ADVANCED POWER TECHNOLOGY RF®

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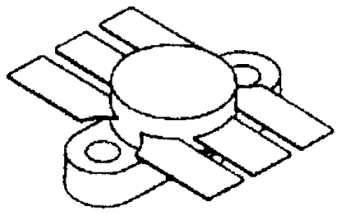
MS1251

RF & MICROWAVE TRANSISTORS
VHF MOBILE APPLICATIONS

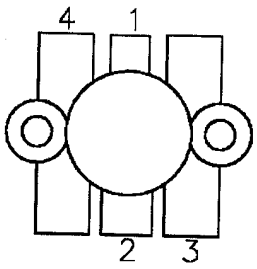


.500 6L flanged (M111)
epoxy sealed

Features

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

PIN CONNECTION



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

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 (Tcase = 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

ELECTRICAL SPECIFICATIONS (Tcase = 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

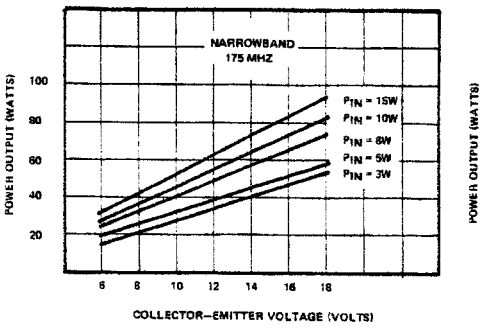
IMPEDANCE DATA

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

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

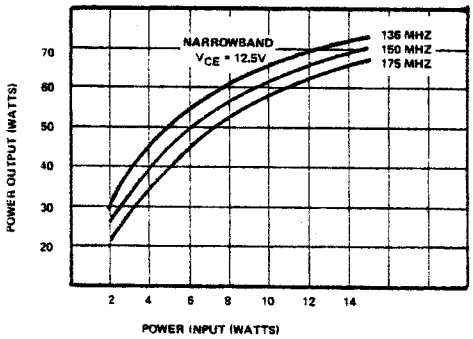
TYPICAL PERFORMANCE

POWER OUTPUT VS. VCE



S88SD1428-02

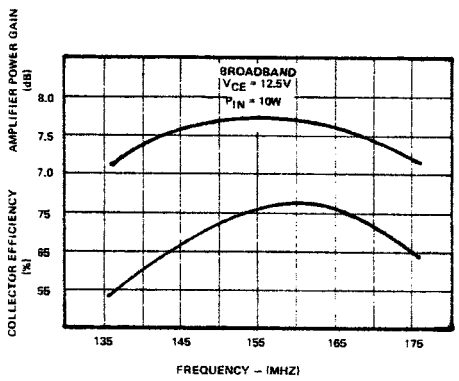
POWER OUTPUT VS.POWER INPUT



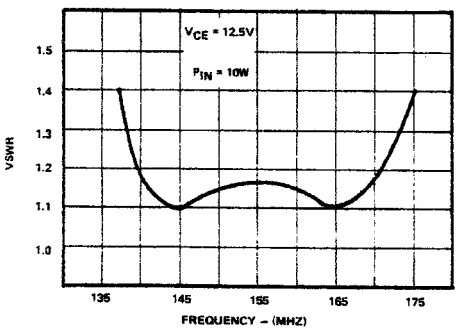
S88S1428-03

TYPICAL PERFORMANCE (CONTINUED)

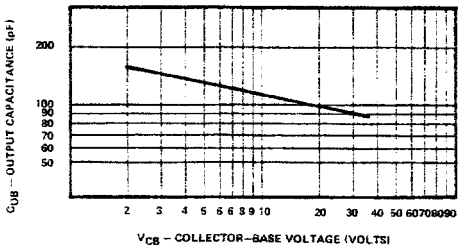
POWER GAIN & COLLECTOR EFFICIENCY vs FREQUENCY



