

SSM SOLID STATE MICROWAVE**SD1278****THOMSON-CSF COMPONENTS CORPORATION**

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

VHF COMMUNICATIONS TRANSISTOR**DESCRIPTION**

The SD1278 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for VHF communications. This device utilizes a nichrome aluminum metallization system to achieve infinite VSWR at rated conditions.

FEATURES

- Designed for VHF military and commercial equipment
- 40.0 watts (min.) with typically 8.0 dB gain
- Withstands infinite VSWR under rated conditions
- Low inductance stripline package

ABSOLUTE MAX. RATING

V_{CBO}	: Collector-Base Voltage	36.0 V
V_{CEO}	: Collector-Emitter Voltage	18.0 V
V_{EBO}	: Emitter-Base Voltage	4.0 V
I_C	: Collector Current (max.)	6.0 A
PT.	: Total Device Dissipation @ 25°C Case	80.0 W
ϕ_{jc}	: Thermal Resistance	2.2° C/W
T_j	: Junction Temperature	-65°C to +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}	$I_C = 200 \text{ mA}, I_b = 0$	18.0	-	-	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}	$I_e = 2.5 \text{ mA}, I_C = 0$	4.0	-	-	V_{dc}
Collector Cut Off Current	I_{CBO}	$V_{cb} = 15 \text{ V}, I_e = 0$	-	-	1.0	mA
DC Current Gain	hFE	$V_{ce} = 5 \text{ V}, I_C = 250 \text{ mA}$	5.0	-	-	-

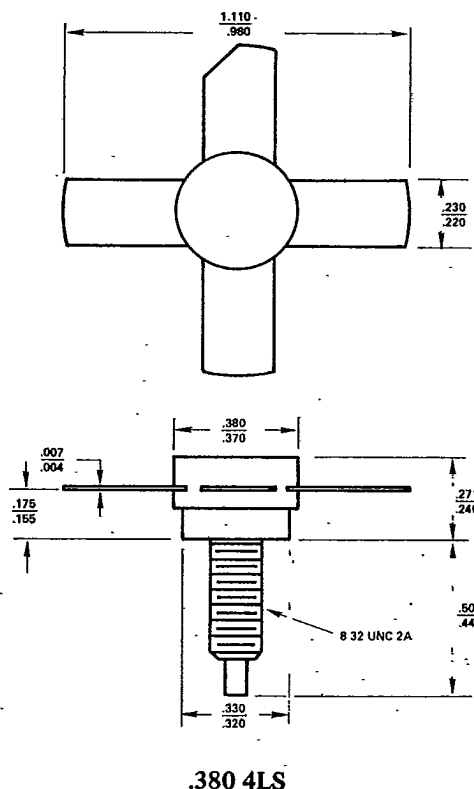
*Pulsed through 25 MH Inductor

RF CHARACTERISTICS: SMALL SIGNAL

Gain Bandwidth – FO = 100 MHz	f(t)	$V_{ce} = 13.5, I_C = 100 \text{ mA}$	200	-	-	MHz
Output Capacitance – FO = 1.0 MHz	C_{ob}	$V_{cb} = 12.5, I_C = 0$	-	-	200	pF

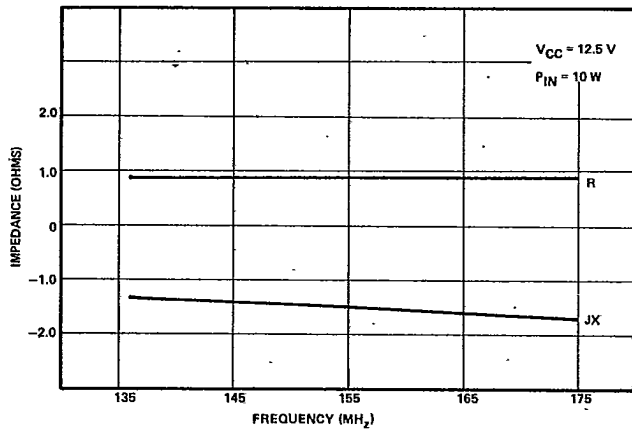
RF CHARACTERISTICS: LARGE SIGNAL

Amplifier power out	P_o	175 MHz/12.5 V	40	-	-	watts
Amplifier power gain	P_g		6.0	-	-	dB
Impedance – Input	Z_s		(0.85 – J 1.75) Typ.	-	-	ohms
Impedance – Output	Z_{cl}	175 MHz/12.5 V	(1.50 – J 0.8) Typ.	-	-	ohms

