TRW® SEMICONDUCTORS

MV 20 - MV 30

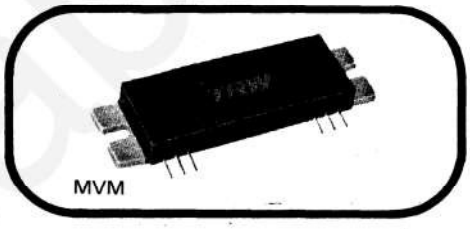
RF Power Modules

140 - 175 MHz
∞ VSWR @ 16 V

Island Labs

The MV modules are rugged power amplifier functions designed for battery powered mobile and marine applications in the 140-175 MHz band. The modules feature 50 Ω input and output impedances, highly repeatable broadband gain, and will withstand infinite load VSWR at 16 volts with overdrive and uncontrolled output power (typically more than 40 watts).

Compared to discrete components, these modules offer significant savings in size as well as cost of design, production and repair.

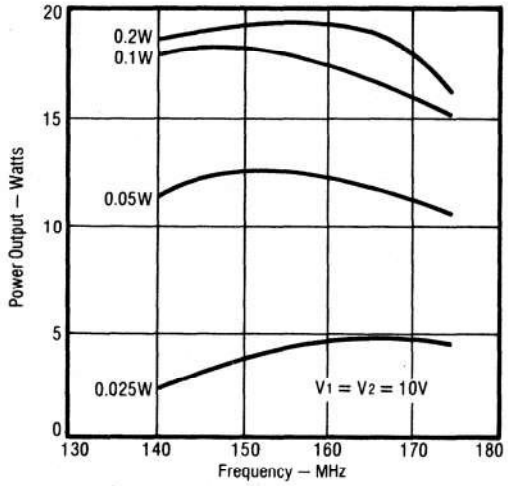


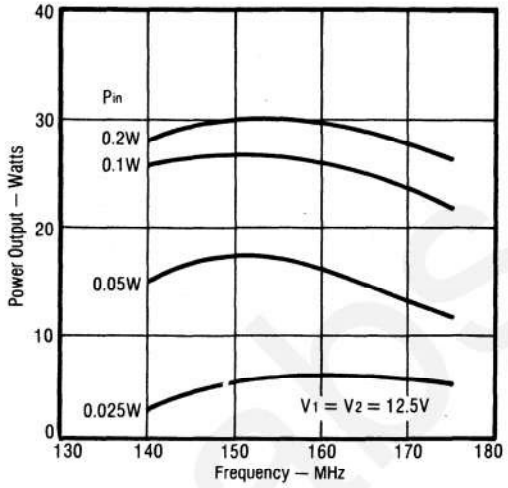
MVM

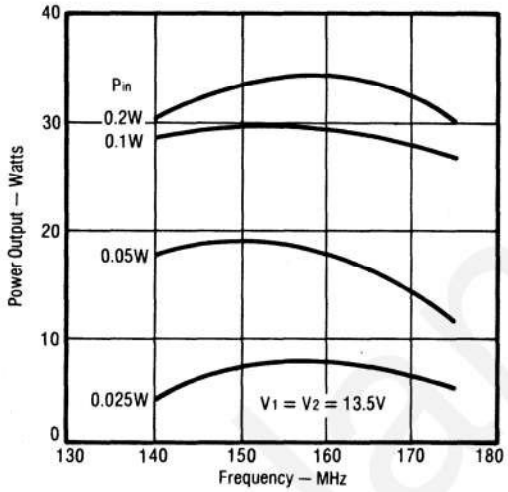
Electrical Characteristics (T_{flange} = 25 °C)

