

# MITSUBISHI RF POWER TRANSISTOR 2SC2055

## NPN EPITAXIAL PLANAR TYPE

### DESCRIPTION

2SC2055 is a silicon NPN epitaxial planar type transistor designed for RF amplifiers on VHF band portable or hand-held radio applications.

### FEATURES

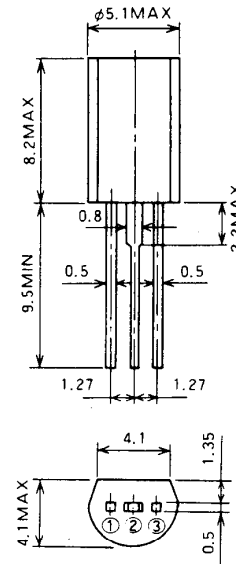
- High power gain:  $G_{pe} \geq 13\text{dB}$   
@  $V_{CC} = 7.2\text{V}$ ,  $P_O = 0.2\text{W}$ ,  $f = 175\text{MHz}$
- Emitter ballasted construction, gold metallization for high reliability and good performances.
- TO-92 similar package is combinient for mounting.

### APPLICATION

Driver amplifiers in general in VHF band portable or hand-held radio applications.

### OUTLINE DRAWING

Dimensions in mm



PIN :

- ① BASE
- ② COLLECTOR
- ③ EMITTER

TO-92L

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

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CB0}$	Collector to base voltage		18	V
$V_{EB0}$	Emitter to base voltage		4	V
$V_{CE0}$	Collector to emitter voltage	$R_{BE} = \infty$	9	V
$I_C$	Collector current		0.3	A
$P_C$	Collector dissipation	$T_a = 25^\circ\text{C}$	0.5	W
$T_j$	Junction temperature		135	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55 to 135	$^\circ\text{C}$
$R_{th-a}$	Thermal resistance	Junction to ambient	220	$^\circ\text{C/W}$

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	$I_C = 10\text{mA}$ , $I_E = 0$	18			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$ , $R_{BE} = \infty$	9			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 10\text{V}$ , $I_E = 0$			30	$\mu\text{A}$
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 3\text{V}$ , $I_C = 0$			30	$\mu\text{A}$
$h_{FE}$	DC forward current gain *	$V_{CE} = 7\text{V}$ , $I_C = 50\text{mA}$	10	50	180	—
$P_O$	Output power	$V_{CC} = 7.2\text{V}$ , $P_{in} = 10\text{mW}$ , $f = 175\text{MHz}$	0.2	0.25		W
$\eta_C$	Collector efficiency		50	60		%

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

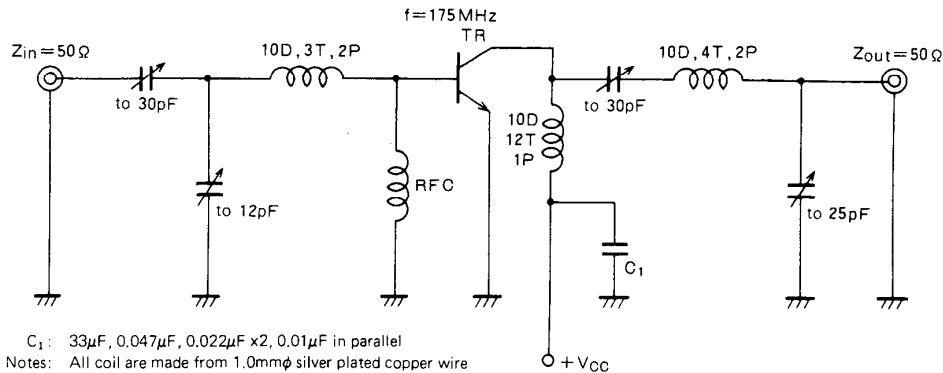
Above parameters, ratings, limits and conditions are subject to change.

