

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

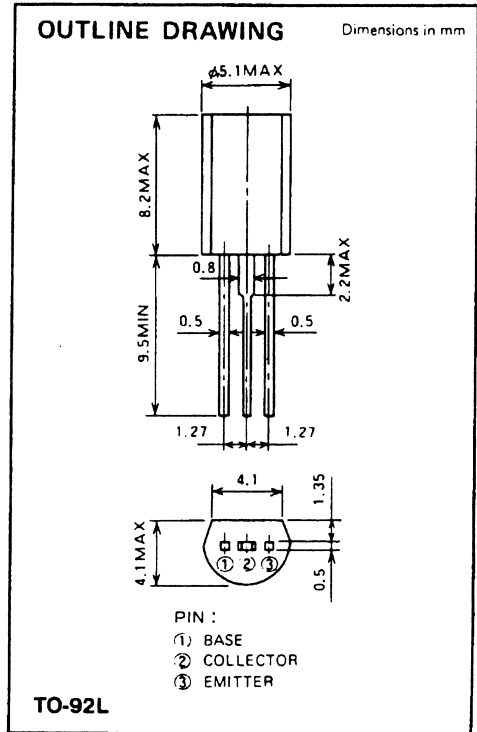
2SC2053 is a silicon NPN epitaxial planar type transistor designed for RF amplifiers on VHF band mobile radio applications.

FEATURES

- High power gain: $G_{p0} \geq 15.7\text{dB}$
@ $V_{CC} = 13.5\text{V}$, $P_O = 0.15\text{W}$, $f = 175\text{MHz}$
- 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 mobile 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		40	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	Collector to emitter voltage	$R_{BE} = \infty$	17	V
I_C	Collector current		0.3	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	0.6	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	183	$^\circ\text{C/W}$

Note. Above parameters are guaranteed independently.

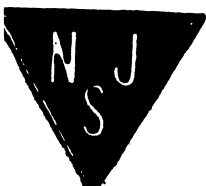
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

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	$I_C = 1\text{mA}$, $I_E = 0$	40			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = \infty$	17			V
I_{CBO}	Collector cutoff current	$V_{CB} = 15\text{V}$, $I_E = 0$			20	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			20	μA
h_{FE}	DC forward current gain *	$V_{CE} = 10\text{V}$, $I_C = 10\text{mA}$	10	50	180	—
P_O	Output power	$V_{CC} = 13.5\text{V}$, $P_{in} = 4\text{mW}$, $f = 175\text{MHz}$	150	200		mW
η_C	Collector efficiency		40	50		%

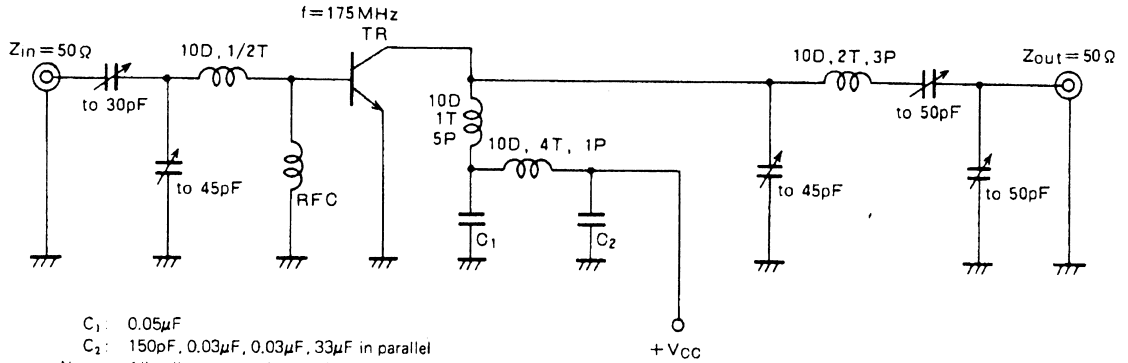
Note. * Pulse test, $P_w = 150\mu\text{s}$, duty = 5%.

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

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



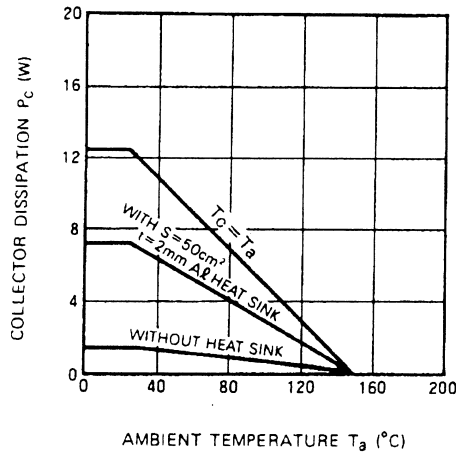
TEST CIRCUIT



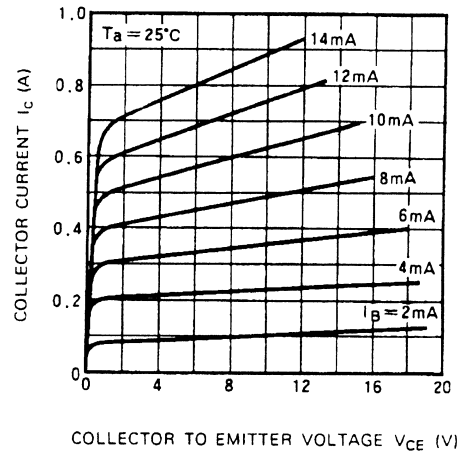
C_1 : $0.05\mu\text{F}$
 C_2 : 150pF , $0.03\mu\text{F}$, $0.03\mu\text{F}$, $33\mu\text{F}$ in parallel
 Notes: All coils are made from 1.5mmϕ silver plated copper wire
 Coil dimensions in milli-meter
 D: Inner diameter of coil
 T: Turn number of coil
 P: Pitch of coil

TYPICAL PERFORMANCE DATA

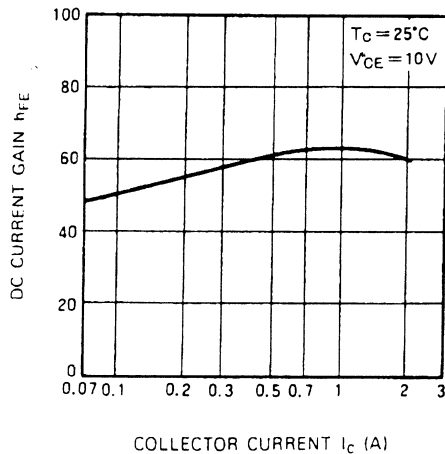
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE

