SMPN7xxx Series

PIN Switching Diode

Rev. V1

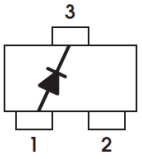
Features

- Low Series Resistance
- Low Capacitance
- Wide Dynamic Range
- Silicon Nitride / Glass Passivation
- SOT23 Surface Mount Package
- RoHS* Compliant

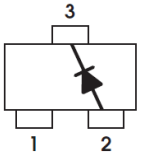
Description

These PIN diodes are specifically designed for commercial applications requiring devices in the SOT-23 surface mount package. The series in low profile has options for bulk or tape and reel. This series offers a wide range of specifications and package configurations to give the designer wide flexibility.

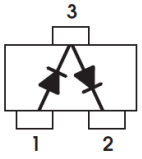
Typical applications of these PIN diodes are switches, phase shifters, pulse and amplitude modulators, limiters, leveling circuits and attenuators.



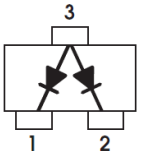
Single Diode (-0)



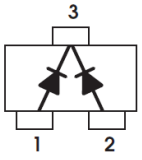
Single Diode (-1)



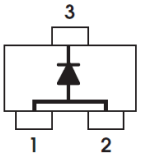
Series Diode (-2)



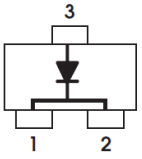
Common Anode(-3)



Common Cathode (-4)



Dual Anode (-5)



Dual Cathode (-6)

SOD323

Electrical Specifications: @ +25°C

Part Number	ID Code[1]	Total Capacitance C_T	Voltage Breakdown V_B	Series Resistance R_S		Carrier Lifetime T_L
		1 MHz	I_R = 10 µA	100 mA, 100 MHz	10 mA, 100 MHz	I_F = 10 mA, I_R = 6 mA
		pF	V	Ω		ns
		Typical	Minimum	Typical		Typical
PIN Attenuator Diodes						
SMPN7453-SOT23-	0S	0.35 @ 50 V	200	0.80	2.5	2500
	1S	0.35 @ 50 V				
	2ST	0.45 @ 50 V				
	3CA	0.45 @ 50 V				
	4CC	0.45 @ 50 V				
SMPN7380-SOT23-	0S	0.35 @ 50 V	200	1.0	3.0	1500
	1S	0.35 @ 50 V				
	2ST	0.45 @ 50 V				
	3CA	0.45 @ 50 V				
	4CC	0.45 @ 50 V				

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* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

Electrical Specifications: @ +25°C

Part Number	ID Code[1]	Total Capacitance C_T	Voltage Breakdown V_B	Series Resistance R_S		Carrier Lifetime T_L
		1 MHz	I_R = 10 µA	100 mA, 100 MHz	10 mA, 100 MHz	I_F = 10 mA, I_R = 6 mA
		pF	V	Ω		ns
		Typical	Minimum	Typical		Typical
PIN Switching Diodes						
SMPN7310-SOT23-	0S	0.30 @ 5 V	100	0.60	1.0	120
	1S	0.30 @ 5 V				
	2ST	0.40 @ 5 V				
	3CA	0.40 @ 5 V				
	4CC	0.40 @ 5 V				
SMPN7316-SOT 23-	0S	0.30 @ 5 V	100	0.60	1.0	200
	1S	0.30 @ 5 V				
	2ST	0.40 @ 5 V				
	3CA	0.40 @ 5 V				
	4CC	0.40 @ 5 V				
PIN General Purpose Diodes						
SMPN7335-SOT 23-	0S	0.30 @ 50 V	200	1.50	2.0	500
	1S	0.30 @ 50 V				
	2ST	0.40 @ 50 V				
	3CA	0.40 @ 50 V				
	4CC	0.40 @ 50 V				
PIN Low Capacitance for High Frequency Applications						
SMPN7320-SOT23-	0S	0.20 @ 10 V	100	2.0	4.0	170
	1S	0.20 @ 10 V				
	2ST	0.30 @ 10 V				
	3CA	0.30 @ 10 V				
	4CC	0.30 @ 10 V				

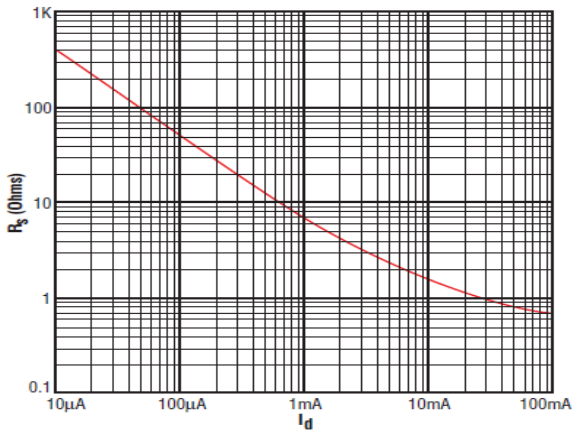
1. 0,1,S=Single; 2,ST=Series Tee; 3,CA=Common Anode; 4,CC=Common Cathode Also available in SOD323 package.

