SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION
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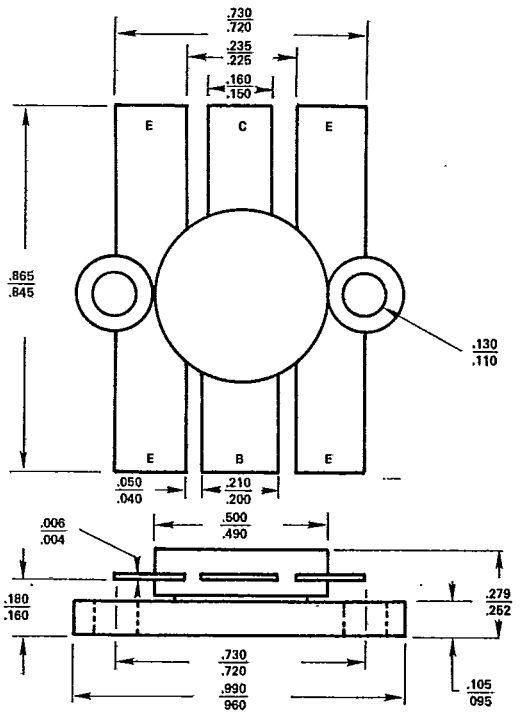
SD1429

12 W, 12.5 V
UHF POWER TRANSISTOR

DESCRIPTION

SSM device type SD1429 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device utilizes tuned Q technology which consists of an input matching network on the base to achieve optimum gain and broadband characteristics.



.500 6LFL

FEATURES

- Designed for UHF military and commercial equipment
- 12.0 watts (min.) with greater than 7.8 dB gain
- Withstands infinite VSWR at rated operating conditions
- Tuned Q Technology
- Impedance matched

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.)	3.4 A
PT.	:	Total Device Dissipation @ 25°C Case	37.5 W
ϕ_{jc}	:	Thermal Resistance	4.6° C/W
T_j	:	Junction Temperature	200° C
T_s	:	Storage Temperature	−65°C to +200°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV_{CEO}	I_c = 200 mA, I_b = 0	16	–	–	V_{dc}
Collector-Emitter Breakdown Voltage*	BV_{CES}	I_c = 200 mA, V_{be} = 0	36	–	–	V_{dc}
Emitter-Base Breakdown Voltage	BV_{EBO}	I_e = 4 mA, I_c = 0	4	–	–	V_{dc}
Collector Cut Off Current	I_{CBO}	V_{cb} = 15V, I_e = 0	–	–	2	mA
DC Current Gain	h_{FE}	V_{ce} = 5V, I_c = .5 A	20	–	–	–

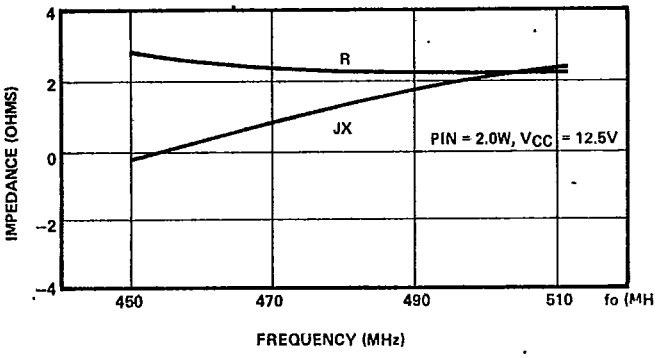
* Pulsed through 25 MH Inductor

RF CHARACTERISTICS: SMALL SIGNAL

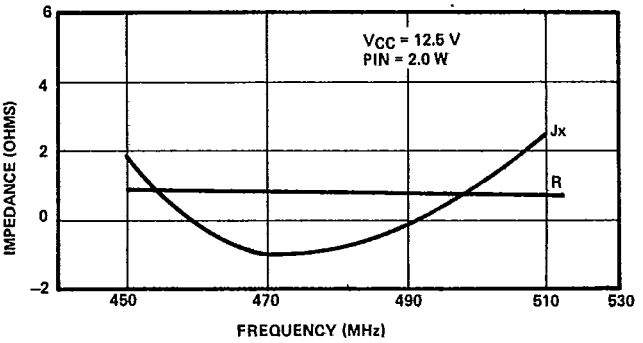
Output Capacitance – F_o = 1.0 MHz	C_{ob}	V_{cb} = 12 V, I_c = 0	–	–	50	pF

