MITSUBISHI RF POWER TRANSISTOR

2SC2630

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC2630 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

FEATURES

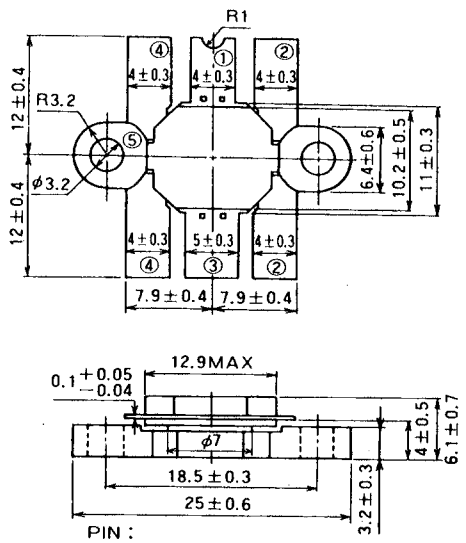
- High power gain: $G_{pe} \geqq 7dB$
  @V_{CC} = 12.5V, P_O = 50W, f = 175MHz
- Emitter ballasted construction and gold metallization for high reliability and good performances.
- Low thermal resistance ceramic package with flange.
- Ability of withstanding more than 20:1 load VSWR when operated at V_{CC} = 15.2V, P_O = 50W, f = 175MHz, T_C = 25°C.
- Equivalent input/output series impedance:
  Z_{in} = 0.8 + j1.2Ω @P_O = 60W, V_{CC} = 12.5V, f = 175MHz
  Z_{out} = 1.5 – j0.6Ω

APPLICATION

40 to 60 watts output power amplifiers in VHF band mobile radio applications.

OUTLINE DRAWING

Dimensions in mm



PIN :
① COLLECTOR
② EMITTER
③ BASE
④ EMITTER
⑤ FIN

NOTE: ALL ELECTRODES ARE ISOLATED FROM FLANGE.

T-40

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		35	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	Collector to emitter voltage	R_{BE} = ∞	17	V
I_C	Collector current		14	A
P_C	Collector dissipation	T_a=25°C	5.5	W
		T_C=25°C	100	
T_j	Junction temperature		175	°C
T_{stg}	Storage temperature		−55 to 175	°C
R_{th-a}	Thermal resistance	Junction to ambient	27.2	°C/W
R_{th-c}		Junction to case	1.5	°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=10mA, I_C=0	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	I_C=10mA, I_E=0	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	I_C=0.1A, R_{BE}=∞	17			V
I_{CBO}	Collector cutoff current	V_{CB}=15V, I_E=0			5	mA
I_{EBO}	Emitter cutoff current	V_{EB}=3V, I_C=0			5	mA
h_{FE}	DC forward current gain *	V_{CE}=10V, I_C=0.2A	10	40	180	—
P_O	Output power	V_{CC}=12.5V, P_{in}=10W, f=175MHz	50	60		W
η_C	Collector efficiency		60	70		%

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

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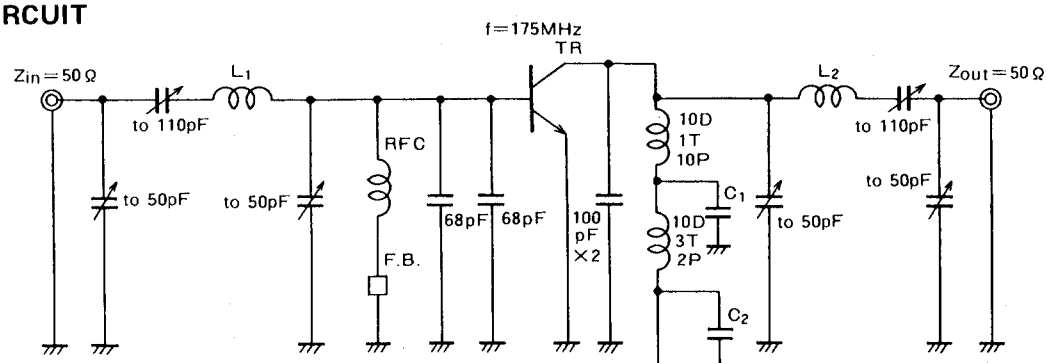
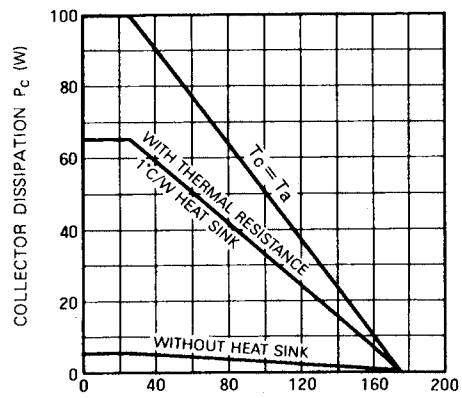
TEST CIRCUIT



