

SSM**SOLID STATE MICROWAVE****SD1015****THOMSON-CSF COMPONENTS CORPORATION**

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

VHF COMMUNICATIONS TRANSISTOR**DESCRIPTION**

The SD1015 is an epitaxial silicon NPN-planar transistor designed primarily for 12.5 volt AM class C rf amplifiers functional in the aviation band 118-136 MHz and for 28V FM class C rf amplifiers utilized in ground station transmitters.

FEATURES

- Designed for VHF 12.5 V AM and 28 V FM transmitters.
- 30 watts (minimum) with greater than 9 db gain at 28 volts.
- Withstands infinite VSWR under rated conditions.
- Low inductance stripline package.
- All leads electrically isolated from stud.

ABSOLUTE MAX. RATINGS (+25°C except where noted)

V_{CB0}	: Collector-Base Voltage	65.0 V
V_{CEO}	: Collector-Emitter Voltage	35.0 V
V_{EBO}	: Emitter-Base Voltage	4.0 V
I_C (max)	: Collector Current	4.0 A
PT.	: Total Device Dissipation at +25°C	40.0 W
ϕ_j	: Thermal Resistance to Stud	4.4°C/W
T_j	: Junction Temperature (operating)	+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*	V_{CEO}	$I_c = 200 \text{ mA}, I_b = 0$	35.0	—	—	V _{dc}
Collector-Emitter Breakdown Voltage*	V_{CES}	$I_c = 200 \text{ mA}, V_{be} = 0$	65.0	—	—	V _{dc}
Emitter-Base Breakdown Voltage	V_{EBO}	$I_e = 10.0 \text{ mA}, I_c = 0$	4.0	—	—	V _{dc}
Collector Cut-Off Current	I_{CBO}	$V_{cb} = 30 \text{ V}, I_e = 0$	—	—	2.0	mA
DC Current Gain	h_{FE}	$V_{ce} = 5 \text{ V}, I_c = 200 \text{ mA}$	5.0	—	—	—

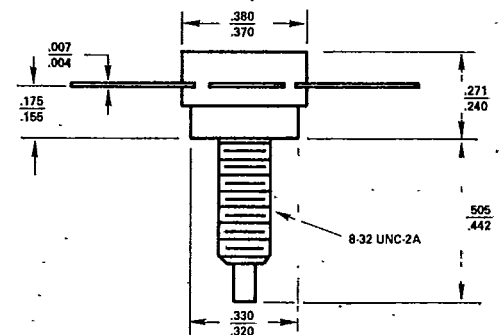
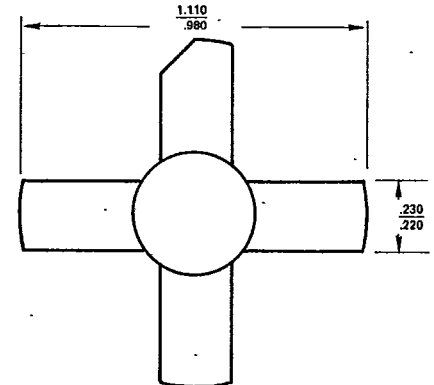
*Pulsed through 25 mH Inductor

RF CHARACTERISTICS: SMALL SIGNAL

Gain Bandwidth Product (100 MHz)	$f(t)$	$V_{ce} = 10.0 \text{ V}, I_c = 200 \text{ mA}$	250.0	—	—	MHz
Output Capacitance	C_{ob}	$V_{cb} = 30.0 \text{ V}, I_e = 0, f_o = 1.0 \text{ MHz}$	—	—	50.0	pF
Input Capacitance	C_{ib}	$V_{eb} = 0.5 \text{ V}, I_c = 0, f_o = 1.0 \text{ MHz}$	—	300	—	pF

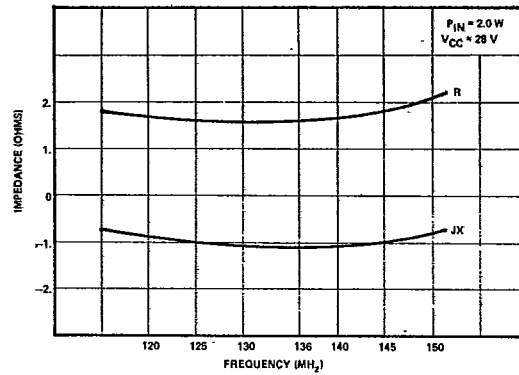
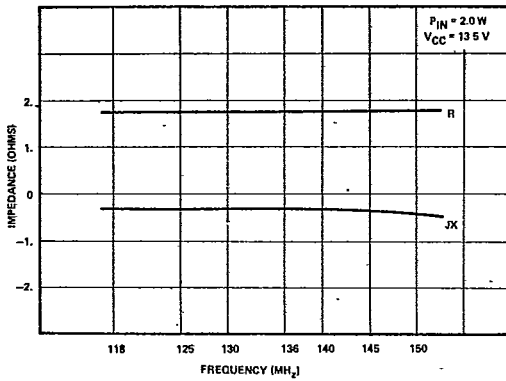
RF CHARACTERISTICS: LARGE SIGNAL — 150 MHz Operation: 13.5 V 28 V

Amplifier power out	P_o		12.5	30.0	—	watts
Amplifier power gain	P_g		7.0	10.0	—	dB
Impedances-Input	Z_s	$f_o = 150 \text{ MHz}, V_{ce} = 28 \text{ V}$	2.0 - J 0.85	Typ.	—	ohms
Impedance-Output	Z_{cl}		7.4 + J 2.1	Typ.	—	ohms

