

MITSUBISHI RF POWER TRANSISTOR 2SC2055

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

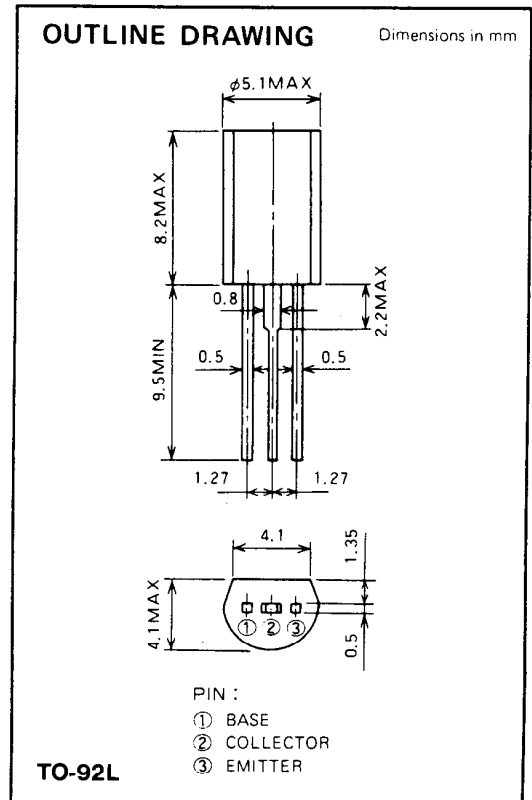
2SC2055 is a silicon NPN epitaxial planar type transistor designed for RF amplifiers on VHF band portable or hand-held radio applications.

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 convenient for mounting.

APPLICATION

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



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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		18	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	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	$^\circ\text{C}/\text{W}$

Note. Above parameters are guaranteed independently.

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

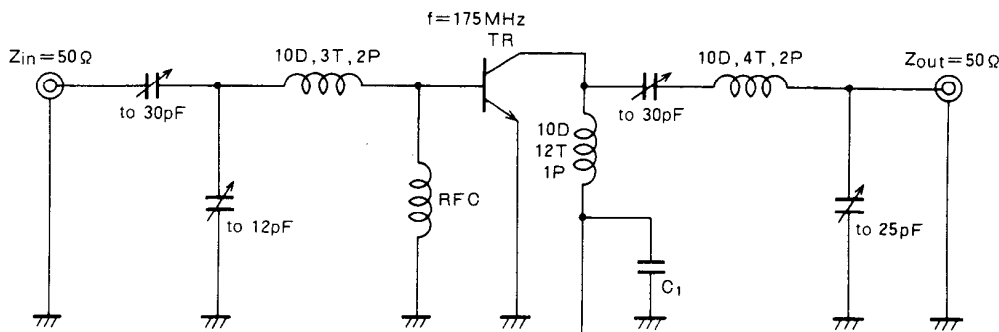
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$, $I_E = 0$	18			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = \infty$	9			V
I_{CBO}	Collector cutoff current	$V_{CB} = 10\text{V}$, $I_E = 0$			30	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			30	μA
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
η_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

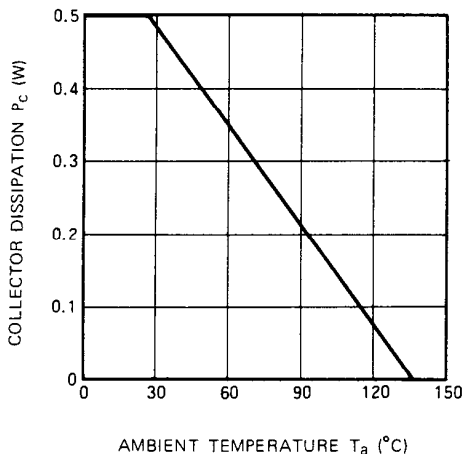
TEST CIRCUIT



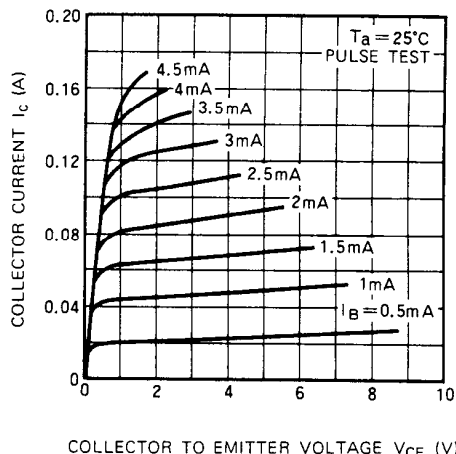
C_1 : $33\mu\text{F}$, $0.047\mu\text{F}$, $0.022\mu\text{F} \times 2$, $0.01\mu\text{F}$ in parallel
 Notes: All coils are made from 1.0mmφ silver plated copper wire
 Coil dimensions in millimeter
 D: Inner diameter of coil
 T: Turn number of coil
 P: Pitch of coil

