MSS20-xxx-x Series

Zero Bias Schottky Diodes

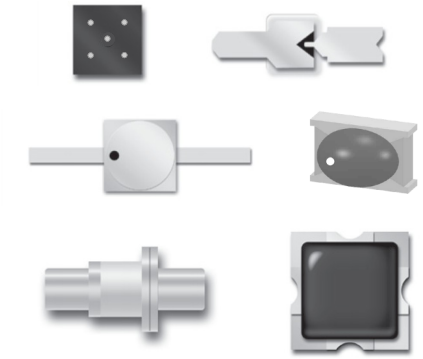
Rev. V4

Features

- Very Low 1/f Noise
- Detector Applications up to 40 GHz
- Chip Beam Lead and Packaged Devices

Description

The MSS20-xxx-x Series of Schottky diodes is fabricated on P-Type epitaxial substrates for superior 1/f noise performance in microwave 0-bias detector applications up to 40 GHz.



Chip & Beam Lead Electrical Specifications: T_A = 25°C

Model	Outline	Frequency	Junction Capacitance (C_J)	Tangential Signal Sensitivity (T_{SS})	Video Resistance (R_V)		Voltage Sensitivity (γ)
		GHz	pF	dBm	Ω		mV / mW
		Max.	Max.	Typ.	Min.	Max.	Typ.
Chip							
MSS20-046-	C15	18	0.10	-58	1000	2000	5000
MSS20-047-		18	0.10	-59	2000	6000	8000
MSS20-050-		12	0.15	-58	1000	2000	5000
MSS20-051-		12	0.15	-59	2000	6000	8000
MSS20-054-		8	0.20	-58	1000	2000	5000
MSS20-055-		8	0.20	-59	2000	6000	8000
Beam Lead							
MSS20-140-	B10D	40	0.08	-58	1000	2000	5000
MSS20-141-		40	0.08	-59	2000	6000	8000
MSS20-142-		26	0.10	-58	1000	2000	5000
MSS20-143-		26	0.10	-59	2000	6000	8000
MSS20-145-		18	0.12	-58	1000	2000	5000
MSS20-146-		18	0.12	-59	2000	6000	8000
Test Conditions			f = 1 MHz, V_R = 0 V	f = 10 GHz, NF = 3 dB	P_{IN} = -30 dBm Video BW = 500 KHz		R_L = 1 MΩ

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Packaged Electrical Specifications: T_A = 25°C, V_{BR} = 0.8 V min @ 100 µA

Model	Outline	Frequency	Total Capacitance (C_T)		Tangential Signal Sensitivity (T_{SS})	Video Resistance (R_V)		Voltage Sensitivity (γ)
			pF		dBm	Ω		mV / mW
			Typ.	Max.	Typ.	Typ.	Max.	Typ.
MSS20-046-	0805-2	20	0.14	0.20	-58	1500	2000	5000
	E25	18	0.15	0.20				
	E28 / E28X	18	0.16	0.20				
	H27	18	0.20	0.25				
	T86	12	0.26	0.31				
MSS20-047-	0805-2	20	0.14	0.20	-59	4000	6000	8000
	E25	18	0.15	0.20				
	E28 / E28X	18	0.16	0.20				
	H27	18	0.20	0.25				
	T86	12	0.26	0.31				
MSS20-050-	0805-2	18	0.18	0.25	-58	1500	2000	5000
	E25	12	0.20	0.25				
	E28 / E28X	12	0.21	0.25				
	H27	12	0.24	0.30				
	T86	12	0.30	0.36				
MSS20-051-	0805-2	18	0.18	0.25	-59	4000	6000	8000
	E25	12	0.20	0.25				
	E28 / E28X	12	0.21	0.25				
	H27	12	0.24	0.30				
	T86	12	0.30	0.36				
MSS20-054-	0805-2	12	0.24	0.30	-58	1500	2000	5000
	E25	8	0.25	0.30				
	E28 / E28X	8	0.26	0.30				
	H27	8	0.30	0.35				
	T86	8	0.36	0.41				
MSS20-055-	0805-2	12	0.24	0.30	-59	4000	6000	8000
	E25	8	0.25	0.30				
	E28 / E28X	8	0.26	0.30				
	H27	8	0.30	0.35				
	T86	8	0.36	0.41				
Test Conditions			f = 1 MHz, V_R = 0.5 V		f = 10 GHz, P_{IN} = -30 dBm, R_L = 1 mΩ, Video BW = 500 KHz, NF = 3 dB			

