ZETAGI

Radio Equipment & Marine Electronic Devices

Alimentatori	*Power supply*
Riduttori di tensione:	*Voltage reducer:*
• 24VCC→12VCC	• *24VDC→12VDC*
Convertitori da:	*Inverter:*
• 12VCC→230VCA	• *12VDC→230VAC*
• 24VCC→230VCA	• *24VDC→230VAC*
• 12VCC→24VCC	• *12VDC→24VDC*
Caricabatteria	*Battery charger*
Amplificatori RF di potenza	*RF Power amplifiers*
Carichi fittizi	*Dummy load*
Rosmetri e wattmetri RF	*SWR and RF power meter*
Adattatori di impedenza	*Transmatch*
Preamplificatori	*Preamplifier*
Demiscelatori	*Splitters*
Commutatori d'antenna	*Antenna switch*
Microfoni da tavolo	*Desk microphones*
Microfoni palmari	*Handheld microphones*
Frequenzimetri	*Frequency counter*

B2002

POWER AMPLIFIER

CE

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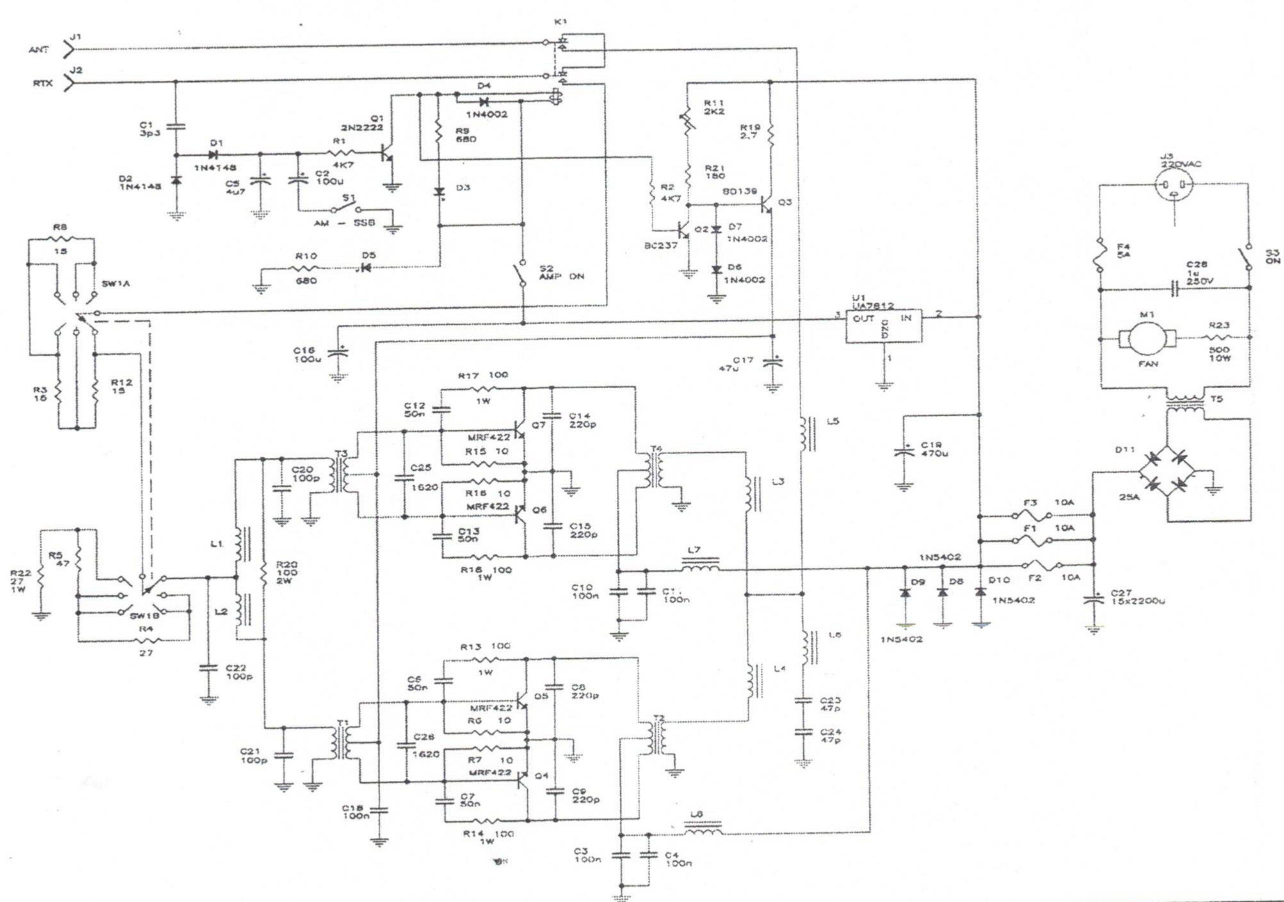
Schema elettrico/Schematic diagram:



AMPLIFICATORE LINEARE B2002

CARATTERISTICHE:

Frequenza: 20 ÷ 30 MHz
Potenza d'ingresso: 1 ÷ 10 W AM, 1 ÷ 20 W SSB
Potenza d'uscita: 100÷600W AM, 200÷1200W SSB regolabile
Funzionamento intermittente 1' ON 1' OFF (@ Tamb.= 21° C)
Impedenza d'uscita: 52 Ω
Tensione di rete: 230 VCA 50 Hz cat. II
Fusibili rete: F - 5 A - 250 V - 5 x 20 mm
Corrente assorbita: 5 A
Protezione termica a 90° C
Dimensioni: 310 x 310 x 150 mm
Peso: 16 Kg.

IMPIEGO (importante):

1. Collegare, con un cavo coassiale, l'uscita del trasmettitore con la presa del lineare contrassegnata con "TRASMETTITORE" ed il cavo dell'antenna nella presa contrassegnata con "ANTENNA".
2. Inserire la spina d'alimentazione nella rete a 230 V.
3. Posizionare il comando AM – SSB sul tipo di trasmissione che s'intende usare.

ATTENZIONE:

- Data l'alta potenza in uscita, è necessario che:
  - l'antenna sopporti una potenza pari a 1200 W;
  - il ROS d'antenna sia inferiore a 1,5:1 a 600 W.
- Tensioni pericolose all'interno! Non togliere il coperchio prima d'avere sfilato la spina dalla presa di rete.
- L'amplificatore può essere usato solo all'interno d'ambienti con temperature comprese tra –10°C e +40°C.
- Si raccomanda di non ostruire le feritoie d'aerazione.
- **In caso di guasto rivolgersi all'assistenza tecnica.**
- **La garanzia decade se non si osservano le suddette regole o se l'apparecchio è manomesso.**
- **In ogni caso i transistor finali sono sempre esclusi da garanzia.**

B2002 LINEAR AMPLIFIER

SPECIFICATIONS:

Frequency: 20 ÷ 30 MHz
Input power: 1 ÷ 10 W AM, 1 ÷ 20 W SSB
Output power: 100÷600 W AM, 200÷1200 W SSB adjustable
Intermittent operation 1' ON 1' OFF (@ R.Temp.= 21° C)
Output impedance: 52 Ω
Input voltage: 230 VCA 50 Hz cat. II
Fuse: F - 5 A - 250 V - 5 x 20 mm
Absorbed power: 5 A
Thermal protection at °90 C.
Size: 310 x 310 x 150 mm
Weight: 16 Kg

APPLICATION (important):

1. Connect by coaxial cable the transmitter ouput to the amplifier socket marked "TRASMETTITORE" and the antenna cable to the other socket.
2. Connect the plug to the 230 V supply mains.
3. Position the AM – SSB control on the type of transmission you intend to use.

WARNINGS:

- Given the amplifier's high output power it is important that:
  - the aerial is able to carry effective power of 1200 W;
  - the aerial SWR is less than 1,5:1 at 600 W.
- High voltage components inside! Do not remove the cover before unplugging the unit.
- For internal use only, with temperatures ranging from – 10° C to + 40° C.
- Keep the cooling vents free.
- **Consult technical service in case of faults.**
- **The loss of any warranty rights is occasioned in the event of non compliance with the above mentioned prescriptions or damage to the equipment.**
- **In any case the output transistors are not covered by warranty.**

AMPLIFICATEUR LINEAIRE B2002

CARACTERISTIQUES:

Fréquence: 20 ÷ 30 MHz
Puissance d'entrée: 1 ÷ 10 W AM, 1 ÷ 20 W BLU
Puissance de sortie: 100÷600W AM, 200÷1200 W BLU rég.
Fonction. intermittent 1' marche 1' arrêt (@ Temp.amb.=21° C)
Impédance de sortie: 52 Ω
Tension d'alimentation: 230 VCA 50 Hz cat. II
Fuses: F - 5 A - 250 V - 5 x 20 mm
Courant absorbé: 5 A
Protection thermique à 90° C
Dimensions: 310 x 310 x 150 mm
Poids: 16 Kg.

