

# 2SC908

## NPN EPITAXIAL PLANAR TYPE

### DESCRIPTION

2SC908 is a silicon NPN epitaxial planar type transistor designed for industrial use RF power amplifiers on UHF band mobile radio applications.

### FEATURES

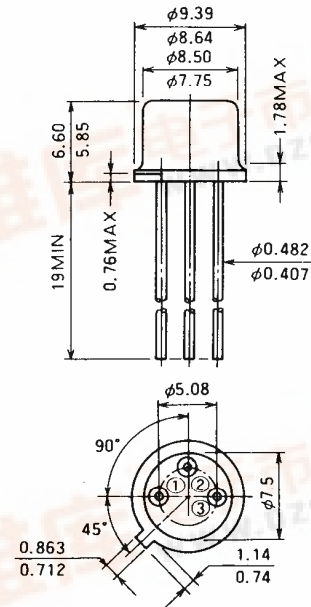
- High power gain:  $G_{pe} \geq 4\text{dB}$   
@ $V_{CC} = 13.5\text{V}$ ,  $P_O = 1\text{W}$ ,  $f = 500\text{MHz}$
- TO-39 metal sealed package for high reliability.
- All electrodes are isolated from the case.

### APPLICATION

0.5 to 0.8 watt power amplifiers, and driver stage in UHF band.

### OUTLINE DRAWING

Dimensions in mm



PIN :

- ① EMITTER
- ② BASE
- ③ COLLECTOR

T-8

### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CBO}$	Collector to base voltage		40	V
$V_{EBO}$	Emitter to base voltage		4	V
$V_{CER}$	Collector to emitter voltage	$R_{BE} = 10\ \Omega$	40	V
$I_C$	Collector current		0.5	A
$P_C$	Collector dissipation	$T_a = 25^\circ\text{C}$	0.86	W
		$T_C = 25^\circ\text{C}$	4.3	W
$T_j$	Junction temperature		175	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-65 to 175	$^\circ\text{C}$
$R_{th-a}$	Thermal resistance	Junction to ambient	175	$^\circ\text{C}/\text{W}$
$R_{th-c}$		Junction to case	35	$^\circ\text{C}/\text{W}$

Note. Above parameters are guaranteed independently.

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$ , $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$ , $I_E = 0$	40			V
$V_{(BR)CER}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$ , $R_{BE} = 10\ \Omega$	40			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 15\text{V}$ , $I_E = 0$			50	$\mu\text{A}$
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 3\text{V}$ , $I_C = 0$			100	$\mu\text{A}$
$h_{FE}$	DC forward current gain *	$V_{CE} = 10\text{V}$ , $I_C = 0.1\text{A}$	10	50	180	—
$P_O$	Output power	$V_{CC} = 13.5\text{V}$ , $P_{in} = 0.4\text{W}$ , $f = 500\text{MHz}$	1	1.2		W
$\eta_C$	Collector efficiency		50	70		%

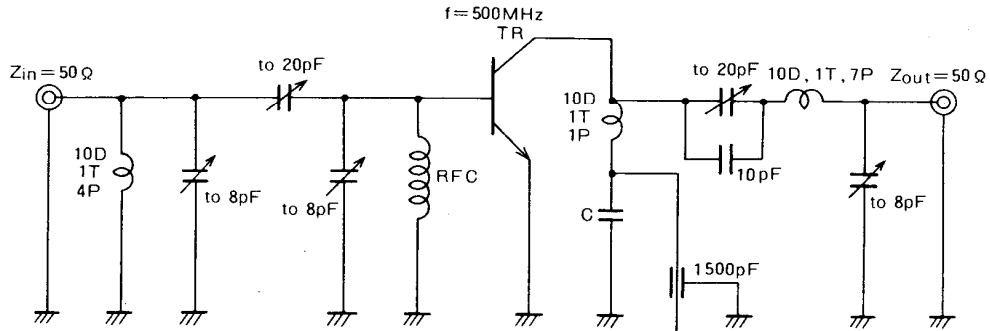
Note. \* Pulse test,  $P_W = 150\ \mu\text{s}$ , duty = 5%.

Above parameters, ratings, limits and conditions are subject to change.

MITSUBISHI RF POWER TRANSISTOR  
**2SC908**

**NPN EPITAXIAL PLANAR TYPE**

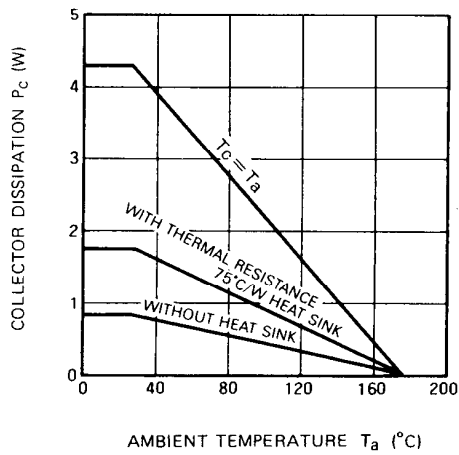
**TEST CIRCUIT**



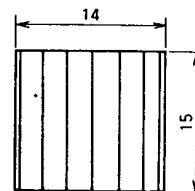
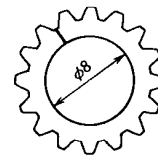
C: 500pF, 1000pF, 0.0033μF, 0.01μF in parallel  
Notes: All coils are made from 1.5mmφ silver plated copper wire  
Coil dimensions in milli-meter  
D: Inner diameter of coil  
T: Turn number of coil  
P: Pitch of coil

