

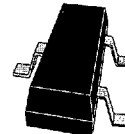
SMP1300 Series

Features

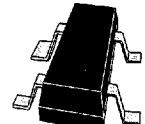
- Industry Standard Outlines
- Designed for High Performance Switches & Attenuators
- Single and Dual Diode Configurations
- Low Inductance Designs for Microwave Applications
- Priced for High Volume Commercial Applications
- Available in Tape and Reel Packaging



SOD 323



SOT 23



SOT 143

Maximum Ratings

Operating Temperature:	-65 to 125 °C
Storage Temperature:	-65 to 125 °C
Power Dissipation: (At 25 °C Lead Temperature)	250 mW
Junction Temperature:	150 °C

Description

The SMP1300 series of surface mount PIN diodes are designed for high volume RF control applications from 1 MHz to beyond 2 GHz. Package offerings include SOT 23, SOT 143 and the small footprint SOD 323 all aggressively priced for commercial applications.

The PIN switching diodes are designed for low loss, high isolation performance with switching speeds faster than 100 nS. The SMP1320 devices have been specially designed for low current drain wireless applications above 800 MHz.

The PIN attenuator diodes are designed for wide dynamic range, low distortion applications from frequencies lower than 10 MHz in PI, TEE and reflective circuit topologies.

Package Models

The inductance of a conventional SOT 23 package is typically 1.5 nH between terminals. Alpha's low inductance SOT 23 package employs an internal







wiring configuration that reduces the inductance to approximately 0.4 nH. To benefit from this design in a shunt connected switch, the microstrip trace should be split between pins 1 and 2 with pin 3 connected to ground. The low inductance is achieved by inserting most of the package inductance in series with the transmission line rather than in shunt where it would be more detrimental. Typical isolation of 20 dB may be achieved at 900 MHz using the SMP1320-07 PIN diode, at 10 mA forward current, in a shunt connected switch employed in this manner.

The following table lists the effective typical inductance of Alpha's plastic packaged PIN diodes. The values were derived from S-parameter measurements and validated in a shunt connected switch employing a 50 ohm Duroid microstrip line.







Package	Configuration	Inductance
SOT 23 SOT 143	Single Junction	1.5 nH
SOT 23	Common Cathode/Anode (Junctions in Parallel)	0.8 nH
SOT 23	Low Inductance Design (Split Microstrip Line)	0.4 nH
SOD 323	Single Junction	1.2 nH

Electrical Specifications







Low Current Switching Diodes

Voltage Rating @ 10 μ A V Min	C_T @ 30V pf max	R_S @ 1 mA Ω max	R_S @ 10 mA Ω max	T_L μ sec typ	Nom I Reg. (μ M)											
						SOD 323						SOT 23				
						Single	Single	Common Anode	Common Cathode	Series Pair	Low Inductance					
50	0.30	2	0.9	0.4	8	SMP1320-11	SMP1320-01	SMP1320-03	SMP1320-04	SMP1320-05	SMP1320-07					
Device Marking:						-	PL1	PL9	PL3	PL2	PLB					

PIN Switching Diodes

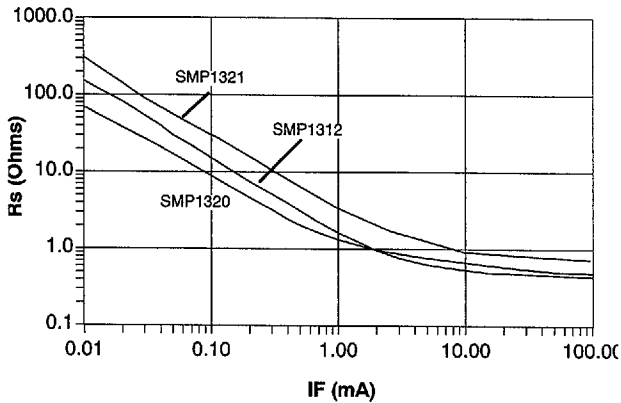
Voltage Rating @ 10 μ A V Min	C_T @ 30V pf max	R_S @ 1 mA Ω max	R_S @ 10 mA Ω max	T_L μ sec typ	Nom I Reg. (μ M)											
						SOD 323						SOT 23				SOT 143
						Single	Single	Common Anode	Common Cathode	Series Pair	Unconnected Pair					
50	1.0	2.0	0.6	0.1	8		SMP1312-01		SMP1312-04	SMP1312-05						
Device Marking:						-	PD1	-	PD3	PD2	-					
100	0.25	7.0	2.0	0.4	15	SMP1321-11	SMP1321-01	SMP1321-03	SMP1321-04	SMP1321-05	SMP1321-15					
Device Marking:						-	PM1	PM9	PM3	PM2	PM7					

