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RF AND IF

QUARTER 4, 2001
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What's New!

Market	Part
General Purpose RF SiGe:C LNA and Cascode Amplifier	MBC13720, MBC13916
Land Mobile Radio	MRF1535T1, MRF1550T1
TV Broadcast	MRF373A, MRF373AS, MRF374A, MRF372
900 MHz Cellular Base Station	MRF9002R1, MRF9030/S, MRF9045MR1, MRF9045, MRF9080/S/LSR3, MRF9085/S/LSR3, MRF9120/S, MRF9180/S, MHVIC910HR2
GSM/EDGE/TDMA 1.8 GHz Cellular Base Station	MRF18030A/S, MRF18030B/S, MHL18336, MHL18926
CDMA 1.9 GHz Cellular Base Station	MRF19030/S, MRF19045/S, MRF19085/S, MRF19120/S, MHL19936
W-CDMA 2.1 GHz Cellular Base Station	MRF21010/S, MRF21030/S, MRF21045/S, MRF21090/S, MRF21120/S, MRF21180/S, MHL21336
CATV GaAs	MHW9187

4th Quarter Scheduled Introductions

Market	Part
900 MHz Cellular Base Station	MRF9030MBR1, MRF9030MR1, MRF9045MBR1, MRF9060MBR1, MRF9060MR1
GSM/EDGE/TDMA 1.8 GHz Cellular Base Station	MRF18085A/S, MRF18085B/S
CDMA 1.9 GHz Cellular Base	MHPA19010, MHL19926
W-CDMA 2.1 GHz Cellular Base Station	MHPA21010
WLL, BWA, W-CDMA	MRFG35010
CATV Silicon Bipolar	MHW8202B
CATV GaAs	MHW9206

What's New! (continued)

SILICON GERMANIUM:CARBON (SIGE:C)

Several of our new products utilize Motorola's Silicon Germanium:Carbon(SiGe:C) process technology. Improved high frequency performance and lower noise are achieved by adding the SiGe:C module to our mainstream RF BiCMOS process. This option requires the addition of only a single masking step. The new process provides the designer with the ability to integrate on-chip a wide variety of high quality/accuracy active and passive devices, including copper inductors and transformers.

The SiGe:C process is designed to help enable manufacturers of digital cellular products to offer more innovative, feature-rich phones with longer battery life, at a very reasonable cost. Applications also include Bluetooth technology, short-range wireless data, and fiber optic drivers in networking, which can be expected to benefit from this technology.

WIRELESS LOCAL LOOP, BROADBAND WIRELESS ACCESS AND BASE STATION APPLICATIONS AT 3.5 GHz WITH HIGHLY LINEARIZED AMPLIFIER

The MRFG35010 is an unmatched, 3.5 GHz, 10-watt, 12-volt, GaAs discrete transistor available in a bolt-down, nonhermetic package suitable for use as a driver stage in a broadband wireless local loop (BWLL) base station amplifier. Nonhermetic packaging is utilized for cost savings. The use of a nonhermetic package has been validated by performing a highly accelerated stress and temperature test on bare GaAs die under normal operating voltages. This test was performed per JEDEC standard JESD22A110B.

Motorola's Wireless Infrastructure Systems Division is expanding its product portfolio with PHEMT technology at higher frequencies to serve applications outside of the traditional cellular/PCS/3G infrastructure markets. With the MRFG35010, Motorola SPS is now a player in the broadband wireless access market. Additional PHEMT products are in development targeting higher power transistors for BWLL at 3.5 GHz.

BEST INDUSTRY PERFORMANCE DELIVERED IN GALLIUM ARSENIDE BASED CABLE TELEVISION AMPLIFIER

Motorola's new MHW9187 advanced high-output power doubler was designed with Motorola's proprietary HVPHEMT 2 (High Voltage Pseudomorphic High Electron Mobility Transistor) process. Motorola's HVPHEMT 2 process takes output capability to new levels and allows for a significant decrease in the number of cascaded amplifiers required. The MHW9187 is the first in a series of HVPHEMT 2 based products, with additional products including higher gain output amplifiers and a complete series of preamps in development.

The MHW9187 is designed to provide our customers maximum output capability to improve system distortion and drive longer lines than previously possible. With its superior performance, the MHW9187 is engineered to allow for the design of more cost-effective systems than ever before.

WIRELESS RADIO FREQUENCY PRODUCT

As a leading supplier of semiconductor products, Motorola has an extensive RF portfolio of products that serve the wireless infrastructure and subscriber markets. Utilizing LDMOS, BiCMOS, GaAs and SMARTMOS™ technologies, Motorola is committed to the development of new products and expansion of its product offerings to meet the increasing global demands of ISM band and personal communications systems, including cellular phone, broadband data, TV broadcast, land mobile and CATV systems.

RF FRONT END ICS

RFICs

Upconverters/Exciters

Device	RF Freq. Range MHz	Supply Volt. Range Vdc	Supply Current mA (Typ)	Standby Current mA (Typ)	Conv. Gain dB (Typ)	Output IP3 dBm (Typ)	Case No./ Package	System Applicability
MRFIC1813[18b]	1700 to 2000	2.7 to 4.5	25	0.1	15	11	948C/ TSSOP-16	DCS1800, PCS

Power Amplifiers

Device	Freq. Range MHz	Supply Volt. Range Vdc	Saturated P_{out} dBm (Typ)	PAE % (Typ)	Gain P_{out}/P_{in} dB (Typ)	Case No./ Package	System Applicability
MRFIC1819[18b]	1700 to 2000	3.0 to 5.0	33	40	27	948L/ TSSOP-16EP	DCS1800, PCS
MRFIC1869[46a]	800 to 1000	2.7 to 5.5	35.8	55	35.8	1311/ QFN-32	GSM900
	1700 to 2000		34	45	32		DCS1800, PCS

RF BUILDING BLOCKS

Amplifiers

Device	RF Freq. Range MHz	Supply Volt. Range Vdc	Supply Current mA (Typ)	Standby Current µA (Typ)	Small Signal Gain dB (Typ)	Output IP3 dBm (Typ)	NF dB (Typ)	Case No./ Package	System Applicability
MBC13706[46a]	800 to 1000	2.7 to 3.6	10	200	26 @ 900 MHz	6.0 @ 900 MHz	3.0 @ 900 MHz	846A/ Micro-8	GSM, ISM
MBC13720[18c]	400 to 2500	2.5 to 3.0	9.0	<20	14.5 @ 1900 MHz	24.5 @ 1900 MHz	1.38 @ 1900 MHz	419B/ SOT-363	ISM900, 2400, PCS, CDMA
MBC13916[18l]	100 to 2500	2.7 to 5.0	4.7	-	19 @ 900 MHz	16.5 @ 900 MHz	0.9 @ 900 MHz	SOT-343R	General Purpose Cascode Amp for VCOs, Buffers, & LNAs

