

MODULATORS I & Q

LEADLESS SURFACE-MOUNT

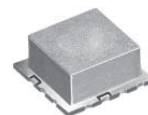


103S

102S

CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
28.5 - 31.5	DC-15	+10	8.0	30	45	0	+15	102S	1	SMS-201
57 - 63	DC-30	+10	8.0	30	45	0	+15	102S	1	SMS-202
66.5 - 73.5	DC-35	+10	8.0	30	45	0	+15	102S	1	SMS-203
40 - 80	DC-40	+10	8.0	30	45	0	+15	102S	1	SMS-204
80 - 160	DC-80	+10	8.0	30	45	0	+15	102S	1	SMS-205
100 - 200	DC-100	+10	8.0	30	45	0	+15	102S	1	SMS-206
150 - 165	DC-20	+26	8.0	25	65	+20	+30	103S	1	SMS-1506
165	DC-5.0	+17	8.0	25	65	+8.0	+20	103S	1	SMS-1650
220	DC-10	+13	8.0	25	60	+6.0	+18	103S	1	SMS-2206
810 - 830	DC-40	+10	8.5	30	35	0	+15	102S	1	SMS-214
869 - 894	DC-80	+10	8.5	30	35	0	+15	102S	1	SMS-224
935 - 960	DC-100	+10	8.5	30	35	0	+15	102S	1	SMS-234
1805 - 1880	DC-100	+10	8.5	25	25	0	+15	102S	1	SMS-244

MINIATURE SURFACE-MOUNT PACKAGE



CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
935-960	DC-10	+10	8.5	25	45	0	+15	240	2	VMS-935M
1710-1780	DC-10	+10	8.5	23	43	0	+15	240	2	VMS-1710M

Notes:

- SSB rejection based on optimum input quadrature signals.
- Conversion Loss is the difference between total power of both modulation inputs, and desired sideband output.
- USB is suppressed when MOD.1 is +90° ref to MOD.2.
- LSB is suppressed when MOD.1 is -90° ref to MOD.2.
- Nominal impedance = 50 ohms.
- Maximum RF input power without damage 200 mW.

PIN-OUT TABLE

	CARRIER	OUTPUT	MOD ₁	MOD ₂	CASE GND
#1	8	1	3	4	All Other
#2	1	8	11	5	All Other

For pin location and package outline drawings, see back pages.

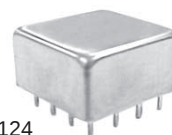
MODULATORS I & Q

THROUGH HOLE MODELS

8 PIN - RELAY HEADER



CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
28.5 - 31.5	DC-15	+10	8.0	30	45	0	+15	102	1	SMR-201
40 - 80	DC-40	+10	8.0	30	45	0	+15	102	1	SMR-204
57 - 63	DC-30	+10	8.0	30	45	0	+15	102	1	SMR-202
60 - 120	DC-60	+10	8.0	30	45	0	+15	102	1	SMR-212
66.5 - 73.5	DC-35	+10	8.0	30	45	0	+15	102	1	SMR-203
80 - 160	DC-80	+10	8.0	30	45	0	+15	102	1	SMR-205
100 - 200	DC-100	+10	8.0	30	45	0	+15	102	1	SMR-206
810 - 830	DC-40	+10	8.5	30	35	0	+15	102	1	SMR-214
869 - 894	DC-80	+10	8.5	30	35	0	+15	102	1	SMR-224
935 - 960	DC-100	+10	8.5	30	35	0	+15	102	1	SMR-234
1805 - 1880	DC-100	+10	8.5	25	25	0	+15	102	1	SMR-244



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PLUG-IN (6 PIN (WIDEBAND) AND 16 PIN)

CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
15 - 510	DC-250	+10	9.0	15	35	0	+15	151	3	SMP-34-15
28.5 - 31.5	DC-15	+10	8.0	30	45	0	+15	124	2	SMP-901
57 - 63	DC-30	+10	8.0	30	45	0	+15	124	2	SMP-902
66.5 - 73.5	DC-35	+10	8.0	30	45	0	+15	124	2	SMP-903
40 - 80	DC-40	+10	8.0	30	45	0	+15	124	2	SMP-904
80 - 160	DC-80	+10	8.0	30	45	0	+15	124	2	SMP-905
100 - 200	DC-100	+10	8.0	30	45	0	+15	124	2	SMP-906
275 - 550	DC-10	+10	8.5	15	35	0	+15	124	2	SMP-907
810 - 830	DC-40	+10	8.5	30	35	0	+15	124	2	SMP-914
869 - 894	DC-80	+10	8.5	30	35	0	+15	124	2	SMP-924
935 - 960	DC-100	+10	8.5	30	35	0	+15	124	2	SMP-934
1805 - 1880	DC-100	+10	8.5	25	25	0	+15	124	2	SMP-944

Notes:

- SSB rejection based on optimum input quadrature signals.
- Conversion Loss is the difference between total power of both modulation inputs, and desired sideband output.
- USB is suppressed when MOD.1 is +90° ref to MOD.2.
- LSB is suppressed when MOD.1 is -90° ref to MOD.2.
- Nominal impedance = 50 ohms.
- Maximum RF input power without damage 200 mW.

PIN-OUT TABLE

	CARRIER	OUTPUT	MOD ₁	MOD ₂	CASE GND
#1	8	1	3	4	All other
#2	16	1	4	13	All other
#3	6	1	3	2	4,5

For pin location and package outline drawings, see back pages.

MODULATORS I & Q



FLAT PACK MODELS

CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
28.5 - 31.5	DC-15	+10	8.0	30	45	0	+15	115	1	SMF-201
57 - 63	DC-30	+10	8.0	30	45	0	+15	115	1	SMF-202
66.5 - 73.5	DC-35	+10	8.0	30	45	0	+15	115	1	SMF-203
40 - 80	DC-40	+10	8.0	30	45	0	+15	115	1	SMF-204
80 - 160	DC-80	+10	8.0	30	45	0	+15	115	1	SMF-205
100 - 200	DC-100	+10	8.0	30	45	0	+15	115	1	SMF-206



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COAXIAL (SMA) CONNECTOR MODELS

CARRIER FREQUENCY (MHz)	MODULATION FREQUENCY (MHz)	CARRIER POWER (dBm) NOM	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	LO/RF ISOLATION (dB) MIN	INPUT 1 dB COMP. PT. (dBm) MIN	INPUT IP ₃ (dBm) TYP	PACKAGE	PIN-OUT (See Below)	MODEL
15 - 510	DC-250	+10	9.0	15	35	0	+15	153	2	SMK-34-15
28.5 - 31.5	DC-15	+10	8.0	30	45	0	+15	113	2	SMK-701*
57 - 63	DC-30	+10	8.0	30	45	0	+15	113	2	SMK-702*
66.5 - 73.5	DC-35	+10	8.0	30	45	0	+15	113	2	SMK-703*
40 - 80	DC-40	+10	8.0	30	45	0	+15	113	2	SMK-704*
80 - 160	DC-80	+10	8.0	30	45	0	+15	113	2	SMK-705*
100 - 200	DC-100	+10	8.0	30	45	0	+15	113	2	SMK-706*

*Select female connector suffix: S=SMA, B=BNC, N=Type N, T=TNC.
All other models numbers are available with SMA connectors only.

Notes:

- SSB rejection based on optimum input quadrature signals.
- Conversion Loss is the difference between total power of both modulation inputs, and desired sideband output.
- USB is suppressed when MOD.1 is +90° ref to MOD.2.
- LSB is suppressed when MOD.1 is -90° ref to MOD.2.
- Nominal impedance = 50 ohms.
- Maximum RF input power without damage 200 mW.

PIN-OUT TABLE

	CARRIER	OUTPUT	MOD ₁	MOD ₂	CASE GND
#1	1	14	10	5	All Other
#2	1	3	2	4	-

For pin location and package outline drawings, see back pages.

