

# The RF Line

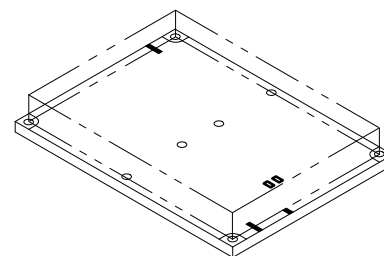
## Broadband RF Power Amplifier for TV Transmitter

**MRFA2602**

**60 W, 470–860 MHz  
CLASS A  
RF POWER AMPLIFIER**

The MRFA2602 is a solid state class A amplifier and is specifically designed for TV transposers and transmitters. This amplifier incorporates microstrip technology and reliable Motorola push-pull transistors.

- Specified 25.5 Volts, 470–860 MHz Characteristics
  - Output Power — 40 Watts @ -50 dB (3 Tones)
  - Output Power — 60 Watts Min @ 1 dB Comp. (CW)
  - Gain — 8.5 dB Min (Small Signal)



CASE 429C-03, STYLE 1

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	26.5	Vdc
Input Power	$P_{in}$	15	W
Storage Temperature Range	$T_{stg}$	-40 to +100	°C
Operating Temperature (1)	$T_{op}$	-20 to +70	°C

### NOMINAL OPERATION CONDITION ( $T_C = 60^\circ\text{C}$ )

Supply	$V_{CC} = 25.5 \text{ V}$	$I_{sup} = 9.2 \text{ A}$
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### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ , Nominal Supply, 470–860 MHz Bandwidth, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Power Gain (small signal)	$G_p$	8.5	—	—	dB
Gain Ripple (small signal)	$G_{rple}$	—	—	$\pm 1$	dB
Output Power @ 1 dB Compression	$P_{out}$	60	—	—	W
Mismatch Tolerance ( $P_{out} = 60 \text{ W}$ )	VSWR	$\infty:1$	—	—	—
Intermodulation (-8 dB/-7 dB/-16 dB, $P_{ref} = 40 \text{ W}$ )	IMD1	—	—	-50	dB
Intermodulation (-8 dB/-10 dB/-16 dB, $P_{ref} = 40 \text{ W}$ )	IMD2	—	—	-53	dB
Input Return Loss/Output Return Loss	IRL/ORL	—	—	-15	dB

#### NOTE:

- Temperature is measured at temperature test point (on the flange of the transistor).

