

SSM SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION

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

SD1410-1

10 W, 12.5 V UHF POWER TRANSISTOR

DESCRIPTION

SSM device type SD1410-1 is a 12 volt epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device incorporates a state of the art geometry to optimize the broadband power gain and maintain ruggedness.

FEATURES

- Designed for UHF military and commercial equipment
- 10.0 watts (min.) with greater than 6.0 dB gain @ 512 MHz
- Withstands infinite VSWR under operating conditions
- Stripline flange package
- Broadband power gain

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.)	3.0 A
PT.	: Total Device Dissipation @ 25°C Case	28.0 W
ϕ_{jc}	: Thermal Resistance	6.2° 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}	$I_C = 200 \text{ mA}, I_b = 0$	16.0	—	—	V_{dc}
Collector-Emitter Breakdown Voltage*	BV_{CES}	$I_C = 200 \text{ mA}, V_{be} = 0$	36.0	—	—	V_{dc}
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_e = 4.0 \text{ mA}, I_C = 0$	4.0	—	—	V_{dc}
Collector Cut Off Current	I_{CBO}	$V_{cb} = 15 \text{ V}, I_e = 0$	—	—	1.0	mA
DC Current Gain	h_{FE}	$V_{ce} = 5 \text{ V}, I_C = 0.5 \text{ A}$	20.0	—	—	—

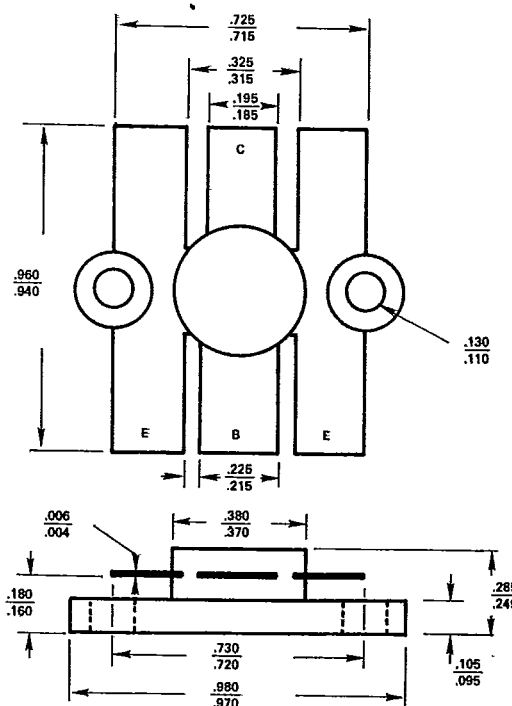
* Pulsed through 25 MH Inductor

RF CHARACTERISTICS: SMALL SIGNAL

Output Capacitance @ 1 MHz	C_{ob}	$V_{cb} = 12.5 \text{ V}, I_e = 0$	—	—	25.0	pF
Input Capacitance	C_{ib}	$V_{eb} = 0.5 \text{ V}, I_C = 0$	—	—	80.0	pF

RF CHARACTERISTICS: LARGE SIGNAL

Amplifier power out	P_o	$f_o = 512 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	10.0	—	—	watts
Amplifier power gain	P_g		6.0	—	—	dB
Impedance — Input	Z_s	$f_o = 512 \text{ MHz}, V_{ce} = 12.5 \text{ V}$	1.0 — J 6.0	Typ.	—	ohms
Impedance — Output	Z_{cl}		5.5 — J 0.5	Typ.	—	ohms



.380 6LFL

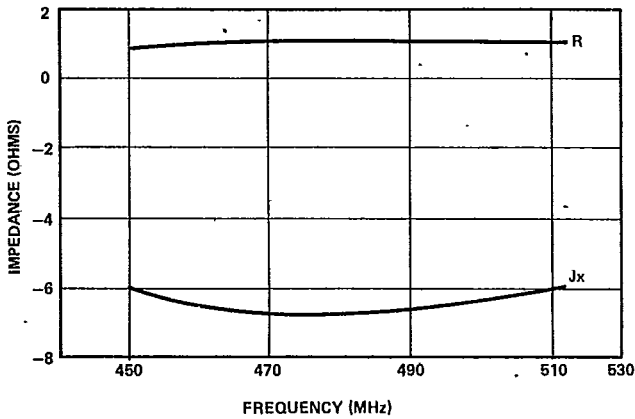


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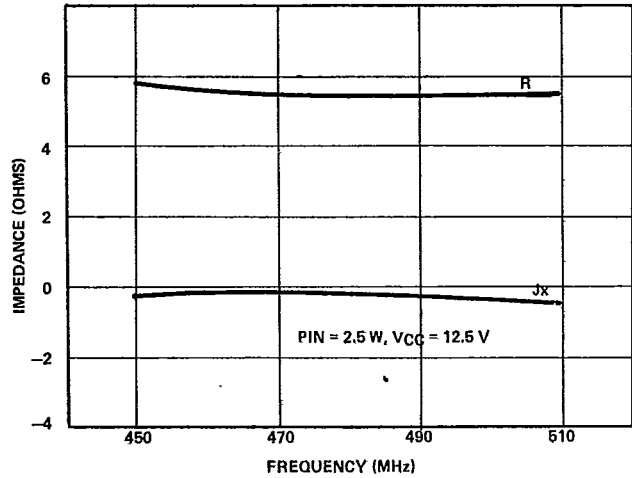
SD --- 01410-1X

880-600

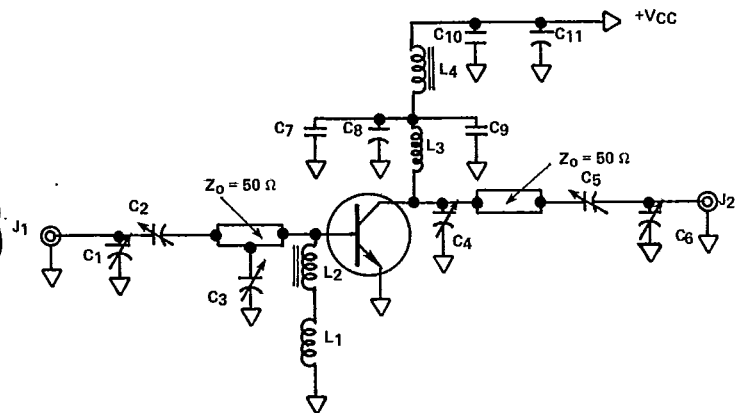
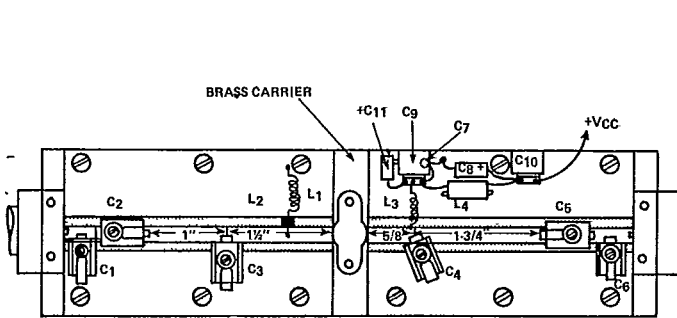
SD1410-1



SOURCE IMPEDANCE VS FREQUENCY



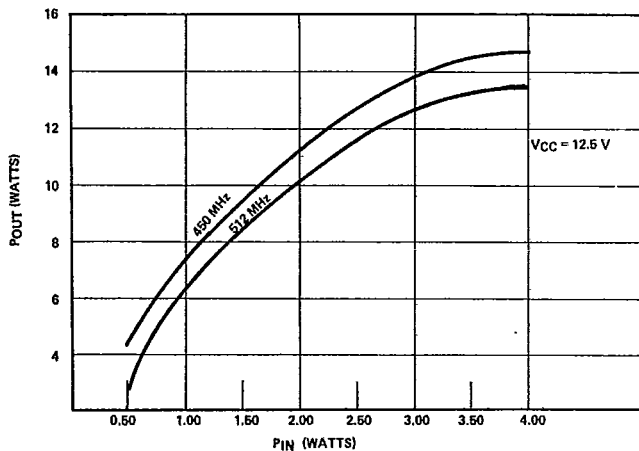
COLLECTOR LOAD IMPEDANCE VS FREQUENCY



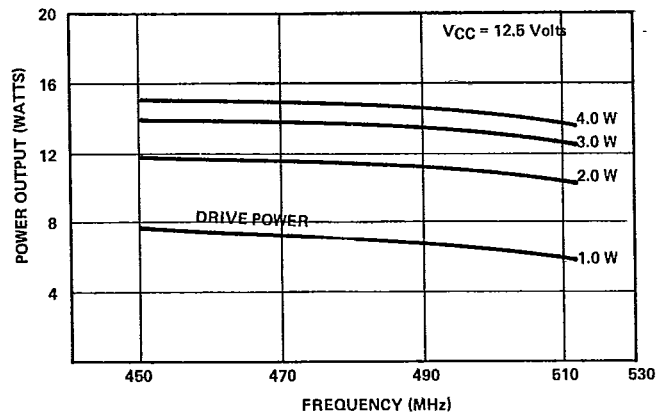
PARTS LIST

	L4	VK200	RFC
4 EA.	C1, C3, C4, C6	ARCO TRIMMER #402	1.5 pf - 20 pf
1 EA.	C2	ARCO TRIMMER #400	0.9 pf - 7.0 pf
1 EA.	C5	ARCO TRIMMER #404	8.0 pf - 60 pf
2 EA.	C9, C10	UNELCO	1000 pf
2 EA.	C8, C11	ELECTROLYTIC	10 μf MIN
1 EA.	C7	DISC	.01 μf
1 EA.	L1	12 TURNS #24 WIRE ON .15" DIA.	
1 EA.	L2	FERROCUBE SLEEVE #3B ON LEAD OF L1	
1 EA.	L3	4 TURNS #20 I.C.B. ON .20" DIA.	

TEST FIXTURE - 450-512 MHz



POWER OUTPUT VS POWER INPUT



POWER OUTPUT VS FREQUENCY

SD---01410-2X