

The RF Line

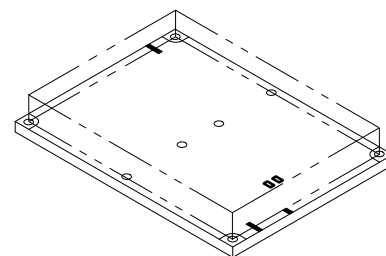
Broadband RF Power Amplifier for TV Transmitter

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)

MRFA2602

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



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}	—	—	± 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).

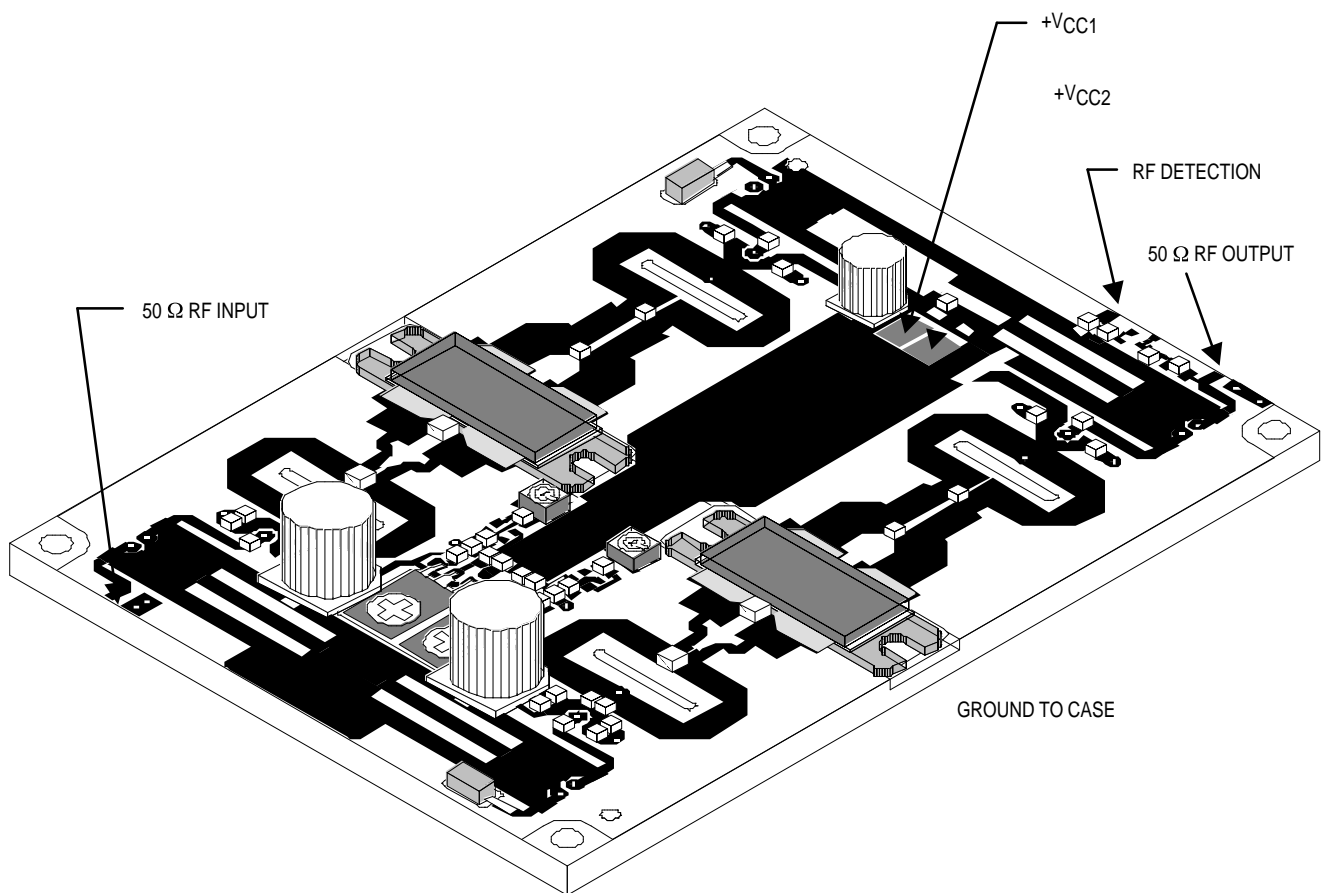


Figure 1. MRFA2602 Connections

TYPICAL CHARACTERISTICS

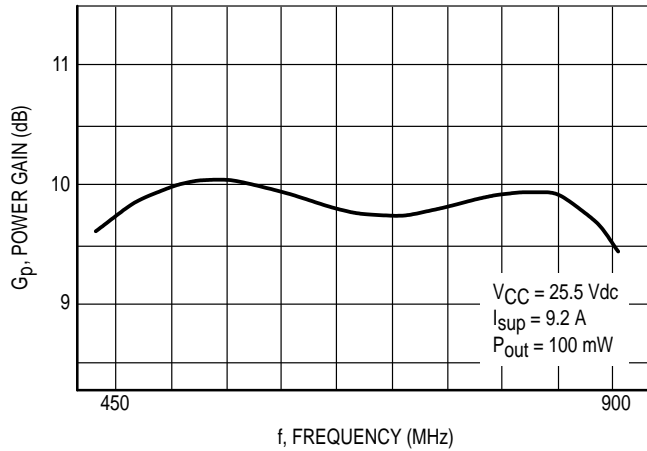


Figure 2. Power Gain versus Frequency

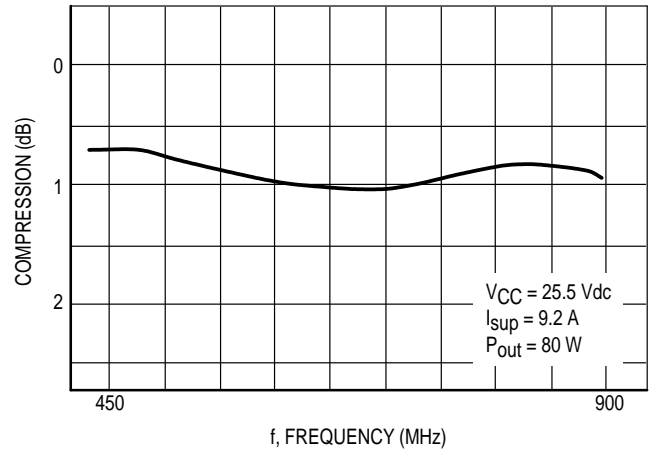


Figure 3. Gain Compression versus Frequency

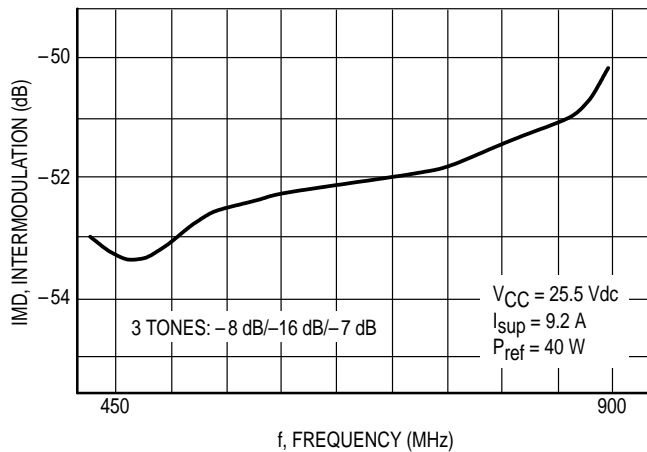


Figure 4. Intermodulation versus Frequency

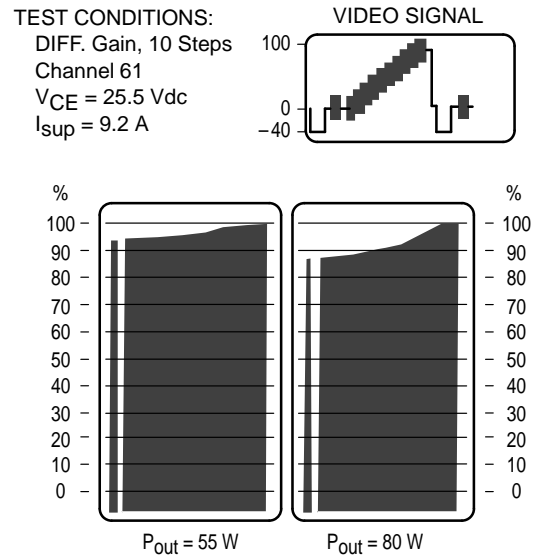