[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

Low Power Transistors

Device	Gain - Bandwidth		NFmin @ f		Gain @ f		Maximum Ratings		Case No./ Package
	f_τ Typ GHz	I_C mA	Typ dB	GHz	Typ dB	GHz	V(BR) CEO Volts	I_C mA	
MBC13900[46a]	15	20	1.0	1.0	17	1.0	7.0	20	318M/ SOT-343
			1.3	2.0	14	2.0			

RF Front End Integrated Circuit Packages

Case 318M (SOT-343)

Case 419B (SOT-363)

Case 846A (Micro-8)

Case 948L (TSSOP-16EP)

Case 1311 (QFN-32, 5x5mm)

RF/IF SUBSYSTEMS

Transceivers

Device	V_{CC}	I_{CC}	GSM Receiver	TDMA/iDEN Receiver	Fractional-N PLL	Direct Launch GSM Transmitter	System Applicability	Case No./ Pkg Type
MC13760[46a]	2.65 to 2.9 4.78 to 5.22 (Charge Pumps)	Transmit 20 mA Receive 30 mA	✓	✓	✓	✓	GSM/DCS, TDMA, iDEN, AMPS	1285/ BGA-104

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

MISCELLANEOUS FUNCTIONS

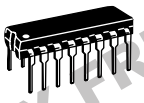
ADCs/DACs

Device	Function	I/O Format	Resolution	Number of Analog Channels	On-Chip Oscillator	Other Features	Suffix/ Case No.
MC144110	DAC	Serial	6 Bits	6	---	Emitter-Follower Outputs	DW/751D
MC144111	DAC	Serial	6 Bits	4	---	Emitter-Follower Outputs	DW/751G

Encoders/Decoders

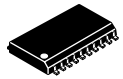
Device	Function	Number of Address Lines	Maximum Number of Address Codes	Number of Data Bits	Operation	Suffix/ Case No.
MC145026	Encoder	Depends on Decoder	Depends on Decoder	Depends on Decoder	Simplex	P/648, D/751B
MC145027	Decoder	5	243	4	Simplex	P/648, DW/751G
MC145028	Decoder	9	19,683	0	Simplex	P/648, DW/751G

RF/IF Subsystems Packages



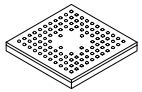
Case 648
P Suffix
(DIP-16)

Case 751B
D Suffix
(SO-16)



Case 751D
DW Suffix
(SO-20L)

Case 751G
DW Suffix
(SO-16W)

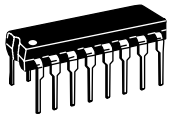


Case 1285
(BGA-104)

Single PLL Synthesizers

Maximum Frequency (MHz)	Supply Voltage (V)	Nominal Supply Current (mA)	Features	Device	Suffix/Case
20 @ 5.0 V	3.0 to 9.0	7.5 @ 5 V	Parallel Interface	MC145151-2	DW/751F
20 @ 5.0 V	3.0 to 9.0	7.5 @ 5 V	Parallel Interface, Uses External Dual-Modulus Prescaler	MC145152-2	DW/751F
20 @ 5.0 V	3.0 to 9.0	7.5 @ 5 V	Serial Interface	MC145157-2	DW/751G
20 @ 5.0 V	3.0 to 9.0	7.5 @ 5 V	Serial Interface, Uses External Dual-Modulus Prescaler	MC145158-2	DW/751G
100 @ 3.0 V 185 @ 4.5 V	2.7 to 5.5	2 @ 3 V 6 @ 5 V	Serial Interface, Auxiliary Reference Divider, Evaluation Kit - MC145170EVK	MC145170-2	P/648 D/751B DT/948C

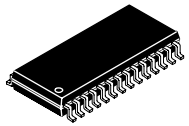
Frequency Synthesis Packages



Case 648
P Suffix
(DIP-16)

Case 751B
D Suffix
(SO-16)

Case 751G
DW Suffix
(SO-16W)



Case 751F
DW Suffix
(SO-28L)

Case 948C
DT Suffix
(TSSOP-16)

MOTOROLA RF HIGH POWER TRANSISTORS
RF LDMOS POWER TRANSISTORS

Motorola LDMOS technology is ideally suited for RF power amplifier applications. Several families of products have been targeted for specific markets including VHF and UHF portable/land mobile, 900 MHz linear cellular, GSM, TDMA and CDMA, digital television, GSM EDGE, PCS, UMTS, and W-CDMA.
With the unique LDMOS characteristics, these parts offer superior thermal performance. This is due to the simplified package design, which offers excellent Class AB intermodulation performance under medium peak-to-average ratios providing a superior device choice for advanced digital modulations formats or high gain applications.

Mobile — To 520 MHz

Designed for broadband VHF and UHF commercial and industrial applications. The high gain and broadband performance of these devices make them ideal for large-signal, common-source amplifier applications in 12.5/7.5 volt mobile, portable and base station operation.

Device	Frequency Band[37]		P_{out} Watts	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Package/Style
VHF & UHF, Land Mobile Radio, Class AB								
MRF1511T1[18f]	U	136-175	8	7.5	11.5/175	55	2.0	466/1
MRF1517T1[18f]	U	430-520	8	7.5	11/520	55	2.0	466/1
MRF1513T1[18f]	U	400-520	3	7.5/12.5	11/520	55	4.0	466/1
MRF1518T1[18f]	U	400-520	8	12.5	11/520	55	2.0	466/1
MRF1535T1[18j] ☆	U	400-520	35	12.5	10(Min)/520	50(Min)	0.90	1264/1
MRF1550T1[18j] ☆	U	136-175	50	12.5	10(Min)/175	50(Min)	0.75	1264/1

TV Broadcast — To 1.0 GHz

Device	Frequency Band[37]		P_{out} Watts	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	IMD dBc	Package/Style
470 - 1000 MHz, Class AB									
MRF373A ☆	U	470-860	75 CW	32	18.2/860	60	0.89	—	360B/1
MRF373AS ☆	U	470-860	75 CW	32	18.2/860	60	0.63	—	360C/1
MRF374A ☆	U	470-860	130 PEP	32	17.3/860	41	0.58	-31	375F/2
MRF372 ☆	M	470-860	180 PEP	32	17/860	36	0.5	-35	375G/2
MRF377[46b]	M	470-860	240 PEP	32	16/860	40	0.5	-30	375G/2