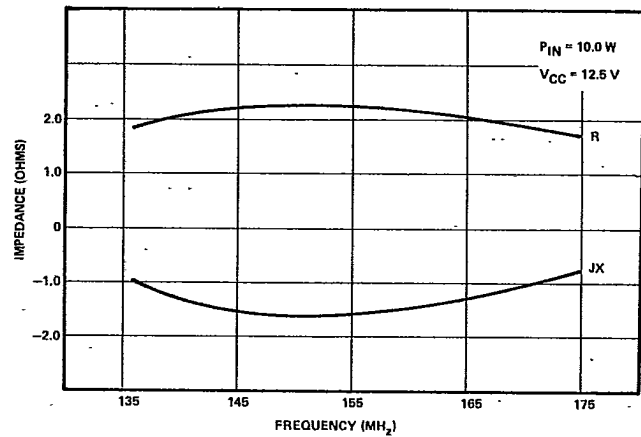


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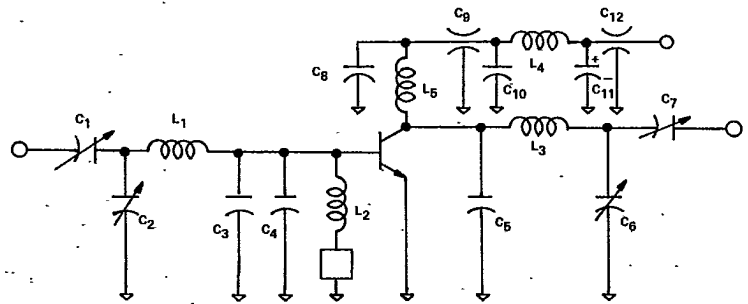
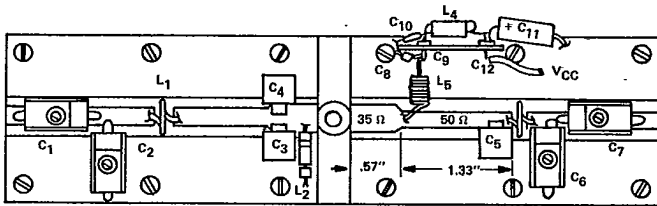
SD --- 01278-1X



SERIES SOURCE IMPEDANCE VS FREQUENCY



SERIES COLLECTOR LOAD IMPEDANCE VS FREQUENCY

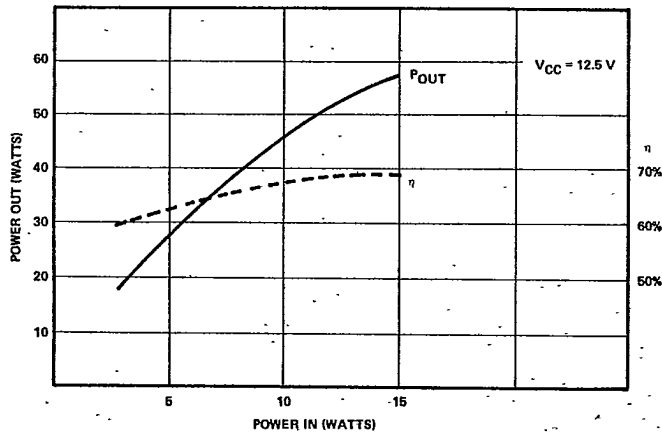


COMPONENT LIST

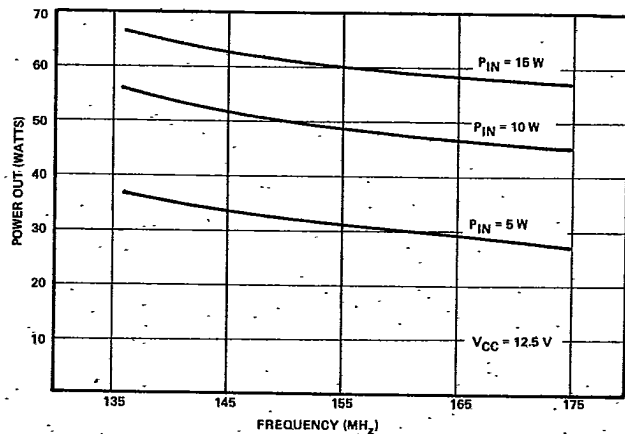
- C₁, C₇ ARCO 423
- C₂, C₆ ARCO 422
- C₃ UNELCO 82 pf
- C₄ UNELCO 120 pf
- C₅ UNELCO 56 pf
- C₈ 0.1 μf ERIE RED CAP
- C₉, C₁₂ 470 pf FEEDTHRU
- C₁₀ .01 μf DISC.

- C₁₁ 10 μf, 35V TANTALITIC
- L₁, L₃ 1 TURN #16 AWG
3/8 DIA.
- L₂ CHOKE .33 μh
WITH FERROXCUBE 3B BEAD
- L₄ RFC FERROXCUBE 3B
- L₅ 10 TURNS #22 AWG
1/8" DIA. CLOSE WOUND

TEST CIRCUIT



POWER OUT VS POWER IN



POWER OUT VS POWER FREQUENCY

SD --- 01278-2X