Packaged Electrical Specifications: T_A = 25°C, V_{BR} = 0.8 V min @ 100 µA

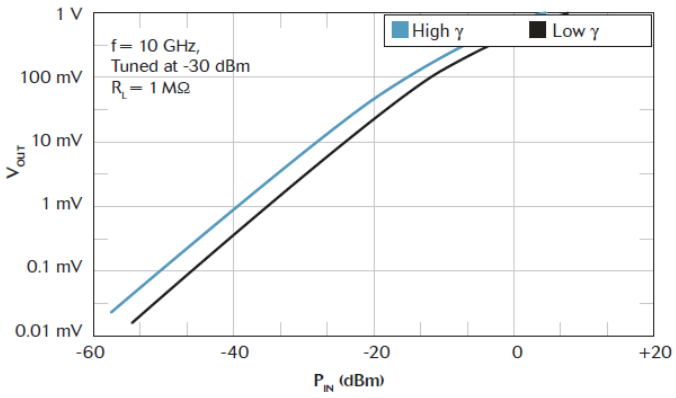
Model	Outline	Frequency	Total Capacitance (C_T)		Tangential Signal Sensitivity (T_{SS})	Video Resistance (R_V)		Voltage Sensitivity (γ)
		GHz	pF		dBm	Ω		mV / mW
		Max.	Typ.	Max.	Typ.	Typ.	Max.	Typ.
MSS20-140-	0402	26	0.12	0.15	-58	1500	2000	5000
MSS20-141-		26	0.12	0.15	-59	4000	6000	8000
MSS20-142-		20	0.15	0.18	-58	1500	2000	5000
MSS20-143-		20	0.15	0.18	-59	4000	6000	8000
MSS20-144-		18	0.18	0.20	-58	1500	2000	5000
MSS20-145-		18	0.18	0.20	-59	4000	6000	8000
Test Conditions			f = 1 MHz, V_R = 0.5 V		f = 10 GHz, P_{IN} = -30 dBm, R_L = 1 mΩ, Video BW = 500 KHz, NF = 3 dB			

Absolute Maximum Ratings

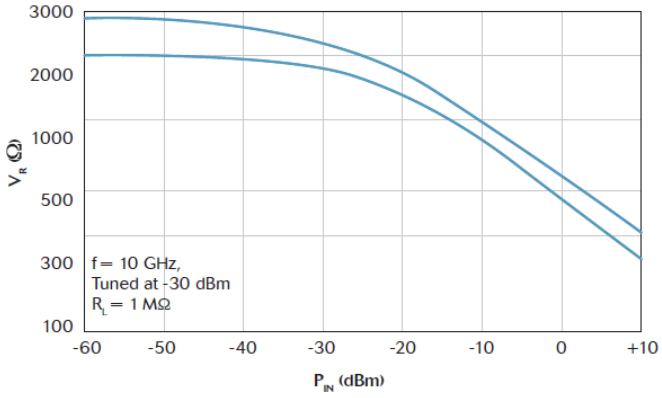
Parameters	Rating
Reverse Voltage	1 V
Forward Current	35 mA
CW Power Dissipation	100 mW, derate linearly to 0 @ T_A = +150°C
Operating Temperature	-65°C to +150°C
Storage Temperature	-65°C to +150°C
Soldering Temperature (packaged)	+230°C for 5 seconds