[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.
[37]M = Matched Frequency Band; U = Unmatched Frequency Band.
[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02
☆ New Product

Cellular — To 1.0 GHz

Device	Frequency Band[37]	P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
800 - 1.0 GHz, Class AB								
MRF9002R2[18e] ☆	U	960	(3x) 2 PEP[41]	2-Tone	26	16/960	50	12	978/-
MRF9030MBR1[18a,46a]	U	945	30 PEP	2-Tone	26	19.2/945	41	—	1337/1
MRF9030MR1[18a,46a]	U	945	30 PEP	2-Tone	26	19.2/945	41	—	1265/1
MRF9030 ☆	U	945	30 PEP	2-Tone	26	19/945	41.3	1.9	360B/1
MRF9030S[18a] ☆	U	945	30 PEP	2-Tone	26	19/945	41.3	1.5	360C/1
MRF9045MBR1[18a,46a]	U	945	45 PEP	2-Tone	28	19.5/945	40.5	0.85	1337/1
MRF9045MR1[18a] ☆	U	945	45 PEP	2-Tone	28	18.5/945	41	0.8[50]	1265/1
MRF9045 ☆	U	945	45 PEP	2-Tone	28	18.8/945	42	1.4	360B/1
MRF9045S[18a] ☆	U	945	45 PEP	2-Tone	28	18.8/945	42	1.0	360C/1
MRF9060MBR1[18a,46a]	U	945	60 PEP	2-Tone	26	18/945	40	—	1337/1
MRF9060MR1[18a,46a]	U	945	60 PEP	2-Tone	26	18/945	40	—	1265/1
MRF9060 ☆	U	945	60 PEP	2-Tone	26	17/945	40	1.1	360B/1
MRF9060S[18a] ☆	U	945	60 PEP	2-Tone	26	17/945	40	0.8	360C/1
MRF6522-70[18i]	M	921-960	70 CW	1-Tone	26	16/921,960	58	1.1	465D/1
MRF9080 ☆	M	921-960	75 CW	1-Tone	26	18.5/921,960	55	0.7	465/1
MRF9080LSR3[18i] ☆	M	921-960	75 CW	1-Tone	26	18.5/921,960	55	0.7	465A/1
MRF9080S ☆	M	921-960	75 CW	1-Tone	26	18.5/921,960	55	0.7	465A/1

[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.
[37]M = Matched Frequency Band; U = Unmatched Frequency Band.
[41]Three individual transistors in a single package.
[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02
[50]Simulated
☆New Product

RF LDMOS POWER TRANSISTORS (CONTINUED)

Cellular — To 1.0 GHz (continued)

Device	Frequency Band[37]	P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
800 - 1.0 GHz, Class AB (continued)								
MRF9085[18i] ☆	M	880	90 PEP	2-Tone	26	17.9/880	40	0.7	465/1
MRF9085LSR3[18i] ☆	M	880	90 PEP	2-Tone	26	17.9/880	40	0.7	465A/1
MRF9085S ☆	M	880	90 PEP	2-Tone	26	17.9/880	40	0.7	465A/1
MRF9100L[46b]	M	921-960	100 CW	1-Tone	26	19/960	50	1.0	465/1
MRF9100LS[46b]	M	921-960	100 CW	1-Tone	26	19/960	50	1.0	465A/1
MRF9120 ☆	M	880	120 PEP	2-Tone	26	16.5/880	39	0.45	375B/2
MRF9120S ☆	M	880	120 PEP	2-Tone	26	16.5/880	39	0.45	375H/2
MRF9135L[46b]	M	880	26 AVG	N-CDMA	26	17/880	25	0.6	465/1
MRF9135LS[46b]	M	880	26 AVG	N-CDMA	26	17/880	25	0.6	465A/1
MRF9180 ☆	M	880	170 PEP	2-Tone	26	17.5/880	39	0.45	375D/2
MRF9180S ☆	M	880	170 PEP	2-Tone	26	17.5/880	39	0.45	375E/2
MRF9200L[46b]	M	880	45 AVG	N-CDMA	26	17/880	26	0.4	465B/1
MRF9200LS[46b]	M	880	45 AVG	N-CDMA	26	17/880	26	0.4	465C/1
MRF9210[46b]	M	880	200 PEP	2-Tone	26	16/880	39	0.5	375G/2

[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.

[37]M = Matched Frequency Band; U = Unmatched Frequency Band.

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

☆New Product

PCS and 3G — To 2.1 GHz

Device	Frequency Band[37]		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
1805 - 1990 MHz, Class AB (GSM1800, GSM1900, GSM EDGE and PCS TDMA)									
MRF18030A[18i] ☆	M	1805-1880	30 CW	1-Tone	26	14/1805,1880	50	2.1	465E/1
MRF18030AS[18i] ☆	M	1805-1880	30 CW	1-Tone	26	14/1805,1880	50	2.1	465F/1
MRF18030B[18i] ☆	M	1930-1990	30 CW	1-Tone	26	14/1930,1990	50	2.1	465E/1
MRF18030BS[18i] ☆	M	1930-1990	30 CW	1-Tone	26	14/1930,1990	50	2.1	465F/1
MRF18060A[18i]	M	1805-1880	60 CW	1-Tone	26	13/1805,1880	45	0.97	465/1
MRF18060ASR3[18i]	M	1805-1880	60 CW	1-Tone	26	13/1805,1880	45	0.97	465A/1
MRF18060B[18i]	M	1930-1990	60 CW	1-Tone	26	13/1930,1990	45	0.97	465/1
MRF18060BS	M	1930-1990	60 CW	1-Tone	26	13/1930,1990	45	0.97	465A/1
MRF18085A[46a]	M	1805-1880	85 CW	1-Tone	26	13/1805,1880	53	0.64	465/1
MRF18085AS[46a]	M	1805-1880	85 CW	1-Tone	26	13/1805,1880	53	0.64	465A/1
MRF18085B[46a]	M	1930-1990	85 CW	1-Tone	26	13/1930,1990	52	0.64	465/1
MRF18085BS[46a]	M	1930-1990	85 CW	1-Tone	26	13/1930,1990	52	0.64	465A/1
MRF18090A	M	1805-1880	90 CW	1-Tone	26	13.5/1805,1880	52	0.7	465B/1
MRF18090AS	M	1805-1880	90 CW	1-Tone	26	13.5/1805,1880	52	0.7	465C/1
MRF18090B	M	1930-1990	90 CW	1-Tone	26	13.5/1930,1990	45	0.7	465B/1
MRF18090BS	M	1930-1990	90 CW	1-Tone	26	13.5/1930,1990	45	0.7	465C/1

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[37]M = Matched Frequency Band; U = Unmatched Frequency Band.

