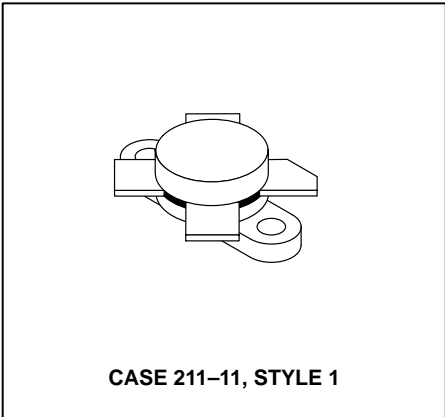


The RF Line NPN Silicon RF Power Transistor

Designed for 12.5 volt low band VHF large-signal power amplifier applications in commercial and industrial FM equipment.

- Specified 12.5 V, 50 MHz Characteristics —
 - Output Power = 70 W
 - Minimum Gain = 11 dB
 - Efficiency = 50%
- Load Mismatch Capability at High Line and RF Overdrive



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	18	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous	I_C	20	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ (1) Derate above 25°C	P_D	250 1.43	Watts W/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (2)	$R_{\theta JC}$	0.7	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 100 \text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	18	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 50 \text{ mAdc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \text{ mAdc}$, $I_C = 0$)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current ($V_{CE} = 13.6 \text{ Vdc}$, $V_{BE} = 0$)	I_{CES}	—	—	20	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	10	—	150	—
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DYNAMIC CHARACTERISTICS

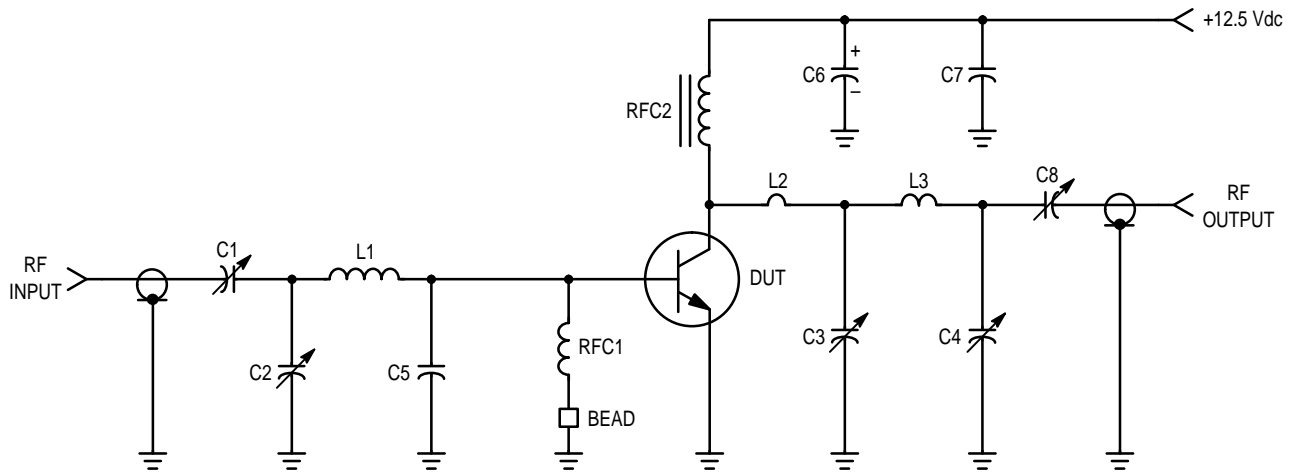
Output Capacitance ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{ob}	—	275	450	pF
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FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ($V_{CC} = 12.5 \text{ Vdc}$, $P_{out} = 70 \text{ W}$, $f = 50 \text{ MHz}$)	G_{PE}	11	13	—	dB
Collector Efficiency ($V_{CC} = 12.5 \text{ Vdc}$, $P_{out} = 70 \text{ W}$, $f = 50 \text{ MHz}$)	η	50	—	—	%

NOTES:

- These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.
- Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques.



C1, C8 — 9.0–180 pF, Arco 463
 C2, C3, C4 — 80–480 pF, Arco 466
 C5 — 1000 pF, 350 V, Unelco
 C6 — 10 μ F, 25 Vdc
 C7 — 0.01 μ F, Ceramic
 RFC1 — 10 μ H Molded Choke

RFC2 — 12 Turns, #16 AWG, Enameled Wire Closewound
 on a 2.0 W Carbon Resistor
 L1 — 2 Turns, #18 AWG Enameled Wire, 0.4" ID, 0.15" Long
 L2 — Loop, #12 AWG Wire, 0.6" High, 0.4" Wide
 L3 — 2 Turns, #12 AWG Wire, ID 0.4", 0.25" Long
 Bead — Ferrite Bead Ferroxcube #56–590–65/3B

Figure 1. 50 MHz Test Circuit

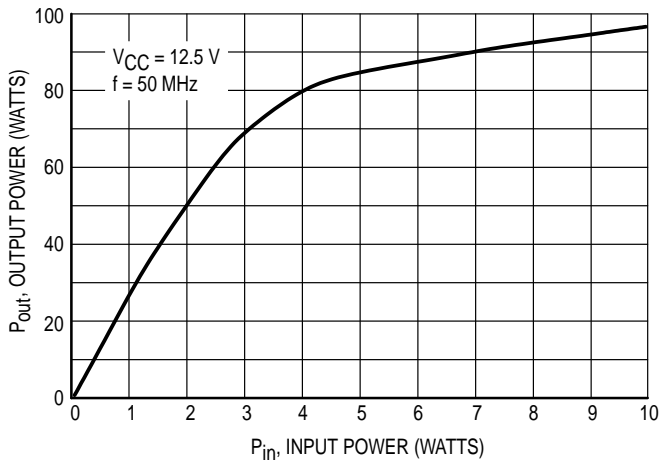


Figure 2. Output Power versus Input Power

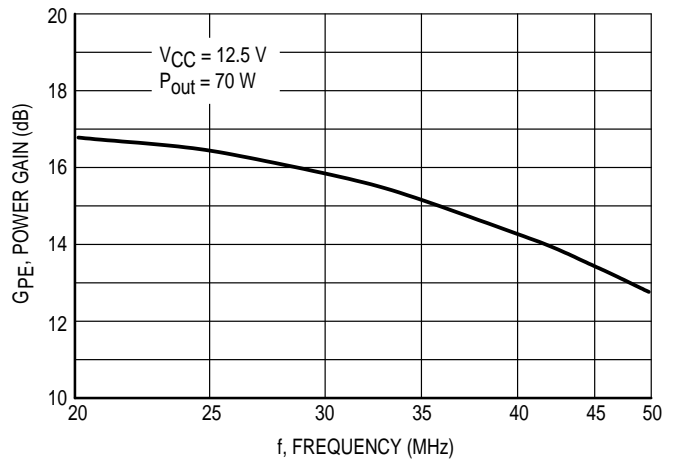


Figure 3. Power Gain versus Frequency

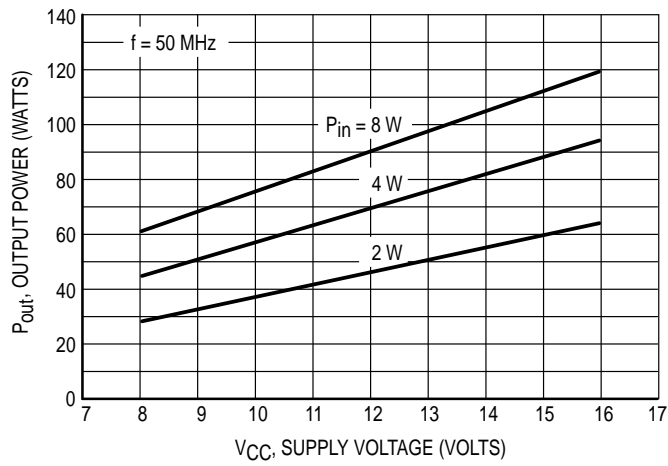


