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

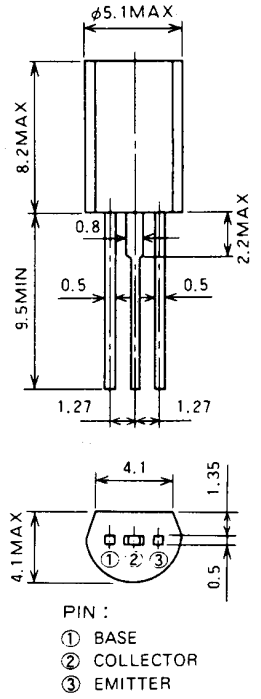
- High power gain: $G_{pe} \geqq 13$dB
  @V_{CC} = 12V, P_O = 0.3W, f=27MHz
- Emitter ballasted construction, gold metallization for good performances.
- TO-92 similar package with low thermal resistance.

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°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		75	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	Collector to emitter voltage	$R_{BE}=\infty$	35	V
I_C	Collector current		1	A
P_C	Collector dissipation	Ta = 25°C	0.8	W
T_j	Junction temperature		135	°C
Tstg	Storage temperature		−55 to 135	°C
Rth-a	Thermal resistance	Junction to ambient	137.5	°C/W

Note. Above parameters are guaranteed independently.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise specified)

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

Note. * Pulse test, P_W = 150μs, duty = 5%.
Above parameters, ratings, limits and conditions are subject to change.

NOV. '97

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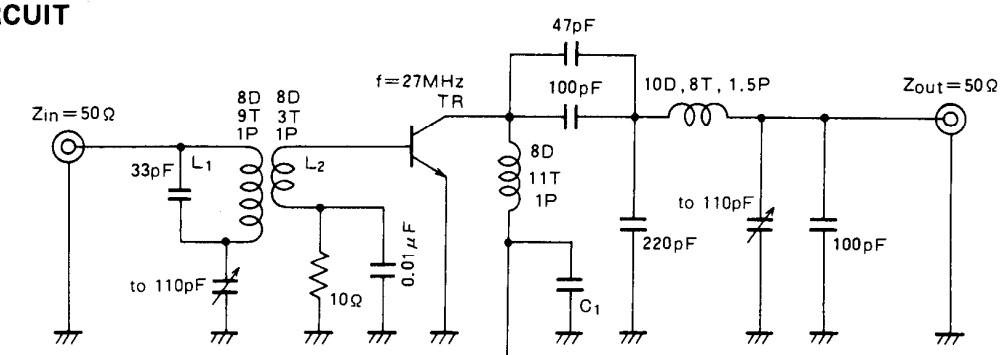
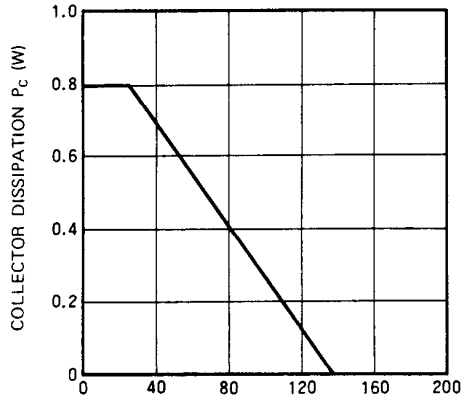
TEST CIRCUIT



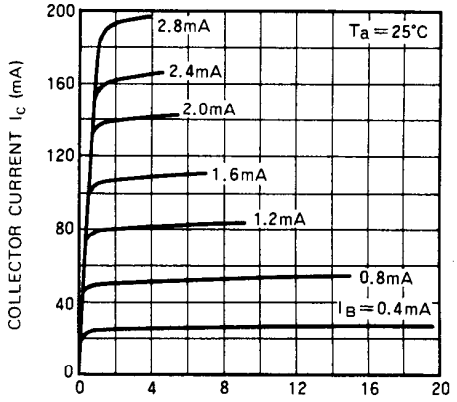
C_1: 33μF, 0.033μF, 0.01μF, 330pF, 100pF in parallel
Notes: L_1 and L_2 are reeled same core by turns
Coils are made from 1.0mmφ silver plated copper wire, but L_2 is made from 0.8mmφ enamel wire
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil
Coils dimensions in milli-meter