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

☆ New Product

RF LDMOS POWER TRANSISTORS (CONTINUED)

PCS and 3G — To 2.1 GHz (continued)

Device	Frequency Band[37]		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
1.9 GHz, Class AB (2-CH N-CDMA)									
MRF19030 ☆	M	1930-1990	30 PEP	2-Tone	26	13/1990	36	2.1	465E/1
MRF19030S[18i]	M	1930-1990	30 PEP	2-Tone	26	13/1990	36	2.1	465F/1
MRF19045[18i] ☆	M	1930-1990	9.5 AVG	N-CDMA	26	14.5/1990	23.5	0.65	465E/1
MRF19045S[18i] ☆	M	1930-1990	9.5 AVG	N-CDMA	26	14.5/1990	23.5	0.65	465F/1
MRF19060[18i]	M	1930-1990	60 PEP	2-Tone	26	12.5/1990	36	0.97	465/1
MRF19060S[18i]	M	1930-1990	60 PEP	2-Tone	26	12.5/1990	36	0.97	465A/1
MRF19090	M	1930-1990	90 PEP	2-Tone	26	11.5/1990	35	0.65	465B/1
MRF19090S	M	1930-1990	90 PEP	2-Tone	26	11.5/1990	35	0.65	465C/1
MRF19085[18i] ☆	M	1930-1990	18 AVG	N-CDMA	26	13/1990	23	0.64	465/1
MRF19085S[18i] ☆	M	1930-1990	18 AVG	N-CDMA	26	13/1990	23	0.64	465A/1
MRF19120[3] ☆	M	1930-1990	120 PEP	2-Tone	26	11.7/1990	34	0.45	375D/2
MRF19120S[3] ☆	M	1930-1990	120 PEP	2-Tone	26	11.7/1990	34	0.45	375E/2
MRF19125 ☆	M	1930-1990	24 AVG	N-CDMA	26	13.5/1990	22	0.53	465B/1
MRF19125S ☆	M	1930-1990	24 AVG	N-CDMA	26	13.5/1990	22	0.53	465C/1
MRF19180[46b]	M	1930-1990	40 AVG	N-CDMA	26	11.4/1990	34	0.39	375D/2
MRF19180S[46b]	M	1930-1990	40 AVG	N-CDMA	26	11.4/1990	34	0.39	375E/2

[3]Internal Impedance Matched Push–Pull Transistors
[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.
[37]M = Matched Frequency Band; U = Unmatched Frequency Band.
[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02
☆New Product

PCS and 3G — To 2.1 GHz (continued)

Device	Frequency Band[37]		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
2.0 GHz, Class A, AB									
MRF281SR1[18a]	U	1930-2000	4 PEP	2-Tone	26	12.5/2000	33	5.74	458B/1
MRF281ZR1[18a]	U	1930-2000	4 PEP	2-Tone	26	12.5/2000	33	5.74	458C/1
MRF282SR1[18a]	U	1930-2000	10 PEP	2-Tone	26	11.5/2000	28(min)	4.2	458B/1
MRF282ZR1[18a]	U	1930-2000	10 PEP	2-Tone	26	11.5/2000	28(min)	4.2	458C/1
MRF284	U	1930-2000	30 PEP	2-Tone	26	10.5/2000	35	2.0	360B/1
MRF284SR1[18a]	U	1930-2000	30 PEP	2-Tone	26	10.5/2000	35	2.0	360C/1
MRF286[46a]	M	1930-2000	60 PEP	2-Tone	26	10.5/2000	32	0.73	465/1
MRF286S[46a]	M	1930-2000	60 PEP	2-Tone	26	10.5/2000	32	0.73	465A/1
2.1 GHz, Class AB (2-CH W-CDMA, UMTS)									
MRF21010 ☆	U	2110-2170	10 PEP	2-Tone	28	13.5/2170	35	5.5	360B/1
MRF21010S ☆	U	2110-2170	10 PEP	2-Tone	28	13.5/2170	35	5.5	360C/1
MRF21030[18i] ☆	M	2110-2170	30 PEP	2-Tone	28	13/2170	33	2.1	465E/1
MRF21030S[18i] ☆	M	2110-2170	30 PEP	2-Tone	28	13/2170	33	2.1	465F/1
MRF21045[18i] ☆	M	2110-2170	10 AVG	W-CDMA	28	15/2170	23.5	1.65	465E/1
MRF21045S[18i] ☆	M	2110-2170	10 AVG	W-CDMA	28	15/2170	23.5	1.65	465F/1
MRF21060[18i]	M	2110-2170	60 PEP	2-Tone	28	12.5/2170	34	1.02	465/1
MRF21060SR3[18i]	M	2110-2170	60 PEP	2-Tone	28	12.5/2170	34	1.02	465A/1

[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 = 5,000 units.

[37]M = Matched Frequency Band; U = Unmatched Frequency Band.

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

☆ New Product

RF LDMOS POWER TRANSISTORS (CONTINUED)

PCS and 3G — To 2.1 GHz (continued)

Device	Frequency Band[37]		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/GHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
2.1 GHz, Class AB (2-CH W-CDMA, UMTS) (continued)									
MRF21085 ☆	M	2110-2170	19 AVG	W-CDMA	28	13.6/2170	23	0.78	465/1
MRF21085S ☆	M	2110-2170	19 AVG	W-CDMA	28	13.6/2170	23	0.78	465A/1
MRF21090 ☆	M	2110-2170	90 PEP	2-Tone	28	11.7/2170	33	0.65	465B/1
MRF21090S ☆	M	2110-2170	90 PEP	2-Tone	28	11.7/2170	33	0.65	465C/1
MRF21120[3] ☆	M	2110-2170	120 PEP	2-Tone	28	11.4/2170	34.5	0.45	375D/2
MRF21120S[3] ☆	M	2110-2170	120 PEP	2-Tone	28	11.2/2170	34.5	0.45	375E/2
MRF21125	M	2110-2170	20 AVG	W-CDMA	28	13/2170	18	0.53	465B/1
MRF21125S	M	2110-2170	20 AVG	W-CDMA	28	13/2170	18	0.53	465C/1
MRF21180[3] ☆	M	2110-2170	38 AVG	W-CDMA	28	12.1/2170	22	0.46	375D/2
MRF21180S[3] ☆	M	2110-2170	38 AVG	W-CDMA	28	12.1/2170	22	0.46	375E/2

[3]Internal Impedance Matched Push–Pull Transistors
[37]M = Matched Frequency Band; U = Unmatched Frequency Band.
☆ New Product

RF POWER GaAs TRANSISTORS

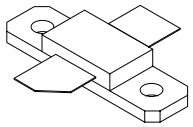
Motorola power GaAs transistors are made using an InGaAs PHEMT epitaxial structure for superior RF efficiency and linearity. The FETs listed in this section are designed for operation in base station infrastructure RF power amplifiers and are grouped according to frequency range and type of application. Parts are listed first by order of operating voltage, then by increasing output power.