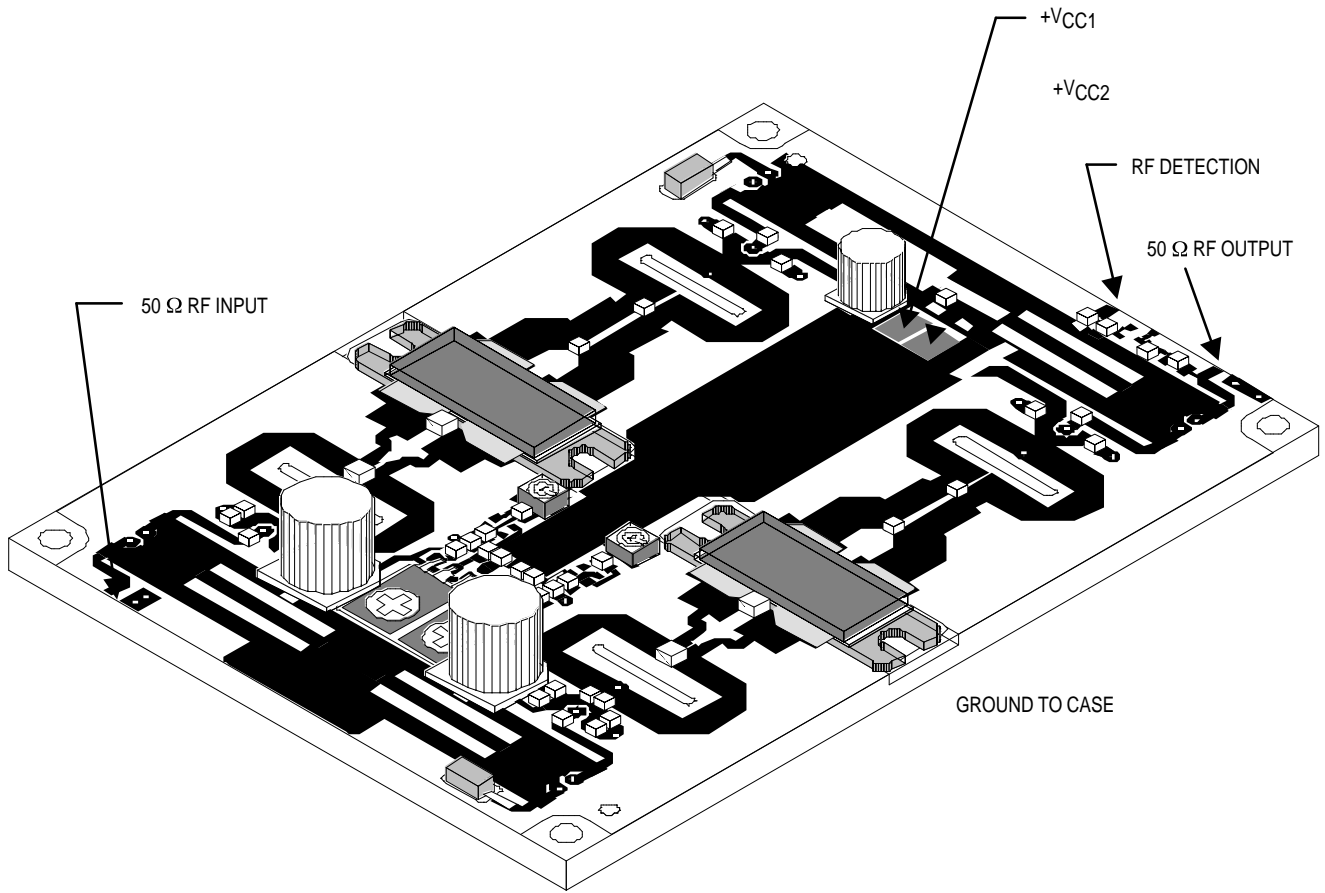
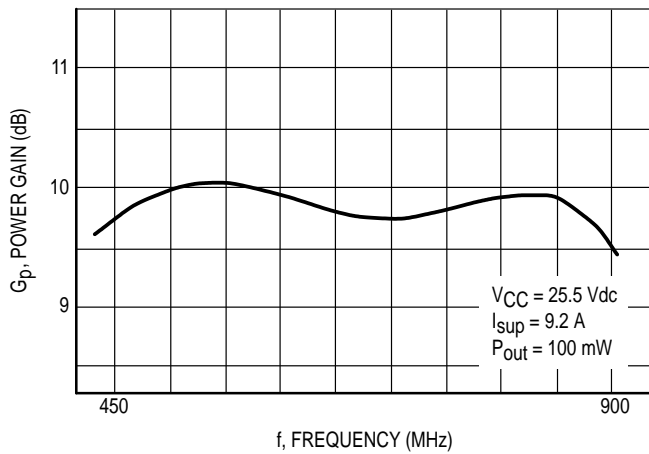
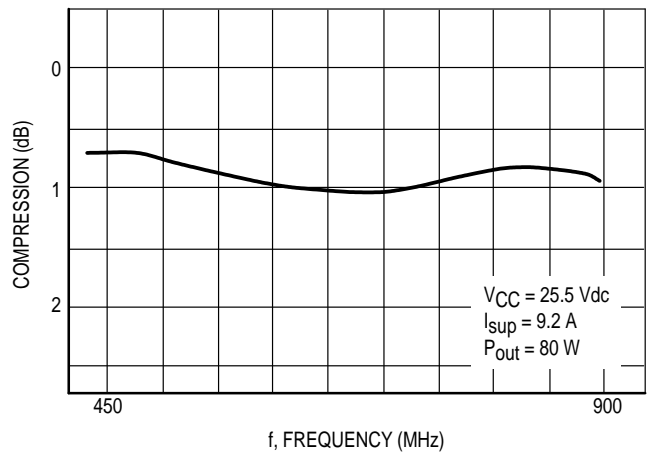


