

SMALL SIGNAL SCHOTTKY DIODE

Table 1: Main Product Characteristics

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

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.

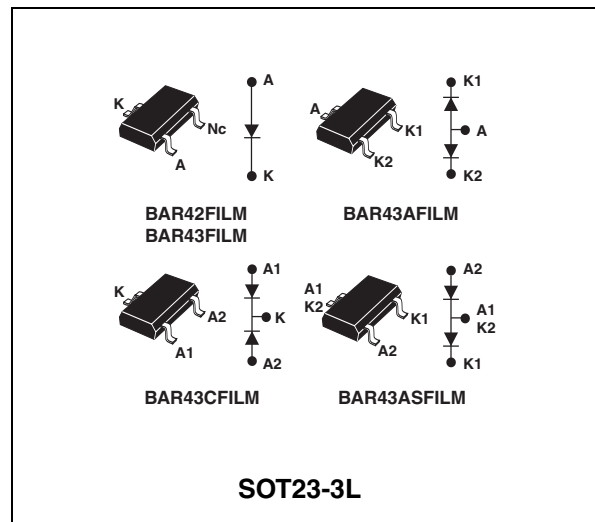


Table 2: Order Codes

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	μA	
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
η	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)

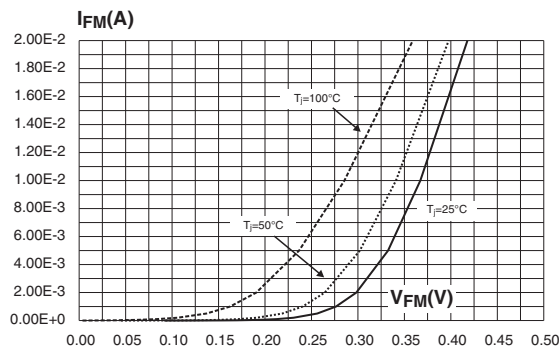


Figure 2: Forward voltage drop versus forward current (typical values, high level)

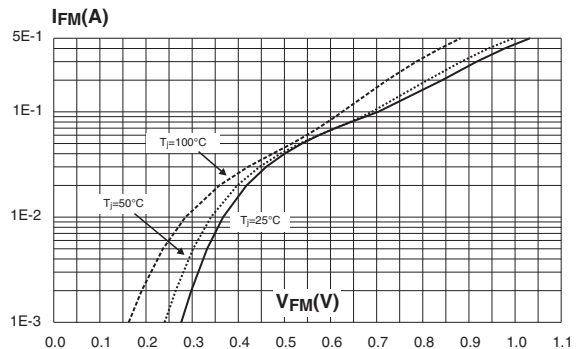


Figure 3: Reverse leakage current versus reverse voltage applied (typical values)

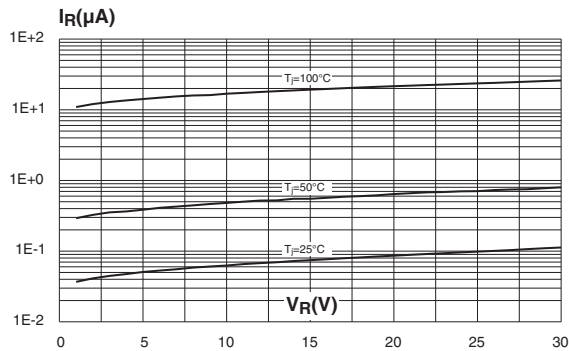


Figure 4: Reverse leakage current versus junction temperature

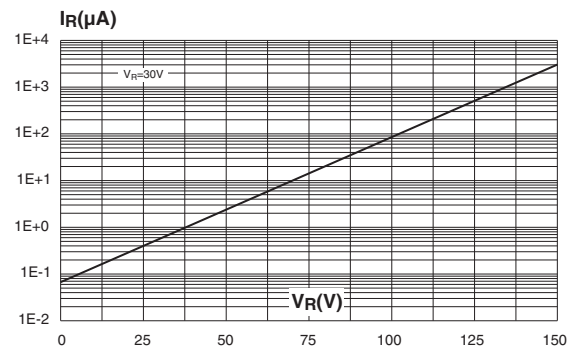


Figure 5: Junction capacitance versus reverse voltage applied (typical values)

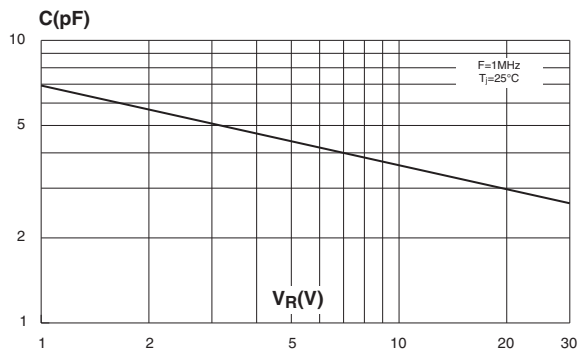


Figure 6: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout, $e(Cu) = 35\mu m$)

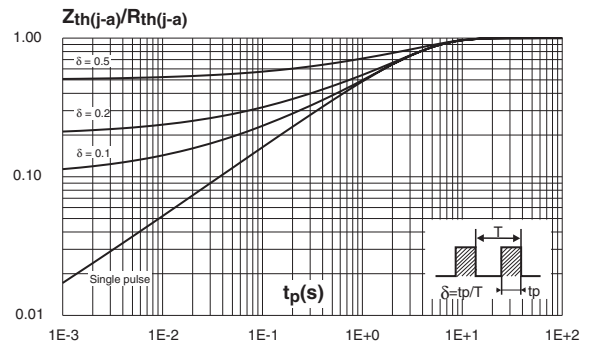


Figure 7: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: $35\mu m$)

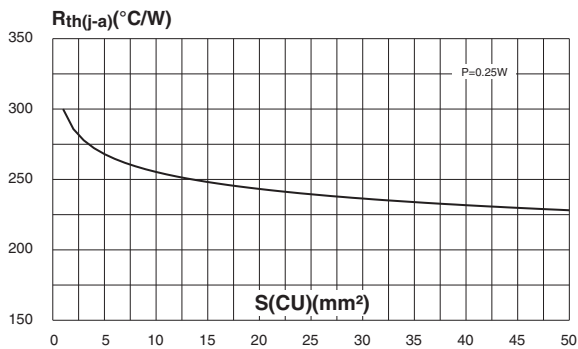


Figure 8: SOT23-3L Package Mechanical Data

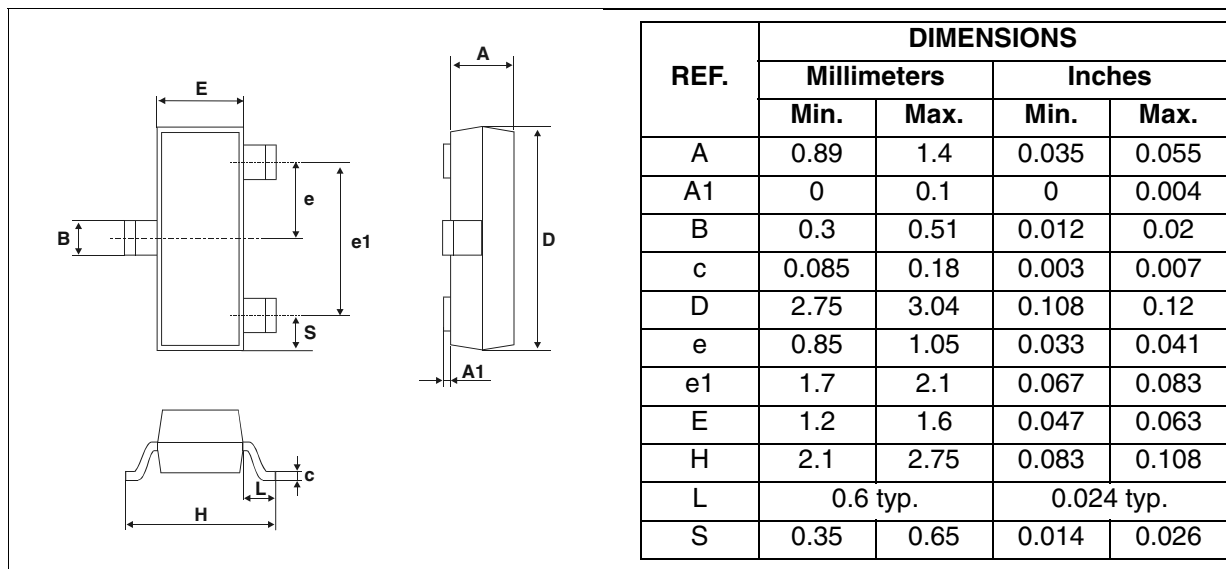


Figure 9: Foot Print Dimensions (in millimeters)

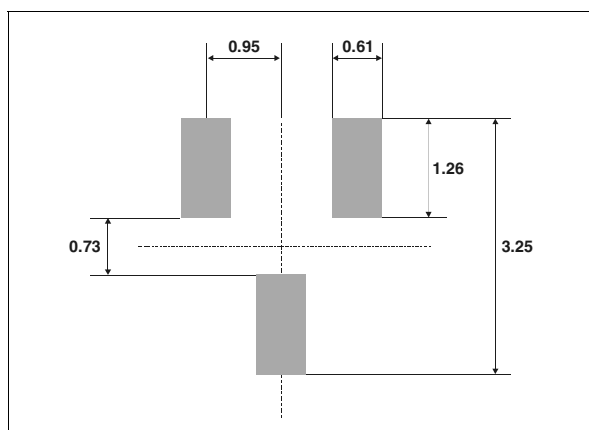


Table 7: Ordering Information

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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