



SOLID STATE MICROWAVE

SD1412

THOMSON-CSF COMPONENTS CORPORATION

Montgomeryville, PA 18936 ■ (215) 362-8500 ■ TWX 510-661-7299

800 MHz COMMUNICATIONS TRANSISTOR

DESCRIPTION

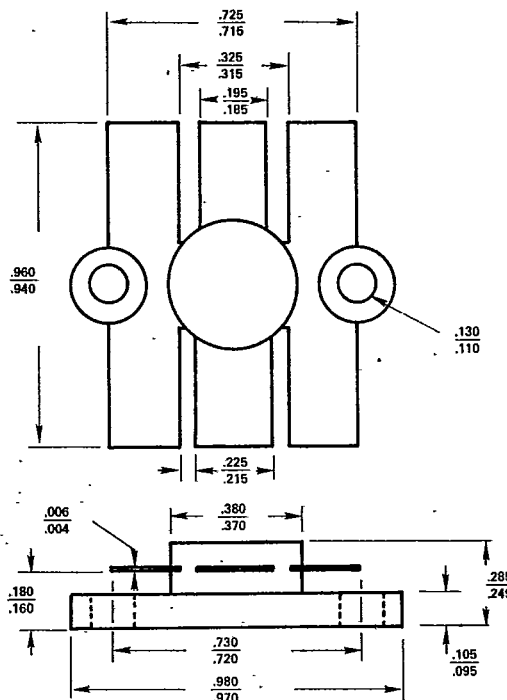
The SD1412 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for 800 MHz mobile communications. This device utilizes matched input technology (Tuned Q) to increase bandwidth and power gain over the complete range of 806-866 MHz.

FEATURES

- Designed for 806-866 MHz mobile equipment
- 18 watts (min.) with greater than 6.0 dB gain @ 836 MHz
- Withstands 10:1 VSWR at rated operating conditions
- Matched Input Technology
- Common Base

ABSOLUTE MAX. RATING

V_{CBO}	: Collector-Base Voltage	36.0 V
V_{CEO}	: Collector-Emitter Voltage	16.0 V
V_{EBO}	: Emitter-Base Voltage	4.0 V
I_C	: Collector Current (max.)	7.0 A
PT.	: Total Device Dissipation @ 25°C	46.0 W
T_j	: Junction Temperature	+200°C
T_s	: Storage Temperature	-65°C to +200°C



380 6 LFL

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV_{CEO}	$I_C = 50 \text{ mA}, I_B = 0$	16.0	—	—	Vdc
Collector-Emitter Breakdown Voltage*	BV_{CES}	$I_C = 50 \text{ mA}, V_{be} = 0$	36.0	—	—	Vdc
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_e = 10 \text{ mA}, I_C = 0$	4.0	—	—	Vdc
Collector Cut Off Current	I_{CES}	$V_{cb} = 15 \text{ V}, V_{be} = 0$	—	—	10.0	mA
DC Current Gain	h_{FE}	$V_{ce} = 6 \text{ V}, I_C = 1 \text{ A}$	20.0	—	—	—

*Pulsed through 25 MH Inductor

RF CHARACTERISTICS: SMALL SIGNAL

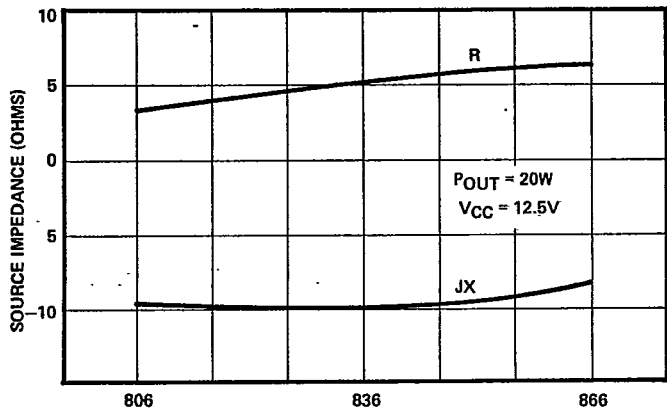
Output Capacitance	C_{ob}	$V_{cb} = 12.5 \text{ V}, I_e = 0$	—	20.0	—	pF
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RF CHARACTERISTICS: LARGE SIGNAL

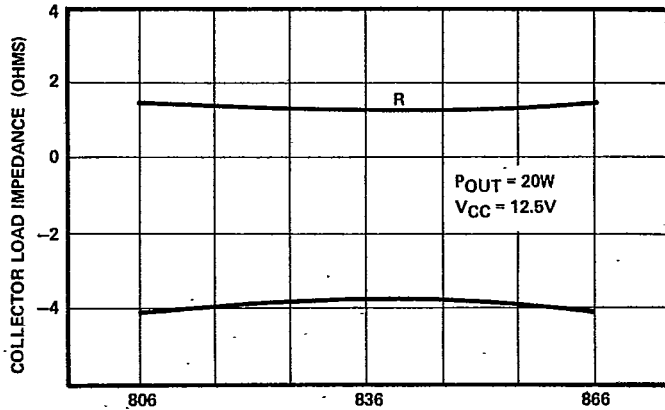
Amplifier Power Out	P_o	$f_o = 836 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	18.0	—	—	Watts
Amplifier Power Gain	P_g	$f_o = 836 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	6.0	—	—	dB
Impedance-Input	Z_{in}	$f_o = 836 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	(3.0 - J 4.8)	(Typ.)	—	ohms
Impedance-Output @ 15 Watts	Z_{out}	$f_o = 836 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	(1.6 - J 2.5)	(Typ.)	—	ohms

