

## HSMP-482B

### RF power limiter diode

#### Description

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Lifecycle status: **Active**

#### Features

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The HSMP-482x family of low resistance PIN diodes are optimized for switch applications where Ultra-low resistance and low inductance are required.  $C_t=0.8\text{pF}$ ,  $R_s@10\text{mA}=0.6\text{Ohms}$ ,  $\tau=70\text{nSec}$

# Data Sheet

## Description/Applications

The HSMP-382x series is optimized for switching applications where ultra-low resistance is required. The HSMP-482x diode is ideal for limiting and low inductance switching applications up to 1.5 GHz.

A SPICE model is not available for PIN diodes as SPICE does not provide for a key PIN diode characteristic, carrier lifetime.

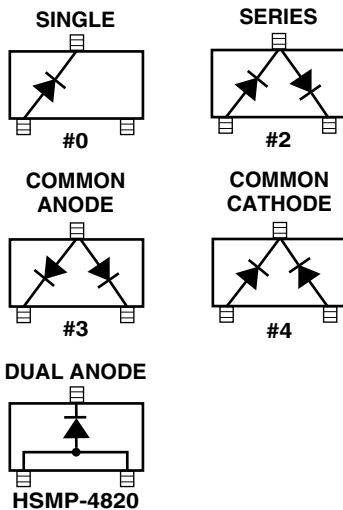
## Features

- Diodes Optimized for:  
Low Current Switching  
Low Distortion Attenuating
- Power Limiting /Circuit Protection
- Surface Mount SOT-23 and SOT-323 Packages  
Single and Dual Versions  
Tape and Reel Options Available
- Low Failure in Time (FIT) Rate<sup>[1]</sup>
- Lead-free

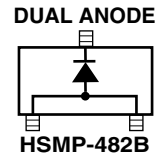
Note:

1. For more information see the Surface Mount PIN Reliability Data Sheet.

### Package Lead Code Identification, SOT-23 (Top View)



### Package Lead Code Identification, SOT-323 (Top View)



## Absolute Maximum Ratings<sup>[1]</sup> $T_c = +25^\circ\text{C}$

Symbol	Parameter	Unit	SOT-23	SOT-323
$I_f$	Forward Current (1 $\mu\text{s}$ Pulse)	Amp	1	1
$P_{IV}$	Peak Inverse Voltage	V	50	50
$T_j$	Junction Temperature	$^\circ\text{C}$	150	150
$T_{stg}$	Storage Temperature	$^\circ\text{C}$	-65 to 150	-65 to 150
$\theta_{jc}$	Thermal Resistance <sup>[2]</sup>	$^\circ\text{C}/\text{W}$	500	150

Notes:

- Operation in excess of any one of these conditions may result in permanent damage to the device.
- $T_c = +25^\circ\text{C}$ , where  $T_c$  is defined to be the temperature at the package pins where contact is made to the circuit board.

## Electrical Specifications $T_c = 25^\circ\text{C}$

Part Number HSMP-	Package Marking Code	Lead Code	Configuration	Minimum Breakdown Voltage $V_{BR}$ (V)	Maximum Series Resistance $R_s$ ( $\Omega$ )	Maximum Total Capacitance $C_T$ (pF)
3820	F0	0	Single	50	0.6	0.8
3822	F2	2	Series			
3823	F3	3	Common Anode			
3824	F4	4	Common Cathode			
Test Conditions				$V_R = V_{BR}$ Measure $I_R \leq 10 \mu\text{A}$	$f = 100 \text{ MHz}$ $I_F = 10 \text{ mA}$	$f = 1 \text{ MHz}$ $V_R = 20 \text{ V}$

## High Frequency (Low Inductance, 500 MHz – 3 GHz) PIN Diodes

Part Number HSMP-	Package Marking Code	Lead Code	Configuration	Minimum Breakdown Voltage $V_{BR}$ (V)	Maximum Series Resistance $R_s$ ( $\Omega$ )	Typical Total Capacitance $C_T$ (pF)	Maximum Total Capacitance $C_T$ (pF)	Typical Total Inductance $L_T$ (nH)
4820	FA	A	Dual Anode	50	0.6	0.75	1.0	1.0
482B	FA	A	Dual Anode					
Test Conditions				$V_R = V_{BR}$ Measure $I_R \leq 10 \mu\text{A}$	$I_F = 10 \text{ mA}$	$f = 1 \text{ MHz}$ $V_R = 20 \text{ V}$	$f = 1 \text{ MHz}$ $V_R = 0 \text{ V}$	$f = 500 \text{ MHz} - 3 \text{ GHz}$

## Typical Parameters at $T_c = 25^\circ\text{C}$

Part Number HSMP-	Series Resistance $R_s$ ( $\Omega$ )	Carrier Lifetime $\tau$ (ns)	Reverse Recovery Time $T_{rr}$ (ns)	Total Capacitance $C_T$ (pF)
382x	1.5	70	7	0.60 @ 20 V
Test Conditions		$f = 100 \text{ MHz}$ $I_F = 10 \text{ mA}$	$I_F = 10 \text{ mA}$	$V_R = 10 \text{ V}$ $I_F = 20 \text{ mA}$ 90% Recovery

## Assembly Information

### SOT-323 PCB Footprint

A recommended PCB pad layout for the miniature SOT-323 (SC-70) package is shown in Figure 19 (dimensions are in inches). This layout provides ample allowance for package placement by automated assembly equipment without adding parasitics that could impair the performance.

