

**RF & MICROWAVE TRANSISTORS**  
**450-512MHz CLASS C MOBILE APPLICATIONS**

- CLASS C TRANSISTOR
- FREQUENCY 470MHz
- VOLTAGE 12.5V
- POWER OUT 2W
- POWER GAIN 8.0dB
- COMMON EMITTER



TO-39 (M133)

ORDER CODE  
SD1444

BRANDING  
SD1444

**PIN CONNECTION**



1 2 3

S88SD1444-01

1 collector  
2 emitter

3 base

**DESCRIPTION**

The SD1444 is a 12.5V epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device is packaged in a grounded emitter TO-39 package for increased power gain and optimum heat dissipation.

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$ )

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector - Base Voltage	36.0	V
$V_{CEO}$	Collector - Emitter Voltage	16.0	V
$V_{EB0}$	Emitter - Base Voltage	4.0	V
$I_C$	Collector Current	.40	A
$P_{tot}$	Total Power Dissipation	5.0	W
$T_{stg}$	Storage Temperature	- 65 to + 200	$^{\circ}C$
$T_J$	Junction Temperature	+ 200	$^{\circ}C$

**THERMAL DATA**

$R_{th(j-c)}$	Junction-case Thermal Resistance	35.0	$^{\circ}C/W$
---------------	----------------------------------	------	---------------

## SD1444

### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ )

#### STATIC

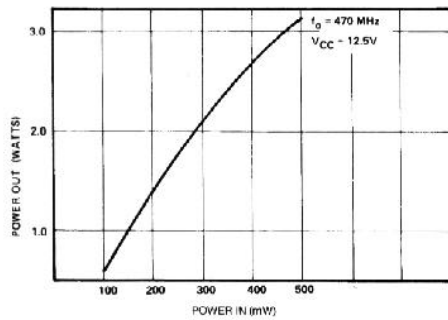
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{CES}$	$I_C = 50mA$ $V_{BE} = 0$	36.0			V
$BV_{CEO}$	$I_C = 50mA$ $I_B = 0$	16.0			V
$BV_{EBO}$	$I_E = 1mA$ $I_C = 0$	4.0			V
$I_{CBO}$	$V_{CB} = 15.0V$ $I_E = 0$			1.0	mA
$h_{FE}$	$V_{CE} = 5.0V$ $I_C = 50mA$	20.0		200.0	

#### DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_O$	$f = 470MHz$ $V_{CE} = 12.5V$	2.0			W
$G_P$	$f = 470MHz$ $V_{CE} = 12.5V$	8.0			dB
$C_{OB}$	$f = 1MHz$ $V_{CB} = 12.5V$ $I_E = 0$			15.0	pF

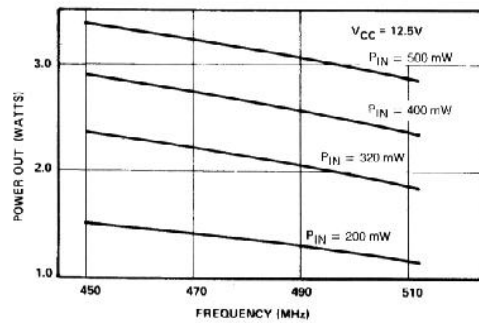
### APPLICATION INFORMATION (typical curves)