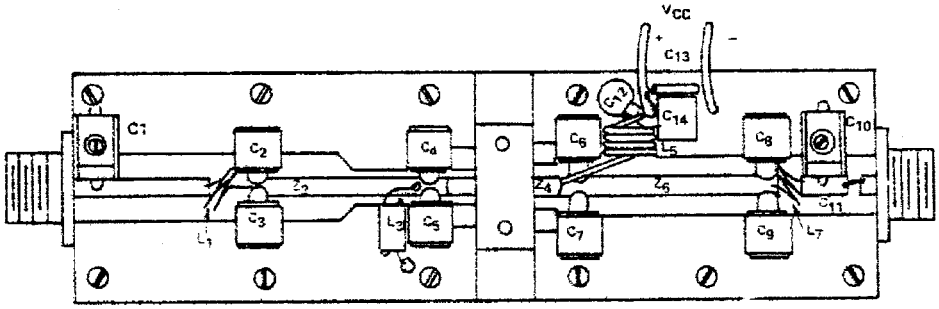
INPUT VSWR vs FREQUENCY

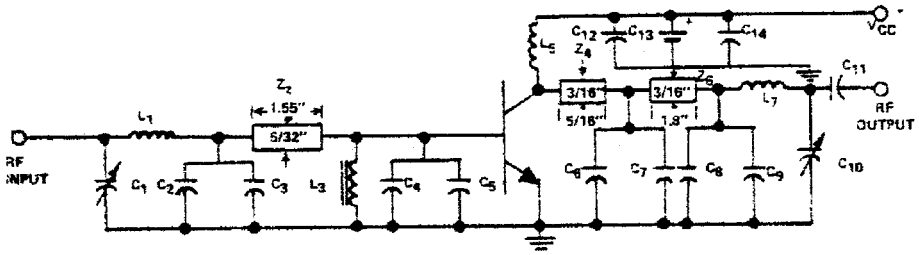


COLLECTOR CAPACITANCE vs VOLTAGE



TEST CIRCUIT





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

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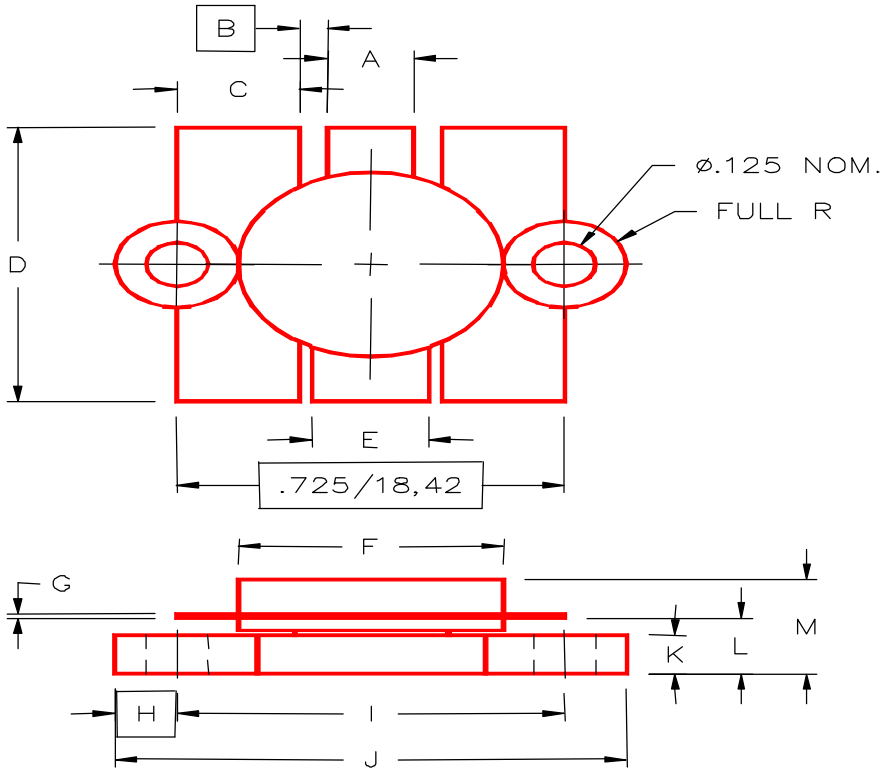
PACKAGE MECHANICAL DATA

PACKAGE STYLE M111



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.150/3,43	.160/4,06	I	.720/18,29	.730/18,54
B	.045/1,14		J	.970/24,64	.980/24,89
C	.210/5,33	.220/5,59	K	.095/2,41	.105/2,67
D	.835/21,21	.865/21,97	L	.150/3,81	.170/4,32
E	.200/5,08	.210/5,33	M		.280/7,11
F	.490/12,45	.510/12,95			
G	.003/0,08	.007/0,18			
H	.125/3,18				