

## SMALL SIGNAL SCHOTTKY DIODE

**Table 1: Main Product Characteristics**

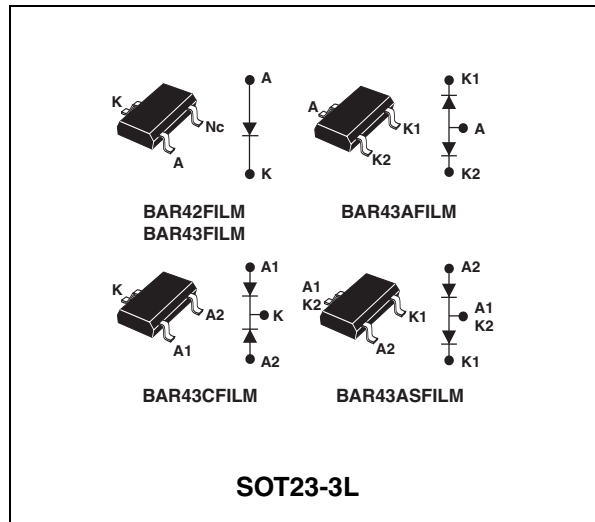
$I_{F(AV)}$	<b>0.1 A</b>
$V_{RRM}$	<b>30 V</b>
$T_j$	<b>150°C</b>
$V_F(max)$	<b>0.33 and 0.40 V</b>

### FEATURES AND BENEFITS

- Very small conduction losses
- Negligible switching losses
- Low forward voltage drop
- Surface mount device

### DESCRIPTION

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



**Table 2: Order Codes**

Part Number	Marking
BAR42FILM	D94
BAR43FILM	D95
BAR43AFILM	DB1
BAR43CFILM	DB2
BAR43SFILM	DA5

**Table 3: Absolute Ratings** (limiting values)

Symbol	Parameter	Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage	30	V	
$I_{F(AV)}$	Continuous forward current	0.1	A	
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10ms$ sinusoidal	0.75	A
$P_{tot}$	Power dissipation (note 1)	$T_{amb} = 25°C$	250	mW
$T_{stg}$	Maximum storage temperature range	-65 to + 150	°C	
$T_j$	Maximum operating junction temperature *	150	°C	
$T_L$	Maximum temperature for soldering during 10s	260	°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

# BAR42FILM / BAR43FILM

**Table 4: Thermal Resistance**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (*)	500	°C/W

(\*) Mounted on epoxy board with recommended pad layout.

**Table 5: Static Electrical Characteristics**

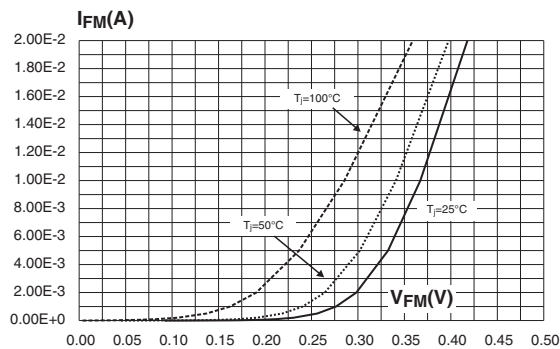
Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit	
$V_{BR}$	Breakdown voltage	$T_j = 25^\circ\text{C}$	$I_R = 100\mu\text{A}$	30			V	
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			500	nA	
		$T_j = 100^\circ\text{C}$				100	$\mu\text{A}$	
$V_F^{**}$	Forward voltage drop	$T_j = 25^\circ\text{C}$	BAR42	$I_F = 10\text{mA}$		0.35	0.40	V
				$I_F = 50\text{mA}$		0.50	0.65	
			BAR43	$I_F = 2\text{mA}$	0.26		0.33	
				$I_F = 15\text{mA}$			0.45	
ALL	$I_F = 100\text{mA}$			1				

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

**Table 6: Dynamic Characteristics ( $T_j = 25^\circ\text{C}$ )**

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	$T_j = 25^\circ\text{C}$ $V_R = 1\text{V}$ $F = 1\text{ MHz}$		7		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
$\eta$	Detection efficiency	$C_L = 300\text{ pF}$ $F = 45\text{ MHz}$ $T_j = 25^\circ\text{C}$ $V_i = 2\text{ V}$ $R_L = 50\ \Omega$	80			%

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



**Figure 2: Forward voltage drop versus forward current (typical values, high level)**

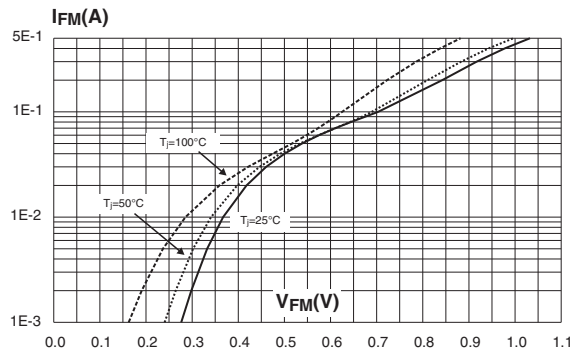


Figure 3: Reverse leakage current versus reverse voltage applied (typical values)