Figure 1. MRFA2602 Connections

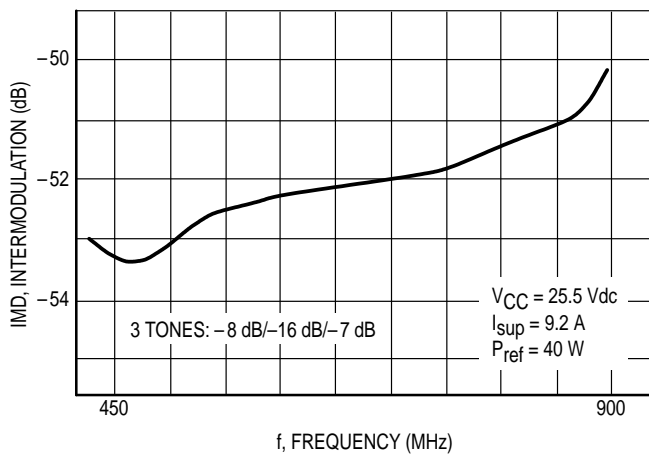
## TYPICAL CHARACTERISTICS



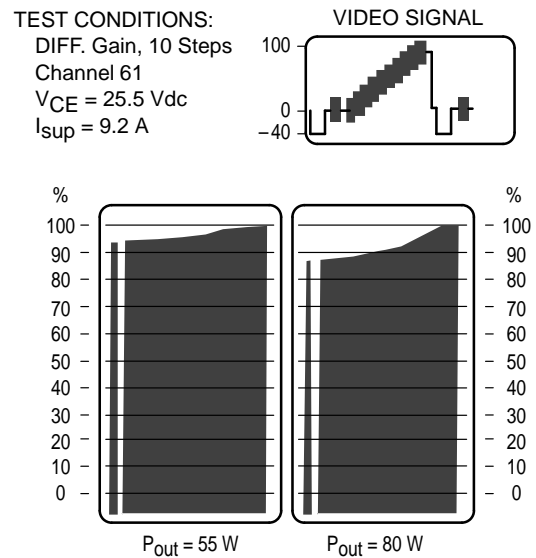
**Figure 2. Power Gain versus Frequency**



**Figure 3. Gain Compression versus Frequency**



**Figure 4. Intermodulation versus Frequency**



**Figure 5. Differential Gain**

## MOUNTING RECOMMENDATIONS

### 1. HEATSINK TOOLING

- Planarity: Better than 0.03 mm
- Roughness: Typical Value 0.8
- 8 Fixing Holes M3



### 2. THERMAL COMPOUND

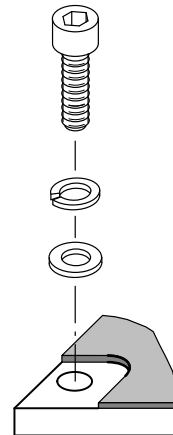
- Paste with silicones: SICERONT KF Ref. 1201 Recommended.
- Thickness: Optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier.  
(Typical volume: 700 mm<sup>3</sup> for 0.1 mm thickness)  
(Equivalent weight: 1.5 g for 2.2 density paste)

### 3. SCREWS

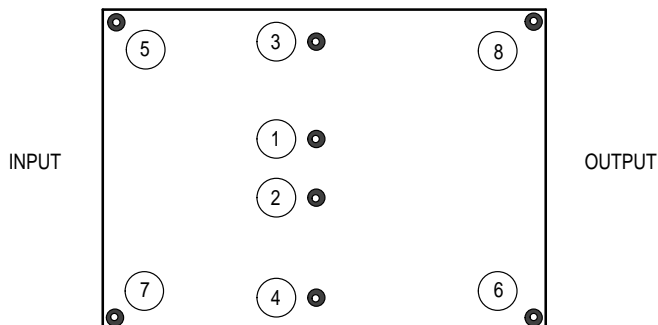
- Socket head cap screws: — CHC M3 x 10 for Copper/Aluminum Heatsink.
- Material: Nickel plated steel.