TYPICAL PERFORMANCE DATA

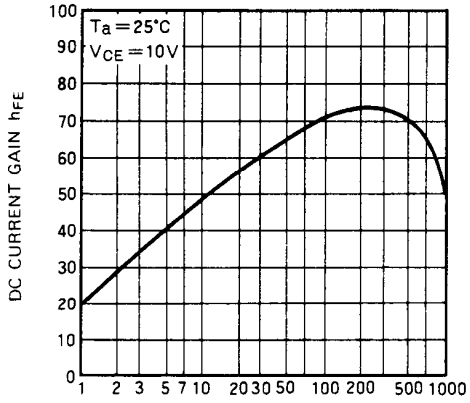
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



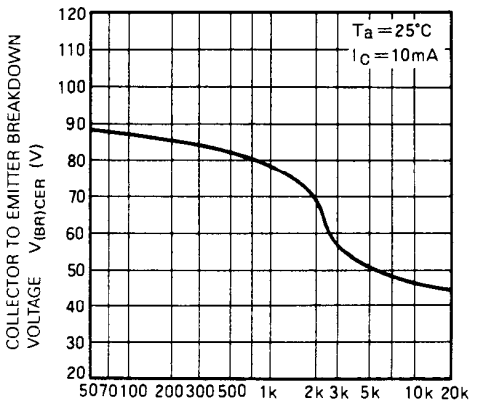
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



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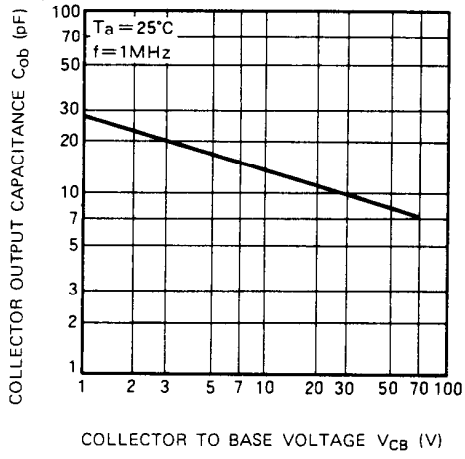
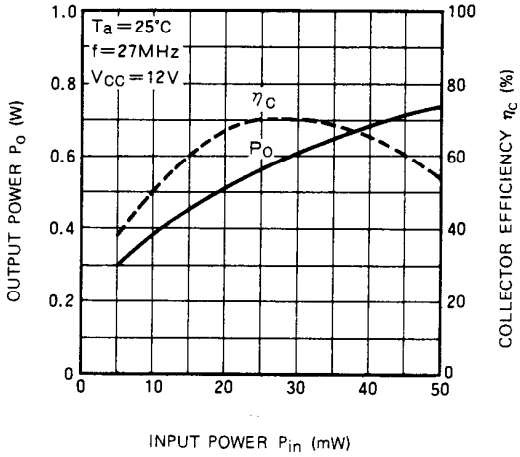
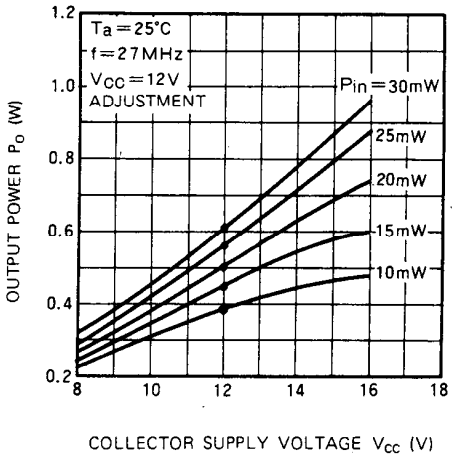
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



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