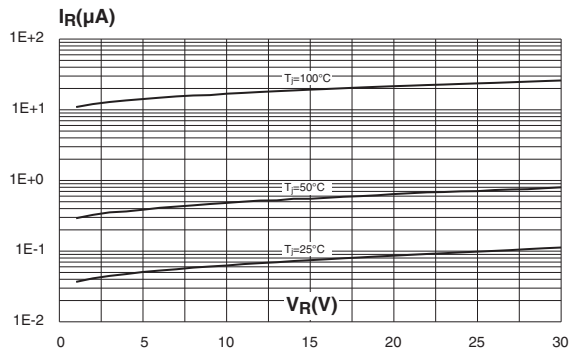


Figure 4: Reverse leakage current versus junction temperature

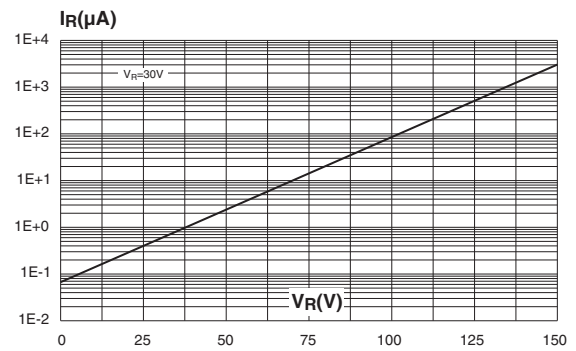


Figure 5: Junction capacitance versus reverse voltage applied (typical values)

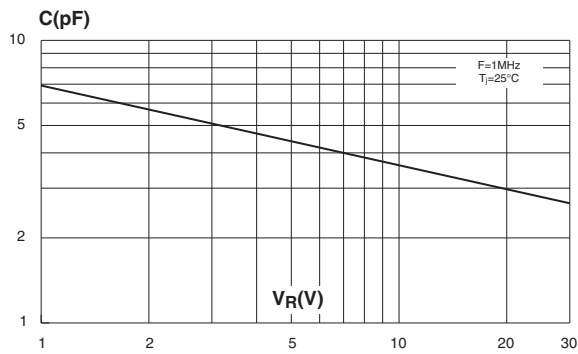


Figure 6: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout,  $e(Cu) = 35\mu m$ )

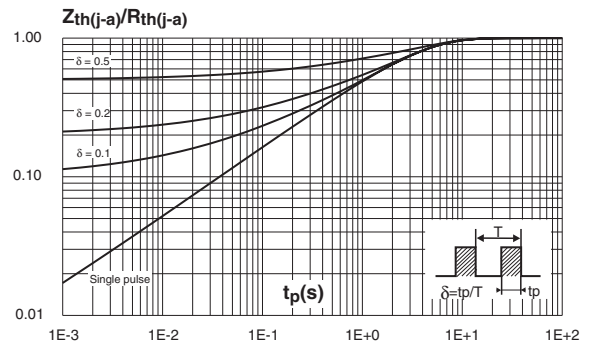
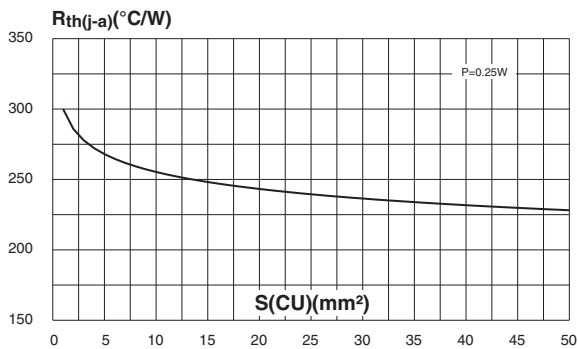


Figure 7: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness:  $35\mu m$ )



## BAR42FILM / BAR43FILM

Figure 8: SOT23-3L Package Mechanical Data

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

Figure 9: Foot Print Dimensions (in millimeters)

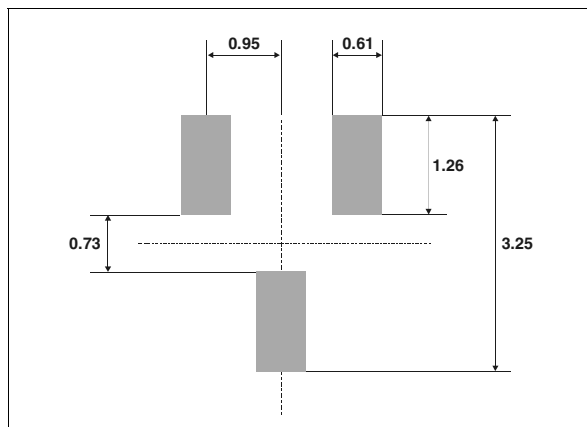


Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAR42FILM	D94	SOT23-3L	0.01 g	3000	Tape & reel
BAR43FILM	D95				
BAR43AFILM	DB1				
BAR43CFILM	DB2				
BAR43SFILM	DA5				

- Epoxy meets UL94, V0

Table 8: Revision History

Date	Revision	Description of Changes
Aug-2001	2B	Last update.
16-Apr-2005	3	Layout update. No content change.

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