Products > RF ICs/Discretes > PIN Diodes > Surface Mount > HSMP-3814

HSMP-3814 Low distortion PIN attenuator diode

Description



Lifecycle status: Active



Features

The HSMP-381x family of PIN diodes are the ideal solution for low distortion attenuators. Ct=0.35pF, Rs@100mA=2.5Ohms, Tau=1800nSec, Fc=88kHz

HSMP-381x, 481x

Surface Mount RF PIN Low Distortion Attenuator Diodes

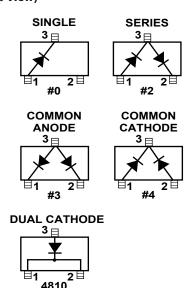
Data Sheet

Description/Applications

The HSMP-381x series is specifically designed for low distortion attenuator applications. The HSMP-481x products feature ultra low parasitic inductance in the SOT-23 and SOT-323 packages. They are specifically designed for use at frequencies which are much higher than the upper limit for conventional diodes.

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

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



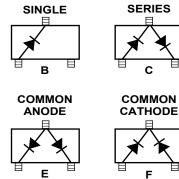
Features

- Diodes Optimized for:
 - Low Distortion Attenuating
 - Microwave Frequency Operation
- Surface Mount Packages
 - Single and Dual Versions
 - Tape and Reel Options Available
- Low Failure in Time (FIT) Rate^[1]

Note:

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

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





DUAL CATHODE





Absolute Maximum Ratings^[1] $T_c = +25^{\circ}C$

Symbol	Parameter	Unit	SOT-23	SOT-323
l _f	Forward Current (1 µs Pulse)	Amp	1	1
P _{IV}	Peak Inverse Voltage	V	Same as V _{BR}	Same as $V_{\rm BR}$
T	Junction Temperature	°C	150	150
T _{stq}	Storage Temperature	°C	-65 to 150	-65 to 150
θ _{jc}	Thermal Resistance ^[2]	°C/W	500	150

Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to the device. 2. $T_c = +25^{\circ}C$, where T_c is defined to be the temperature at the package pins where contact is made to the circuit board.

Part Number HSMP-	Package Marking Code	Lead Code	Configuration	Minimum Breakdown Voltage V _{BR} (V)	Maximum Total Capacitance C _T (pF)	Minimum Resistance at I _F = 0.01mA, RH (Ω)	Maximum Resistance at I _F = 20mA, R _L (Ω)	Maximum Resistance at I _F = 100mA, RT (Ω)	Resistance at $I_F = 1mA, R_M(\Omega)$
3810	EO	0	Single						
3812	E2	2	Series						
3813	E3	3	Common Anode						
3814	E4	4	Common Cathode	100	0.25	1500	10	2.0	40 to 70
381B	EO	В	Single	100	0.35	1500	10	3.0	48 to 70
381C	E2	C	Series	-					
381E	E3	E	Common Anode						
381F	E4	F	Common Cathode						
Test Conditi	ons	·		$V_{R} = V_{BR}$ Measure $I_{R} \le 10$ uA	$V_{R} = 50V$ f = 1MHz	$I_F = 0.01 \text{mA}$ f = 100MHz	$I_F = 20 \text{mA}$ f = 100MHz	$I_{\rm F} = 100 {\rm mA}$ f = 100MHz	$I_F = 1mA$ f = 100MHz

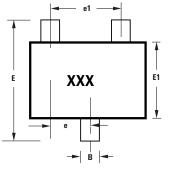
Electrical Specifications $T_c = +25^{\circ}C$ (Each Diode) Conventional Diodes

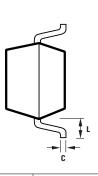
High Frequency (Low Inductance, 500 MHz – 3 GHz) PIN Diodes

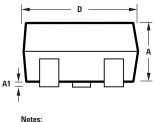
Part Number HSMP-	Package Marking Code	Lead Code	Configuration	Minimum Breakdown Voltage V _{BR} (V)	Maximum Series Resistance R _s (Ω)	Series Resistance I _F = 1mA, R _M (Ω)	Typical Total Capacitance C _T (pF)	Maximum Total Capacitance C _T (pF)	Typical Total Inductance L _r (nH)
4810	EB	В	Dual Cathode	— 100	3	48 - 70	0.35	0.4	1
481B	EB	В	Dual Cathode						
Test Conditi	ons			$V_{R} = V_{BR}$ Measure $I_{R} \le 10 \mu A$	$I_{F} = 100 \text{mA}$ f = 100MHz	$I_F = 1mA$ f = 100MHz	$V_{R} = 50V$ f = 1MHz	$V_{R} = 50V$ f = 1MHz	f = 500MHz - 3GHz

Package Dimensions

Outline SOT-323 (SC-70)

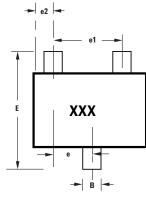




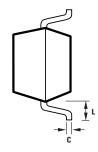


XXX-package marking Drawings are not to scale

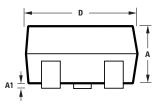
	DIMENSIONS (mm)		
SYMBOL	MIN.	MAX.	
Α	0.80	1.00	
A1	0.00	0.10	
В	0.15	0.40	
C	0.10	0.20	
D	1.80	2.25	
E1	1.10	1.40	
e	0.65 typical		
e1	1.30 typical		
E	1.80 2.40		
L	0.425 typical		



Outline 23 (SOT-23)



E1



Notes: XXX-package marking Drawings are not to scale

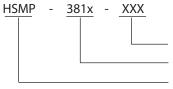
	DIMENSIONS (mm)	
SYMBOL	MIN.	MAX.
Α	0.79	1.20
A1	0.000	0.100
В	0.37	0.54
C	0.086	0.152
D	2.73	3.13
E1	1.15	1.50
е	0.89	1.02
e1	1.78	2.04
e2	0.45	0.60
E	2.10	2.70
L	0.45	0.69

Package Characteristics

Lead Material	Copper (SOT-323); Alloy 42 (SOT-23)
Lead Finish	Tin 100% (Lead-free option)
Maximum Soldering Temperature	
Minimum Lead Strength	
Typical Package Inductance	
Typical Package Capacitance	

Ordering Information

Specify part number followed by option. For example:



- Bulk or Tape and Reel Option

Part Number; x = Lead Code

Surface Mount PIN

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."