SD - - - 01412 - 1X

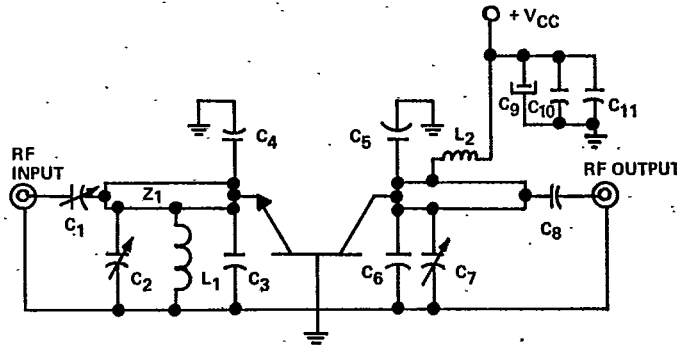
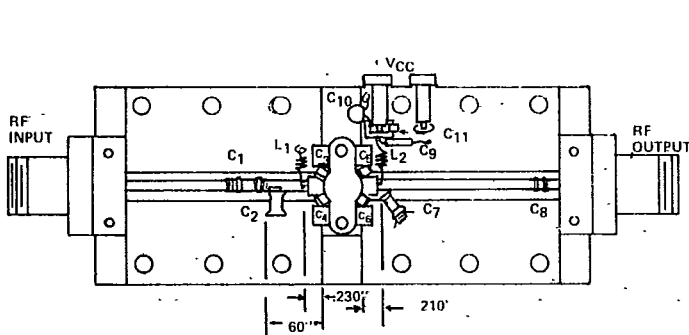
SD1412



SERIES SOURCE IMPEDANCE VS. FREQUENCY

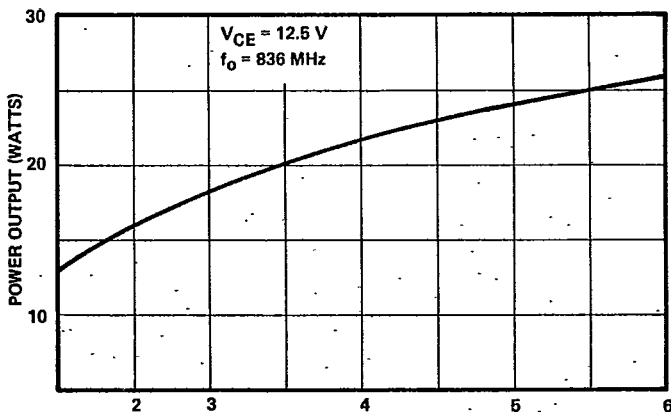


SERIES COLLECTOR LOAD IMPEDANCE VS. FREQUENCY

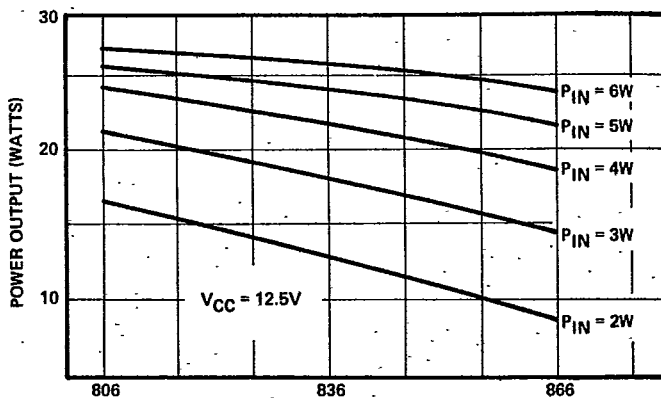


COMPONENTS LIST

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|------------|----------------------|----|--|
| C1, C2, C7 | VOLTRONIC .8-10 pf | L1 | 4 TURNS, AWG #22, CLOSE WD., 3/32" I.D. |
| C8 | ATC 250 pf CHIP 100B | L2 | 4 1/2 TURNS, AWG #22, CLOSE WD., 3/32 I.D. |
| C3, C4 | ATC 5.6 pf CHIP 100B | Z1 | .090" WIDE X .600" LONG, 1/32" THICK |
| C5, C6 | ATC 10 pf CHIP 100B | | BOARD MATERIAL - 3M-K-6098 |
| C9 | 4.7 pf ELECTROLYTIC | Z2 | .105" WIDE X 1.710" LONG, 1/32" THICK |
| C10 | .01 uf ERIE DISK | | BOARD MATERIAL - 3M-K-6098 |
| C11 | ATC 510 pf CHIP 100B | | |



POWER OUTPUT VS. POWER INPUT



POWER OUTPUT VS. FREQUENCY