Low 1/f Noise, Low Barrier Schottky Doppler Mixer Diodes

V3.00

Features

- Low Guaranteed 1/f Noise At 10 KHz
- Low Local Oscillator Requirements
- Wide Range Of Available Packages
- Useful For Starved Lo Mixers

Description

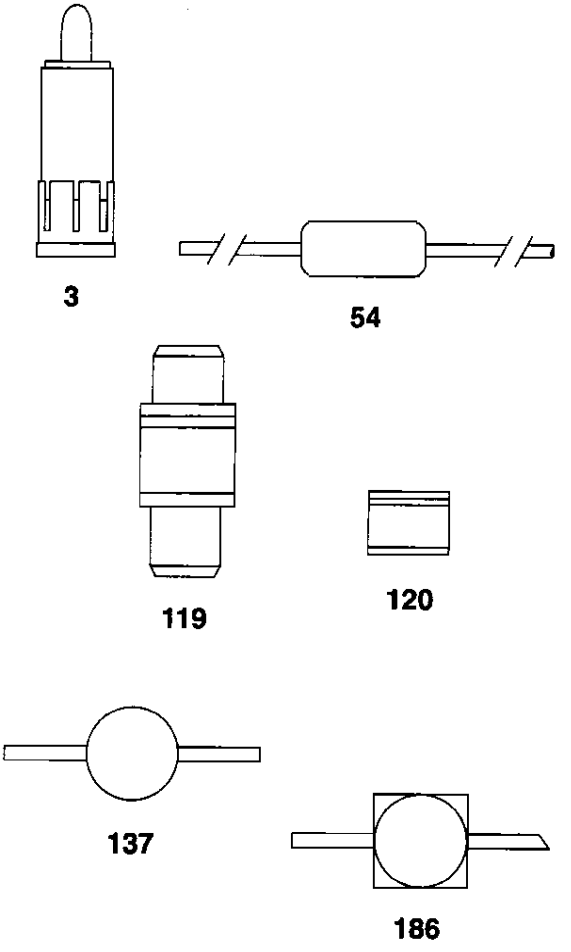
This family of low barrier Schottky diodes is designed to operate under low local oscillator drive or with starved local oscillator drive (-6 dBm). These diodes are particularly useful for doppler systems and the noise figure is specified at an IF frequency of 10 KHz. These low barrier Schottky doppler mixer diodes are offered in a wide range of packages including ceramic packages for coaxial and waveguide circuits, axial lead glass packages and stripline packages.

Applications

Mixers using low frequency IF such as doppler radars, altimeters and motion detection devices. These diodes are also useful for systems where the local oscillator drive is limited or a starved local oscillator is required.

Case Styles

(See appendix for complete dimensions)



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Electrical Specifications at 25°C

Low IF/Low LO Drive Schottky Doppler Mixer Diodes

These low level Schottky doppler mixer diodes are suitable for use in waveguide, coaxial and stripline mixers. These diodes are intended for mixers using starved LO conditions (-6 dBm). This family of diodes exhibits the specified noise figure without external DC bias.

Model Number	Case Style[1]	Test Frequency (GHz)	Maximum[2] Noise Figure (dB)	Nominal[3] Z_{IF} (Ohms)
MA40194	3	9.375	12	250
MA40192	54	9.375	12	250
MA40196	137	9.375	12	250
MA40197	186	9.375	12	250
MA40190	120	9.375	12	250
MA40183	119	16.000	12	250
MA40182	120	16.000	12	250
MA40181	119	24.000	12	350
MA40180	120	24.000	12	350

Notes:
1. The standard case style is listed for each model number.
2. Test conditions are as follows:
   P_{LO} = -10 dBm
   F_{IF} = 10 KHz
   R_L = 22 Ohms
   N_{IF} = 1.5 dB
3. The input impedance of the 10 KHz amplifier is approximately 10 K Ohms. I_F impedance is measured by modulating the specified test frequency with a 1000 Hz signal, R_L = 22 Ohms.

