leakage current versus junction temperature.



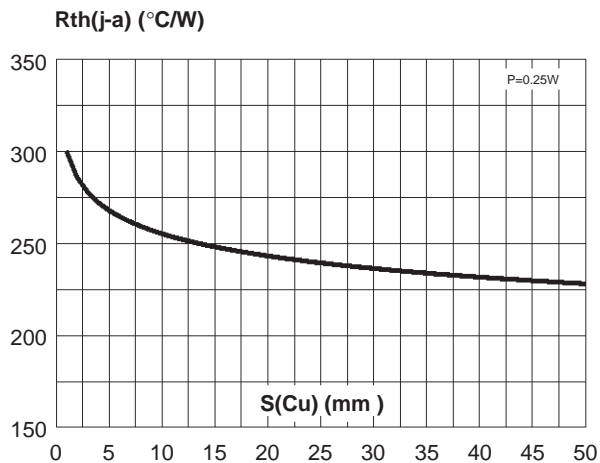
**Fig. 4:** Junction capacitance versus reverse voltage applied (typical values).



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

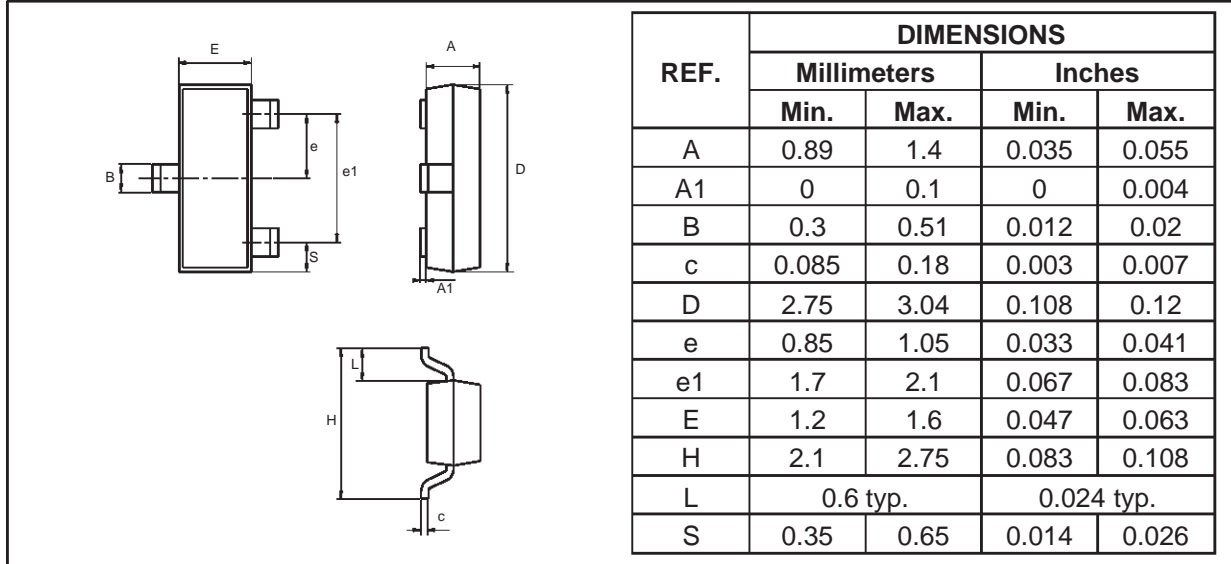


**Fig. 6:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness:  $35\mu m$ ).

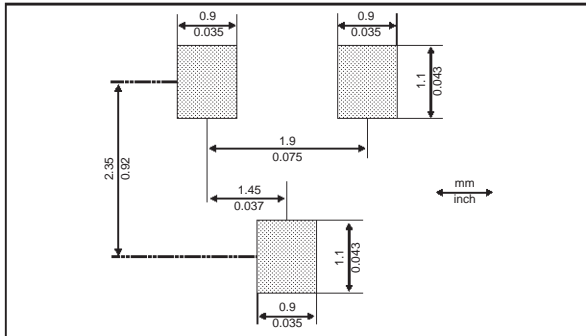


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### PACKAGE MECHANICAL DATA SOT-23 (Plastic)



### FOOT PRINT DIMENSIONS



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAR42FILM	D94	SOT-23	0.01g	3000	Tape & reel
BAR43FILM	D95	SOT-23	0.01g	3000	Tape & reel
BAR43AFILM	DB1	SOT-23	0.01g	3000	Tape & reel
BAR43CFILM	DB2	SOT-23	0.01g	3000	Tape & reel
BAR43SFILM	DA5	SOT-23	0.01g	3000	Tape & reel

Epoxy meets UL94,V0

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