Figure 5. Differential Gain

MOUNTING RECOMMENDATIONS

1. HEATSINK TOOLING

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



2. THERMAL COMPOUND

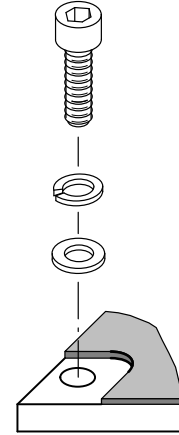
- Paste with silicones: SICERONT KF Ref. 1201 Recommended.
- Thickness: Optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier.
(Typical volume: 700 mm³ for 0.1 mm thickness)
(Equivalent weight: 1.5 g for 2.2 density paste)

3. SCREWS

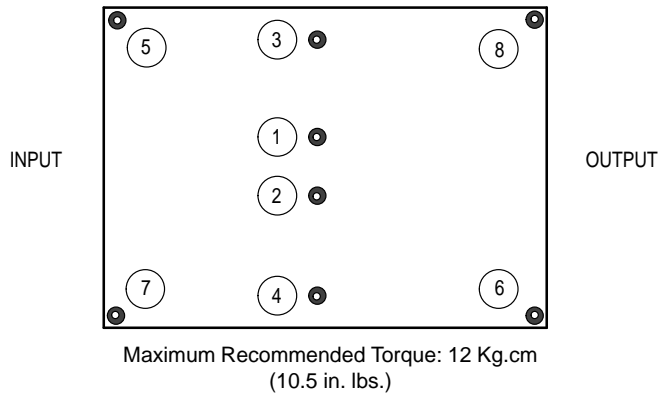
- Socket head cap screws: — CHC M3 x 10 for Copper/Aluminum Heatsink.
- Material: Nickel plated steel.

4. WASHERS

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

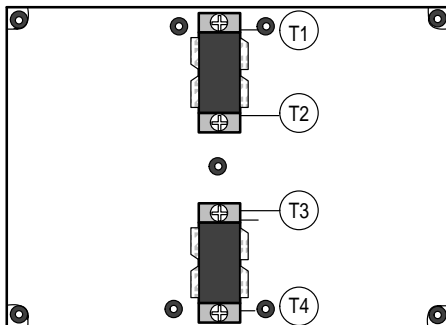


5. TIGHTENING ORDER