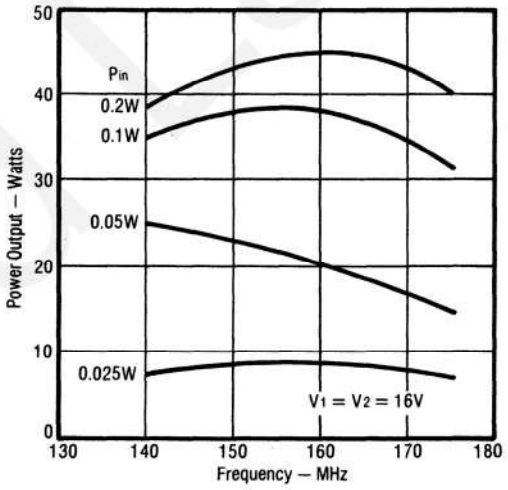
Characteristic	Test Conditions	MV20	MV30	Units/Limit
Frequency Range		140-175	150-160	MHz
Supply Voltage, V_{CC}		12.5	13.5	Vdc, Nom.
Power Output	Rated V_{CC} Any In-Band Frequency $P_{in} \leqslant 0.2$ Watts	20	30	W, Min.
Efficiency	Rated P_0, V_{CC}	40	50	%, Min.
Harmonic Outputs	Rated P_0, V_{CC}	— 35	— 40	dB, Max.
Input Return Loss	Z_0 = 50 Ω	— 10	— 10	dB, Max.
Output Impedance		50	50	Ω, Nom.
Quiescent Current	V_{CC} = 16 V, P_{in} = 0 W	0.1	0.1	Adc, Max.
Power Slump	Rated P_0, V_{CC} 25 °C — 30 °C to + 80 °C	1.0	1.0	dB, Max.
Load VSWR, 0-360° (Degradation)	V_{CC} = 16 V, P_{in} = 0.3 W Lowest Frequency	20 : 1	20 : 1	No Degradation
Load VSWR, 0-360° (Stability)	10 V $\leqslant V_{CC} \leqslant$ 16 V 0 < $P_{in} \leqslant$ 0.3 W Any In-Band Frequency	3 : 1 5 : 1	3 : 1 5 : 1	Min. Typ.
Temperature Range	Operating, T_{FLANGE}	— 30 + 100	— 30 + 100	°C Min. °C Max.