PIN Attenuator Diodes

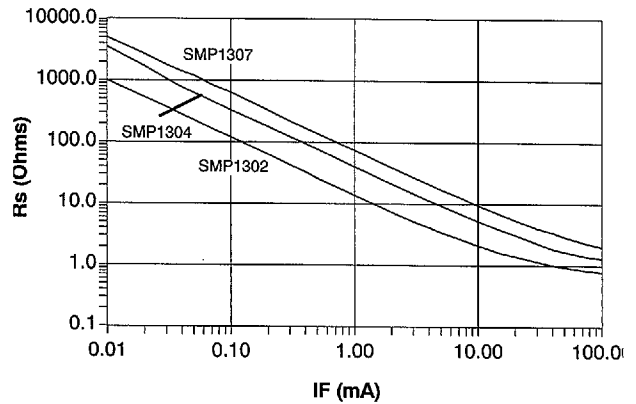
Voltage Rating @ 10 μ A V Min	C_T @ 30V pf max	R_S @ 1 mA Ω max	R_S @ 10 mA Ω max	R_S @ 100mA Ω max	T_L μ sec typ	Nom I Reg. (μ M)											
							SOD 323						SOT 23				
							Single	Single	Common Anode	Common Cathode	Series	Low Inductance					
200	0.30	20	3.0	1.5	1.0	50	SMP1302-11	SMP1302-01	SMP1302-03								
Device Marking:						-	PF1	PF9									
200	0.30	50	7.0	2.0	2.0	100	SMP1304-11	SMP1304-01		SMP1304-04	SMP1304-05	SMP1304-07					
Device Marking:						-	PG1		PG3	PG2		PGB					
200	0.30	100	15	3.0	3.0	175	SMP1307-11	SMP1307-01		SMP1307-04	SMP1307-05						
Device Marking:						-	PJ1		PJ3	PJ2							

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Performance Data



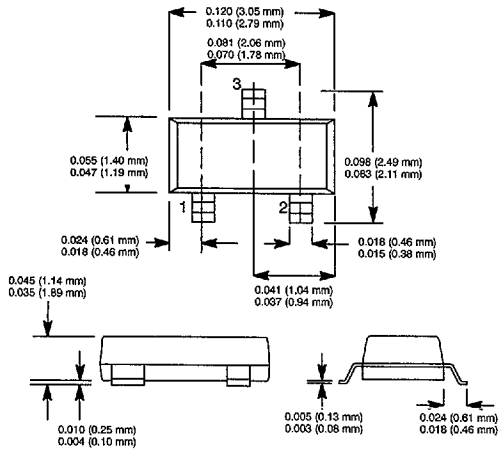
Series Resistance vs. Forward Current @ 100 MHz



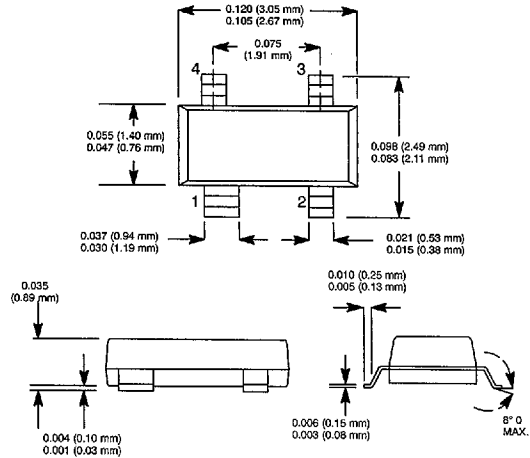
Series Resistance vs. Forward Current @ 100 MHz

Outline Drawing Dimensions

SOT 23

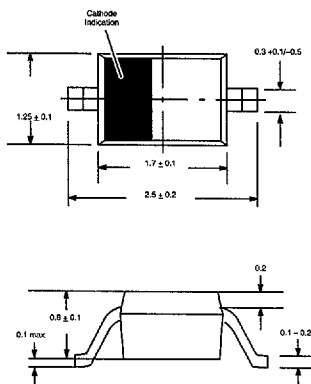


SOT 143



SOD 323

Dimensions in Millimeters



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RF GaAs MMIC Products in Metal Packages

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