#### POWER OUT VS. POWER IN



S88SD1444-02

#### POWER OUT VS. FREQUENCY

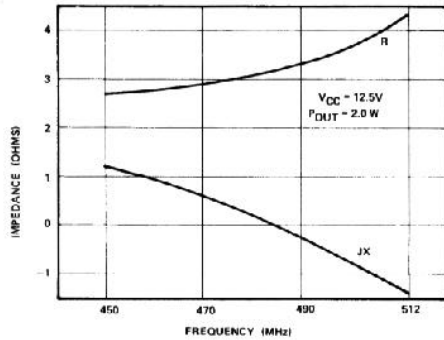


S88S1444-03

**IMPEDANCE DATA** (typical)

$$Z_s = 2.9 + j 0.6 \Omega$$

$$Z_{CL} = 15.6 + j 10.2 \Omega$$

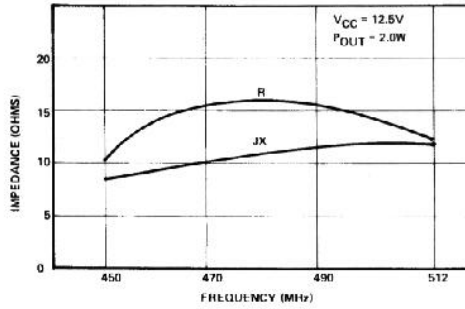
**SOURCE IMPEDANCE VS. FREQUENCY**

S88SD1444-04

$$F = 470\text{MHz}$$

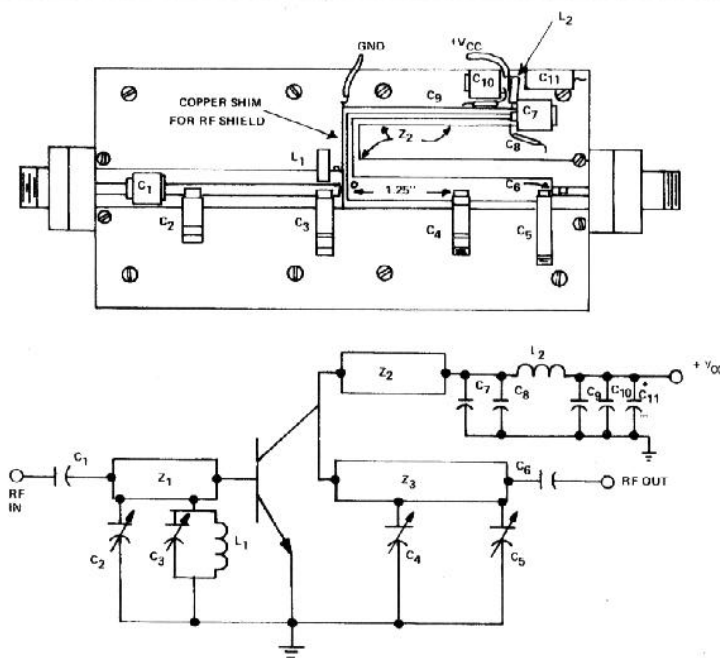
$$V_{CE} = 12.5V$$

$$P_O = 2W$$

**COLLECTOR LOAD IMPEDANCE VS. FREQUENCY**

S88SD1444-05

## TEST CIRCUIT



S88SD1444-06

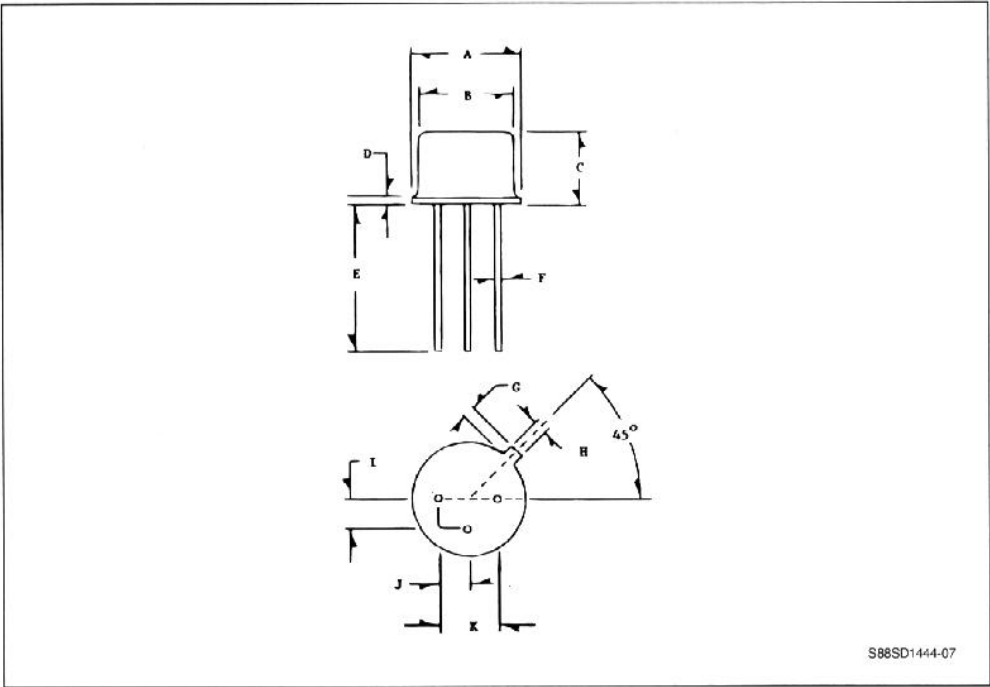
## COMPONENT LIST

C<sub>1</sub>, C<sub>7</sub>, C<sub>10</sub> 1000pf UNELCO  
 C<sub>2</sub> 0.8 – 10pf, VOLTRONICS AJ10  
 C<sub>3</sub>, C<sub>4</sub> 1.0 – 20pf, JOHANSON 5500  
 C<sub>5</sub> 1.0 – 30pf, JOHANSON 5600  
 C<sub>6</sub> 1000pf CHIP CAPACITOR  
 C<sub>8</sub>, C<sub>9</sub> 0.01μf DISC-CERAMIC  
 C<sub>11</sub> 10μf, 35V ELECTROLYTIC

L<sub>1</sub> 0.47μh MOLDED CHOKE  
 L<sub>2</sub> 2.2μh MOLDED CHOKE  
 Z<sub>1</sub> 2.25" x 0.185"  
 Z<sub>2</sub> 2.50" x 0.0625"  
 Z<sub>3</sub> 2.25" x 0.185"  
 BOARD MATERIAL – 3M-K6098,  
 1/16" THK

PACKAGE MECHANICAL DATA

TO-39



	Minimum Inches	Maximum Inches
A	.350	.370
B	.315	.335
C	.240	.260
D	.015	.045
E	.500	
F	.016	.019

	Minimum Inches	Maximum Inches
G	.029	.040
H	.028	.034
I	.095	.105
J	.095	.105
K	.190	.210