Typical Performance Curves: T_A = 25°C

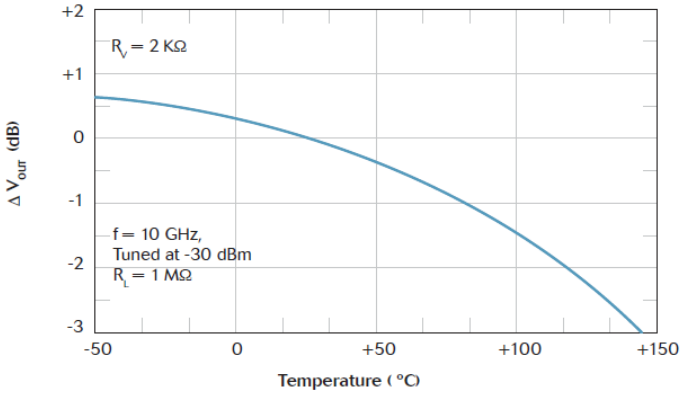
Detected Output vs. RF Input Power



Video Resistance vs. RF Input Power

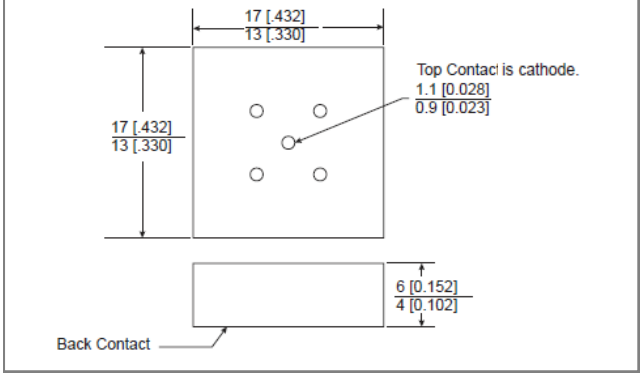


Detector Output vs. Temperature

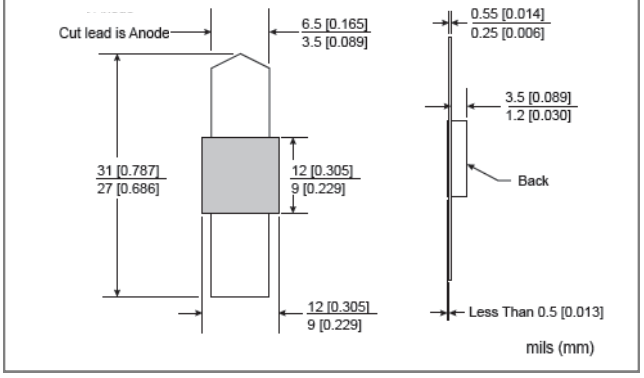


Outline Drawings