L1, L2: L = 8mm, W = 5mm, t = 0.3mm copper plate
C1, C2: 150pF, 1000pF, 4.7μF in palallel
F.B.: Ferrite Bead
NOTES: All coils are made from 1.5mmϕ silver plated copper wire
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil
Dimension in milli-meter

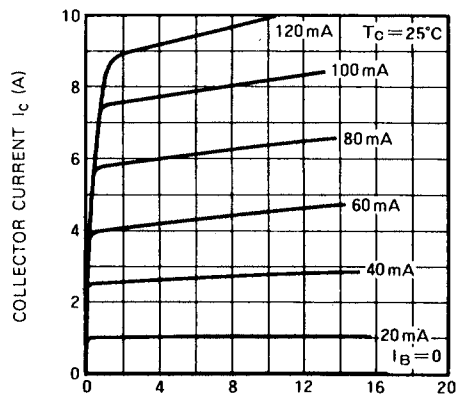
TYPICAL PERFORMANCE DATA

COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



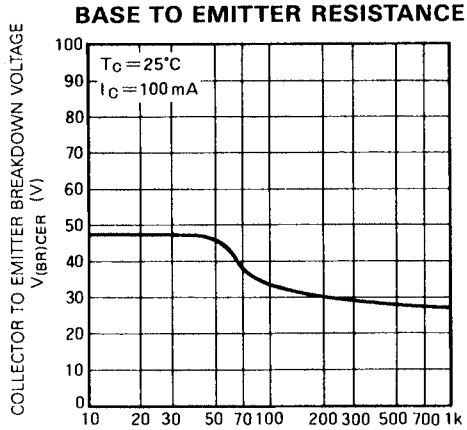
AMBIENT TEMPERATURE T_a (°C)

COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



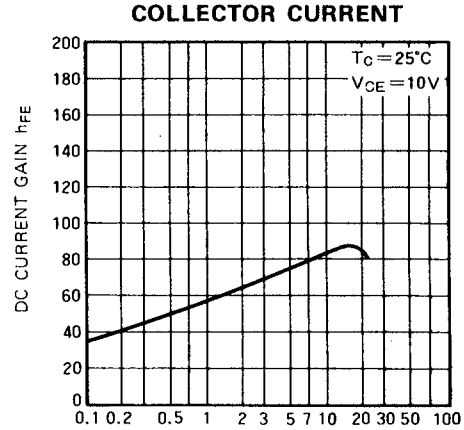
COLLECTOR TO EMITTER VOLTAGE V_{CE} (V)

COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



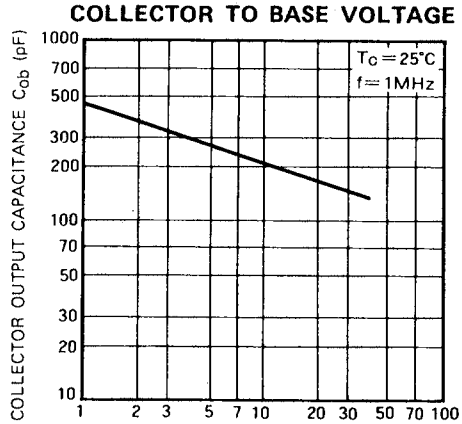
BASE TO EMITTER RESISTANCE R_{BE} (Ω)

DC CURRENT GAIN VS. COLLECTOR CURRENT

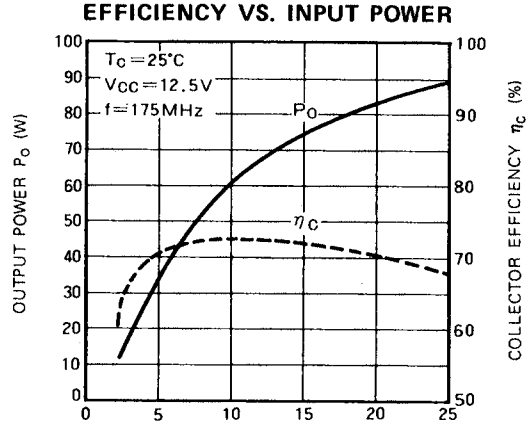


COLLECTOR CURRENT I_C (A)

COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE