

MS1251

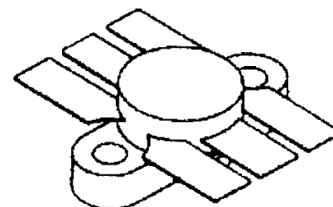
RF & MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS

Features

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

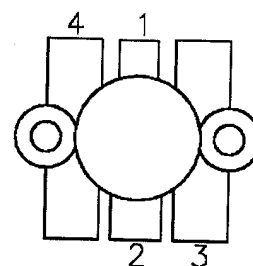
DESCRIPTION:

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.



.500 6L flanged (M111)
epoxy sealed

PIN CONNECTION



- | | |
|--------------|------------|
| 1. Collector | 3. Base |
| 2. Emitter | 4. Emitter |

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 (Tcase = 25°C)

STATIC

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

DYNAMIC

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

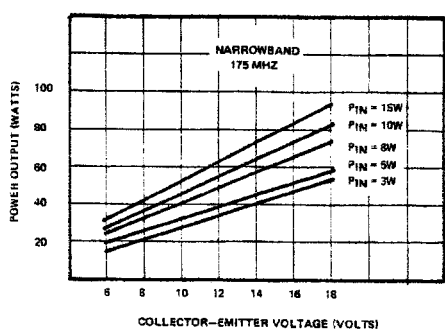
IMPEDANCE DATA

FREQ	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
175 MHz	$1.38 + j0.44$	$1.70 + j0.48$

$P_{IN} = 10 \text{ W}$
 $V_{CE} = 12.5 \text{ V}$

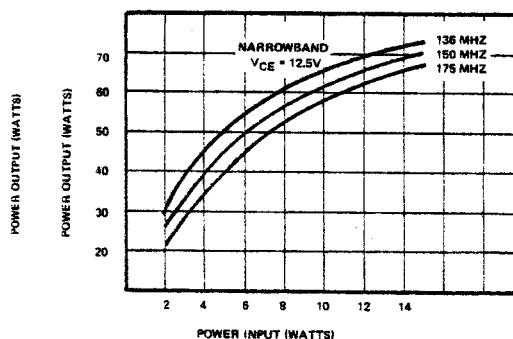
TYPICAL PERFORMANCE

POWER OUTPUT VS. V_{CE}



S88SD1428-02

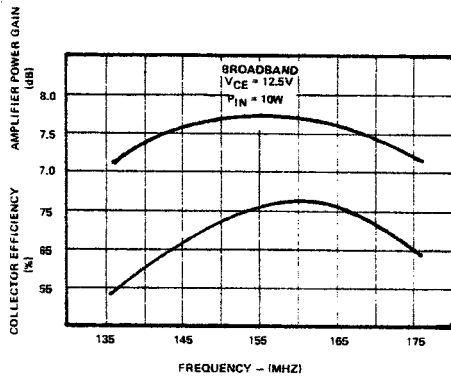
POWER OUTPUT VS. POWER INPUT



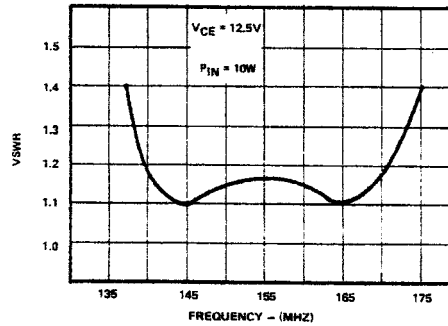
S88SD1428-03

TYPICAL PERFORMANCE (CONTINUED)

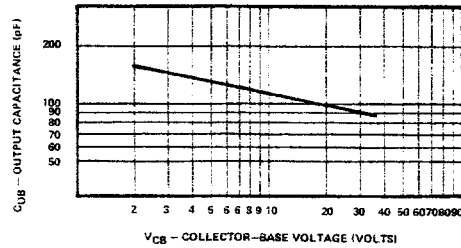
**POWER GAIN & COLLECTOR
EFFICIENCY vs FREQUENCY**



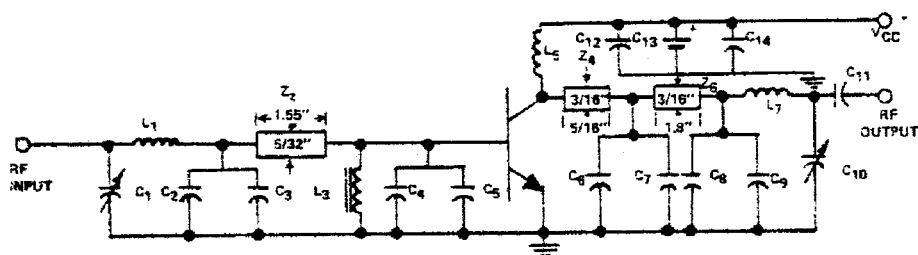
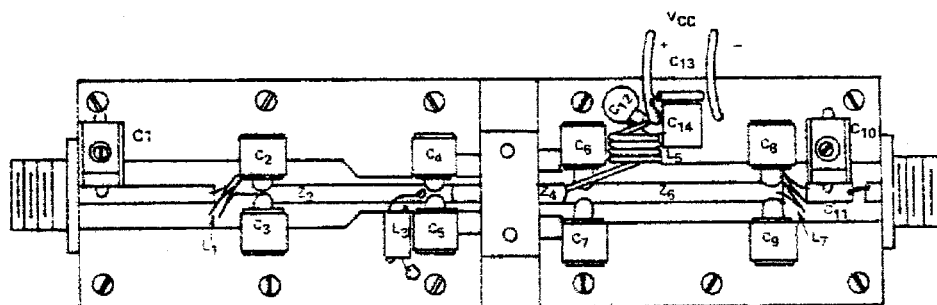
INPUT VSWR vs FREQUENCY



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