6. MOUNTING VERIFICATION

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

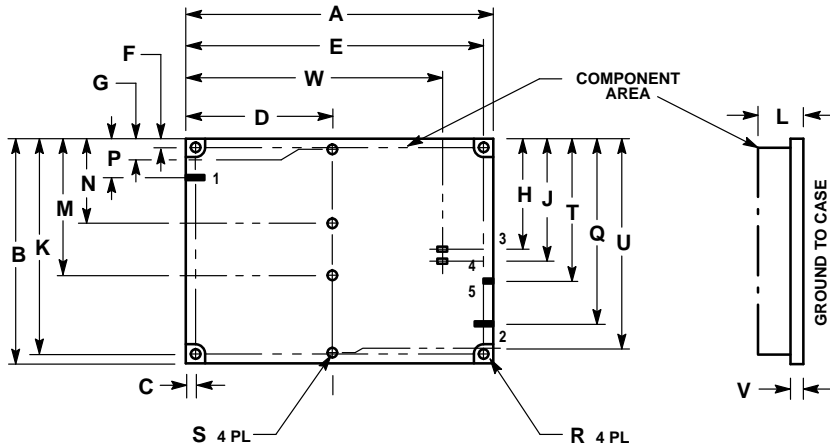


Characteristic	Typ	Max	Unit
T1, T2, T3, T4	—	70	°C
$\Delta(T1, T2), \Delta(T3, T4)$	3	5	°C

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
 - RF OUTPUT
 - +V_{CC1}
 - +V_{CC2}
 - RF DETECTION GROUND TO CASE

**CASE 429C-03
ISSUE B**

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How to reach us:

USA / EUROPE: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

MFAX: RMFAX0@email.sps.mot.com - TOUCHTONE (602) 244-6609
INTERNET: <http://Design-NET.com>

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,
6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298



MOTOROLA



MRFA2602/D