RF CHARACTERISTICS: LARGE SIGNAL

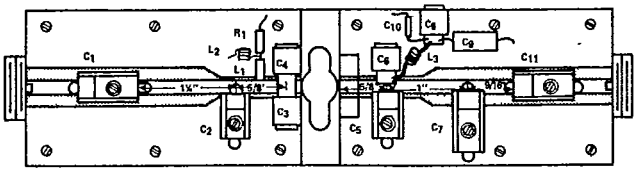
Amplifier power out,		P_o	470 MHz/12.5V	12	–	–	watts
Amplifier power gain		P_g		7.8	–	–	dB
Impedance – Input	Pin = 2.0 watts	Z_s	470 MHz/12.5V	0.8 – J 1.0		Typ.	ohms
Impedance – Output		Z_{cl}		2.4 + J 1.8		Typ.	ohms

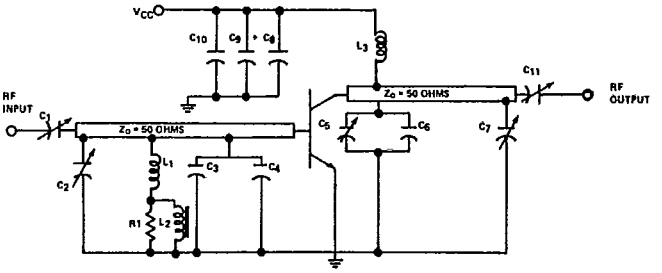


COLLECTOR LOAD IMPEDANCE VS FREQUENCY



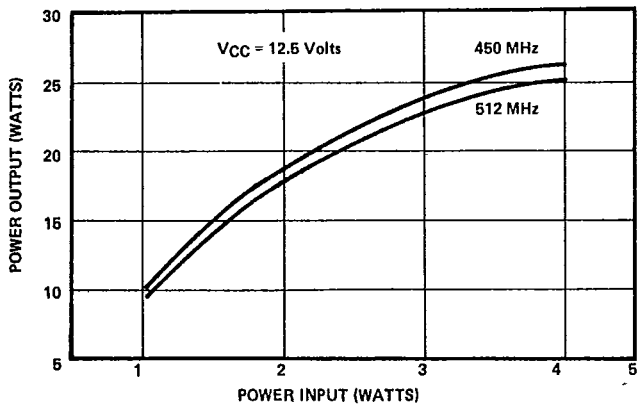
SOURCE IMPEDANCE VS FREQUENCY



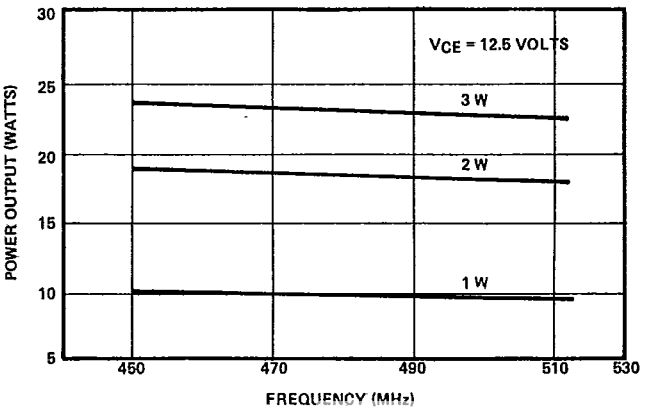


COMPONENT LIST

C_1, C_{11},	4-40 pf, ARCO 422	L1, 0.10 μh, MOLDED CHOKE
C2,	0.9-7 pf, ARCO 400	L2, 6 TURNS #28 AWG THRU
C3, C4,	20pf, UNELCO	FERROCUBE SLEEVE #3B1
C5,	1.5-20pf, ARCO 402	L3, 6 TURNS, #20 AWG, 0.20 ID
C6,	15pf, UNELCO	R1, 56 OHMS, ¼ WATT
C7,	2-25pf, ARCO 421	Zo, 50 OHM LINE
C8,	1000pf, UNELO	BOARD MATERIAL – DOUBLE SIDED
C9,	10μf, ELECTROLYTIC, 3EVDC	COPPER 1/16" THK, 3M-K-6098
C10,	0.47 μf, ERIE RED CAP	MOUNTED ON 3/8" BRASS PLATES



POWER OUTPUT VS POWER INPUT



POWER OUTPUT VS FREQUENCY