USAGE (important):

1. Connecter par câble la sortie de l'émetteur avec la prise de l'amplificateur, marquée «TRASMETTITORE» et le câble d'antenne sur l'autre prise.
2. Connecter la fiche d'alimentation du réseau à 230 V.
3. Positionner la commande AM – SSB sur le type d'émission qu'on veut utiliser.

AVVERTISEMENTS:

- Vue la puissance délivrée par l'amplificatuer, il est indispensable que:
  - l'antenne supporte au moins 1200 W;
  - le TOS de l'antenne soit inférieur à 1,5 :1 à 600 W.
- Tensions dangereuses à l'intérieur ! Ne jamais enlever le couvercle sans avoir débranché le cordon d'alimentation.
- Exclusivement pour usage interne à une température ambiante comprise entre -10°C et +40°C.
- Ne pas boucher les fentes d'aération.
- **En case de panne, s'addresser a notre service aprés-vente.**
- **L'inobservances des descriptions sus-dites détermine la déchéance de tout droit de garantie.**
- **En tout cas, les transistors de puissance ne sont pas couverts de garantie.**

LINEARVERSTÄRKER B2002

EIGENSCHAFTEN:

Frequenz: 20 ÷ 30 MHz
Eingangsleistung: 1 ÷ 10 W AM, 1 ÷ 20 W SSB
Ausgangsleistung:100÷600W AM 200÷1200W SSB Umschalt.
Intermitt. Betrieb 1' Min. EIN, 1 Min. AUS (@ T.Umg.= 21° C)
Ausgangsimpedanz: 52 Ω
Eingangsspannung: 230 VCA 50 Hz cat. II
Schmelzsicherungen: F - 5 A - 250 V - 5 x 20 mm
Stromaufnahme: 5 A
Thermischer Shutz an 90° C
Maβe: 310 x 310 x 150 mm
Gewicht: 16 Kg

BETRIEB (wichtig):

1. Den Sender durch ein Koaxialkabel an die mit „TRASMETTITORE" gekennzeichnete Buchse des Lineargeräts und das Antennenkabel an die andere Buchse anschlieβen.
2. Den Versorgungsstecker an das 230 V-Stromnetz anschlieβen.
3. Den Wahlschalter AM – SSB auf die gewünschte Übertragungsart stellen.

HINWEISE:

- In Anbetracht der hohen Ausgangsleistung des Verstärkers ist erforderlich, daβ:
  - die Antenne auf eine Leistung von 1200 W ausgelegt ist;
  - das SWR der Antenne niedriger ist als 1,5:1 von 600W.
- Gefährliche Spannungen im Innern! Den Dekel erst abnehmen, nachdem der Stecker aus des Steckdose genommen wurde.
- Nur für den Einsatz in Innenräumen bei einer Temperatur von – 10 °C bis + 40° C.
- Auf keinen Fall die Luftschlize verstopfen.
- **Im falle von Störungen wenden Sie sich an unseren Kundendienst.**
- **Die Garantie verfällt, falls die o.a. Normen nicht beachtet werden bzw.**
- **Die Endtransistoren sind stets von der Garantie ausgeschlossen.**

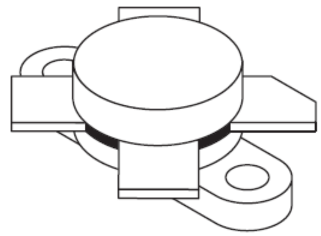
The RF Line NPN Silicon Power Transistor
150W(PEP), 30MHz, 28V

Rev. V1

Designed primarily for applications as a high–power linear amplifier from 2.0 to 30 MHz.

- Specified 28 V, 30 MHz characteristics —
  Output power = 150 W (PEP)
  Minimum gain = 10 dB
  Efficiency = 40%
- Intermodulation distortion @ 150 W (PEP) —IMD = –30 dB (min.)
- 100% tested for load mismatch at all phase angles with 30:1 VSWR

Product Image



CASE 211–11, STYLE 1

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	85	Vdc
Emitter–Base Voltage	V_{EBO}	3.0	Vdc
Collector Current — Continuous	I_C	20	Adc
Withstanding Current — 10 s	—	30	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	290 1.66	Watts W/°C
Storage Temperature Range	T_{stg}	–65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.6	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I_C = 200 mAdc, I_B = 0)	$V_{(BR)CEO}$	35	—	—	Vdc
Collector–Emitter Breakdown Voltage (I_C = 100 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	85	—	—	Vdc
Collector–Base Breakdown Voltage (I_C = 100 mAdc, I_E = 0)	$V_{(BR)CBO}$	85	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 mAdc, I_C = 0)	$V_{(BR)EBO}$	3.0	—	—	Vdc
Collector Cutoff Current (V_{CE} = 28 Vdc, V_{BE} = 0, T_C = 25°C)	I_{CES}	—	—	20	mAdc

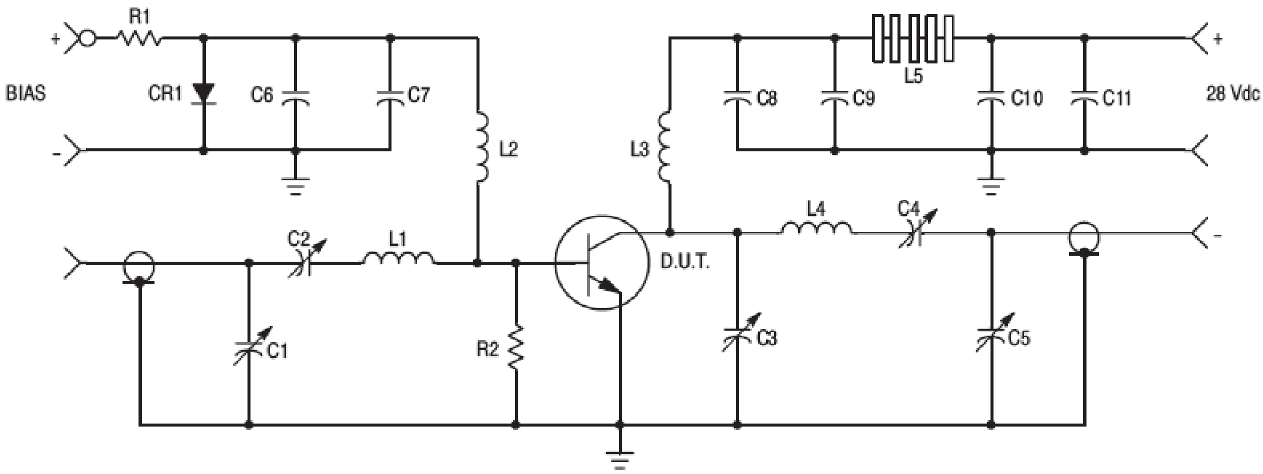
(continued)

ELECTRICAL CHARACTERISTICS — continued (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	15	30	120	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	—	420	—	pF
FUNCTIONAL TESTS					
Common–Emitter Amplifier Power Gain (V_{CC} = 28 Vdc, P_{out} = 150 W (PEP), $I_{C(max)}$ = 6.7 Adc, I_{CQ} = 150 mAdc, f = 30, 30.001 MHz)	G_{PE}	10	13	—	dB
Collector Efficiency (V_{CC} = 28 Vdc, P_{out} = 150 W (PEP), $I_{C(max)}$ = 6.7 Adc, I_{CQ} = 150 mAdc, f = 30, 30.001 MHz)	η	—	45	—	%
Intermodulation Distortion (1) (V_{CE} = 28 Vdc, P_{out} = 150 W (PEP), I_C = 6.7 Adc, I_{CQ} = 150 mAdc, f = 30, 30.001 MHz)	IMD	—	–33	–30	dB
Output Power (V_{CE} = 28 Vdc, f = 30 MHz)	P_{out}	150	—	—	Watts (PEP)

NOTE:
1. To Mil–Std–1311 Version A, Test Method 2204, Two Tone, Reference each Tone.