3.5 GHz — Linear Transistors

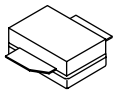
Device	Frequency Band[37]		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/GHz	η Eff. (Typ) %	θ_{JC} °C/W	Pkg/ Style
3.5 GHz, Class AB (WLL, BWA, W-CDMA)									
MRFG35010[46a]	U	3.5 G	1 AVG	W-CDMA	12	10/3.5	26	5.5	360D/1
MRFG35030[9]	M	3.5 G	4 AVG	W-CDMA	12	10/3.5	26	—	—

[9]In development.
[37]M = Matched Frequency Band; U = Unmatched Frequency Band.
[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

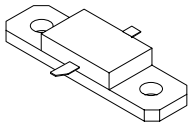
RF High Power Transistor Packages



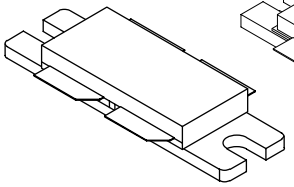
Case 360B
Style 1
(NI-360)



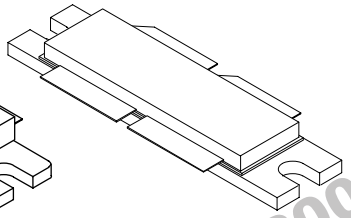
Case 360C
Style 1
(NI-360S)



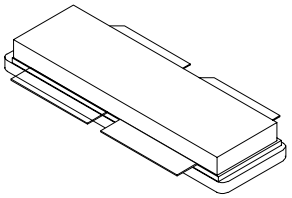
Case 360D
Style 1
(NI-360HF)



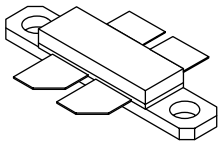
Case 375B
Style 2
(NI-860)



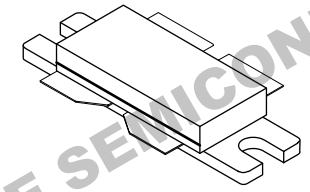
Case 375D
Style 2
(NI-1230)



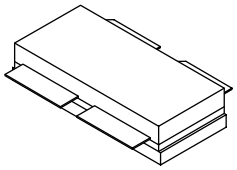
Case 375E
Style 2
(NI-1230S)



Case 375F
Style 2
(NI-650)



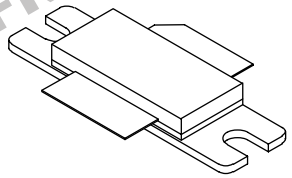
Case 375G
Style 2
(NI-860C3)



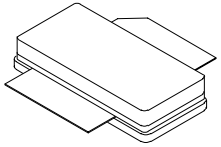
Case 375H
Style 2
(NI-860S)

Case 458B
Style 1
(NI-200S)

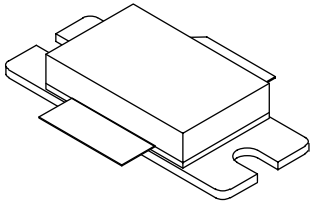
Case 458C
Style 1
(NI-200Z)



Case 465
Style 1
(NI-780)

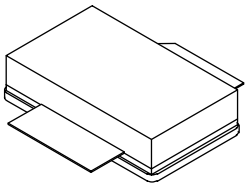


Case 465A
Style 1
(NI-780S)

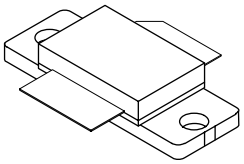


Case 465B
Style 1
(NI-880)

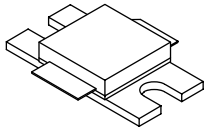
Scale 1:1



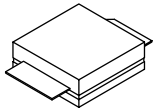
Case 465C
Style 1
(NI-880S)



Case 465D
Style 1
(NI-600)

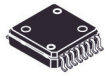


Case 465E
Style 1
(NI-400)



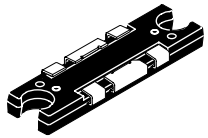
Case 465F
Style 1
(NI-400S)

Case 466
Style 1
PLASTIC
(PLD 1.5)

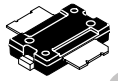


Case 978
PLASTIC
(PFP-16)

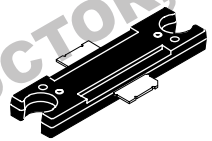
Scale 1:1



Case 1264
Style 1
PLASTIC
(TO-272)



Case 1265
Style 1
PLASTIC
(TO-270)



Case 1337
Style 1
PLASTIC
(TO-272 Dual Lead)

MOTOROLA RF AMPLIFIER MODULES/ICs

Complete amplifiers with 50 ohm input impedances are available for all popular base station transmitter systems, including GSM and CDMA, covering frequencies from 800 MHz up to 2.2 GHz.

Base Station Drivers

Designed for applications such as macrocell drivers and microcell output stage, these class AB amplifiers are ideal for base station systems with power requirements up to 10 watts.

Device	Frequency MHz	P1dB Watts	Gain (Min) dB	Supply Voltage Volts	Class	System Application	Die Technology	Package/Style
MHVIC910HR2[18e] ☆	921-960	10	38	26	AB	GSM900	LDMOS-IC	978/-
MHW1810-1	1805-1880	10	24	26	AB	GSM1800	LDMOS	301AW/1
MHW1810-2	1805-1880	10	32	26	AB	GSM1800	LDMOS	301AW/1
MHW1910-1	1930-1990	10	24	26	AB	GSM1900	LDMOS	301AW/1
MHPA19010[46a]	1900-2000	10	24	28	AB	PCS1900	LDMOS	301AP/3
MHPA21010[46a]	2100-2200	10	24	28	AB	W-CDMA	LDMOS	301AP/3

Base Station Pre-Drivers

These 50 ohm amplifiers are recommended for modern multi-tone CDMA, TDMA and UMTS base station pre-driver applications. Their high third-order intercept point, tight phase and gain control, and excellent group delay characteristics make these devices ideal for use in high-power feedforward loops.

