

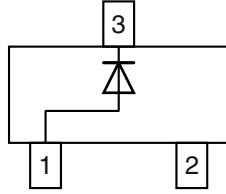
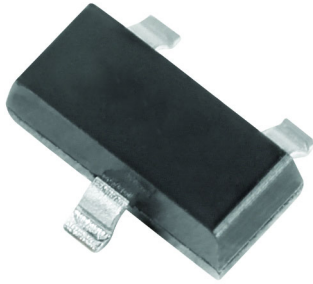


**THE DATASHEET OF  
BAS20-E3-18**





## Small Signal Switching Diodes, High Voltage



### FEATURES

- Silicon epitaxial planar diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion
- AEC-Q101 qualified available
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3\_A - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### LINKS TO ADDITIONAL RESOURCES



### MECHANICAL DATA

Case: SOT-23

Weight: approx. 9.2 mg

Packaging codes / options:

18/10K per 13" reel (8 mm tape), 10K/box

08/3K per 7" reel (8 mm tape), 15K/box

PARTS TABLE							
PART	TYPE DIFFERENTIATION	ORDERING CODE	AEC-Q101 QUALIFIED	TYPE MARKING	CIRCUIT CONFIGURATION	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BAS19	$V_R = 100\text{ V}$	BAS19-E3-08	no	A8G	Single	3 000 (8 mm tape on 7" reel)	15 000
		BAS19-HE3_A-08	yes				
		BAS19-E3-18	no			10 000 (8 mm tape on 13" reel)	10 000
		BAS19-HE3_A-18	yes				
BAS20	$V_R = 150\text{ V}$	BAS20-E3-08	no	A9G	Single	3 000 (8 mm tape on 7" reel)	15 000
		BAS20-HE3_A-08	yes				
		BAS20-E3-18	no			10 000 (8 mm tape on 13" reel)	10 000
		BAS20-HE3_A-18	yes				
BAS21	$V_R = 200\text{ V}$	BAS21-E3-08	no	AAG	Single	3 000 (8 mm tape on 7" reel)	15 000
		BAS21-HE3_A-08	yes				
		BAS21-E3-18	no			10 000 (8 mm tape on 13" reel)	10 000
		BAS21-HE3_A-18	yes				

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOT-23	9.2 mg	UL 94 V-0	MSL 1 (according J-STD-020)	Peak temperature max. 260 °C



<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)					
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT
Continuous reverse voltage		BAS19	$V_R$	100	V
		BAS20	$V_R$	150	V
		BAS21	$V_R$	200	V
Repetitive peak reverse voltage		BAS19	$V_{RRM}$	120	V
		BAS20	$V_{RRM}$	200	V
		BAS21	$V_{RRM}$	250	V
Non repetitive peak forward current <sup>(1)</sup>	$t = 1\text{ }\mu\text{s}$		$I_{FSM}$	2.5	A
Non repetitive peak forward surge current <sup>(1)</sup>	$t = 1\text{ s}$		$I_{FSM}$	0.5	A
Maximum average forward rectified current <sup>(1)</sup>	$f \geq 50\text{ Hz}$		$I_{F(AV)}$	250	mA
DC forward current <sup>(1)</sup>			$I_F$	350	mA
Repetitive peak forward current			$I_{FRM}$	625	mA
Power dissipation	On FR-4 board with recommended soldering footprint		$P_{tot}$	300	mW
	Infinite heatsink			500	mW

**Note**<sup>(1)</sup> Infinite heatsink

<b>THERMAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Thermal resistance junction to ambient air	according to JEDEC <sup>®</sup> 51-3 on FR-4 board with recommended soldering footprint	$R_{thJA}$	420	K/W
Thermal resistance junction to lead	Infinite heatsink	$R_{thJL}$	250	K/W
Junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	-65 to +150	$^{\circ}\text{C}$
Operating temperature range		$T_{op}$	-55 to +150	$^{\circ}\text{C}$

