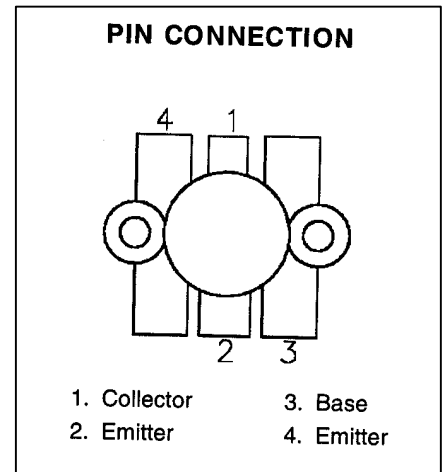
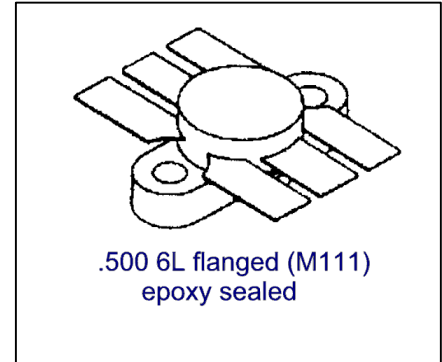


MS1251

**RF & MICROWAVE TRANSISTORS
VHF MOBILE APPLICATIONS**

Features

- 175 MHz
- 12.5 VOLTS
- P_{OUT} = 45 WATTS
- G_P = 6.5 dB MINIMUM
- INPUT MATCHED
- COMMON EMITTER CONFIGURATION
- VSWR = 20:1



DESCRIPTION:

The MS1251 is an epitaxial silicon NPN planar transistor designed primarily for 12.5 V, Class C VHF communications. This device utilizes diffused emitter resistors to achieve 20:1 VSWR capability at rated operating conditions.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector - Base Voltage	36	V
V _{CEO}	Collector - Emitter Voltage	18	V
V _{CES}	Collector - Emitter Voltage	36	V
V _{EBO}	Emitter - Base Voltage	4.0	V
I _C	Device Current	6.0	A
P _{DISS}	Power Dissipation	145	W
T _J	Junction Temperature	+200	°C
T _{STG}	Storage Temperature	-65 to +150	°C

Thermal Data

R _{TH(J-C)}	Junction-Case Thermal Resistance	1.2	°C/W
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ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)
STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50 mA	I_E = 0 mA	36	---	---	V
BV_{CES}	I_C = 50 mA	V_{BE} = 0 V	36	---	---	V
BV_{CEO}	I_C = 50 mA	I_B = 0 mA	18	---	---	V
BV_{EBO}	I_E = 10 mA	I_C = 0 mA	4.0	---	---	V
I_{CES}	V_{CE} = 15 V	I_E = 0 mA	---	---	5	mA
H_{FE}	V_{CE} = 5 V	I_C = 5 A	20	---	200	---

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 138 - 175 MHz	P_{IN} = 10 W	V_{CE} = 12.5 V	45	---	---	W
G_P	f = 138 - 175 MHz	P_{IN} = 10 W	V_{CE} = 12.5 V	6.5	---	---	dB
η_C	f = 138 - 175 MHz	P_{IN} = 10 W	V_{CE} = 12.5 V	50	---	---	%
C_{OB}	f = 1 MHz	V_{CB} = 12.5 V		---	---	135	pF

