



Features

- Low R_S — 5Ω
- High F_{CO} — 370 GHz
- Low leakage current < 1 nA at 1V typical
- N-Type
- Military and space reliability level available
- Passivated
- Tight batch matching available

Applications

- High dynamic range mixers, modulators, samplers
- Doublers
- High-speed switches
- Detectors
- Beam lead version as mixer to 60 GHz

High Barrier Specifications at 25°C

New Part Number Model-Outline MSS-	Old Part Number	Description	V_F Typ. @ 1 mA (Volts)	V_{BR} Min. @ 10 μ A (Volts)	R_D Typ. @ 5 mA (Ohms)	C_J Typ. @ 0V (pF)	C_T Typ. @ 0V (pF)	NF_{SSB} ** (dB)	R_S Typ. **** (Ohms)	F_{CO} Typ. *** (Ghz)
50,048-C15	MSKM-003	Chip	.5	4	12	.12	.12	6	7	190
50,048-P55	MSKM-101-44	Pill Packaged Chip	.5	4	12	.12	.24	6	7	190
50,048-P86	MSKM-106-49	Pill Packaged Chip	.5	4	12	.12	.27	6	7	190
50,062-C16	New	Chip	.5	5	7	.50	.50	—	2	160
50,146-B10	MSKM-667	Beam Lead	.52	5	15	.07	.10	6	9	253
50,146-E20	MSKM-667-U2	Epoxy Package Beam Lead	.52	5	15	.07	.20	6	9	253
50,146-H20	New	Hermetic Package Beam Lead	.52	5	15	.07	.28	6	9	253
50,448-B40	New	Ring Quad Beam Quad	.52	5	10	.20*	.20*	6	6	133
50,448-E40	New	Ring Quad Epoxy Package	.52	5	10	.20*	.30*	6	6	133
50,448-H40	New	Ring Quad Hermetic Package	.52	5	10	.20*	.36*	6	6	133

*Diagonal

**See page 2.

*** $F_{CO} = 1/\sqrt{2} \cdot \pi \cdot R_S \cdot C_J$; F_{CO} = Hz, R_S = Ohms, C_J = Farads

**** $R_S = R_{D5} - 5.6\Omega$



High Barrier Schottky Description

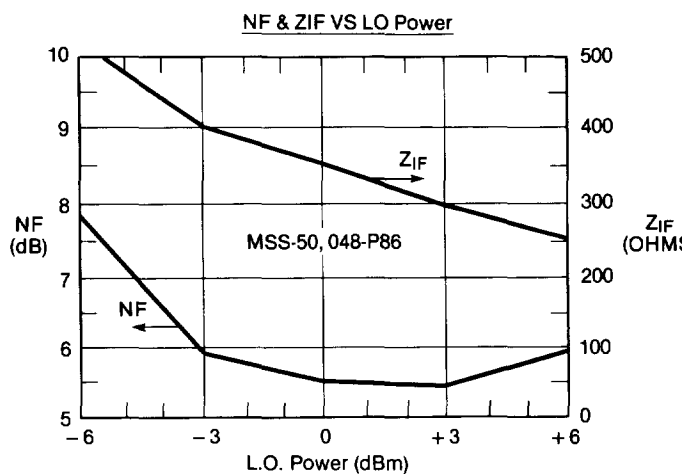
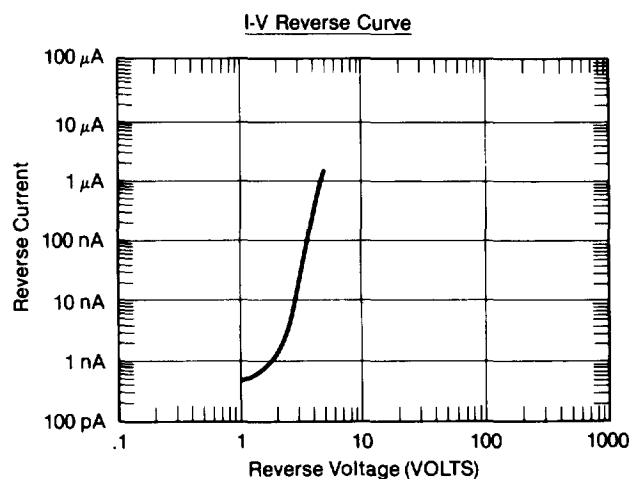
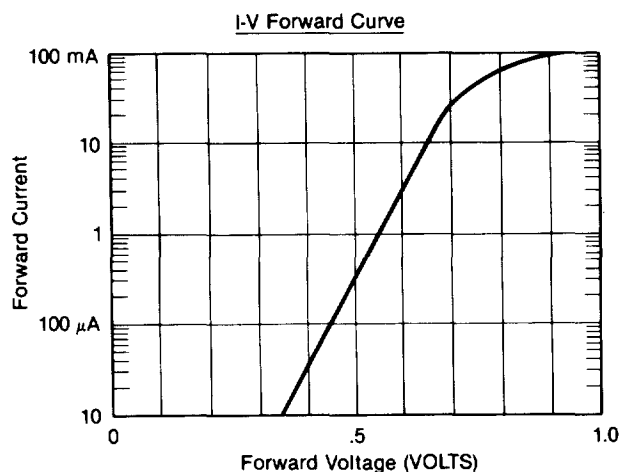
The MSS-50,000 series of Metelics silicon Schottky barrier diodes are constructed using advanced material and processes, resulting in a lower series resistance (R_s) than is produced with conventional methods. This N-type diode is well-suited for mixer applications where +3 to +6 dBm per diode is available. Because of the high cutoff frequency (F_{co} up to 370+ GHz), selected diodes can be used as mixers up to 60 GHz. The low R_s makes this family well-suited for use in extremely fast switches and samplers.