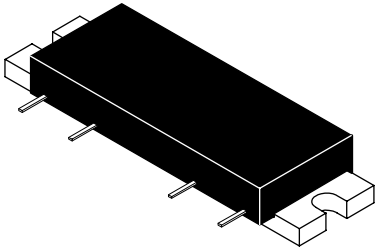
Ultra-Linear (for CDMA, W-CDMA, TDMA, Analog) — Class A (LDMOS Die) — Lateral MOSFETs

Device	Frequency Band MHz	V_{DD} (Nom.) Volts	I_{DD} (Nom.) mA	Gain (Nom.) dB	Gain Flatness (Typ) dB	P_{1dB} (Typ) dBm	3rd Order Intercept (Typ) dBm	NF (Typ) dB	Case/ Style
MHL9838	800 - 925	28	770	31	.1	39	50	3.7	301AP/1
MHL9236	800 - 960	26	550	30.5	.1	34	47	3.5	301AP/1
MHL9236M	800 - 960	26	550	30.5	.1	34	47	3.5	301AP/2
MHL9318	860 - 900	28	500	17.5	.1	35.5	49	3.0	301AS/1
MHL18336 ☆	1800 - 1900	26	500	30	.2	36	46	4.2	301AP/1
MHL18926 ☆	1805 - 1880	26	1100	28.6	.3	40	50	4.2	301AY/1
MHL19338 ☆	1900 - 2000	28	500	30	.1	36	46	4.2	301AP/1
MHL19926 [46a]	1930 - 1990	26	1000	29.4	.3	40	50	4.2	301AY/1
MHL19936 ☆	1900 - 2000	26	1400	29	.2	41	49.5	4.2	301AY/1
MHL21336 ☆	2110 - 2170	26	500	31	.15	35	45	4.5	301AP/1

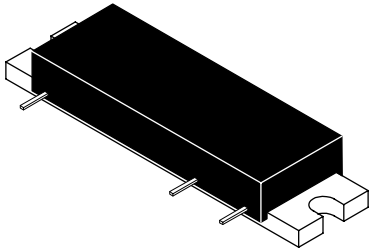
[18]Tape and Reel Packaging Option Available by adding suffix: a) R1 = 500 units; b) R2 = 2,500 units; c) T1 = 3,000 units; d) T3 = 10,000 units; e) R2 = 1,500 units; f) T1 = 1,000 units; g) R2 = 4,000 units; h) R1 = 1,000 units; i) R3 = 250 units; j) T1 = 500 units; k) R2 = 450 units; l) T1 - 5,000 units.

[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02

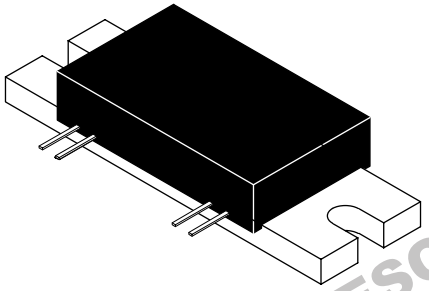
☆ New Product



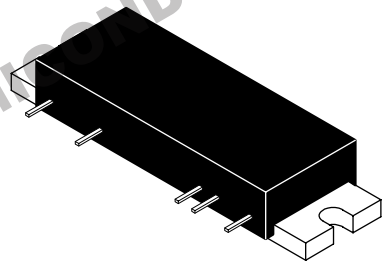
Case 301AP
Style 1, 2, 3



Case 301AS
Style 1



Case 301AW
Style 1



Case 301AY
Style 1

Case 978
PLASTIC
(PFP-16)

Scale 1:1

MOTOROLA RF CATV DISTRIBUTION AMPLIFIERS

Motorola Hybrids are manufactured using the latest generation technology which has set new standards for CATV system performance and reliability. These hybrids have been optimized to provide premium performance in all CATV systems up to 152 channels.

FORWARD AMPLIFIERS

40-1000 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) @ 50 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 1000 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 152 CH	Cross Modulation dB 152 CH		
MHW9182B	18.5	152	+38	-63(40)	-61	-61	7.5	714Y/1
MHW9242A	24	152	+38	-61(40)	-58	-59	8.0	714Y/1

40-870 MHz High Output Gallium Arsenide Power Doubler

Device	Hybrid Gain (Nom.) @ 870 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 870 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 132 CH	Cross Modulation dB 132 CH		
MHW9187 ☆	20	132	+48	-62(34)	-56	-55	4.5	1302/1
MHW9227(9)	22	132	+48	-58(34)	-54	-54	6.0	1302/1
MHW9247(9)	24	132	+48	-59(34)	-55	-54	5.5	1302/1
MHW9267(9)	26	132	+48	-60(34)	-56	-54	5.5	1302/1

(9)In development.
(34)Composite 2nd Order; V_{out} = + 48 dBmV/ch
(40)Composite 2nd Order; V_{out} = + 38 dBmV/ch
☆New Product

40-870 MHz Gallium Arsenide Preamplifiers

Device	Hybrid Gain (Nom.) @ 870 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 870 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 132 CH	Cross Modulation dB 132 CH		
MHW9146[9]	14	132	+44	-64[36]	-56	-55	5.5	1302/1
MHW9186[46b]	18	132	+44	-64[36]	-56	-55	5.0	1302/1
MHW9206[46a]	20	132	+44	-64[36]	-55	-55	4.5	1302/1
MHW9236[9]	23	132	+44	-60[36]	-54	-53	5.5	1302/1
MHW9256[9]	25	132	+44	-60[36]	-55	-53	5.0	1302/1
MHW9276[9]	27	132	+44	-60[36]	-56	-53	5.0	1302/1

40-870 MHz Preamplifiers

Device	Hybrid Gain (Nom.) @ 870 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 870 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 132 CH	Cross Modulation dB 132 CH		
MHW8202B[46a]	20	132	+38	-62[40]	-65	-60	7.5	1302/1

[9]In development.
[36]Composite 2nd order; V_{out} = + 44 dBmV/ch
[40]Composite 2nd Order; V_{out} = + 38 dBmV/ch
[46]To be introduced: a) 4Q01; b) 1Q02; c) 2Q02
☆New Product

