

## HSMP-3830

### General purpose PIN diode

#### Description

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Lifecycle status: **Active**



#### Features

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HSMP-383x family of general purpose PIN diodes are designed for type types of applications. The first, attenuators where current consumption is the most important design consideration. The second application is switches where low capacitance is the most important design factor.  $C_t=0.3\text{pF}$ ,  $R_s@100\text{mA}=1.5\text{Ohms}$

## Data Sheet

### Description/Applications

The HSMP-383x series of general purpose PIN diodes are designed for two classes of applications. The first is attenuators where current consumption is the most important design consideration. The second application for this series of diodes is in switches where low capacitance is the driving issue for the designer.

The HSMP-386x series Total Capacitance ( $C_T$ ) and Total Resistance ( $R_T$ ) are typical specifications. For applications that require guaranteed performance, the general purpose HSMP-383x series is recommended.

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

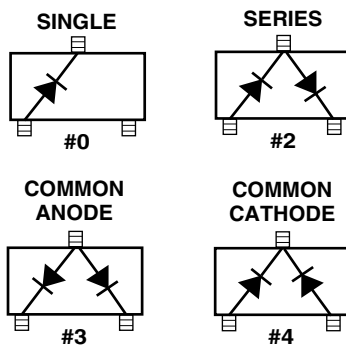
### Features

- Diodes Optimized for:  
Low Capacitance Switching  
Low Current Attenuator
- Surface Mount SOT-23 Package  
Single and Dual Versions  
Tape and Reel Options Available
- Low Failure in Time (FIT) Rate<sup>[1]</sup>
- Lead-free Option Available

Note:

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

### Package Lead Code Identification (Top View)



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

Symbol	Parameter	Units	Absolute Maximum
$I_f$	Forward Current (1 ms Pulse)	Amp	1
$P_t$	Total Device Dissipation	mW <sup>[2]</sup>	250
$P_{iv}$	Peak Inverse Voltage	—	Same as $V_{BR}$
$T_j$	Junction Temperature	$^\circ\text{C}$	150
$T_{STG}$	Storage Temperature	$^\circ\text{C}$	-65 to 150

Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to this device.
2. CW Power Dissipation at  $T_{LEAD} = 25^\circ\text{C}$ . Derate to zero at maximum rated temperature.

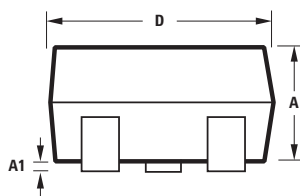
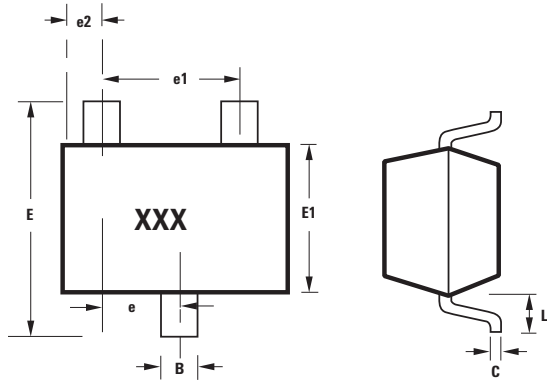
### PIN General Purpose Diodes, Electrical Specifications $T_C = 25^\circ\text{C}$

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)
3830	K0	0	Single	200	1.5	0.3
3832	K2	2	Series			
3833	K3	3	Common Anode			
3834	K4	4	Common Cathode			
Test Conditions				$V_R = V_{BR}$ Measure $I_R \leq 10 \mu\text{A}$	$I_F = 100 \text{ mA}$ $f = 100 \text{ MHz}$	$V_R = 50 \text{ V}$ $f = 1 \text{ MHz}$

### 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)
383x	20	500	80	0.20 @ 50 V
Test Conditions	$I_F = 1 \text{ mA}$ $f = 100 \text{ MHz}$	$I_F = 50 \text{ mA}$ $I_R = 250 \text{ mA}$	$V_R = 10 \text{ V}$ $I_F = 20 \text{ mA}$ 90% Recovery	

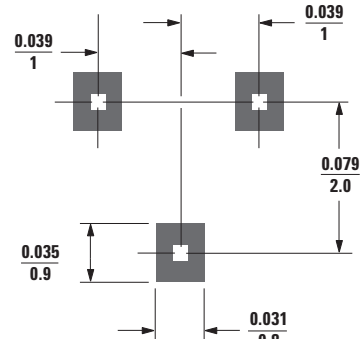
## Package Dimensions Outline 23 (SOT-23)



Notes:  
XXX-package marking  
Drawings are not to scale

SYMBOL	DIMENSIONS (mm)	
	MIN.	MAX.
A	0.79	1.20
A1	0.000	0.100
B	0.37	0.54
C	0.086	0.152
D	2.73	3.13
E1	1.15	1.50
e	0.89	1.02
e1	1.78	2.04
e2	0.45	0.60
E	2.10	2.70
L	0.45	0.69

## Recommended PCB Pad Layout for Avago's SOT-23 Products

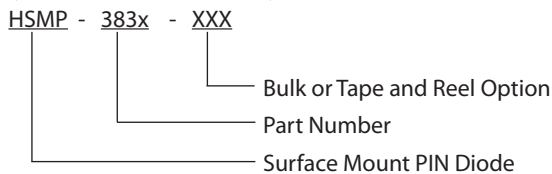


## Package Characteristics

Lead Material .....Alloy 42  
 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:



## Profile Option Descriptions

- BLKG = Bulk
- TR1G = 3K pc. Tape and Reel, Device Orientation; See Figure 13
- TR2G = 10K pc. Tape and Reel, Device Orientation; See Figure 13

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