2SC1965

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC1965 is a silicon NPN epitaxial planar type transistor designed for industrial use RF power amplifiers on VHF band mobile radio applications.

FEATURES

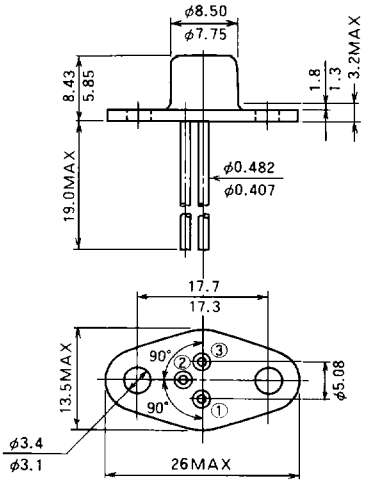
- High power gain: $G_{pe} \geqq 10dB$
  @V_{CC} = 13.5V, P_O = 6W, f = 175MHz
- T_C-17 metal seeled package for high reliability.
- Emitter ballasted construction for good performances.
- Emitter electrode is connected electrically to the case.
- Ability of withstanding more than 20:1 load VSWR when operated at V_{CC} = 15.2V, P_O = 6W, f = 175MHz, T_C = 25°C.

APPLICATION

4 watt pawer amplifiers in VHF band mobile radio applications.

OUTLINE DRAWING

Dimensions in mm



① EMITTER (CASE)
② BASE
③ COLLECTOR

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	$R_{BE} = \infty$	17	V
I_C	Collector current		1	A
P_C	Collector dissipation	T_a = 25°C	1.5	W
		T_C = 25°C	15	W
T_j	Junction temperature		+175	°C
Tstg	Storage temperature		−65 ~ +175	°C
Rth-a	Thermal resistance	Junction to ambient	100	°C/W
Rth-c		Junction to case	10	°C/W

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, $R_{BE} = \infty$	17			V
I_{CBO}	Collector cutoff current	V_{CB} = 25V, I_E = 0			500	μA
I_{EBO}	Emitter cutoff current	V_{EB} = 3V, I_C = 0			500	μA
h_{FE}	DC forward current gain *	V_{CE} = 10V, I_C = 0.1A	10	50	180	—
P_O	Output power **	V_{CC} = 13.5V, P_{in} = 0.6W, f = 175MHz	6	6.5		W
η_C	Collector efficiency		50	60		%

* Note: Pulse test, P_w = 150μs, duty = 5%.
Note: In case of the case grounded.

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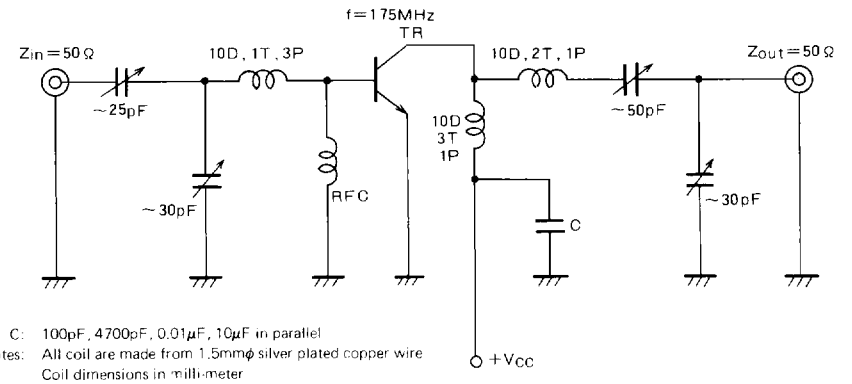
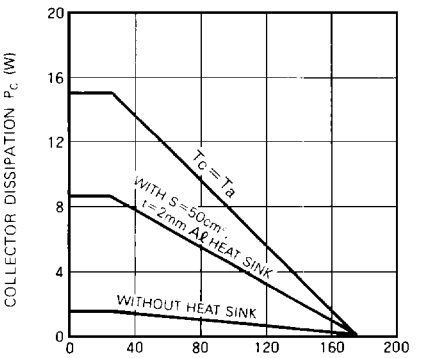
TEST CIRCUIT



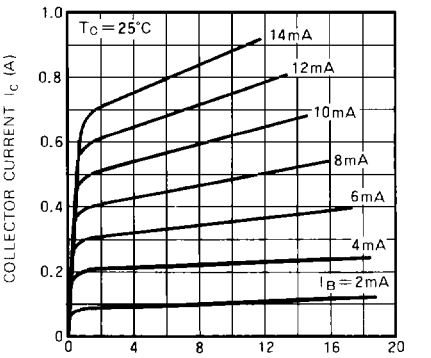
C: 100pF, 4700pF, 0.01μF, 10μF in parallel
Notes: All coil are made from 1.5mmφ silver plated copper wire
Coil dimensions in milli-meter
D: Inner diameter of coil
T: Turn number of coil
F: Pitch of coil

TYPICAL PERFORMANCE DATA

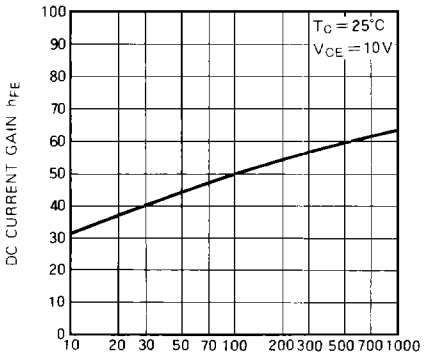
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



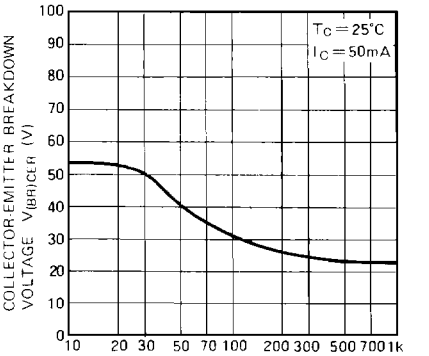
OUTPUT CHARACTERISTICS, COMMON EMITTER



DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR-EMITTER BREAKDOWN VOLTAGE VS. BASE-EMITTER RESISTANCE



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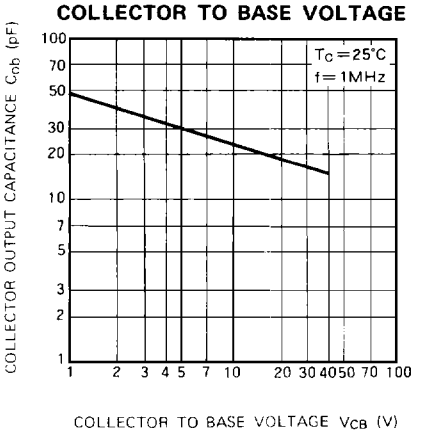
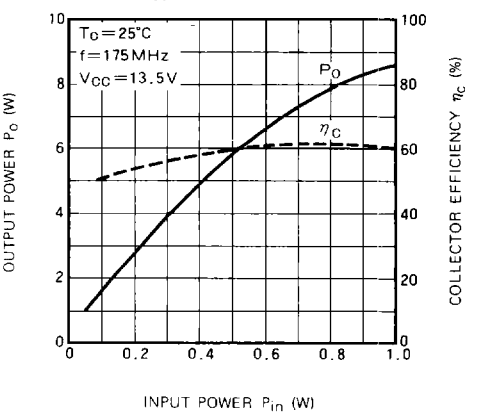
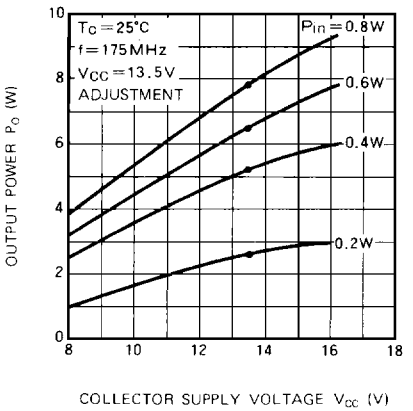
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



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