### 4. WASHERS

- Split lock washers WZ Ø3 + Flat washers ZU Ø3.



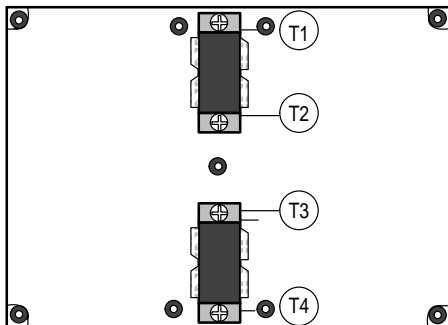
### 5. TIGHTENING ORDER



Maximum Recommended Torque: 12 Kg.cm  
(10.5 in. lbs.)

### 6. MOUNTING VERIFICATION

Supply the amplifier (25.5 Vdc) without RF signal, and measure temperature on points 1, 2, 3, and 4.

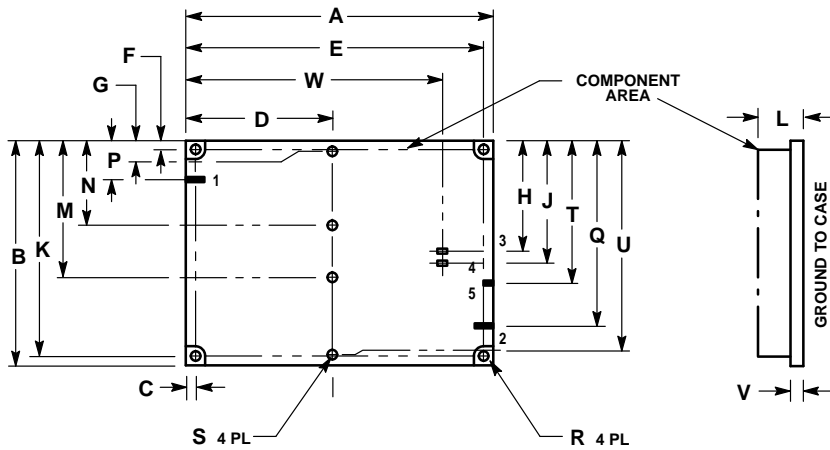


Characteristic	Typ	Max	Unit
T1, T2, T3, T4	—	70	°C
$\Delta(T1, T2), \Delta(T3, T4)$	3	5	°C

## CLEANING RECOMMENDATIONS

Some components of this amplifier are not qualified for every kind of cleaning solvent, so DO NOT clean the amplifier in a solvent bath. Local cleaning is recommended.

# PACKAGE DIMENSIONS




- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	114.88	115.12	4.523	4.532
B	84.88	85.12	3.342	3.351
C	3.40	3.60	0.134	0.142
D	54.70	54.90	2.154	2.161
E	111.40	111.60	4.386	4.394
F	3.40	3.60	0.134	0.142
G	4.00	4.20	0.157	0.165
H	39.90	40.70	1.571	1.602
J	44.30	45.10	1.744	1.776
K	81.40	81.60	3.205	3.213
L	—	17.00	—	0.669
M	51.80	52.00	2.039	2.047
N	33.00	33.20	1.229	1.307
P	14.60	15.40	0.575	0.606
Q	69.60	70.40	2.740	2.772
R	3.40	3.70	0.134	0.146
S	3.00	3.30	0.118	0.130
T	53.50	54.30	2.106	2.138
U	80.80	81.00	3.181	3.189
V	4.50	4.90	0.177	0.193
W	95.80	96.60	3.772	3.803

- STYLE 1:  
 PIN 1. RF INPUT  
 2. RF OUTPUT  
 3. +V<sub>CC1</sub>  
 4. +V<sub>CC2</sub>  
 5. RF DETECTION GROUND TO CASE

**CASE 429C-03  
 ISSUE B**

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