TYPICAL PERFORMANCE DATA

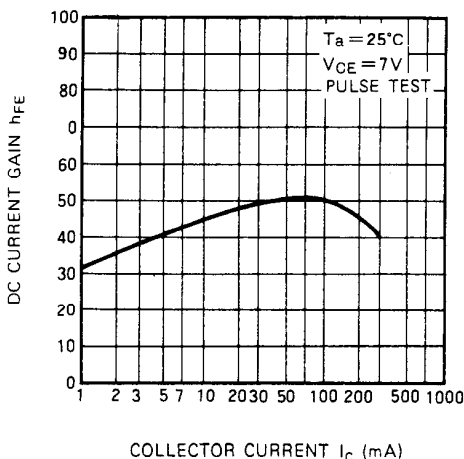
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



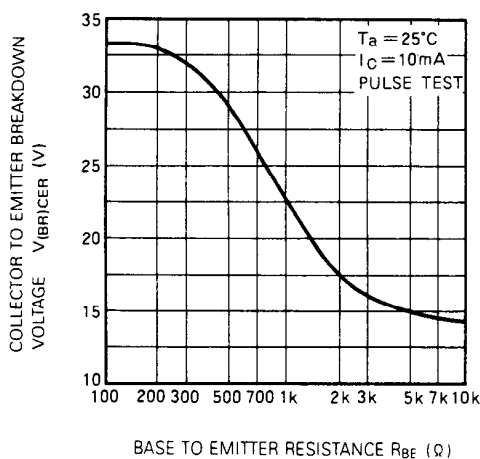
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



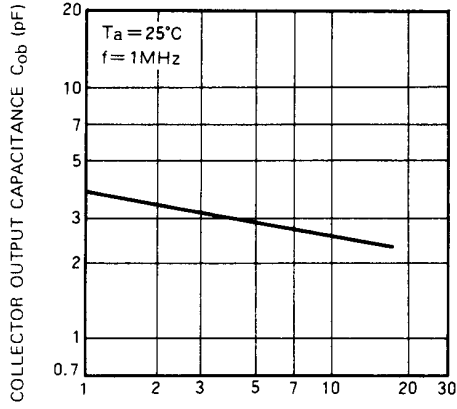
DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE

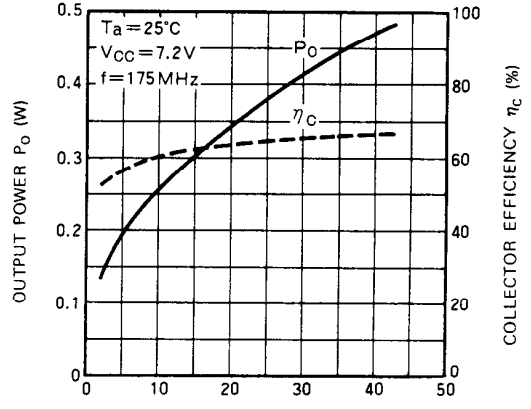


**COLLECTOR OUTPUT CAPACITANCE VS.
 COLLECTOR TO BASE VOLTAGE**



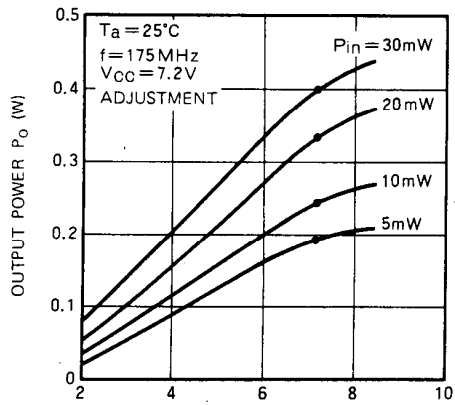
COLLECTOR TO BASE VOLTAGE V_{CB} (V)

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



INPUT POWER P_{in} (W)

**OUTPUT POWER VS. COLLECTOR
 SUPPLY VOLTAGE**



COLLECTOR SUPPLY VOLTAGE V_{CC} (V)