NOV. '97



**NPN EPITAXIAL PLANAR TYPE**

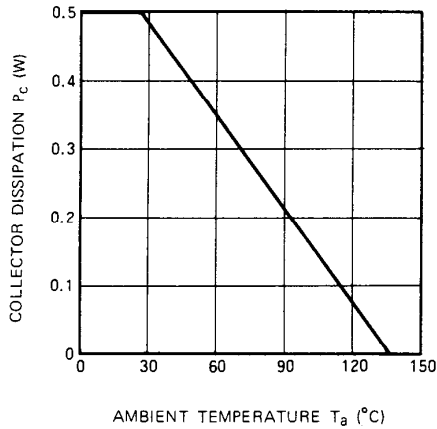
**TEST CIRCUIT**



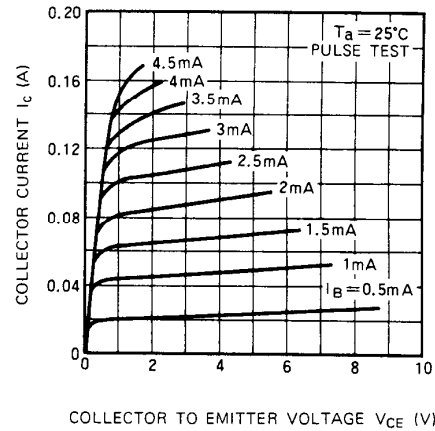
$C_1$ :  $33\mu\text{F}$ ,  $0.047\mu\text{F}$ ,  $0.022\mu\text{F} \times 2$ ,  $0.01\mu\text{F}$  in parallel  
 Notes: All coils are made from 1.0mmφ silver plated copper wire  
 Coil dimensions in millimeter  
 D: Inner diameter of coil  
 T: Turn number of coil  
 P: Pitch of coil

**TYPICAL PERFORMANCE DATA**

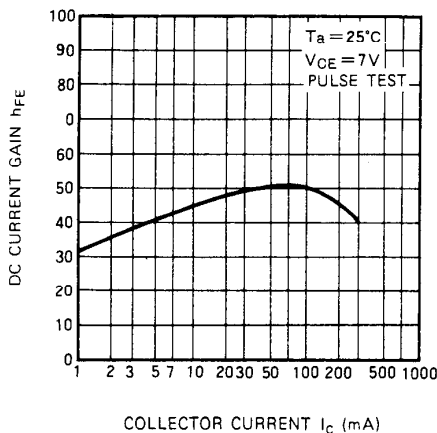
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**



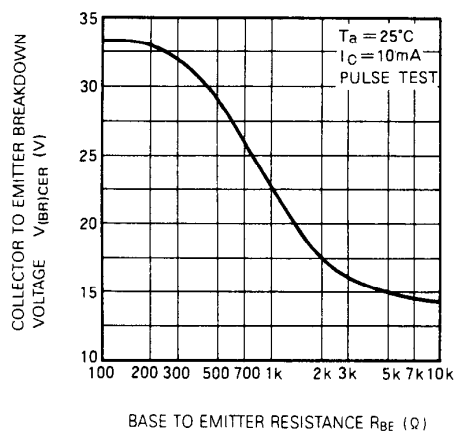
**COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE**



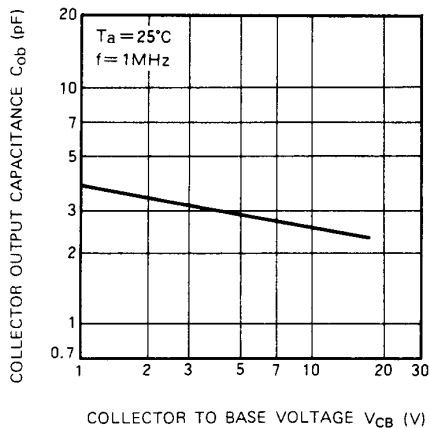
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



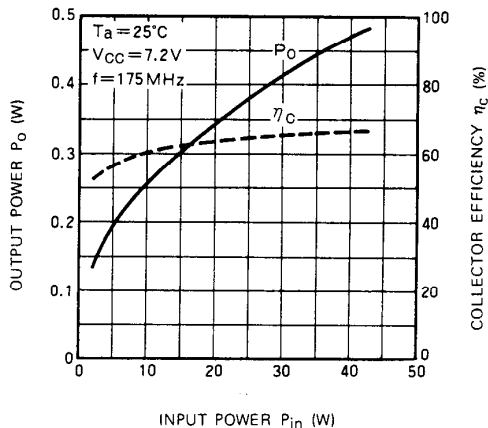
**COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE**



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



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



**OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE**