Absolute Maximum Ratings at 25°C

Parameter	Absolute Maximum
Temperature Range	
Storage Temperature	
(case style 3, 54, 119, 120 186)	-65°C to +150°C
(case style 137)	-65°C to +125°C
Operating Temperature	
(case style 3, 54, 119, 120, 186)	-65°C to +150°C
(case style 137)	-65°C to +125°C
Maximum Incident CW RF Power	X Band 100mW Ku-K Band 75 mW
Solder Temperature Ratings	
For case style 54, 119, 186	230°C for 5 seconds 1 mm from case
For case style 120	200°C for 5 seconds
For case style 137	200°C for 5 seconds 1 mm from case

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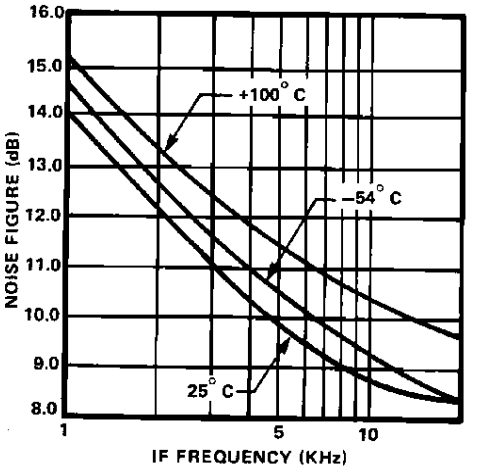
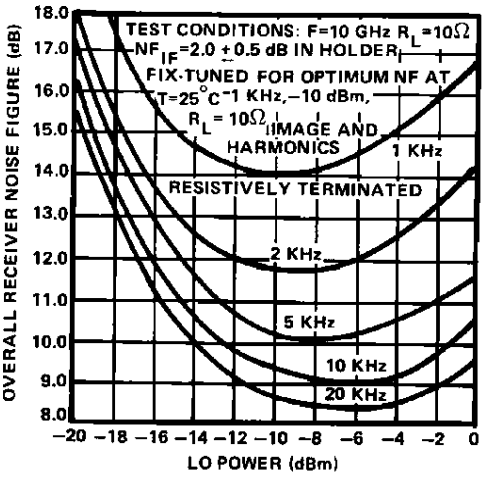
Typical Performance Curves

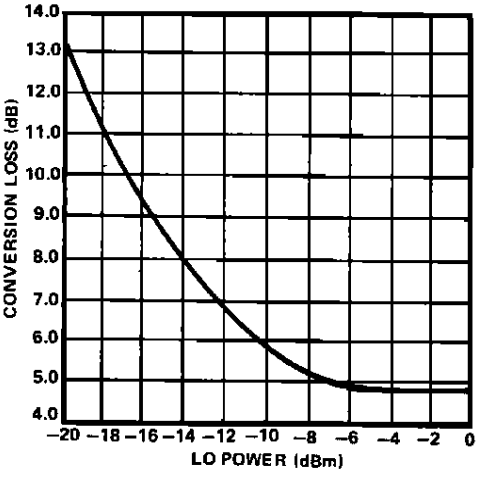
NOISE FIGURE vs I_F FREQUENCY OVER TEMPERATURE



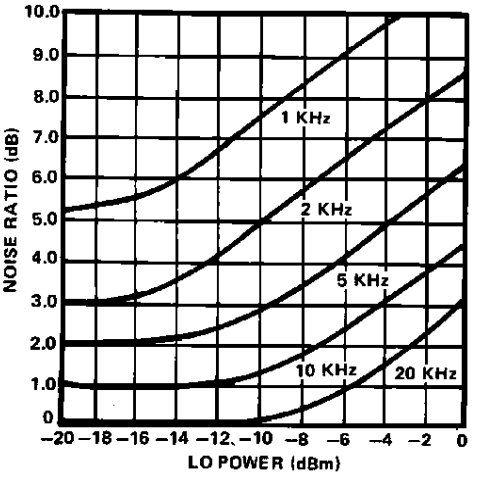
SINGLE SIDEBAND NOISE FIGURE vs POWER



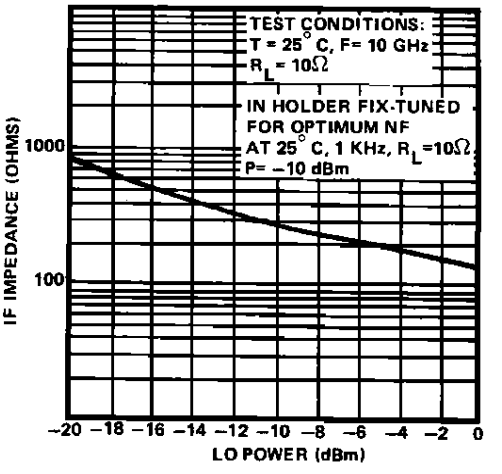
CONVERSION LOSS vs POWER



NOISE RATIO vs POWER



Z_{IF} vs POWER



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