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}$		$V_F$			1.0	V
	$I_F = 200\text{ mA}$		$V_F$			1.25	V
Leakage current	$V_R = 100\text{ V}$	BAS19	$I_R$			100	nA
	$V_R = 150\text{ V}$	BAS20	$I_R$			100	nA
	$V_R = 200\text{ V}$	BAS21	$I_R$			100	nA
	$V_R = V_{Rmax.}, T_j = 150\text{ }^{\circ}\text{C}$		$I_R$			100	$\mu\text{A}$
Dynamic forward resistance	$I_F = 10\text{ mA}$		$r_f$		5		$\Omega$
Diode capacitance	$V_R = 0, f = 1\text{ MHz}$		$C_D$			5	pF
Reverse recovery time	$I_F = I_R = 30\text{ mA}, R_L = 100\text{ }\Omega, i_R = 3\text{ mA}$		$t_{rr}$			50	ns



## TYPICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

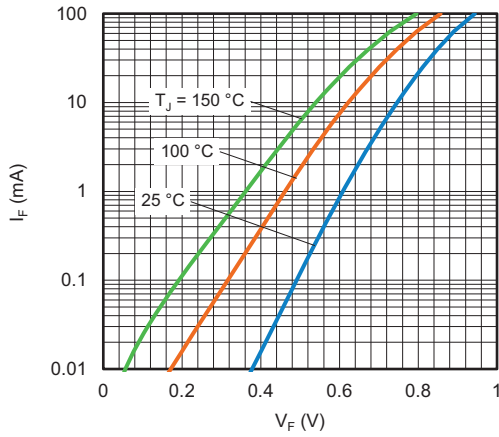


Fig. 1 - Typical Forward Current vs. Forward Voltage

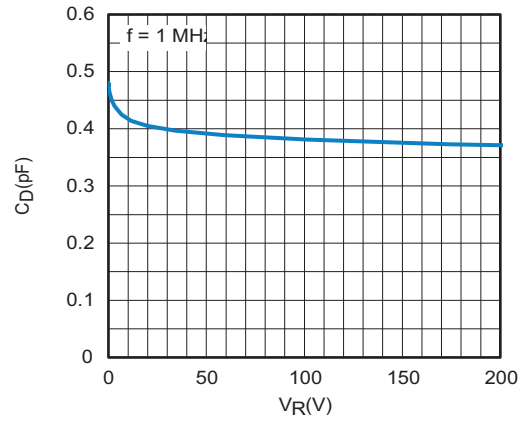


Fig. 3 - Typical Capacitance vs. Reverse Voltage

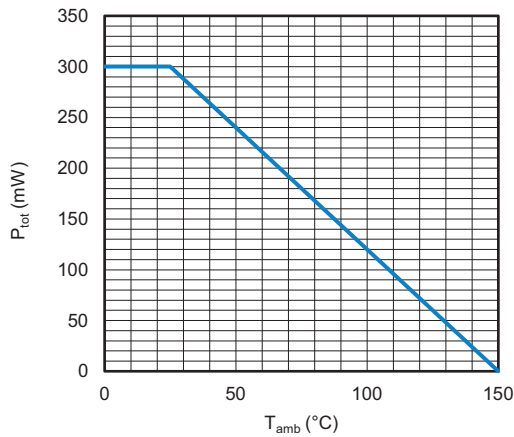


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

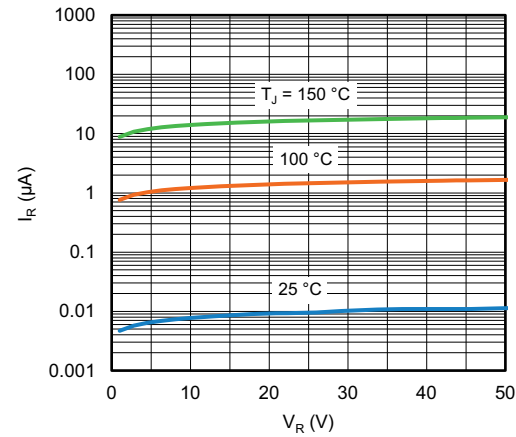
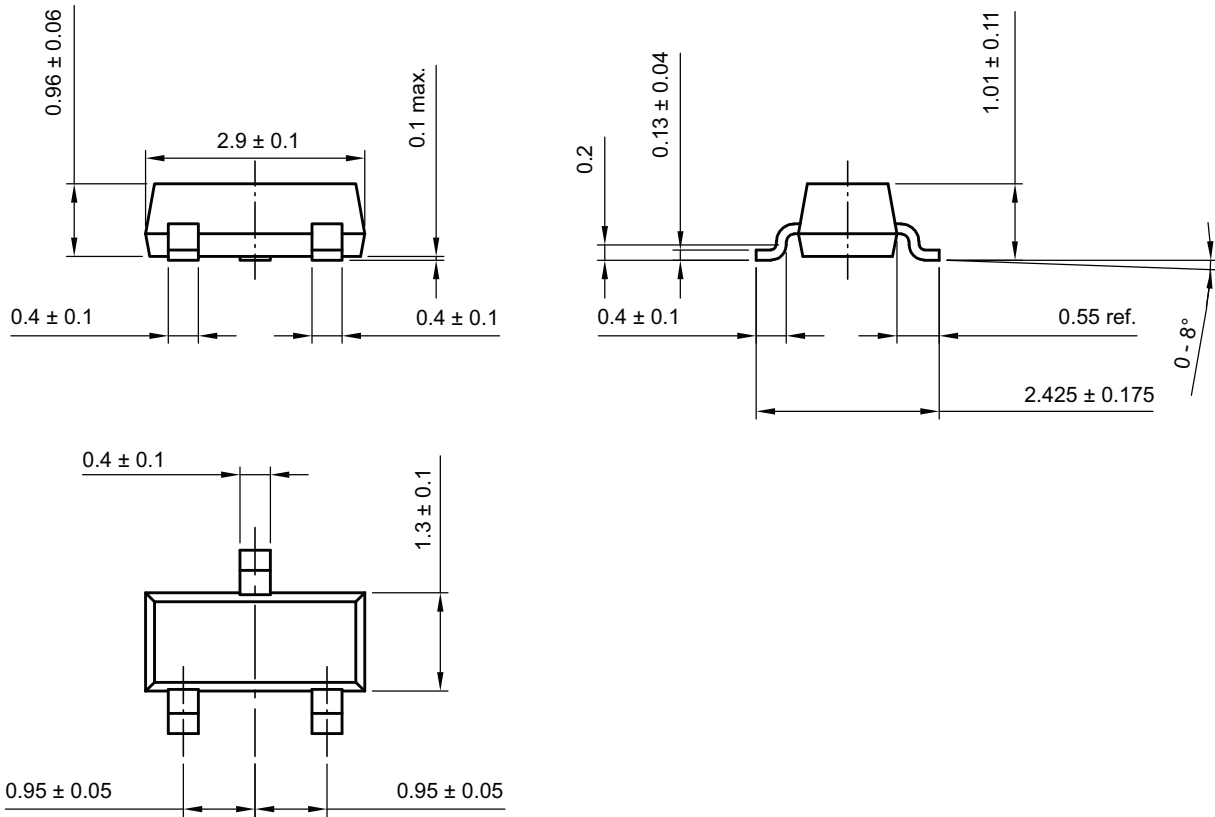


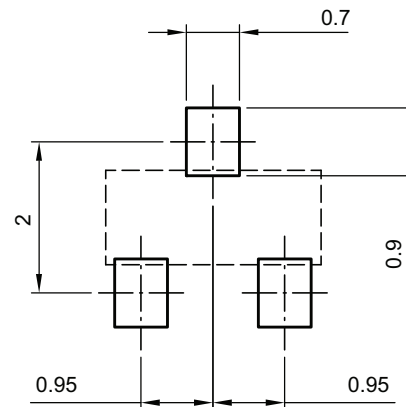
Fig. 4 - Typical Reverse Leakage Current vs. Reverse Voltage