The RF Line NPN Silicon Power Transistor
150W(PEP), 30MHz, 28V



C1, C2, C3, C5 — 170–680 pF, ARCO 469
C4 — 80–480 pF, ARCO 466
C6, C8, C11 — ERIE 0.1 µF, 100 V
C7 — MALLORY 500 µF, 15 V Electrolytic
C9 — UNDERWOOD 1000 pF, 350 V
C10 — 10 µF, 50 V Electrolytic
R1 — 10 Ω, 25 Watt Wire Wound
R2 — 10 Ω, 1.0 Watt Carbon
CR1 — 1N4997

L1 — 3 Turns, #16 Wire, 5/16″ I.D., 5/16″ Long
L2 — 10 µH Molded Choke
L3 — 12 Turns, #16 Enameled Wire, Close Wound, 1/4″ Dia.
L4 — 5 Turns, 1/8″ Copper Tubing
L5 — 10 Ferrite Beads — FERROXCUBE #56–590–65/3B

Figure 1. 30 MHz Test Circuit Schematic

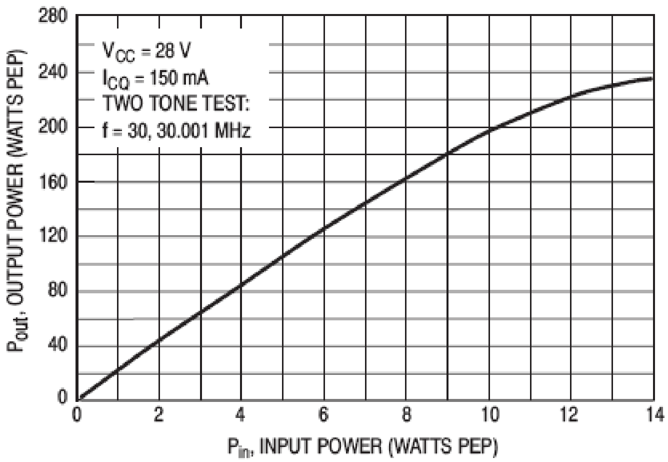


Figure 2. Output Power versus Input Power

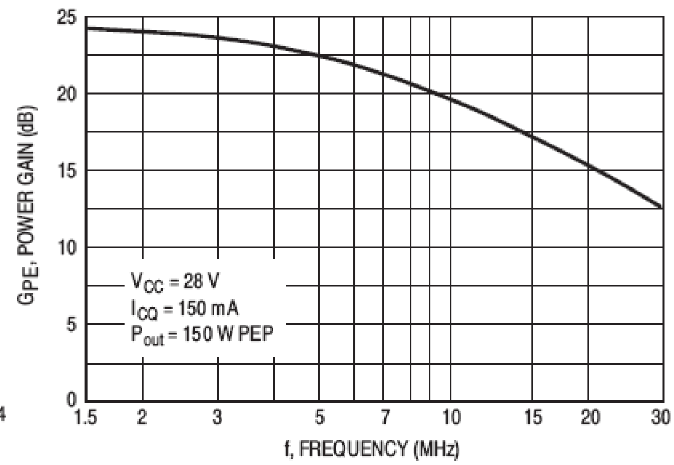


Figure 3. Power Gain versus Frequency

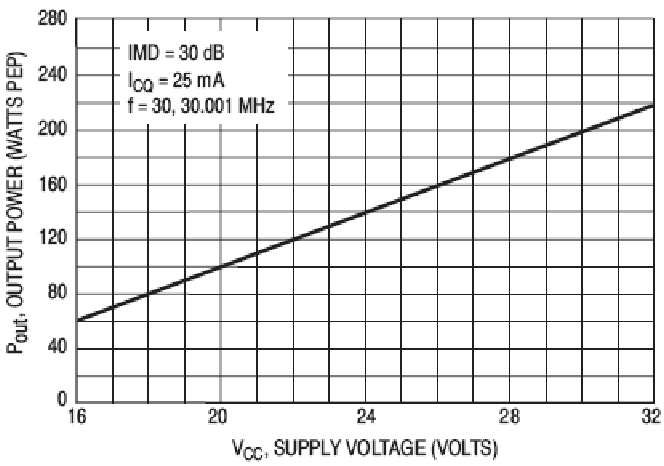


Figure 4. Linear Output Power versus Supply Voltage

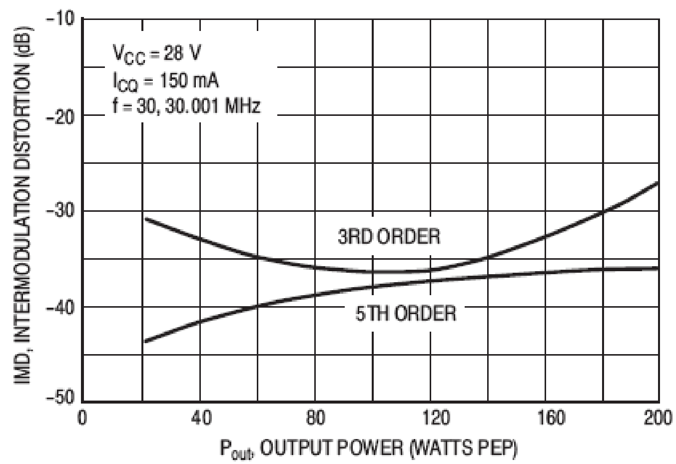


Figure 5. Intermodulation Distortion versus Output Power

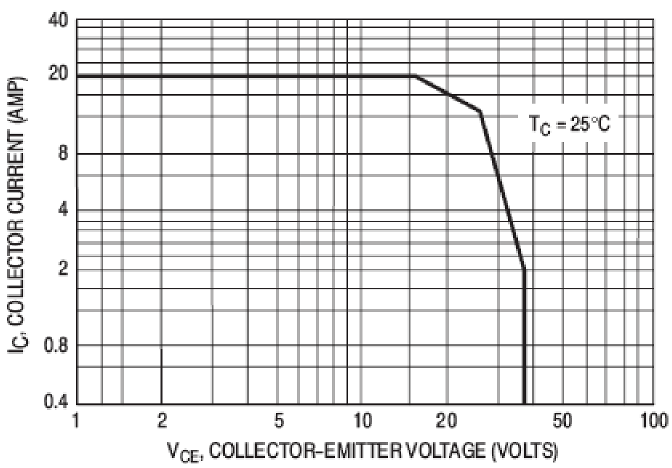