FORWARD AMPLIFIERS (CONTINUED)

40-860 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) @ 50 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 860 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 128 CH	Cross Modulation FM = 55 MHz dB 128 CH		
MHW8182B	18.5	128	+38	-64[40]	-66	-65	7.5	714Y/1
MHW8222B	21.9	128	+38	-60[40]	-64	-63	7.0	1302/1
MHW8242A	24	128	+38	-62[40]	-64	-62	7.5	714Y/1
MHW8272A	27.2	128	+38	-64[40]	-64	-62	7.0	714Y/1
Power Doubling Hybrids								
MHW8185L[21]	18.5	128	+40	-62[39]	-63	-64	8.5*	714Y/1
MHW8185	18.8	128	+40	-62[39]	-64	-64	8.0	714Y/1
MHW8205L[22]	19.5	128	+40	-60[39]	-63	-64	8.5*	714Y/1
MHW8205	19.8	128	+40	-60[39]	-63	-64	8.0	714Y/1

*@ 870 MHz

[21]Low DC Current Version of MHW8185; Typical I_{CC} @ Vdc = 24 V is 365 mA.
[22]Low DC Current Version of MHW8205; Typical I_{CC} @ Vdc = 24 V is 365 mA.
[39]Composite 2nd order; V_{out} = +40 dBmV/ch
[40]Composite 2nd Order; V_{out} = + 38 dBmV/ch

40-750 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) @ 50 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 750 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 110 CH	Cross Modulation FM = 55 MHz dB 110 CH		
MHW7182B	18.5	110	+40	-63[39]	-66	-64	6.5	714Y/1
MHW7222B	21.9	110	+40	-60[39]	-61	-60	6.5	1302/1
MHW7242A	24	110	+40	-62[39]	-63	-61	7.0	714Y/1
MHW7272A	27.2	110	+40	-64[39]	-64	-60	6.5	714Y/1
Power Doubling Hybrids								
MHW7185C	18.8	110	+44	-64[36]	-62	-63	7.5	714Y/1
MHW7205C	19.8	110	+44	-63[36]	-61	-62	7.5	714Y/1

40-550 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) @ 50 MHz dB	Channel Loading Capacity	Maximum Distortion Specifications				Noise Figure @ 550 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test dB	Composite Triple Beat dB 77 CH	Cross Modulation dB 77 CH		
MHW6342T	34.5	77	+44	-64[35]	-57	-57	6.5	1302/1

[35]Channels 2 and M30 @ M39
[36]Composite 2nd order; V_{out} = + 44 dBmV/ch
[39]Composite 2nd order; V_{out} = +40 dBmV/ch

REVERSE AMPLIFIERS

5-200 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) dB	Channel Loading Capacity	Maximum Distortion Specifications						Noise Figure @ 175 MHz dB Max	Package/ Style
			Output Level dBmV	2nd Order Test[30] dB	Composite Triple Beat dB		Cross Modulation dB			
					22 CH	26 CH	22 CH	26 CH		
MHW1244	24	22	+50	-72	-68	-67.5[19]	-61	-61[19]	5.0	714Y/1

Low Current Amplifiers — 5-200 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) dB	Channel Loading Capacity	Maximum Distortion Specifications							DC Current mA Typ.	Noise Figure @ 200 MHz dB Max	Pkg/ Style
			Output Level dBmV	2nd Order Test dB		Composite Triple Beat dB		Cross Modulation dB				
				6 CH	10 CH	6 CH	10 CH	6 CH	10 CH			
MHW1223LA ☆	22.7	6,10	50	-68	-65	-75	-66	-65	-60	95	7.0	1302/1
MHW1253LA ☆	25.5	6,10	50	-68	-66	-75	-66	-65	-61	95	6.5	1302/1
MHW1303LA ☆	30.8	6,10	50	-68	-65	-74	-64	-64	-58	95	5.7	1302/1

Low Current Amplifiers — 5-150 MHz Hybrids, V_{cc} = 24 Vdc, Class A

Device	Hybrid Gain (Nom.) dB	Channel Loading Capacity	Maximum Distortion Specifications							DC Current mA Typ.	Noise Figure @ 150 MHz dB Max	Pkg/ Style
			Output Level dBmV	2nd Order Test dB		Composite Triple Beat dB		Cross Modulation dB				
				6 CH	10 CH	6 CH	10 CH	6 CH	10 CH			
MHW1353LA ☆	35.2	6,10	50	-68	-65	-73	-62	-63	-57	95	5.4	1302/1

[19]Typical
[30]Channels 2 and A @ 7
☆New Product

Low Current Amplifiers — 5-65 MHz Hybrids, V_{cc} = 24 Vdc, Class A

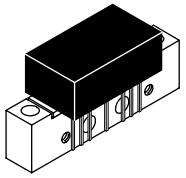
Device	Hybrid Gain (Nom.) dB	Channel Loading Capacity	Maximum Distortion Specifications						DC Current mA Typ.	Noise Figure @ 65 MHz dB Max	Pkg/ Style
			Output Level dBmV	2nd Order Test dB		Composite Triple Beat dB		Cross Modulation dB			
				6 CH	10 CH	6 CH	10 CH	6 CH	10 CH		
MHW1224LA ☆	22.7	6,10	50	-68	-65	-75	-66	-65	-60	95	7.0	1302/1
MHW1254LA ☆	25.5	6,10	50	-68	-66	-75	-66	-65	-61	95	6.5	1302/1
MHW1304LA ☆	30.8	6,10	50	-68	-65	-74	-64	-64	-58	95	5.7	1302/1
MHW1354LA ☆	35.2	6,10	50	-68	-65	-73	-62	-63	-57	95	5.4	1302/1

Low Current Amplifiers — 5-50 MHz Hybrids, V_{cc} = 24 Vdc, Class A

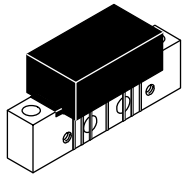
Device	Hybrid Gain (Nom.) dB	Channel Loading Capacity	I_{DC} mA Max	Maximum Distortion Specifications				Noise Figure @ 50 MHz dB Max	Package/ Style
				Output Level dBmV	2nd Order Test[30] dB	Composite Triple Beat dB	Cross Modulation dB		
						4 CH	4 CH		
MHW1254L	25	4	135	+50	-70	-70	-62	4.5	714Y/1

[30]Channels 2 and A @ 7
☆New Product

RF CATV Distribution Amplifiers Packages



Case 714Y
Style 1, 2



Case 1302
Style 1

Scale 1:2

What's EOL?