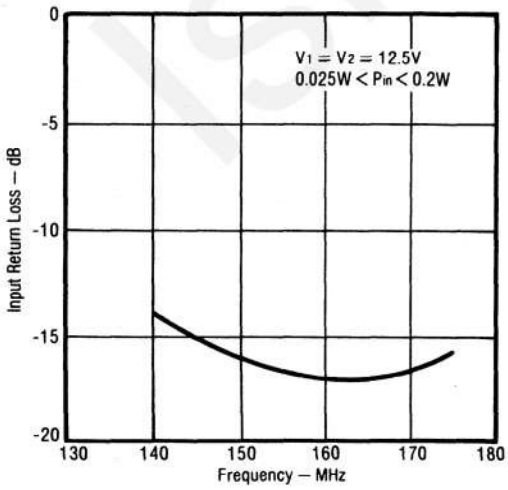
TYPICAL CHARACTERISTICS

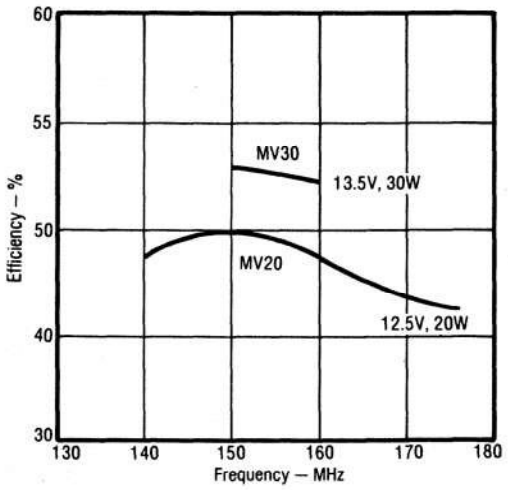


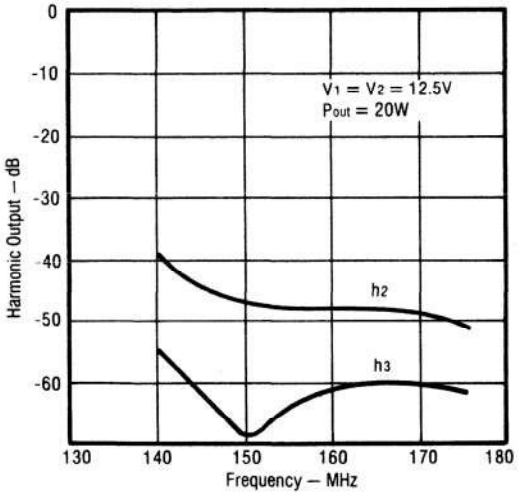


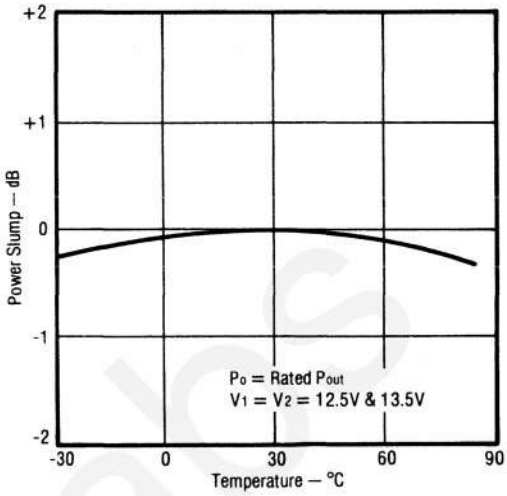


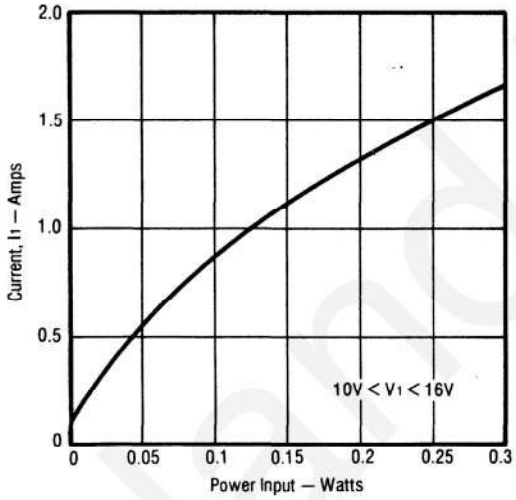


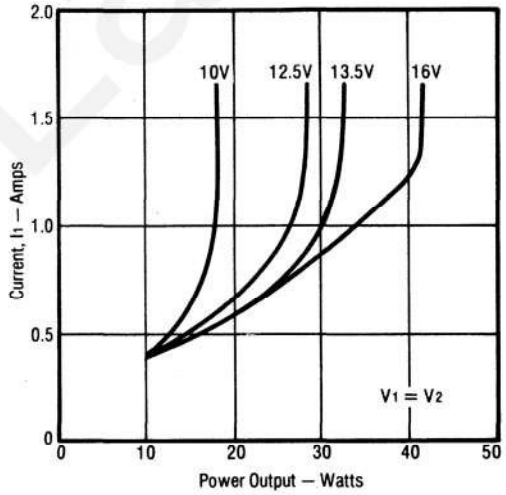


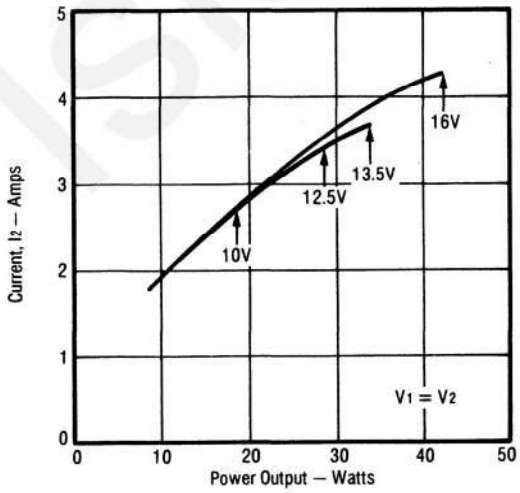


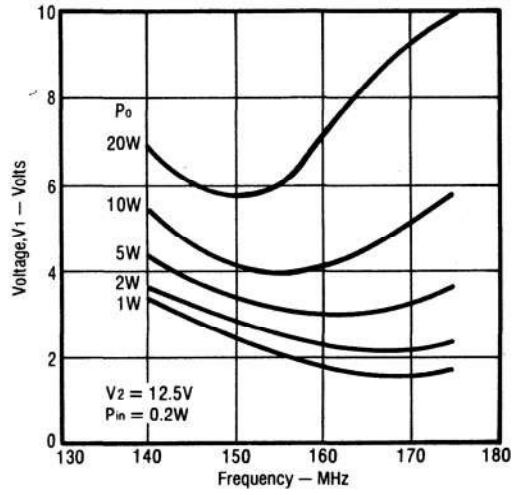

Harmonic Output — dB
0
-10
-20
-30
-40
-50
-60
V1 = V2 = 12.5V
Pout = 20W
h2
h3
130
140
150
160
170
180
Frequency — MHz


Power Slump — dB
+2
+1
0
-1
-2
Po = Rated Pout
V1 = V2 = 12.5V & 13.5V
-30
0
30
60
90
Temperature — °C