Absolute Maximum Ratings

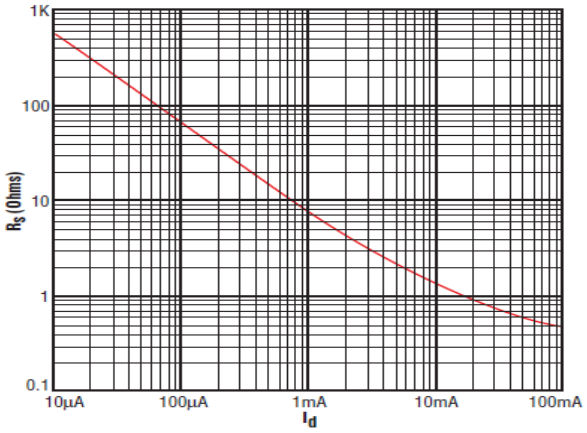
Parameter	Absolute Maximum
Forward Current	1 A, 1 µs pulse
Peak Inverse Voltage	Same as V_{BR}
Power Dissipation	250 mW, derate linearly to 0 @ 150°C
Operating / Storage Temperature	-65°C to +150°C

Typical Resistance Curves @ 100 MHz

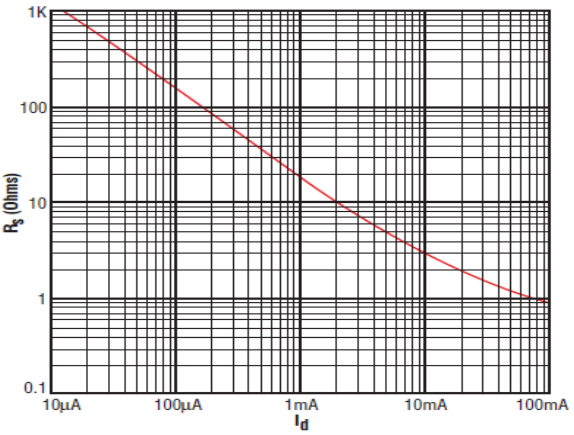
SMPN7335



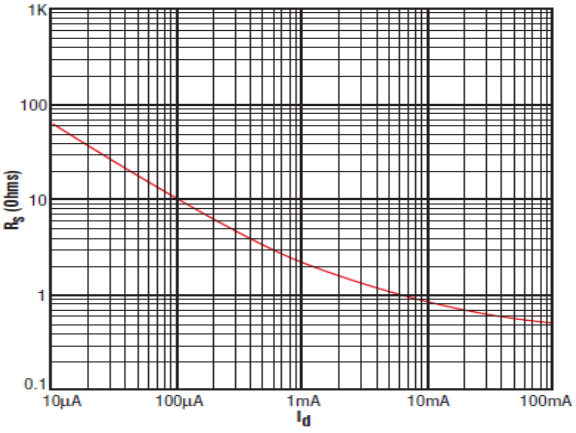
SMPN7453



SMPN7380

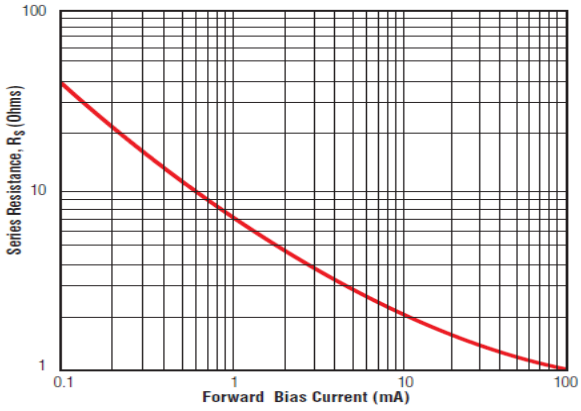


SMPN7316

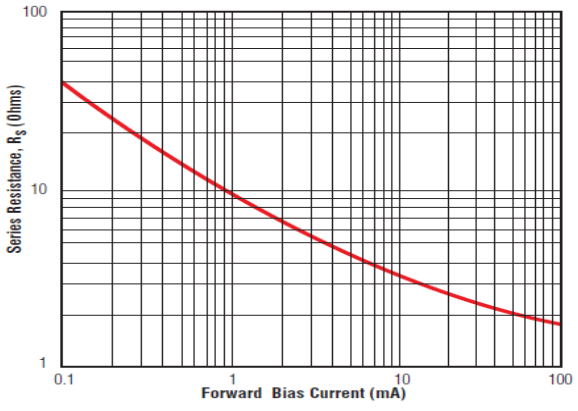


Typical Resistance Curves

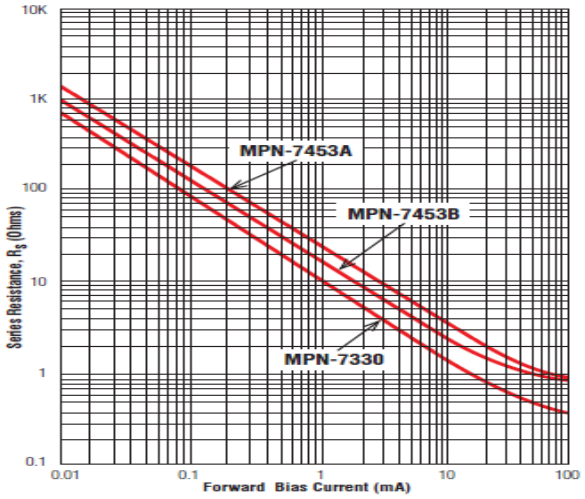
SMPN7310, @ 1 GHz

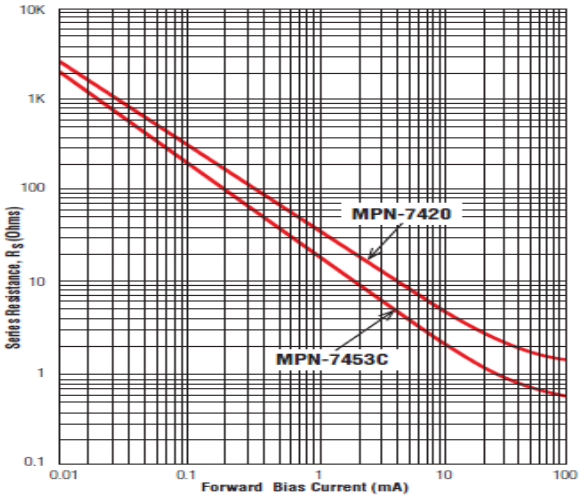


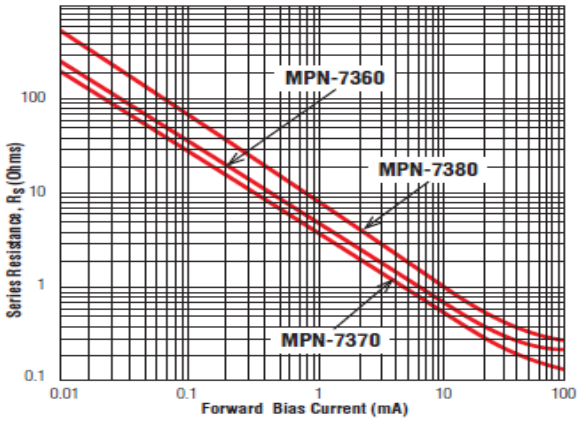
SMPN7320, @ 1 GHz



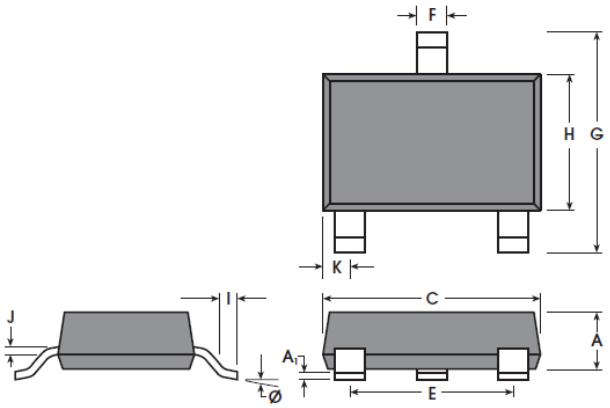
Typical Resistance Curves @ 100 MHz







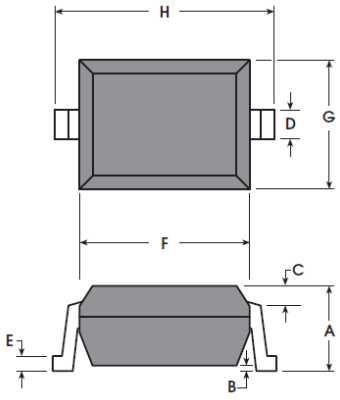
Outline Drawing - SOT23



Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.79	1.02	0.031	0.040
