MITSUBISHI RF POWER TRANSISTOR

2SC2627

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC2627 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

FEATURES

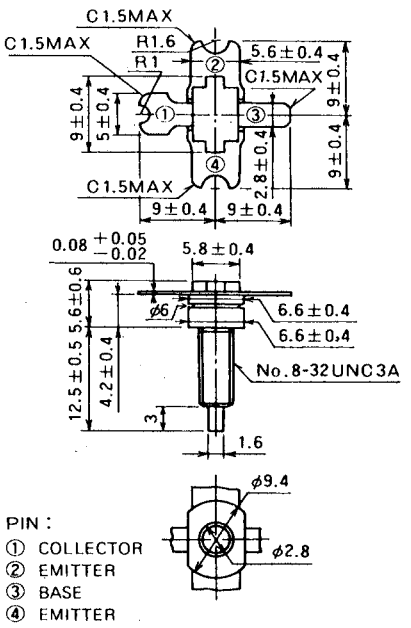
- High power gain: $G_{pe} \geqq 13dB$
  @V_{CC} = 12.5V, P_O = 5W, f = 175MHz
- Emitter ballasted construction and gold metallization for high reliability and good performances.
- Low thermal resistance ceramic package with stud.
- Ability of withstanding more than 20:1 load VSWR when operated at V_{CC} = 15.2V, P_O = 6W, f = 175MHz, T_C = 25°C.
- Equivalent input/output series impedance:
  Z_{in} = 2.9 + j0.5Ω @P_O = 6W, V_{CC} = 12.5V, f = 175MHz
  Z_{out} = 11 −j1.9Ω

APPLICATION

4 to 5 watts output power amplifiers in VHF band mobile radio applications.

OUTLINE DRAWING

Dimensions in mm



NOTE: ALL ELECTRODES ARE ISOLATED FROM FLANGE.

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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		2	A
P_C	Collector dissipation	T_a=25°C	2	W
		T_C=25°C	20	W
T_j	Junction temperature		175	°C
Tstg	Storage temperature		−55 to 175	°C
Rth-a	Thermal resistance	Junction to ambient	75	°C/W
Rth-c		Junction to case	7.5	°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=5mA, 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=50mA, R_{BE} = ∞	17			V
I_{CBO}	Collector cutoff current	V_{CB}=25V, I_E=0			1	mA
I_{EBO}	Emitter cutoff current	V_{EB}=3V, I_C=0			1	mA
h_{FE}	DC forward current gain*	V_{CE}=10V, I_C=0.1A	10	80	180	—
P_O	Output power	V_{CC}=12.5V, P_{in}=0.25W, f=175MHz	5	6		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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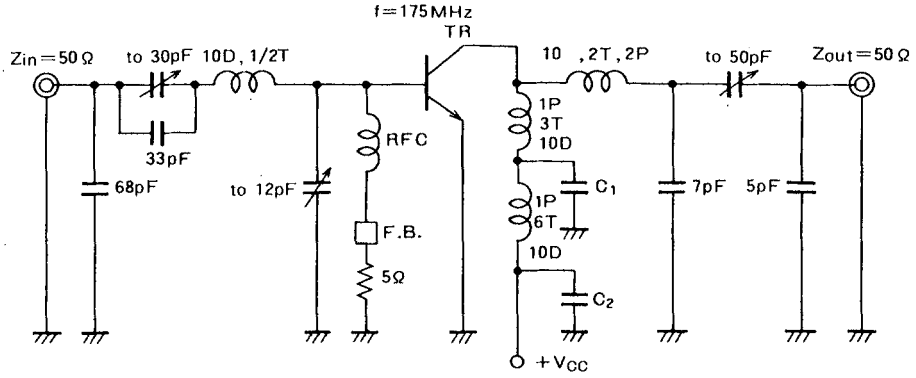
TEST CIRCUIT

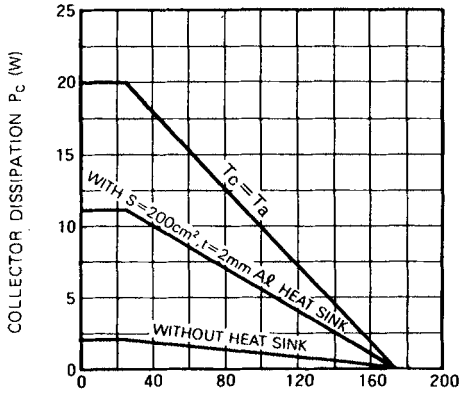


C1: 100pF, 2200pF, 0.01μF in parallel
C2: 100pF, 2200pF, 0.01μF, 10μF in parallel
F.B.: Ferrite Bead

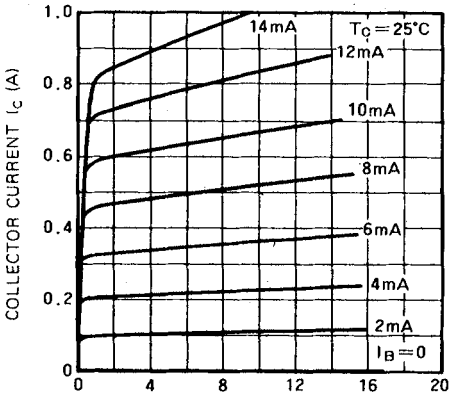
Notes: All coils are made from 1.5mmφ silver plated copper wire
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil
Dimension in milli-meter

TYPICAL PERFORMANCE DATA

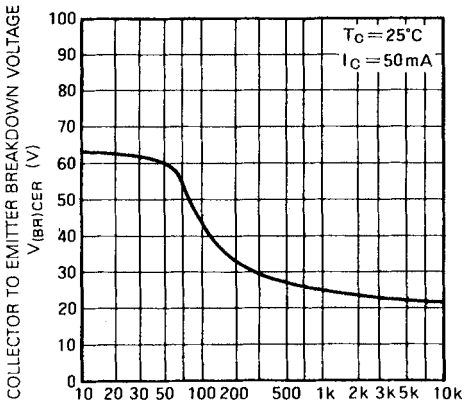
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



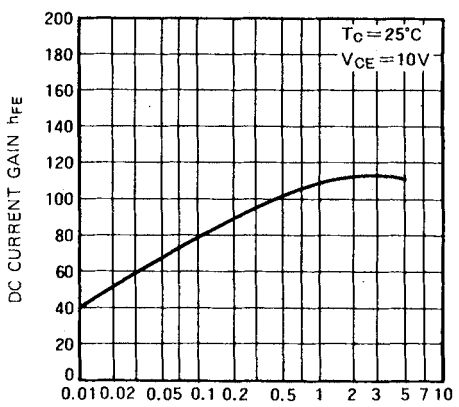
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



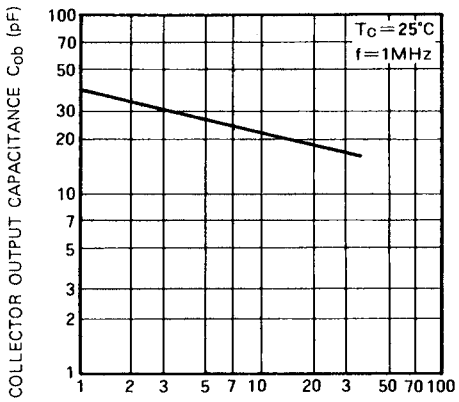
COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



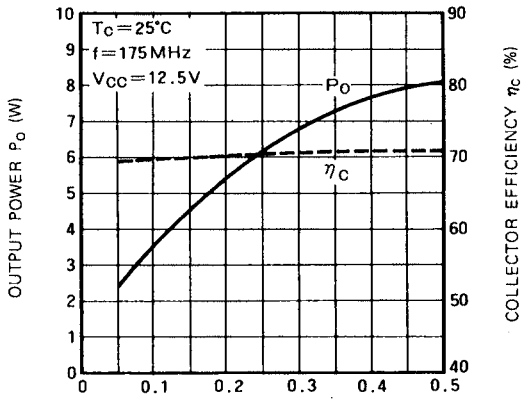
DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE