

MITSUBISHI RF POWER TRANSISTOR

2SC2086

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC2086 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in HF band mobile radio applications.

FEATURES

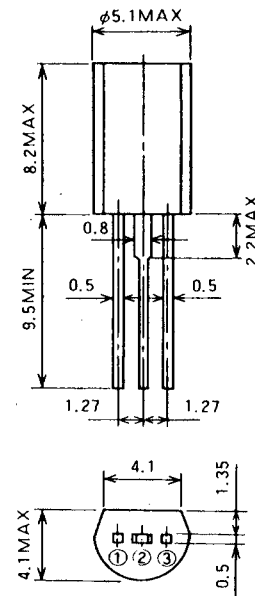
- High power gain: $G_{pe} \geq 13\text{dB}$
@ $V_{CC} = 12\text{V}$, $P_O = 0.3\text{W}$, $f = 27\text{MHz}$
- Emitter ballasted construction, gold metallization for good performances.
- TO-92 similar package with low thermal resistance.

APPLICATION

Driver amplifiers in general in HF band mobile 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		75	V
V_{EB0}	Emitter to base voltage		4	V
V_{CE0}	Collector to emitter voltage	$R_{BE} = \infty$	35	V
I_C	Collector current		1	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	0.8	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	137.5	$^\circ\text{C/W}$

Note. Above parameters are guaranteed independently.

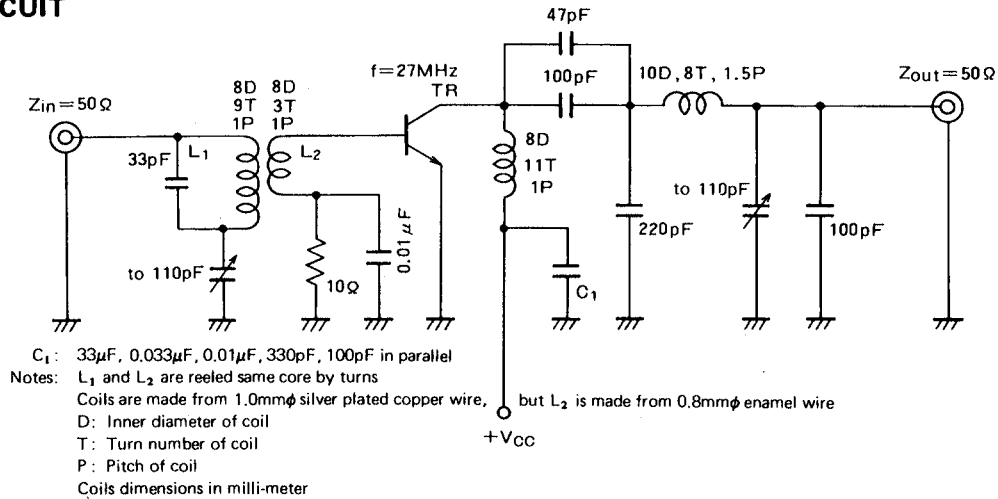
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EB0}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CB0}$	Collector to base breakdown voltage	$I_C = 1\text{mA}$, $I_E = 0$	75			V
$V_{(BR)CE0}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = \infty$	35			V
I_{CB0}	Collector cutoff current	$V_{CB} = 30\text{V}$, $I_E = 0$			10	μA
I_{EB0}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			100	μA
h_{FE}	DC forward current gain *	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	35	70	300	—
P_O	Output power	$V_{CC} = 12\text{V}$, $P_{in} = 15\text{mW}$, $f = 27\text{MHz}$	0.3	0.45		W
η_C	Collector efficiency		50	60		%

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

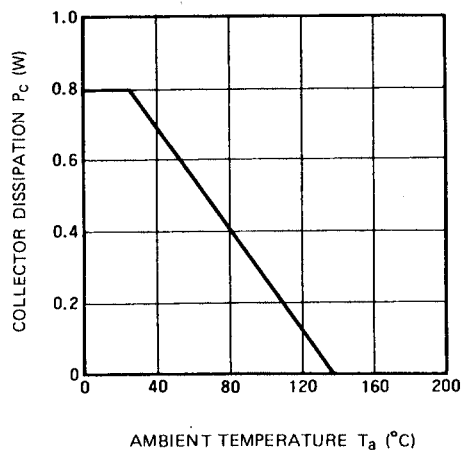
Above parameters, ratings, limits and conditions are subject to change.

TEST CIRCUIT

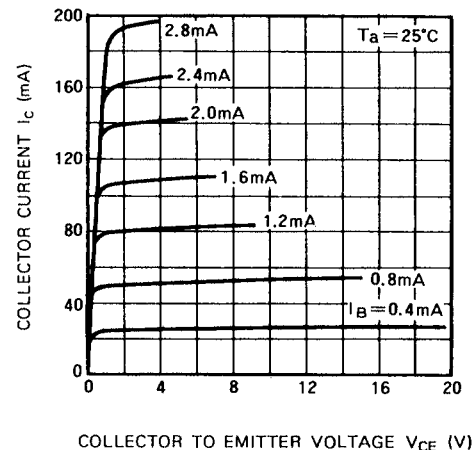


TYPICAL PERFORMANCE DATA

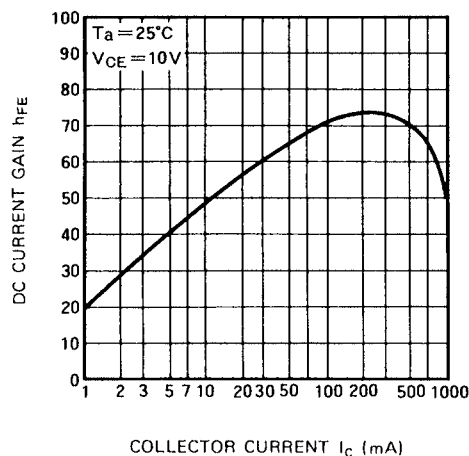
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



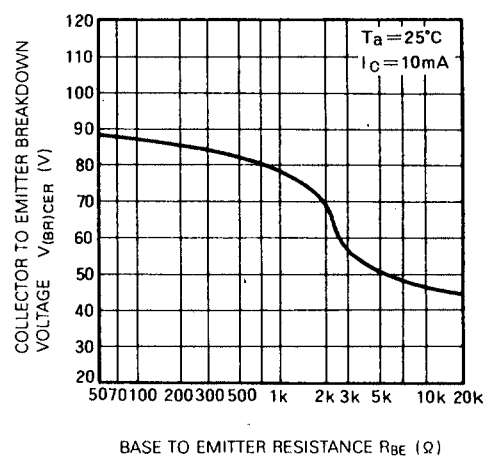
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT



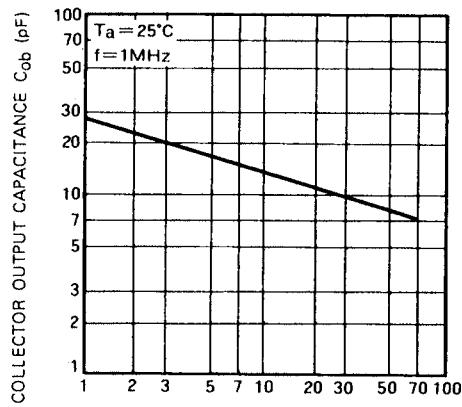
COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



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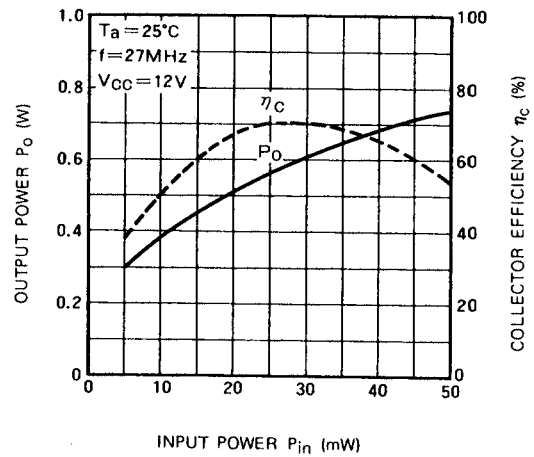
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**COLLECTOR OUTPUT CAPACITANCE VS.
COLLECTOR TO BASE VOLTAGE**



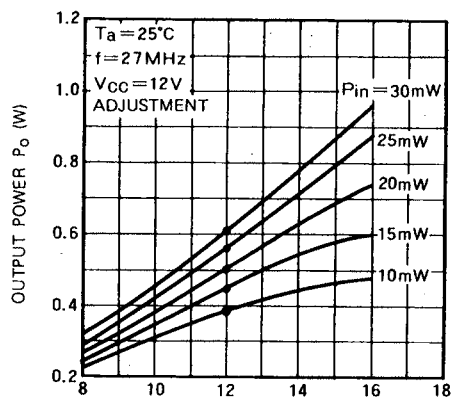
COLLECTOR TO BASE VOLTAGE V_{CB} (V)

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



INPUT POWER P_{in} (mW)

**OUTPUT POWER VS. COLLECTOR
SUPPLY VOLTAGE**



COLLECTOR SUPPLY VOLTAGE V_{CC} (V)