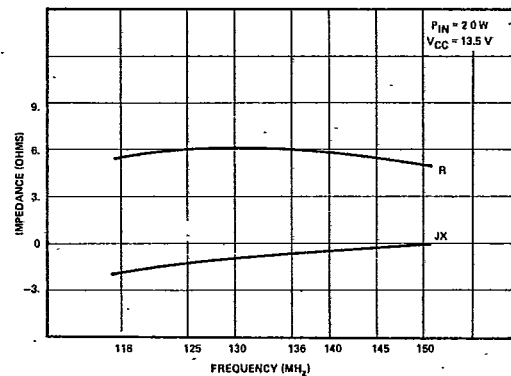
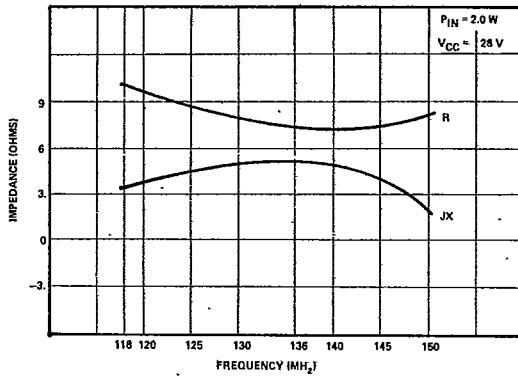
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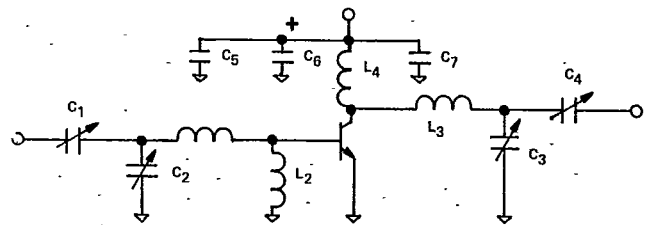
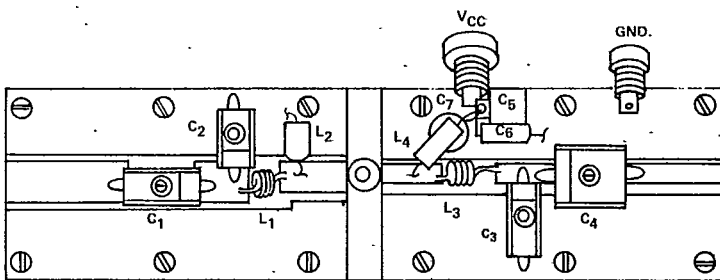
SD1015



SERIES SOURCE IMPEDANCE VS FREQUENCY (13.5V, 28V)



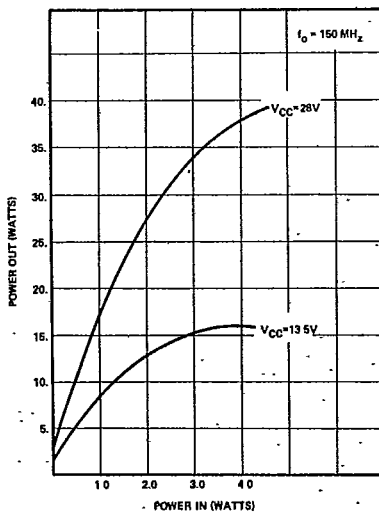
SERIES COLLECTOR LOAD IMPEDANCE VS FREQUENCY (13.5V, 28V)



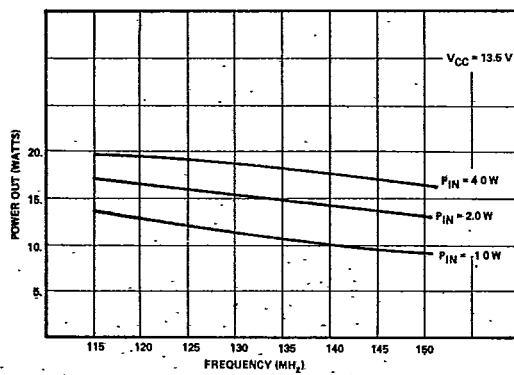
COMPONENT LIST

- | | | | |
|---------------------------------|-----------------------|----------------|----------------------|
| C ₁ , C ₂ | ARCO 422 | C ₇ | .01 pf CERAMIC DISC. |
| C ₃ | ARCO 422 | L ₁ | 3T #22, 1/8 ID |
| C ₄ | ARCO 463 | L ₂ | RFC FERROXCUBE |
| C ₅ | 1000 pf UNELCO | L ₃ | 2T #18, 1/4 ID |
| C ₆ | 10μf ELECTROLYTIC 35V | L ₄ | .47 μH MOLDED CHOKE |

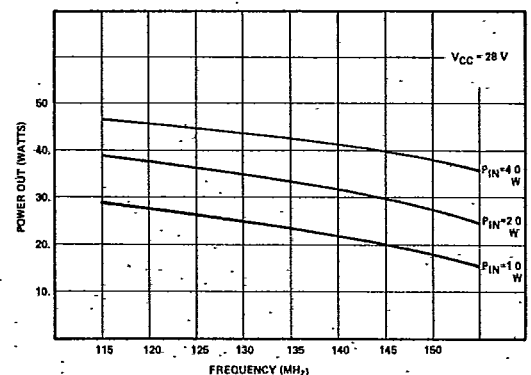
TEST CIRCUIT



POWER OUT VS POWER IN



POWER OUT VS FREQUENCY (13.5V)



POWER OUT VS FREQUENCY (28V)