**TYPICAL PERFORMANCE DATA**

**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**

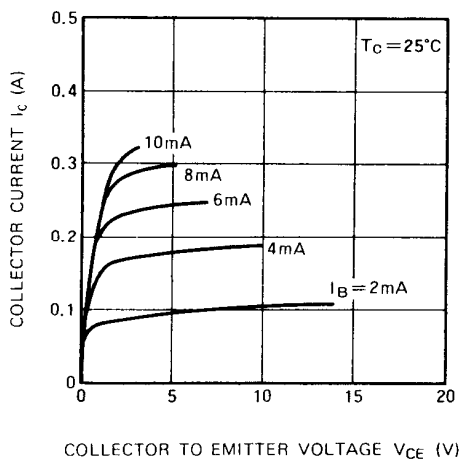


**THERMAL RESISTANCE 75°C  
HEAT SINK DRAWING**

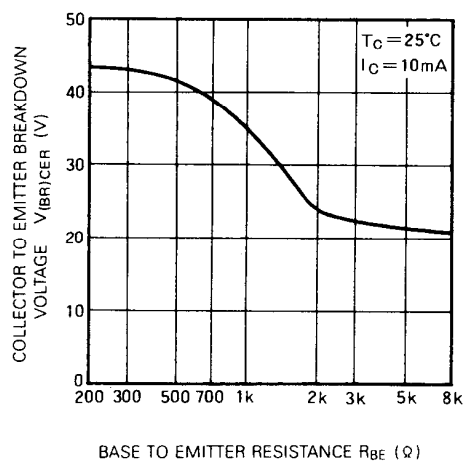


MATERIAL: Al  
DIMENSIONS: mm

**COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE**



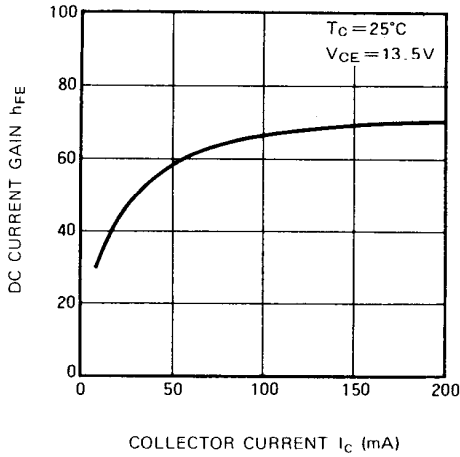
**COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE**



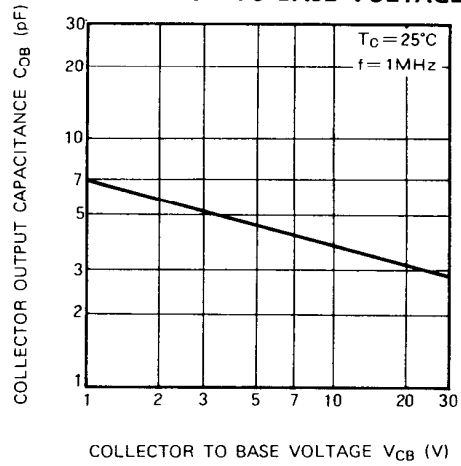
MITSUBISHI RF POWER TRANSISTOR  
**2SC908**

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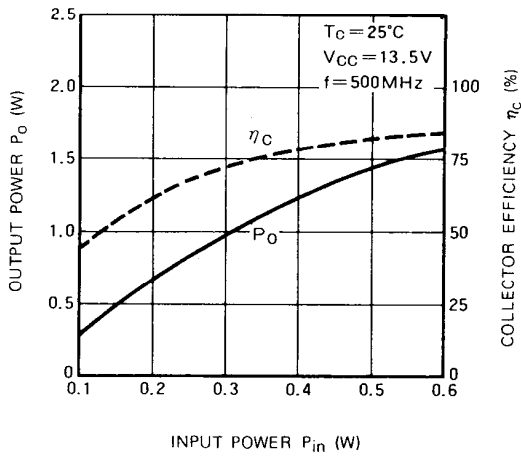
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



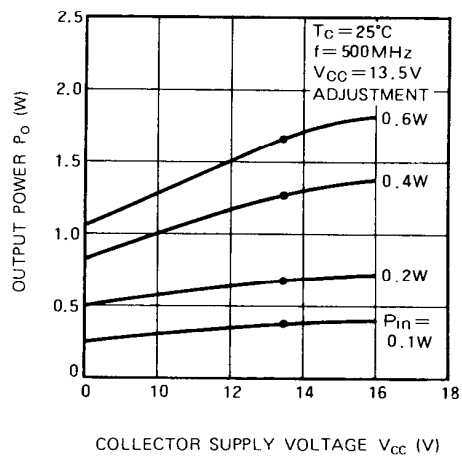
**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE**



**OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE**



**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER**



**OUTPUT POWER VS. FREQUENCY**