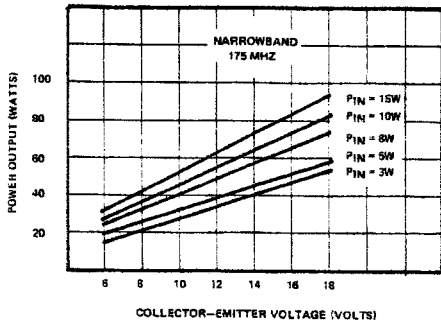
IMPEDANCE DATA

FREQ	Z _{IN} (Ω)	Z _{CL} (Ω)
175 MHz	1.38 + j0.44	1.70 + j0.48

P_{IN} = 10 W
V_{CE} = 12.5 V

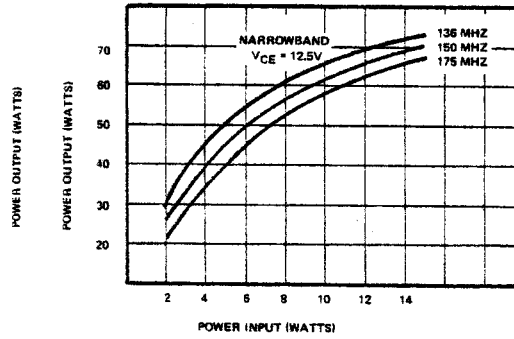
TYPICAL PERFORMANCE

POWER OUTPUT VS. V_{CE}



S88SD1428-02

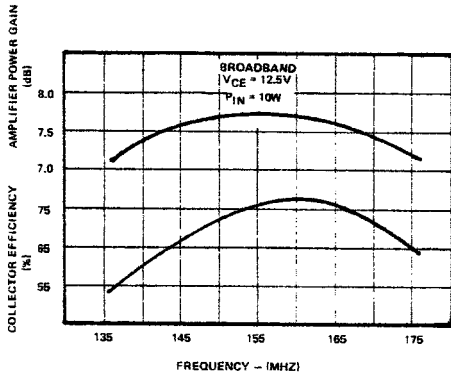
POWER OUTPUT VS. POWER INPUT



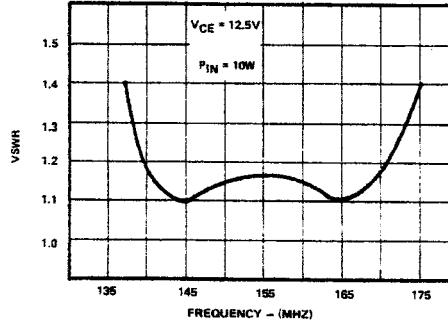
S88SD1428-03

TYPICAL PERFORMANCE (CONTINUED)

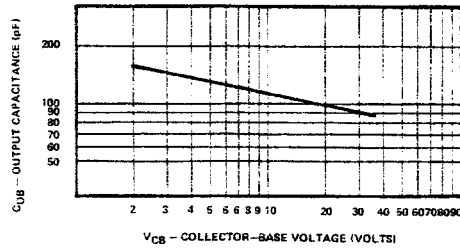
POWER GAIN & COLLECTOR EFFICIENCY vs FREQUENCY



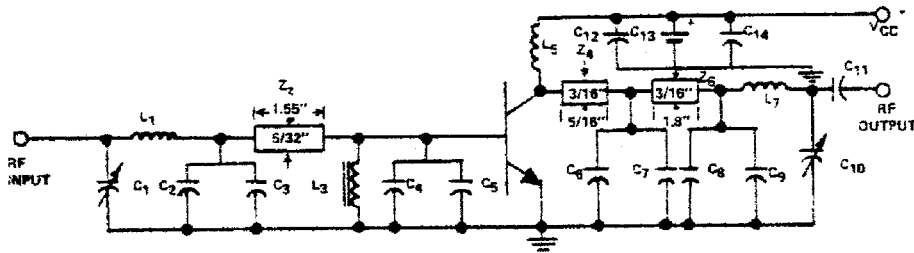
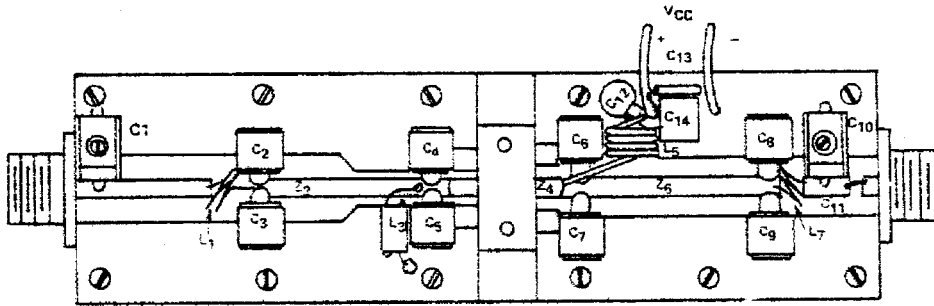
INPUT VSWR vs FREQUENCY



COLLECTOR CAPACITANCE vs VOLTAGE



TEST CIRCUIT



- | | |
|-----------------------------|--|
| C1, C10 : 4 - 40pF ARCO 403 | C14 : 1000pF Unelco |
| C2 : 39pF Unelco | L1 : 2 Turns, #18 AWG, 1/4" I.D., Wire Spacing, Enameled |
| C3 : 56pF Unelco | L3 : vk200 Ferroxcube |
| C4 : 82pF Unelco | L5 : 4 Turns, #16 AWG, 1/4" I.D., Close Wound, Enameled |
| C5 : 100pF Unelco | L7 : 2 Turns, #16 AWG, 17/64" I.D., Wire Spacing, Enameled |
| C6, C7 : 200pF Unelco | Z2 : Approx. 8.1mH |
| C8, C9 : 62pF Unelco | Z4 : Approx. 2.3mH |
| C11 : .015f Erie Red Cap | Z6 : Approx. 10.1mH |
| C12 : .01f Erie Disk | |
| C13 : 4.7f Electrolytic | |

PACKAGE MECHANICAL DATA