Motorola SPS follows the industry standard "EIA-724 Product Life Cycle Data Model" to track the life cycle of its product. This model tracks the product's life cycle from "Product Newly Introduced" to "Product Phase Out." Products can be phased for a variety of reasons: improved product performance, change in technology roadmap, process obsolescence, market decline, etc.

When products are discontinued, a suggested possible replacement device or an alternative source of supply for discontinued devices are made available when possible.

For a list of discontinued devices with possible alternative suppliers, please contact your local Motorola sales office or authorized distributor, or visit the following URL: http://www.motorola.com/semiconductors/rf/ams/allcomp.html

Wireless Infrastructure RF Products EOL and After Market Support

For a current EOL listing of Wireless Infrastructure RF products, see the product listing below. When available, suggested possible replacement parts are listed.

Device	PLC[1]	Last Order Date	Last Ship Date	Possible Replacement
CA2810C	6	3/4/02	9/4/02	MHW6342T
CA2830C	6	12/31/01	6/30/02	MHW6342T
CA2832C	6	4/6/02	10/6/02	None
CA901	6	4/6/02	10/6/02	MHW8182B
CA901A	6	4/6/02	10/6/02	MHW8182B
CA922	6	4/6/02	10/6/02	MHW8185
CA922A	6	4/6/02	10/6/02	MHW8185
MHL8018	6	4/6/02	10/6/02	None
MHL8115	6	4/6/02	10/6/02	None
MHL8118	6	4/6/02	10/6/02	None
MHW5182A	6	9/22/01	3/22/02	MHW7182B
MHW5222A	6	9/22/01	3/22/02	None
MHW6181	6	9/22/01	3/22/02	MHW7182B
MHW6182	6	9/22/01	3/22/02	MHW7182B
MHW6222	6	9/22/01	3/22/01	MHW7222B
MHW6272	6	9/22/01	3/22/01	MHW7272A
MHW7222A	6	9/22/01	3/22/01	MHW7222B
MHW7292	6	4/6/02	10/6/02	None

[1] Product Life Cycle 6 = Product Phase Out. See Last Order Date.

What's EOL? (continued)

Wireless Infrastructure RF Products EOL and After Market Support (continued)

Device	PLC[1]	Last Order Date	Last Ship Date	Possible Replacement
MHW8185LR	6	7/2/02	1/2/03	None
MHW8185R	6	12/8/01	6/8/02	None
MHW8205R	6	4/6/02	10/6/02	None
MHW8292	6	4/6/02	10/6/02	None
MHW910	6	12/31/02	6/30/03	MHVIC910HR2
MHW916	6	12/31/02	6/30/03	None
MRF1507T1	6	6/30/02	12/30/02	MRF1511T1 or MRF1517T1
MRF1508T1	6	6/30/02	12/30/02	MRF1518T1
MRF182	6	7/31/04	1/31/05	MRF9030
MRF182SR1	6	7/31/04	1/31/05	MRF9030S or MRF9030SM
MRF183	6	7/31/04	1/31/05	MRF9045
MRF183S	6	7/31/04	1/31/05	MRF9045MR1 or MRF9045S
MRF183SR1	6	7/31/04	1/31/05	MRF9045MR1 or MRF9045S
MRF184	6	7/31/04	1/31/05	MRF9060
MRF184SR1	6	7/31/04	1/31/05	MRF9060SR1 or MRF9060MR1
MRF185	6	7/31/04	1/31/05	MRF9080
MRF186	6	7/31/04	1/31/05	MRF9120
MRF187	6	7/31/04	1/31/05	MRF9085
MRF187R3	6	7/31/04	1/31/05	MRF9085
MRF187S	6	7/31/04	1/31/05	MRF9085SR3
MRF187SR3	6	7/31/04	1/31/05	MRF9085SR3
MRF1946	6	9/15/01	3/15/02	MRF1535T1
MRF1946A	6	9/15/01	3/15/02	MRF1535T1

[1] Product Life Cycle 6 = Product Phase Out. See Last Order Date.

What's EOL? (continued)

Wireless Infrastructure RF Products EOL and After Market Support (continued)

Device	PLC[1]	Last Order Date	Last Ship Date	Possible Replacement
MRF20030R	6	9/15/01	3/15/02	MRF19030
MRF20060R	6	9/15/01	3/15/02	MRF19060
MRF20060RS	6	9/15/01	3/15/02	MRF19060
MRF247	6	9/15/01	3/15/02	MRF1550T1
MRF2628	6	9/15/01	3/15/02	None
MRF373	6	7/31/04	1/31/05	MRF373A
MRF373S	6	7/31/04	1/31/05	MRF373AS
MRF374	6	7/31/04	1/31/05	MRF374A
MRF492	6	9/15/01	3/15/02	MRF1550T1
MRF5015	6	9/15/01	3/15/02	None
MRF6401	6	9/15/01	3/15/02	None

[1]Product Life Cycle 6 = Product Phase Out. See Last Order Date.

What's EOL? (continued)

Wireless Infrastructure RF Products EOL and After Market Support (continued)

For Wireless Infrastructure products transferred to another manufacturer, see the list of Wireless Infrastructure RF products below. After market support on these parts is available through M/A-COM. For additional information, contact M/A-COM Customer Service at (310) 320-6160 x 354 (voice), clarkj@tycoelectronics.com (email) or (310) 618-9191 (FAX).

2N6439	MRF137	MRF171A	MRF317
MRF10005	MRF140	MRF173	MRF321
MRF1000MB	MRF141	MRF173CQ	MRF323
MRF10031	MRF141G	MRF174	MRF327
MRF1004MB	MRF148A	MRF175GU	MRF392
MRF10120	MRF150	MRF175GV	MRF393
MRF10150	MRF151	MRF175LU	MRF421
MRF10350	MRF151G	MRF176GU	MRF422
MRF10502	MRF154	MRF176GV	MRF426
MRF1090MA	MRF157	MRF177	MRF428
MRF1090MB	MRF158	MRF275G	MRF429
MRF1150MA	MRF160	MRF275L	MRF448
MRF1150MB	MRF16006	MRF3104	MRF454
MRF134	MRF16030	MRF313	MRF455
MRF136	MRF166C	MRF314	MRF587
MRF136Y	MRF166W	MRF316	

NOTES

NOTES

HOW TO REACH US:

USA/EUROPE/LOCATIONS NOT LISTED:
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