



MOTOROLA

Semiconductor Products Sector

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Information Brief



New Versions of Three Popular Low-Noise Motorola RF Transistors Will Enable Design Shrinks

... Has 42% smaller footprint area

The new MRF949, MRF959 and MRF579 are re-packaged versions of the popular MRF9411, MRF9511 and MRF5711 silicon NPN RF transistors. The newer devices are available in the SC-90 micro-miniature surface mount package, while their predecessors were in the larger SOT-143 package.

These low noise, silicon NPN transistors are fully ion-implanted with gold metallization and nitride passivation. These process features ensure maximum reliability, performance, and device-to-device uniformity.

The low noise MRF949, 959, and 579 have maximum collector currents of 50 mA, 100 mA, and 80 mA respectively. The high gain and low noise specifications of these RF discrete transistors make them an ideal choice for low voltage portable wireless applications.

FEATURES

	MRF949	MRF959	MRF579
• Minimum Noise Figure =	1.4 dB	1.3 dB	1.4dB
f = 1.0 GHz, V _{CC} = 6.0 V, I _C @	3.0 mA	5.0 mA	7.0 mA
• Gain BW Product =	9.0 GHz	9.0 GHz	8.0 GHz
V _{CC} = 6.0 V, I _C @	15 mA	30 mA	40 mA
• Maximum Stable Gain =	19 dB	17 dB	14 dB
f = 1.0 GHz, V _{CC} = 6.0 V, I _C @	10 mA	10 mA	6.0 mA
• Output IP3 =	29 dBm	30 dBm	33 dBm
f = 1.0 GHz, V _{CC} = 6.0 V, I _C @	10 mA	30 mA	25 mA
• Maximum I _C =	50 mA	100 mA	80 mA
• Fully ion-implanted with gold metallization and nitride passivation.			
• New MRF949, MRF959 and MRF579 in the SC-90 package have a footprint that is only 42% of the older MRF9411, MRF9511 and MRF5711 in the SOT-143 package.			
• Package Comparison:			
	SC90	SOT-143	
length (maximum)	1.80 mm	3.04 mm	
width (maximum)	1.75 mm	2.48 mm	
height (maximum)	1.00 mm	1.14 mm	

TYPES OF APPLICATIONS

These NPN silicon transistors are well suited for low voltage, low current, front-end RF applications such as Voltage Controlled Oscillators (VCOs), Low Noise Amplifiers (LNAs), and mixers. End use applications include pagers, cellular and cordless phones as well as other portable wireless systems.

BENEFITS TO YOU


- Higher circuit and system density with micro-miniature SC-90 plastic surface mount package having a footprint area that is only 42% of the SOT-143.
- Design flexibility at low cost with discrete transistors.
- Easily met system noise and gain specifications due to excellent low voltage operation and low bias current.
- Fewer battery cells for portable applications due to low voltage operation and low bias current.
- Long battery life with low bias current.
- Improved reliability and performance due to ion-implanted, gold metallization and nitride passivated bipolar silicon wafer process.

A SOLUTION FOR THESE QUESTIONS

- Does your design require reduced PC board space through the use of miniature surface mount devices?
- Do you need to meet low noise and high gain system specifications with devices that operate at low voltages and have low bias currents?
- Do you want to reduce system cost and increase your design flexibility by using high performance, low noise discrete transistors?
- Do you need to lower the voltage and extend the life of the battery in your portable wireless system?
- Do you want to use high reliability, high frequency NPN silicon transistors in your VCO, LNA or mixer?

LITERATURE

Complete data sheets containing full specifications, characteristic curves, common emitter S-parameters, and constant gain and noise figure contours are available through Motorola's LDC as MRF579T1/D, MRF959T1/D and MRF949T1/D. Alternately, call Mfax at 602/244-6609 and key-in MRF949T1, MRF959T1 and/or MRF579T1.

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