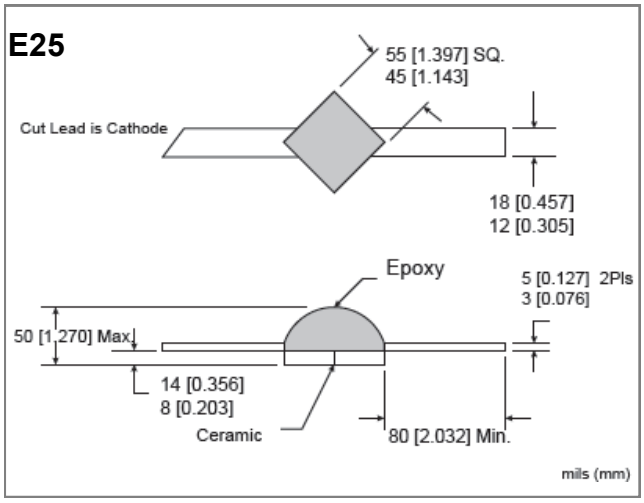
C15



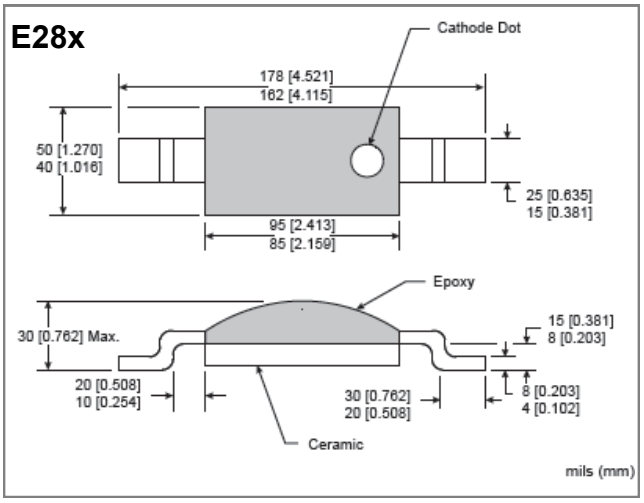
B10D



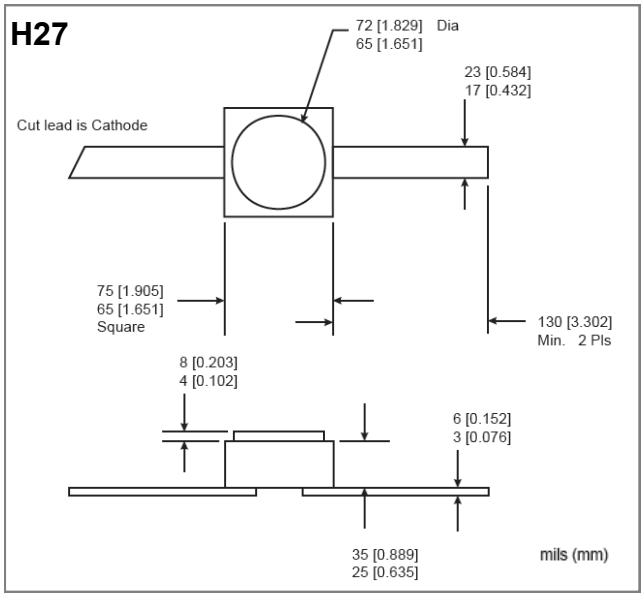
E25



E28x

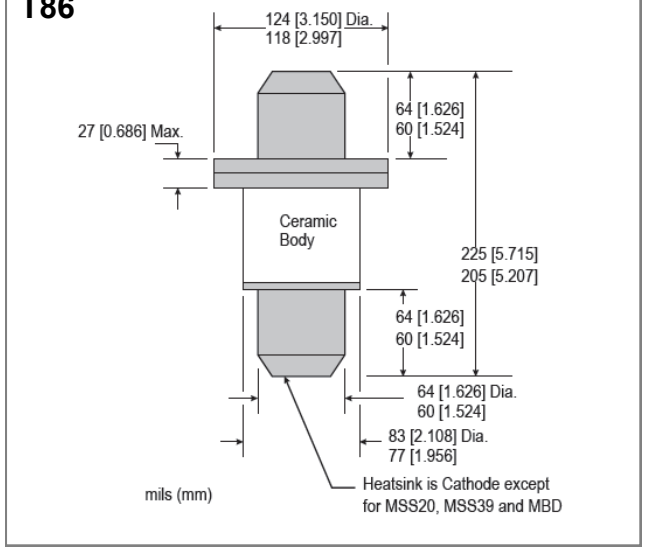


H27

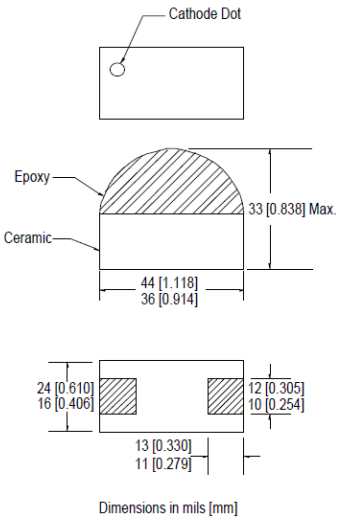


Outline Drawings

T86



0402-1



0805-2