Maximum Ratings

Storage Temperature	.....	- 65 to + 150°C
Operating Temperature	.....	- 65 to + 150°C
Soldering Temperature—Chips	.....	230°C for 30 sec.
Soldering Temperature—B.L.	.....	230°C for 10 sec.
DC Power Dissipation	.....	100 mW max.
		derate linearly to
		0 mW at +150°C
Beam Lead Pull Strength	.....	6 grams

CAUTION: Static Sensitive Diodes

Typical Data



Note**

NF measured at 9.375 (3 GHz±)

50Ω source impedance

50Ω load at 30 MHz, 1.5 dB NF amplifier

< 1Ω load at DC

Z_{IF} measured using a 10 kHz signal in same set-up

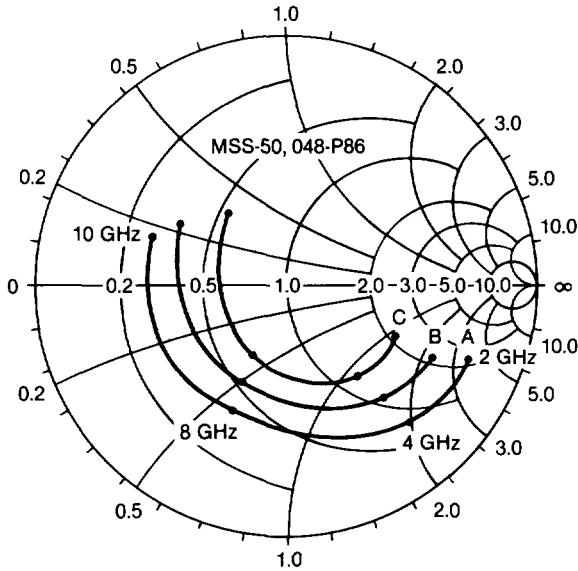
NF_{ssb} = NF_{dsb} + 3 dB



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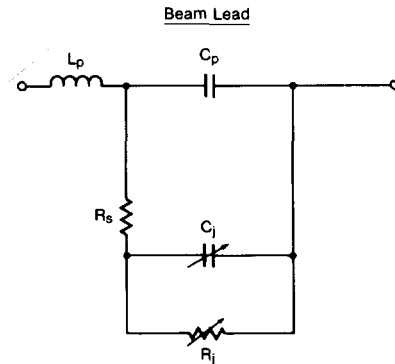
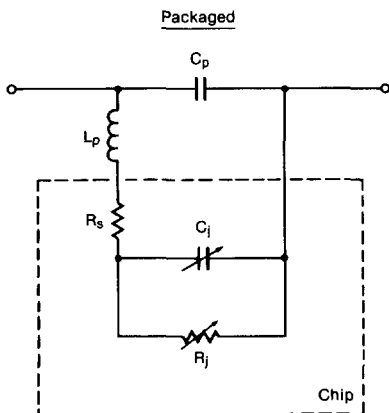
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 Telephone: (408) 737-8181
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 FSCM & CAGE 59365

Smith Chart
 50Ω Reference



- A — $I_{RECT} = 1 \text{ mA}$, $+2\frac{1}{2} \text{ dBm}$
- B — $I_{RECT} = 2 \text{ mA}$, $+4\frac{1}{2} \text{ dBm}$
- C — $I_{RECT} = 4 \text{ mA}$, $+6 \text{ dBm}$

Equivalent Circuits



Notes: Consult factory for special versions, configurations, packages, high reliability screening, or custom designs.

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POLARITY: CATHODE ANODE
 DOT CAP
 CUT LEAD PAD
 POINTED BEAM

Package Outlines

Dimensions are in Mils (mm).