Figure 6. DC Safe Operating Area

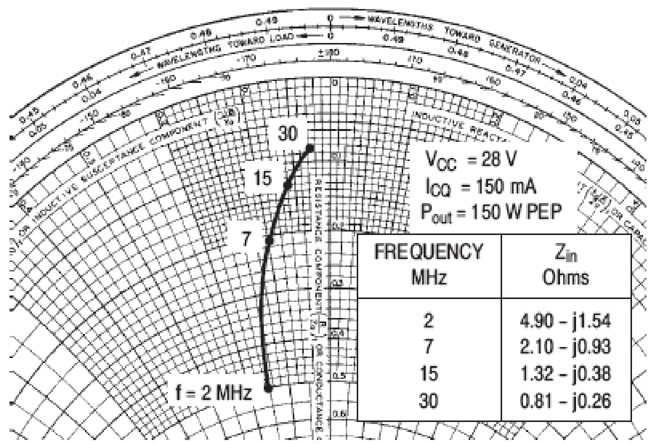


Figure 7. Series Input Impedance

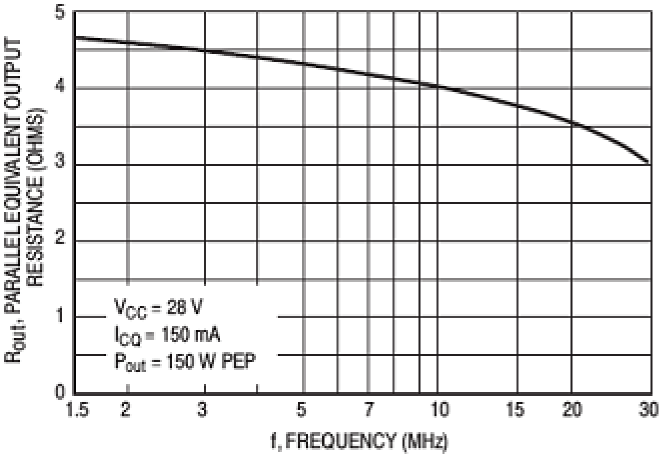


Figure 8. Output Resistance versus Frequency

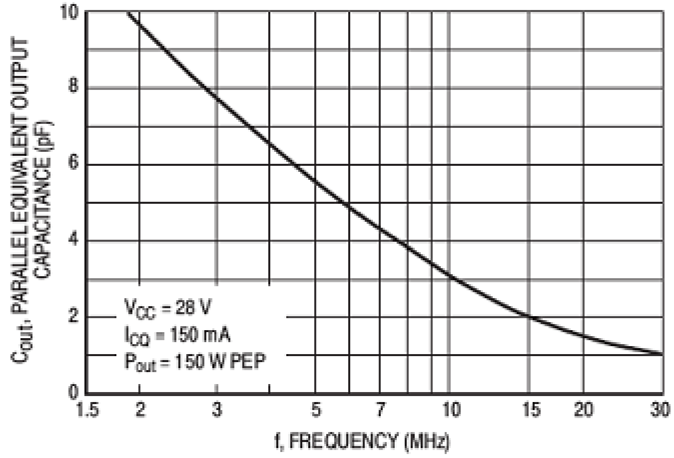
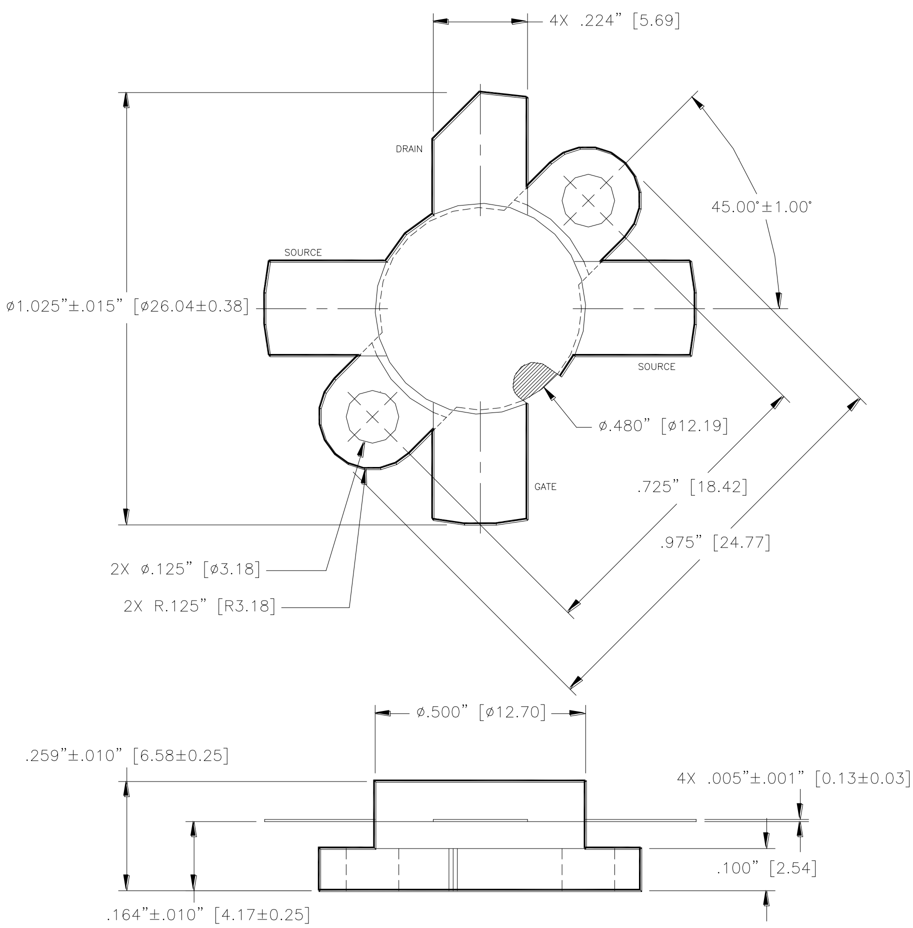


Figure 9. Output Capacitance versus Frequency



Unless otherwise noted, tolerances are inches ±.005" [millimeters ±0.13mm]

The RF Line NPN Silicon Power Transistor
150W(PEP), 30MHz, 28V