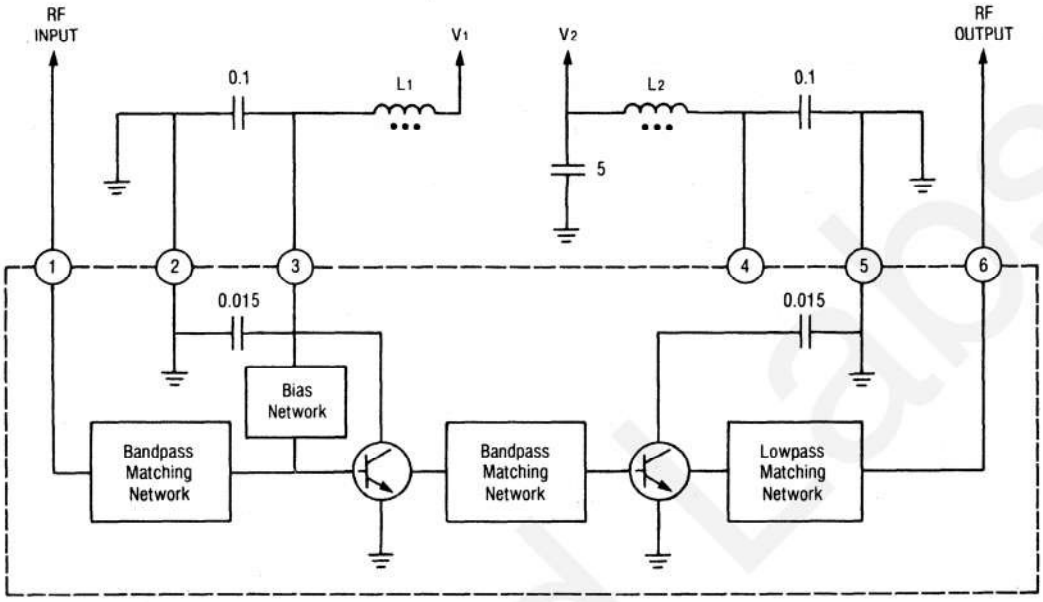

Current, I1 — Amps
2.0
1.5
1.0
0.5
0
10V < V1 < 16V
0
0.05
0.1
0.15
0.2
0.25
0.3
Power Input — Watts

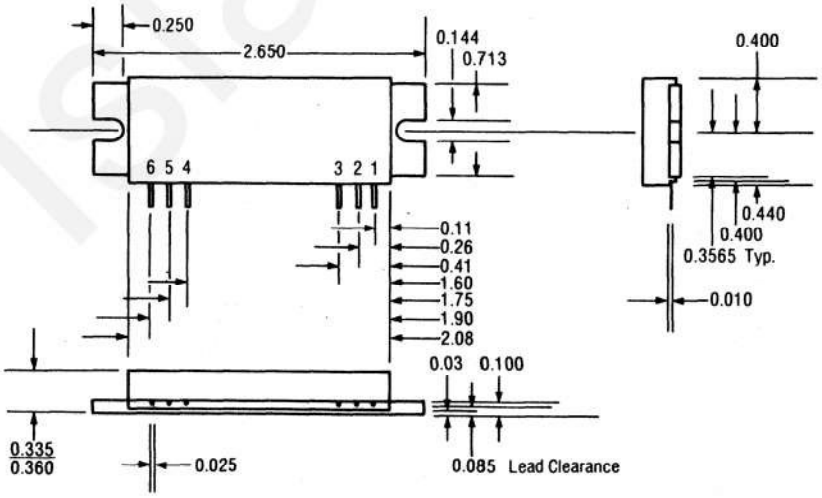

Current, I1 — Amps
2.0
1.5
1.0
0.5
0
10V
12.5V
13.5V
16V
V1 = V2
0
10
20
30
40
50
Power Output — Watts


Current, I2 — Amps
5
4
3
2
1
0
16V
13.5V
12.5V
10V
V1 = V2
0
10
20
30
40
50
Power Output — Watts


Voltage, V1 — Volts
10
8
6
4
2
0
Po
20W
10W
5W
2W
1W
V2 = 12.5V
Pin = 0.2W
130
140
150
160
170
180
Frequency — MHz

CIRCUIT DIAGRAM FOR MV 20 AND MV 30



L1, L2: Ferroxcube VK211173B, 2½ turns
All capacitor values in μF

MVM PACKAGE OUTLINE