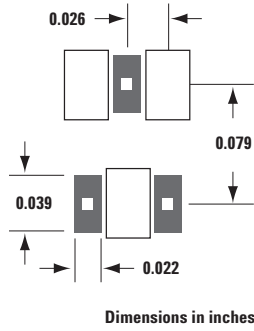


Figure 19. Recommended PCB Pad Layout for Avago's SC70 3L/SOT-323 Products.

### SOT-23 PCB Footprint

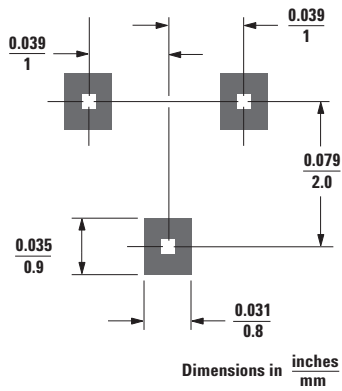
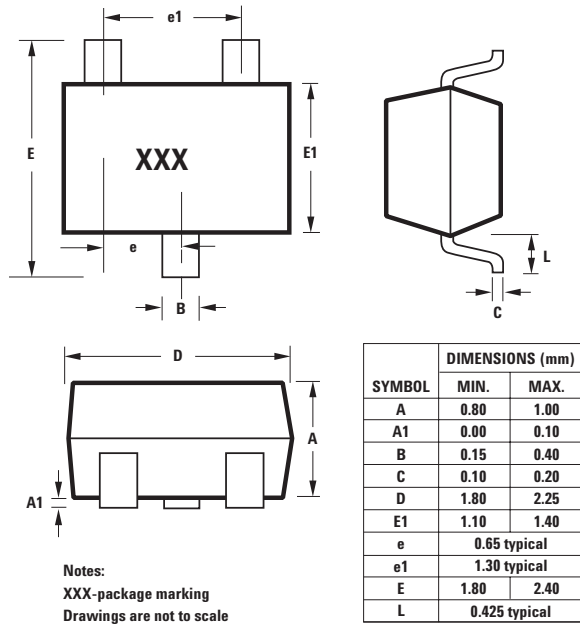


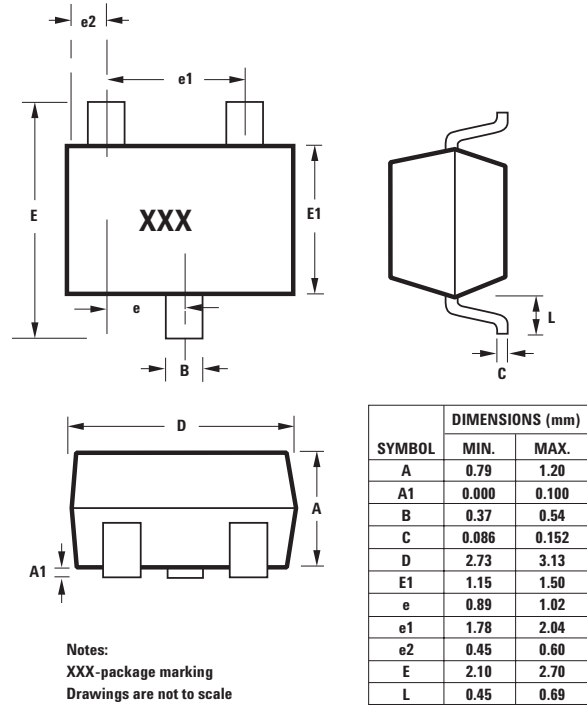
Figure 20. Recommended PCB Pad Layout for Avago's SOT-23 Products.

## Package Dimensions

### Outline SOT-323 (SC-70)



### Outline 23 (SOT-23)

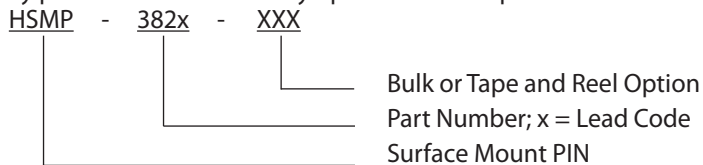


## Package Characteristics

Lead Material ..... Copper (SOT-323); Alloy 42 (SOT-23)  
 Lead Finish ..... Tin 100% (Lead-free option)  
 Maximum Soldering Temperature ..... 260°C for 5 seconds  
 Minimum Lead Strength ..... 2 pounds pull  
 Typical Package Inductance ..... 2 nH  
 Typical Package Capacitance ..... 0.08 pF (opposite leads)

## Ordering Information

Specify part number followed by option. For example:



## Option Descriptions

- BLKG = Bulk, 100 pcs. per antistatic bag
- TR1G = Tape and Reel, 3000 devices per 7" reel
- TR2G = Tape and Reel, 10,000 devices per 13" reel

Tape and Reeling conforms to Electronic Industries RS-481, "Taping of Surface Mounted Components for Automated Placement."