A_1	0.02	0.10	0.001	0.004
C	2.67	3.05	0.105	0.120
E	1.80	2.00	0.071	0.079
F	0.38	0.54	0.010	0.021
H	2.10	2.50	0.083	0.098
I	0.13	0.25	0.005	0.010
J	0.089	0.15	0.0035	0.059
K	0.44	0.55	0.017	0.022
Ø	0.0	8.0	0.0	0.0

Lead Material = Alloy 42
Lead Finish = Tin-Lead, 60-40%
Maximum Soldering Temperature = 260°C for 5 sec.
Minimum Lead Strength = 2 pounds pull
Typical Package Inductance = 2 nH
Typical Package Capacitance = 0.10 pF (opposite leads)

Outline Drawing - SOD323



Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	—	1.10	0.034	0.043
B	—	0.10	0.003	0.004
C	—	0.20	0.006	0.010
D	0.25	0.40	0.010	0.016
E	0.08	0.15	0.003	0.006
F	1.60	1.90	0.063	0.075
G	1.15	1.45	0.045	0.057
H	2.30	2.70	0.094	0.106

Ordering Information

Example Part: SMPN7453-SOT23-xx, replace -xx with desired case style suffix	
0S	Single
1S	Single
2ST	Series Tee
3CA	Common Anode
4CC	Common Cathode