

# MOTOROLA SEMICONDUCTOR TECHNICAL DATA

## MHW710-1 MHW710-2 MHW710-3

### The RF Line

#### UHF POWER AMPLIFIER MODULE

... designed for 12.5 volt UHF power amplifier applications in industrial and commercial FM equipment operating from 400 to 512 MHz.

- Specified 12.5 Volt, UHF Characteristics —  
Output Power = 13 Watts  
Minimum Gain = 19.4 dB  
Harmonics = 40 dB
- 50  $\Omega$  Input/Output Impedance
- Guaranteed Stability and Ruggedness
- Gain Control Pin for Manual or Automatic Output Level Control
- Thin Film Hybrid Construction Gives Consistent Performance and Reliability

13 W 400–512 MHz

RF POWER  
AMPLIFIER MODULE



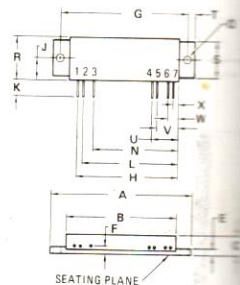
#### MAXIMUM RATINGS (Flange Temperature = 25°C)

Rating	Symbol	Value	Unit
DC Supply Voltages	$V_S, V_{SC}$	15.5	Vdc
RF Input Power	$P_{in}$	250	mW
RF Output Power (@ $V_S = V_{SC} = 12.5$ V)	$P_{out}$	15	W
Operating Case Temperature Range	$T_C$	-30 to +100	°C
Storage Temperature Range	$T_{stg}$	-40 to +100	°C

#### ELECTRICAL CHARACTERISTICS

( $V_S$  and  $V_{SC}$  set at 12.5 Vdc,  $T_A = 25^\circ\text{C}$ , 50  $\Omega$  system unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Frequency Range MHW710-1 MHW710-2 MHW710-3	—	400 440 470	440 470 512	MHz
Input Power ( $P_{out} = 13$ W)	$P_{in}$	—	150	mW
Power Gain	$G_p$	19.4	—	dB
Efficiency ( $P_{out} = 13$ W)	$\eta$	35	—	%
Harmonics ( $P_{out} = 13$ W, Reference)	—	—	-40	dB
Input Impedance ( $P_{out} = 13$ W, 50 $\Omega$ Reference)	$Z_{in}$	—	2:1	VSWR
Power Degradation ( $P_{out} = 13$ W, $T_C = 25^\circ\text{C}$ , Reference) ( $T_C = 0^\circ\text{C}$ to $60^\circ\text{C}$ ) ( $T_C = -30^\circ\text{C}$ to $80^\circ\text{C}$ )	—	—	0.3 0.7	dB
Load Mismatch (VSWR = $\infty$ , $V_S = 15.5$ Vdc, $P_{out} = 16.5$ W)	—	No degradation in $P_{out}$		
Stability 1. ( $P_{in} = 50$ to 200 mW, Load Mismatch = 4:1, 50 $\Omega$ reference, $V_S = V_{SC} = 8.0$ to 15.5 Vdc) 2. ( $V_S = 12.5$ Vdc, $V_{SC}$ adjusted for $P_{out} = 5.0$ to 15 W, $P_{in} = 150$ mW, Load Mismatch = 4:1, 50 $\Omega$ reference, note $V_{SC} \leq V_S$ )	—	All spurious outputs more than 70 dB below desired signal		



NOTE  
1. MOUNTING HOLES WITHIN 0.13 mm (0.005) DIA OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION

STYLE 1  
PIN 1: RF INPUT  
2: GND  
3: GND  
4: GND  
5: D.C. SUPPLY  
6: GND  
7: RF OUTPUT

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	67.06	67.56	2.640	2.660
B	51.82	52.96	2.040	2.085
C	9.51	9.14	0.335	0.360
E	2.54	2.92	0.100	0.115
F	2.67	2.92	0.105	0.115
G	81.05	85C	2.405	85C
H	47.88	48.64	1.885	1.915
J	10.16	11.18	0.400	0.440
K	5.84	7.62	0.230	0.300
L	45.34	46.10	1.785	1.815
N	40.26	41.02	1.585	1.615
Q	3.45	3.71	0.136	0.146
R	20.32	20.83	0.800	0.820
S	17.02	17.53	0.670	0.690
T	2.98	3.24	0.1175	0.1275
V	9.78	10.54	0.385	0.415
W	4.70	5.46	0.185	0.215
X	2.16	2.92	0.085	0.115

CASE 700-03