## PACKAGE DIMENSIONS in millimeters: SOT-23



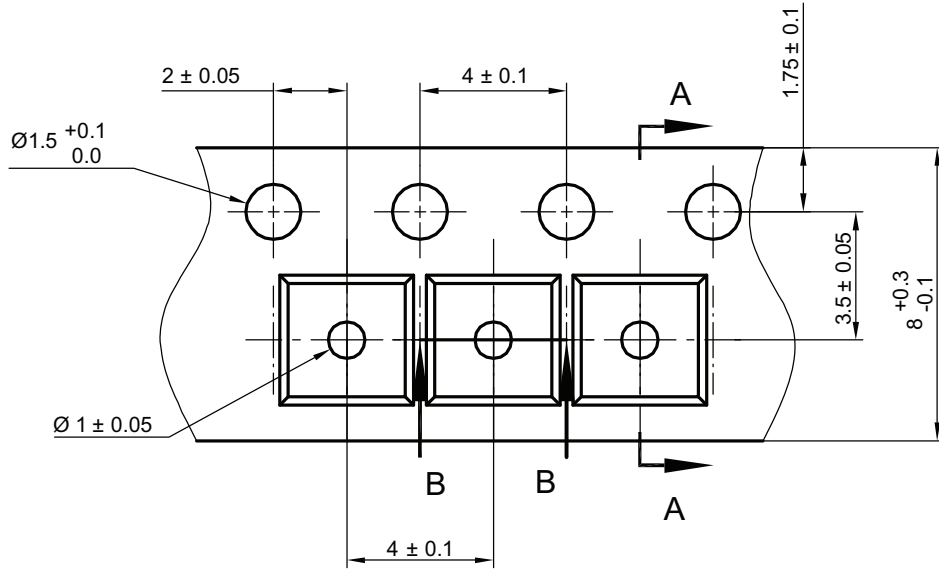
footprint recommendation:



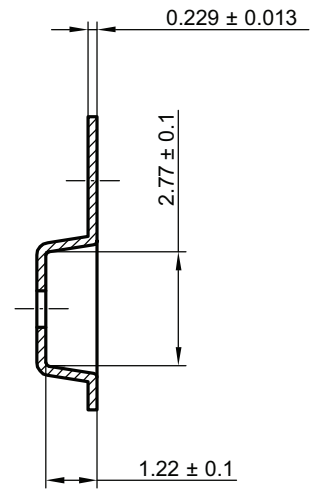
Created - Date: 18-Oct-2021  
Rev. 01 - Date: 18-Jan-2022  
S8-V-3929.01-009 (4)



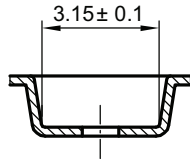
CARRIER TAPE SOT-23



A-A Section



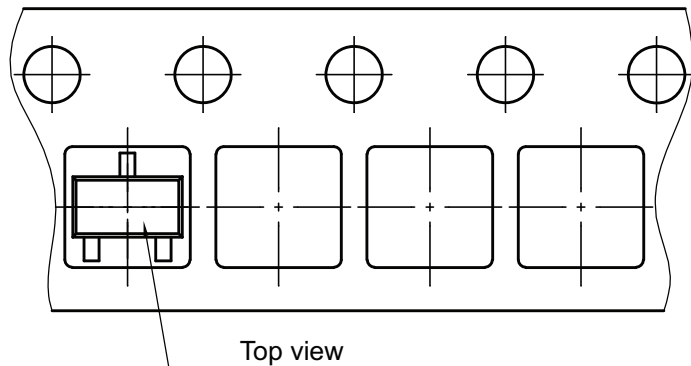
B-B Section



Created Date: 04-Feb-2010  
Rev. Date: 07-Feb-2022  
S8-V-3929.01-005 (4)

ORIENTATION IN CARRIER TAPE SOT-23

Unreeling direction



Created Date: 04-Feb-2010  
Rev. Date: 07-Nov-2022  
S8-V-3929.01-005 (4)



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