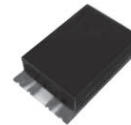
MODULATORS I & Q SUB-HARMONIC

8 PIN - RELAY HEADER



RF OUTPUT FREQUENCY (MHz)	CARRIER FREQUENCY (MHz)	NOMINAL CARRIER POWER (dBm)	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	CARRIER REJECTION (dB) MIN	HARMONIC REJECTION (dB) MIN	PACKAGE	PIN-OUT (See Below)	MODEL
810 - 830	405 - 415	+10	11.0	30	30	33	102	1	HSMR-810
825 - 875	412 - 438	+10	11.0	30	30	33	102	1	HSMR-825
869 - 894	434 - 447	+10	11.0	30	30	33	102	1	HSMR-869
935 - 970	467 - 485	+10	11.0	30	30	33	102	1	HSMR-935
1000 - 1070	500 - 535	+10	11.0	30	30	33	102	1	HSMR-1000
1200 - 1280	600 - 640	+10	11.0	30	30	33	102	1	HSMR-1200
1400 - 1500	700 - 750	+10	11.0	30	30	33	102	1	HSMR-1400
1500 - 1650	750 - 825	+10	11.0	30	30	33	102	1	HSMR-1500
1800 - 1900	900 - 950	+10	12.0	25	25	30	102	1	HSMR-1800
1805 - 1880	902 - 940	+10	12.0	25	25	30	102	1	HSMR-1805
1920 - 2000	960 - 1000	+10	12.0	25	25	30	102	1	HSMR-1930
2000 - 2200	1000 - 1100	+10	12.0	25	25	30	102	1	HSMR-2000
2200 - 2500	1100 - 1250	+10	12.0	25	25	30	102	1	HSMR-2250

LEADLESS SURFACE-MOUNT MODELS



RF OUTPUT FREQUENCY (MHz)	CARRIER FREQUENCY (MHz)	NOMINAL CARRIER POWER (dBm)	CONVERSION LOSS (dB) MAX	SSB REJECTION (dB) MIN	CARRIER REJECTION (dB) MIN	HARMONIC REJECTION (dB) MIN	PACKAGE	PIN-OUT (See Below)	MODEL
810 - 830	405 - 415	+10	11.0	30	30	33	161	2	HSMD-810
825 - 875	412 - 438	+10	11.0	30	30	33	161	2	HSMD-825
869 - 894	434 - 447	+10	11.0	30	30	33	161	2	HSMD-869
935 - 970	467 - 485	+10	11.0	30	30	33	161	2	HSMD-935
1000 - 1070	500 - 535	+10	11.0	30	30	33	161	2	HSMD-1000
1200 - 1280	600 - 640	+10	11.0	30	30	33	161	2	HSMD-1200
1400 - 1500	700 - 750	+10	11.0	30	30	33	161	2	HSMD-1400
1500 - 1650	750 - 825	+10	11.0	30	30	33	161	2	HSMD-1500
1800 - 1900	900 - 950	+10	12.0	25	25	30	161	2	HSMD-1800
1805 - 1880	902 - 940	+10	12.0	25	25	30	161	2	HSMD-1805
1920 - 2000	960 - 1000	+10	12.0	25	25	30	161	2	HSMD-1930
2000 - 2200	1000 - 1100	+10	12.0	25	25	30	161	2	HSMD-2000
2200 - 2500	1100 - 1250	+10	12.0	25	25	30	161	2	HSMD-2250

Notes:

- USB is suppressed when MOD.1 is +90° ref to MOD. 2.
- LSB is suppressed when MOD.1 is -90° ref to MOD. 2.
- 1 dB Comp. Point: -5 dBm (Nom)
- Modulation Frequency = DC to 20 MHz
- Harmonic and Carrier rejection is guaranteed with -10 dBm input at MOD. 1 and MOD. 2.
- Conversion Loss is the difference between total power of both modulation inputs and desired sideband output.

This product is protected under United States Patent Number 5,416,449.

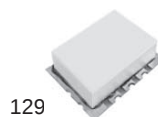
PIN-OUT TABLE

	CARRIER	MOD.1	MOD.2	SSB OUTPUT	CASE GND
#1	8	3	4	1	All Other
#2	3	1	4	2	All Other

For pin location and package outline drawings, see back pages.