Figure 4. Output Power versus Supply Voltage

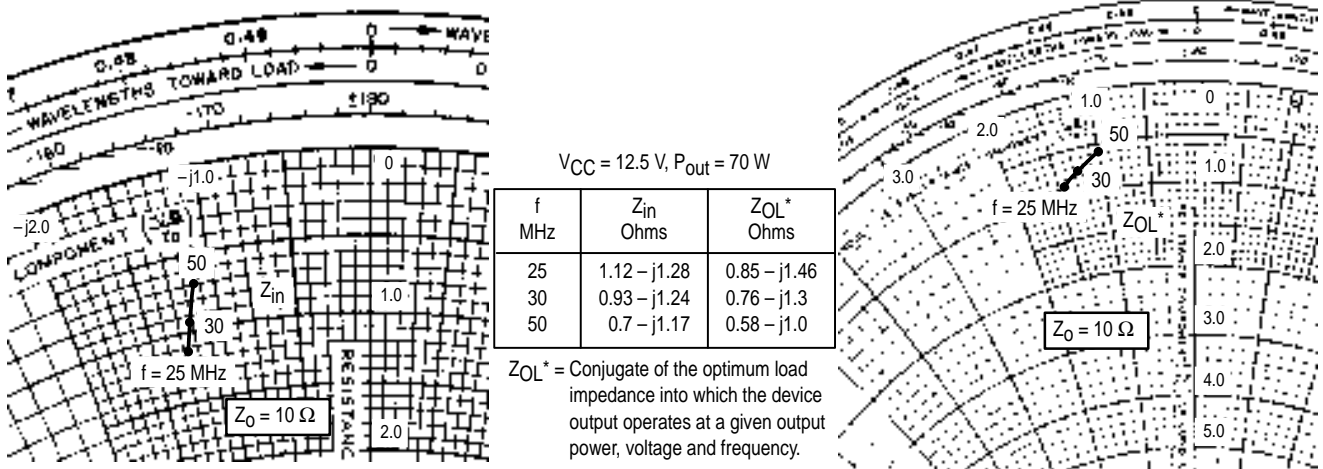
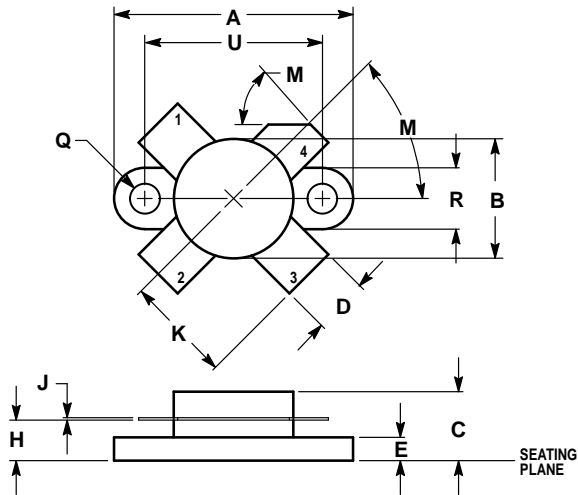


Figure 5. Series Equivalent Input/Output Impedances

PACKAGE DIMENSIONS



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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.960	0.990	24.39	25.14
B	0.465	0.510	11.82	12.95
C	0.229	0.275	5.82	6.98
D	0.216	0.235	5.49	5.96
E	0.084	0.110	2.14	2.79
H	0.144	0.178	3.66	4.52
J	0.003	0.007	0.08	0.17
K	0.435	—	11.05	—
M	45° NOM		45° NOM	
Q	0.115	0.130	2.93	3.30
R	0.246	0.255	6.25	6.47
U	0.720	0.730	18.29	18.54

- STYLE 1:
 PIN 1. EMITTER
 2. BASE
 3. EMITTER
 4. COLLECTOR

**CASE 211-11
 ISSUE N**

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