MODULATORS I & Q

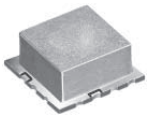
LEADLESS SURFACE-MOUNT


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.

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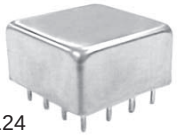
THROUGH HOLE MODELS

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**

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



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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.

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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.

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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.

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MODULATORS
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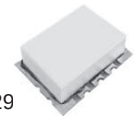
SURFACE-MOUNT MODELS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INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) TYP/MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
1 - 200	3.5/4.5	0.4	4.0	+ 1	1.8:1	134	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.

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MODULATORS
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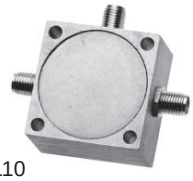
FLAT PACK MODELS

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** ⌖

COAXIAL (SMA) CONNECTOR MODELS



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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.

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COAXIAL CONNECTOR MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) Fc MAX	PHASE UNBALANCE (Degrees) FULL BAND MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
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

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SYNERGY® MICROWAVE CORPORATION

MODULATORS
QPSK

SURFACE-MOUNT MODELS

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) Fc MAX	PHASE UNBALANCE (Degrees) FULL BAND MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
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) Fc MAX	PHASE UNBALANCE (Degrees) FULL BAND MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
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

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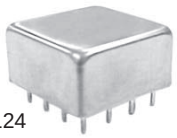
MODULATORS
QPSK

THROUGH-HOLE

8 PIN - RELAY CAN

INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) Fc MAX	PHASE UNBALANCE (Degrees) FULL BAND MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
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



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INPUT CARRIER FREQUENCY (MHz)	INSERTION LOSS (dB) MAX	AMPLITUDE UNBALANCE (dB) MAX	PHASE UNBALANCE (Degrees) Fc MAX	PHASE UNBALANCE (Degrees) FULL BAND MAX	INPUT 1 dB COMP. PT. (dBm) MIN	VSWR MAX	PACKAGE	PIN-OUT (See Below)	MODEL
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.

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