MODULATORS BPSK

SURFACE-MOUNT MODELS



INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 200	3.5/4.5	0.4	4.0	+ 1	1.8:1	134	1	SBM-K1
2 - 600	4.5/5.5	0.4	4.0	+ 1	1.8:1	134	1	SBM-K2
1 - 200	2.5/4.5	0.4	2.0	+ 1	2.0:1	129	2	SBM-C1
2 - 600	2.5/4.5	0.4	2.0	+ 1	2.0:1	129	2	SBM-C2

THROUGH HOLE MODELS

8 PIN - RELAY CAN



INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 400	1.5/3.0	0.2	2.0	+ 1	1.5:1	103	3	MP-205
1 - 400	1.5/3.0	0.2	2.0	+ 10	1.5:1	103	3	MP-215
10 - 900	2.5/4.5	0.4	2.0	+ 1	2.0:1	103	3	MP-207
10 - 900	2.5/4.5	0.4	2.0	+ 10	2.0:1	103	3	MP-217

TO-8 (12 PIN)



INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 400	1.5/3.0	0.2	2.0	+ 1	1.5:1	104	4	MP-201
1 - 400	1.5/3.0	0.2	2.0	+ 10	1.5:1	104	4	MP-211
10 - 900	2.5/4.5	0.4	2.0	+ 1	2.0:1	104	4	MP-203
10 - 900	2.5/4.5	0.4	2.0	+ 10	2.0:1	104	4	MP-213

Notes:

Logic 1 corresponds to +20 mA and Logic 0 corresponds to -20 mA.

Nominal input/output impedance = 50 ohms.

Maximum RF input power without damage 75 mW or 40 mA.

PIN-OUT TABLE

	INPUT	OUTPUT	D1	D2	CASE GND	NO CONN.
#1	1	4	5	2	3,6	
#2	1	3	6	4	7,8,9,10	2,5
#3	8	1	*3,4	*5,6	2,7	
#4	11	8	2	5	All other	

For pin location and package outline drawings, see back pages.

*Connect pins together externally.

MODULATORS

BPSK



FLAT PACK MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 400	1.5/3.0	0.2	2.0	+ 1	1.5:1	101	1	MF-206
1 - 400	1.5/3.0	0.2	2.0	+ 10	1.5:1	101	1	MF-216
10 - 900	2.5/4.5	0.4	2.0	+ 1	2.0:1	101	1	MF-208
10 - 900	2.5/4.5	0.4	2.0	+ 10	2.0:1	101	1	MF-218
40 - 1150	3.9/4.5	0.4	4.0	+ 1	3.0:1	101	2	MF-210 †
40 - 1150	3.9/4.5	0.4	4.0	+ 10	3.0:1	101	2	MF-220 †



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COAXIAL (SMA) CONNECTOR MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 400	1.5/3.0	0.2	2.0	+ 1	1.5:1	113	3	MK-701S
1 - 400	1.5/3.0	0.2	2.0	+ 10	1.5:1	113	3	MK-711S
10 - 900	2.5/4.5	0.4	2.0	+ 1	2.0:1	110	4	MK-702S
10 - 900	2.5/4.5	0.4	2.0	+ 10	2.0:1	113	3	MK-712S
40 - 1150	3.9/4.5	0.4	4.0	+ 1	3.0:1	110	4	MK-703S †
40 - 1150	3.9/4.5	0.4	4.0	+ 10	3.0:1	110	4	MK-713S †

† Require external bipolar squarewave driver capable of generating +/-20 mA.

Notes:

Logic 1 corresponds to +20 mA and Logic 0 corresponds to -20 mA.

Nominal input/output impedance = 50 ohms.

Maximum RF input power without damage 75 mW or 40 mA.

PIN-OUT TABLE

	INPUT	OUTPUT	D1	D2	CASE GND
#1	4	1	5	8	2,3,6,7
#2	4	1	5	-	2,3,6,7,8
#3	1	3	2	4	
#4	1	3	2	-	

For pin location and package outline drawings, see back pages.

MODULATORS

QPSK



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COAXIAL CONNECTOR MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees)		INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
Fc MAX			FULL BAND MAX						
15 - 510	11.0	1.5	10	10	+4	2.5:1	153	1	MK-34-15
28.5 - 31.5	7.0	0.4	2.0	3.5	+4	1.7:1	113	1	MK-751*
52 - 88	8.0	1.0	2.0	5.0	+4	1.7:1	113	1	MK-757*
57 - 63	7.0	0.4	2.0	3.5	+4	1.7:1	113	1	MK-753*
66.5 - 73.5	7.0	0.4	2.0	3.5	+4	1.7:1	113	1	MK-755*
104 - 176	8.0	1.0	2.0	5.0	+4	1.7:1	113	1	MK-758*
133 - 147	7.0	0.4	2.0	3.5	+4	1.7:1	113	1	MK-756*
190 - 210	7.0	0.4	2.0	3.5	+4	1.7:1	113	1	MK-759*
285 - 315	7.5	0.4	2.0	5.0	+4	1.7:1	113	1	MK-760*
810 - 830	8.0	0.6	4.0	5.0	+4	2.0:1	113	1	MK-714S
869 - 894	8.5	0.6	4.0	5.0	+4	2.0:1	113	1	MK-724S
935 - 960	8.0	0.6	4.0	5.0	+4	2.0:1	113	1	MK-734S
1805 - 1880	9.5	1.0	6.0	7.0	+4	2.2:1	113	1	MK-736S

Notes:

Logic 1 corresponds to +20 mA and Logic 0 corresponds to -20 mA.

Requires external bipolar squarewave driver capable of generating +/-20 mA to drive D1 and D3.

Nominal input/output impedance = 50 ohms.

Maximum RF input power without damage 200 mW and 40 mA at D1 and D3.

*Select female connector suffix: S=SMA, B=BNC, N=Type N, T=TNC.

All other models numbers are available with SMA connectors only.

PIN-OUT TABLE

	CARRIER	OUTPUT	D1	D3
#1	1	3	2	4

For pin location and package outline drawings, see back pages.

LOGIC TABLE

PHASE	D1	D3
0°	1	1
90°	1	0
180°	0	0
270°	0	1

MODULATORS

QPSK



SURFACE-MOUNT MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees)		INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
			Fc MAX	FULL BAND MAX					
10.165 - 11.235	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-202
20.33 - 22.47	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-204
28.5 - 31.5	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-201
52 - 88	8.0	1.0	2.0	5.0	+4	1.7:1	102S	1	MS-207
57 - 63	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-203
66.5 - 73.5	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-205
104 - 176	8.0	1.0	2.0	5.0	+4	1.7:1	102S	1	MS-208
133 - 147	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-206
190 - 210	7.0	0.4	2.0	3.5	+4	1.7:1	102S	1	MS-209
285 - 315	7.5	0.4	2.0	5.0	+4	1.7:1	102S	1	MS-210
810 - 830	8.0	0.6	4.0	5.0	+4	2.0:1	102S	1	MS-214
869 - 894	8.5	0.6	4.0	5.0	+4	2.0:1	102S	1	MS-224
935 - 960	8.0	0.6	4.0	5.0	+4	2.0:1	102S	1	MS-234
1805 - 1880	9.5	1.0	6.0	7.0	+4	2.2:1	102S	1	MS-236



FLAT PACK MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees)		INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
			Fc MAX	FULL BAND MAX					
28.5 - 31.5	7.0	0.4	2.0	3.5	+4	1.7:1	115	2	MF-111
52 - 88	8.0	1.0	2.0	5.0	+4	1.7:1	115	2	MF-117
57 - 63	7.0	0.4	2.0	3.5	+4	1.7:1	115	2	MF-113
66.5 - 73.5	7.0	0.4	2.0	3.5	+4	1.7:1	115	2	MF-115
104 - 176	8.0	1.0	2.0	5.0	+4	1.7:1	115	2	MF-118
133 - 147	7.0	0.4	2.0	3.5	+4	1.7:1	115	2	MF-116
190 - 210	7.0	0.4	2.0	3.5	+4	1.7:1	115	2	MF-119
285 - 315	7.5	0.4	2.0	5.0	+4	1.7:1	115	2	MF-120

Notes:

Logic 1 corresponds to +20 mA and Logic 0 corresponds to -20 mA.

Above models do not include Logic complimentary drivers.

Nominal input/output impedance = 50 ohms.

Maximum RF input power without damage 200 mW and 40 mA.

PIN-OUT TABLE

	CARRIER	OUTPUT	D1	D2	D3	D4	CASE GND
#1	8	1	3	5	4	6	2,7
#2	1	14	5	3	12	10	All Other

For pin location and package outline drawings, see back pages.

LOGIC TABLE

PHASE	D1	D2	D3	D4
0°	1	0	1	0
90°	1	0	0	1
180°	0	1	0	1
270°	0	1	1	0

MODULATORS

QPSK

THROUGH-HOLE

8 PIN - RELAY CAN



INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees)		INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
			Fc MAX	FULL BAND MAX					
10.165 - 11.235	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-202
20.33 - 22.47	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-204
28.5 - 31.5	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-201
52 - 88	8.0	1.0	2.0	5.0	+4	1.7:1	102	1	MR-207
57 - 63	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-203
66.5 - 73.5	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-205
104 - 176	8.0	1.0	2.0	5.0	+4	1.7:1	102	1	MR-208
133 - 147	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-206
190 - 210	7.0	0.4	2.0	3.5	+4	1.7:1	102	1	MR-209
285 - 315	7.5	0.4	2.0	5.0	+4	1.7:1	102	1	MR-210
810 - 830	8.0	0.6	4.0	5.0	+4	2.0:1	102	1	MR-214
869 - 894	8.5	0.6	4.0	5.0	+4	2.0:1	102	1	MR-224
935 - 960	8.0	0.6	4.0	5.0	+4	2.0:1	102	1	MR-234
1805 - 1880	9.5	1.0	6.0	7.0	+4	2.2:1	102	1	MR-236

PLUG-IN 6 PIN (Wideband) AND 16 PIN



INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees)		INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
			Fc MAX	FULL BAND MAX					
15 - 510	11.0	1.5	10	10	+4	2.5:1	151	3	*MP-34-15
28.5 - 31.5	7.0	0.4	2.0	3.5	+4	1.7:1	124	2	MP-901
52 - 88	8.0	1.0	2.0	5.0	+4	1.7:1	124	2	MP-907
57 - 63	7.0	0.4	2.0	3.5	+4	1.7:1	124	2	MP-903
66.5 - 73.5	7.0	0.4	2.0	3.5	+4	1.7:1	124	2	MP-905
104 - 176	8.0	1.0	2.0	5.0	+4	1.7:1	124	2	MP-908
133 - 147	7.0	0.4	2.0	3.5	+4	1.7:1	124	2	MP-906
190 - 210	7.0	0.4	2.0	3.5	+4	1.7:1	124	2	MP-909
285 - 315	7.5	0.4	2.0	5.0	+4	1.7:1	124	2	MP-910
810 - 830	8.0	0.6	4.0	5.0	+4	2.0:1	124	2	MP-914
869 - 894	8.5	0.6	4.0	5.0	+4	2.0:1	124	2	MP-924
935 - 960	8.0	0.6	4.0	5.0	+4	2.0:1	124	2	MP-934
1805 - 1880	9.5	1.0	6.0	7.0	+4	2.2:1	124	2	MP-936

Notes:

Logic 1 corresponds to +20 mA and Logic 0 corresponds to -20 mA.
 Above models do not include Logic complimentary drivers.
 Nominal input/output impedance = 50 ohms.
 Maximum RF input power without damage 200 mW and 40 mA.
 The logic table for the MP-34-15 is the same as for the coaxial connector models.

LOGIC TABLE

PHASE	D1	D2	D3	D4
0°	1	0	1	0
90°	1	0	0	1
180°	0	1	0	1
270°	0	1	1	0

PIN-OUT TABLE

	CARRIER	OUTPUT	D1	D2	D3	D4	CASE GND
#1	8	1	3	5	4	6	2,7
#2	16	1	13	5	3	4	All Other
#3	6	1	3	-	2	-	4,5

For pin location and package outline drawings, see back pages.