

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.

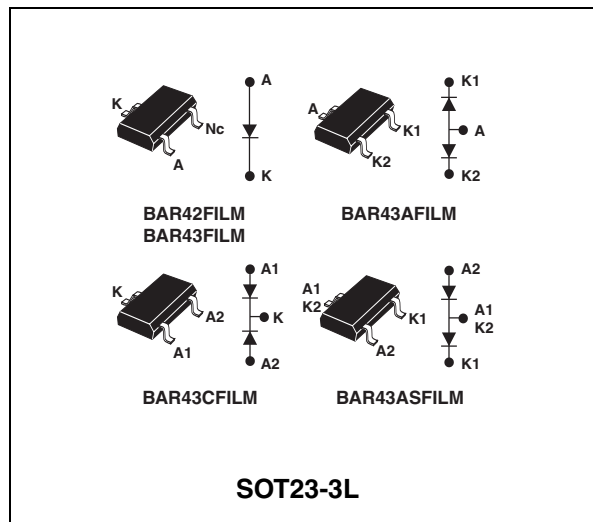


Table 2: Order Codes

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)

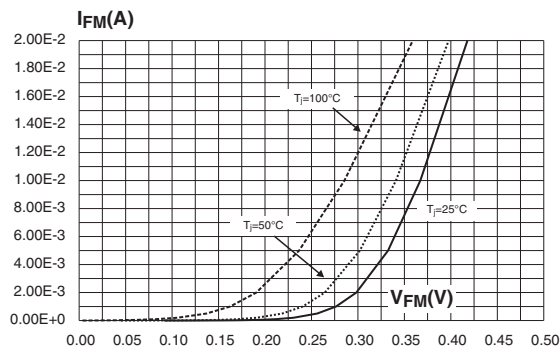


Figure 2: Forward voltage drop versus forward current (typical values, high level)

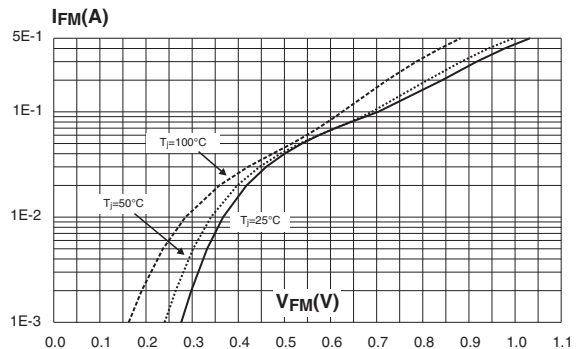


Figure 3: Reverse leakage current versus reverse voltage applied (typical values)

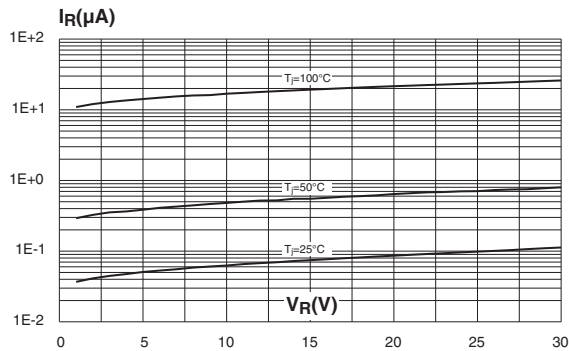


Figure 4: Reverse leakage current versus junction temperature

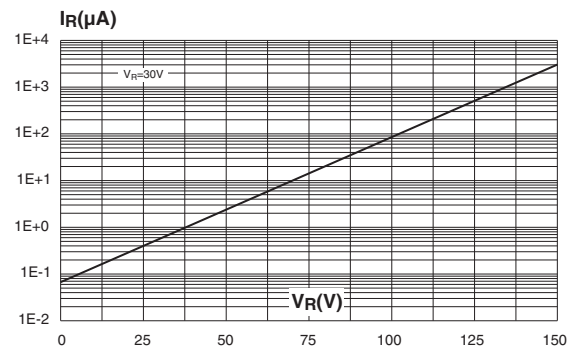


Figure 5: Junction capacitance versus reverse voltage applied (typical values)

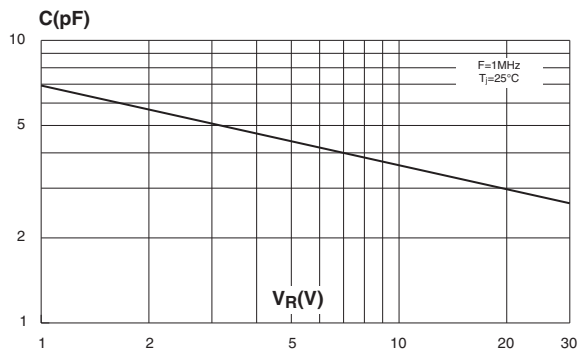


Figure 6: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout, $e(Cu) = 35\mu m$)

