

MITSUBISHI RF POWER TRANSISTOR 2SC1968A

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

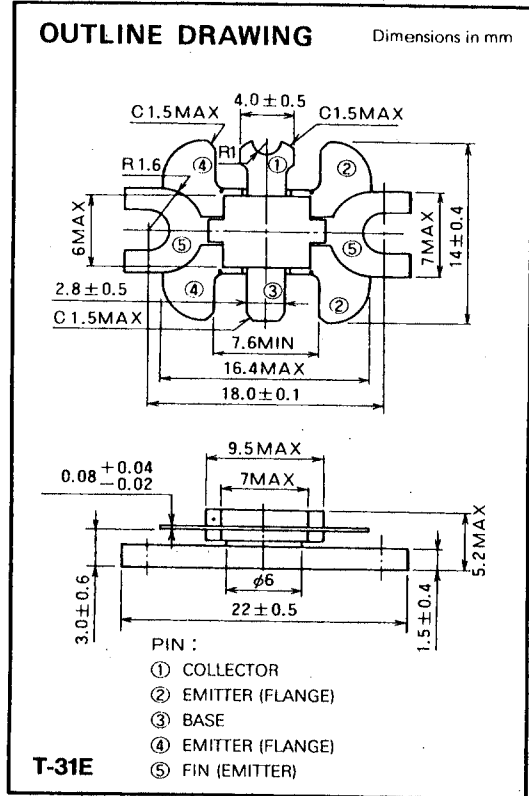
2SC1968A is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers on UHF band mobile radio applications.

FEATURES

- High power gain: $G_{pe} \geq 5.4\text{dB}$
@ $V_{CC} = 13.5\text{V}$, $P_O = 14\text{W}$, $f = 470\text{MHz}$
- 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 all phase when operated at $V_{CC} = 15.2\text{V}$, $P_O = 18\text{W}$, $f = 470\text{MHz}$.

APPLICATION

10 to 14 watts output power amplifiers in UHF band mobile radio applications.



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ 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		5	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	3	W
		$T_C = 25^\circ\text{C}$	40	W
T_j	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-65 to 175	$^\circ\text{C}$
R_{th-a}	Thermal resistance	Junction to ambient	50	$^\circ\text{C/W}$
R_{th-c}		Junction to case	3.75	$^\circ\text{C/W}$

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	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 10\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$, $I_E = 0$	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 50\text{mA}$, $R_{BE} = \infty$	17			V
I_{CBO}	Collector cutoff current	$V_{CB} = 15\text{V}$, $I_E = 0$			500	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 2\text{V}$, $I_C = 0$			400	μA
h_{FE}	DC forward current gain*	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 13.5\text{V}$, $P_{in} = 4\text{W}$, $f = 470\text{MHz}$	14	16		W
η_C	Collector efficiency		50	60		%

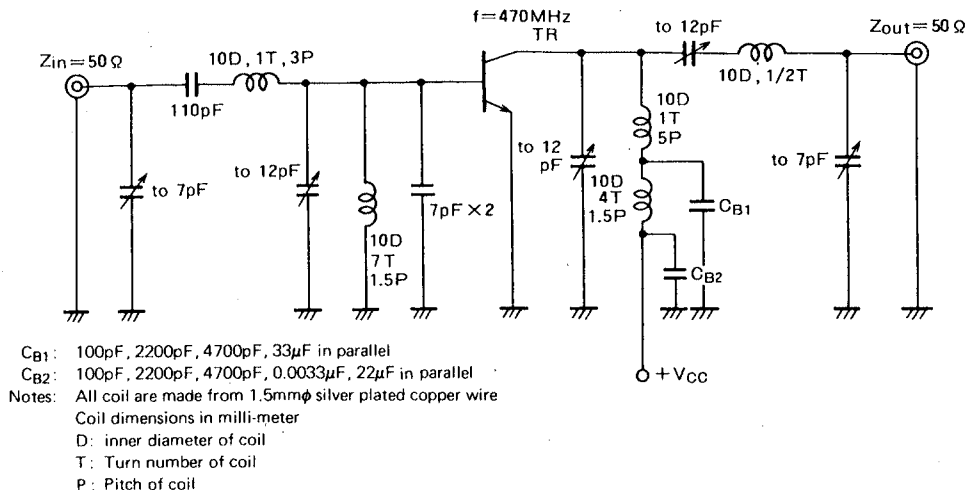
Note. * Pulse test, $P_W = 150\mu\text{s}$, duty = 5%.

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

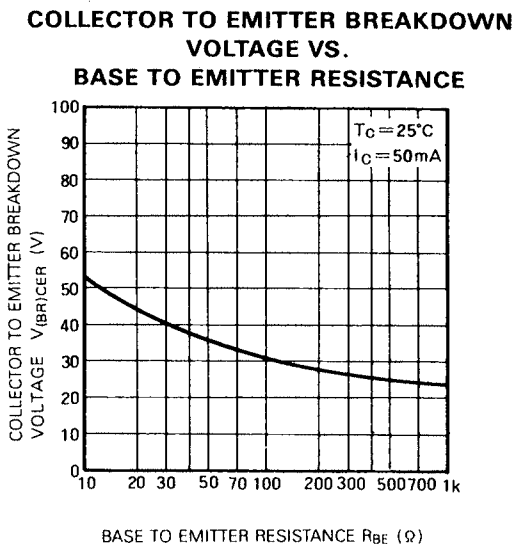
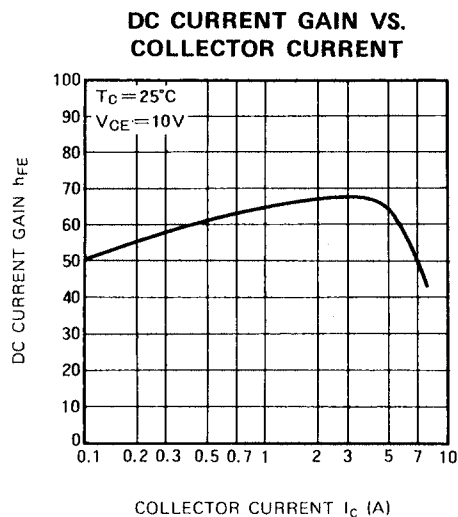
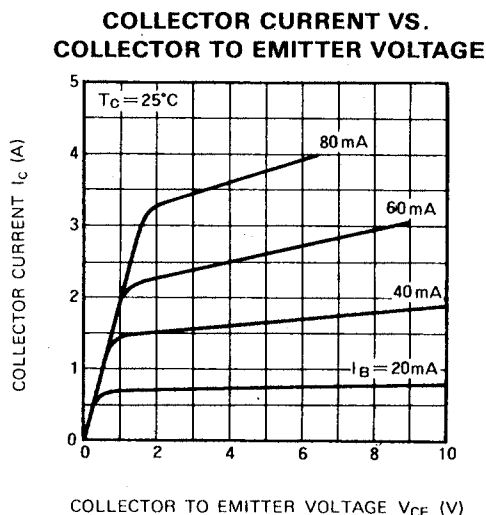
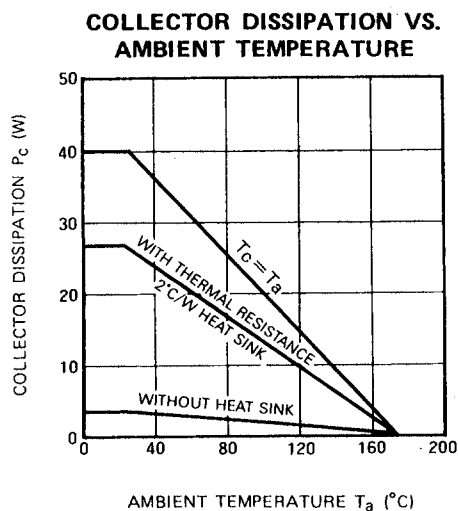
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TEST CIRCUIT



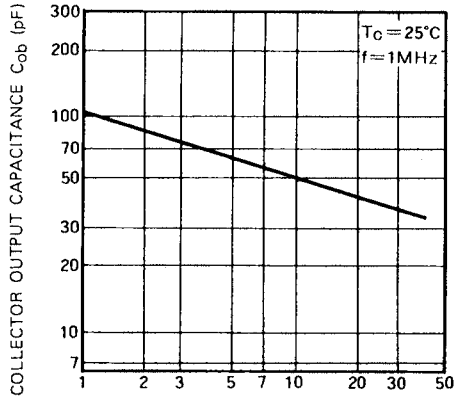
TYPICAL PERFORMANCE DATA



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2SC1968A

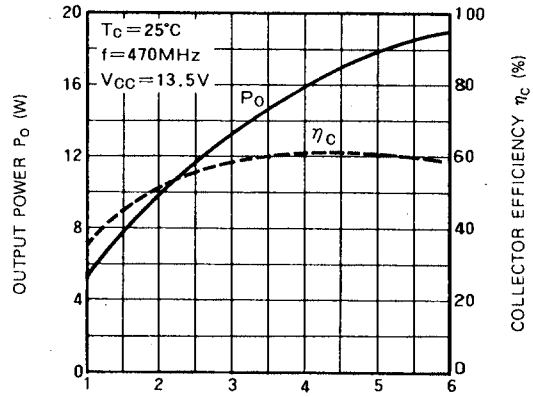
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COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



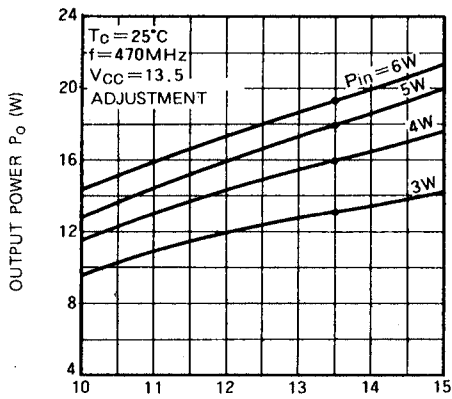
COLLECTOR TO BASE VOLTAGE V_{CB} (V)

OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



INPUT POWER P_{in} (W)

OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



COLLECTOR SUPPLY VOLTAGE V_{CC} (V)