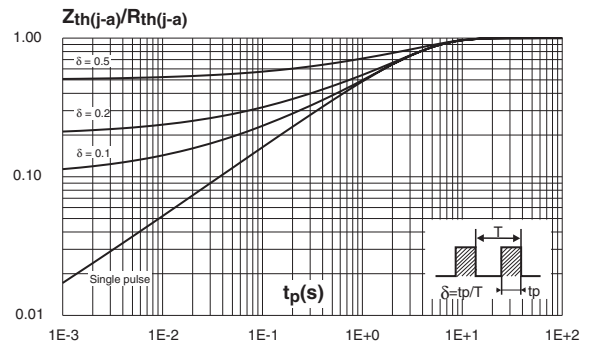
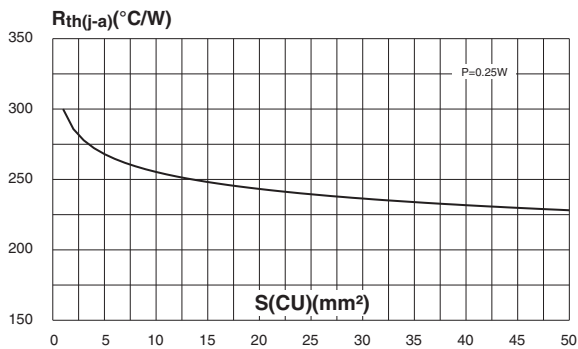


Figure 7: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: $35\mu m$)



BAR42FILM / BAR43FILM

Figure 8: SOT23-3L Package Mechanical Data

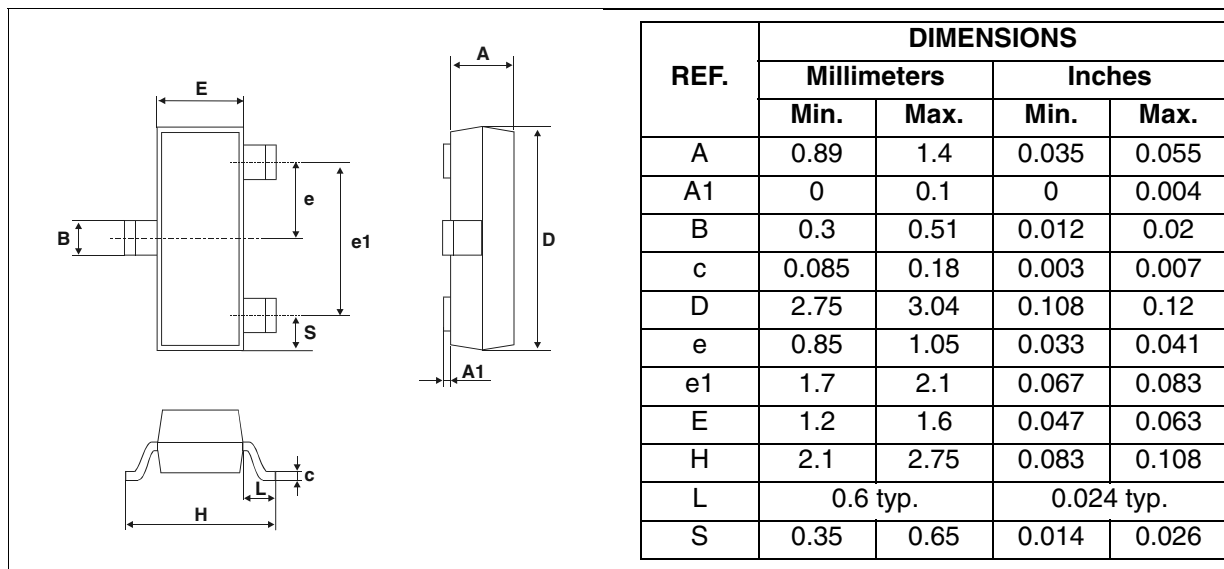


Figure 9: Foot Print Dimensions (in millimeters)

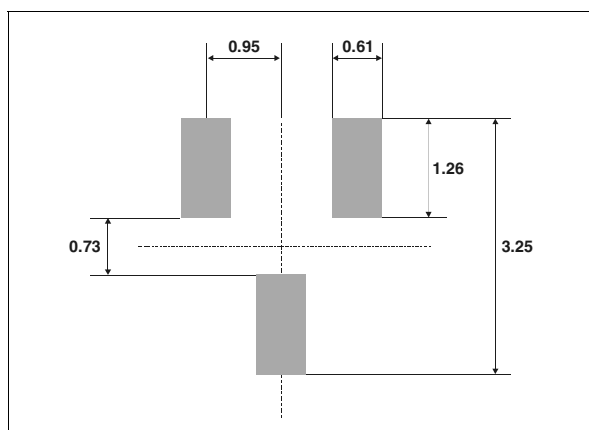


Table 7: Ordering Information

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.

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.
All other names are the property of their respective owners

© 2005 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com