

**DESCRIPTION**

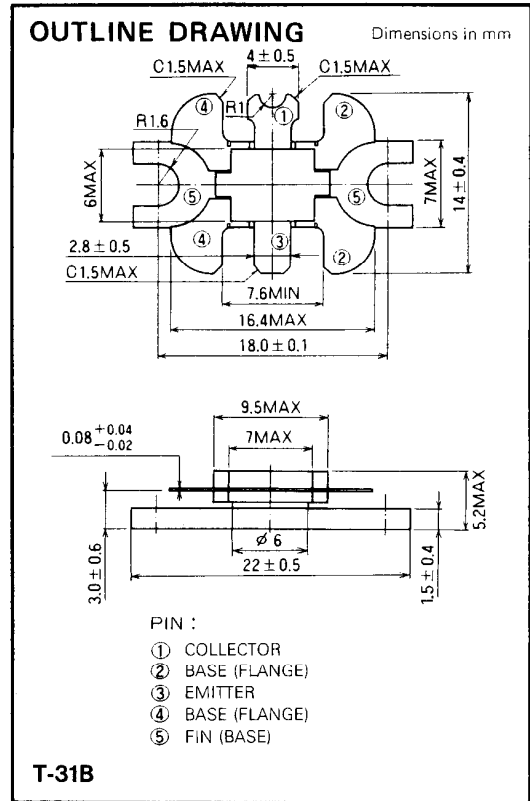
2SC2933 is silicon NPN epitaxial planar type transistor specifically designed for power amplifiers in 800 ~ 940MHz band.

**FEATURES**

- High gain, High efficiency:  
 $G_{pb} = 6.7\text{dB}$ ,  $\eta_c \geq 50\%$ ,  $P_o \geq 14\text{W}$   
 $@f = 900\text{MHz}$ ,  $V_{CC} = 12.5\text{V}$ ,  $P_{in} = 3\text{W}$
- Gold metalization of transistor die.
- Flange type ceramic package.
- Equivalent input/output series impedance:  
 $Z_{in} = 2.5 + j0.75(\Omega)$ ,  $Z_{out} = 2.2 - j2.1(\Omega)$   
 $@f = 900\text{MHz}$ ,  $V_{CC} = 12.5\text{V}$ ,  $P_o = 16\text{W}$
- Common base type.
- The ability withstand infruite VSWR when operated at  
 $f = 900\text{MHz}$   $V_{CC} = 15.2\text{V}$ ,  $P_o = 14\text{W}$ .

**APPLICATION**

Output stage of power amplifiers in 800MHz band mobile radio equipment



**ABSOLUTE MAXIMUM RATINGS** ( $T_0 = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CBO}$	Collector to base voltage		35	V
$V_{EBO}$	Emitter to base voltage		3	V
$V_{CEO}$	Collector to emitter voltage	$R_{BE} = \infty$	17	V
$I_C$	Collector current		4	A
$P_C$	Collector dissipation	$T_a = 25^\circ\text{C}$	3	W
		$T_0 = 25^\circ\text{C}$	40	W
$T_J$	Junction temperature		175	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55 to 175	$^\circ\text{C}$
$R_{th-a}$	Thermal resistance		50	$^\circ\text{C}/\text{W}$
$R_{th-c}$			3.75	$^\circ\text{C}/\text{W}$

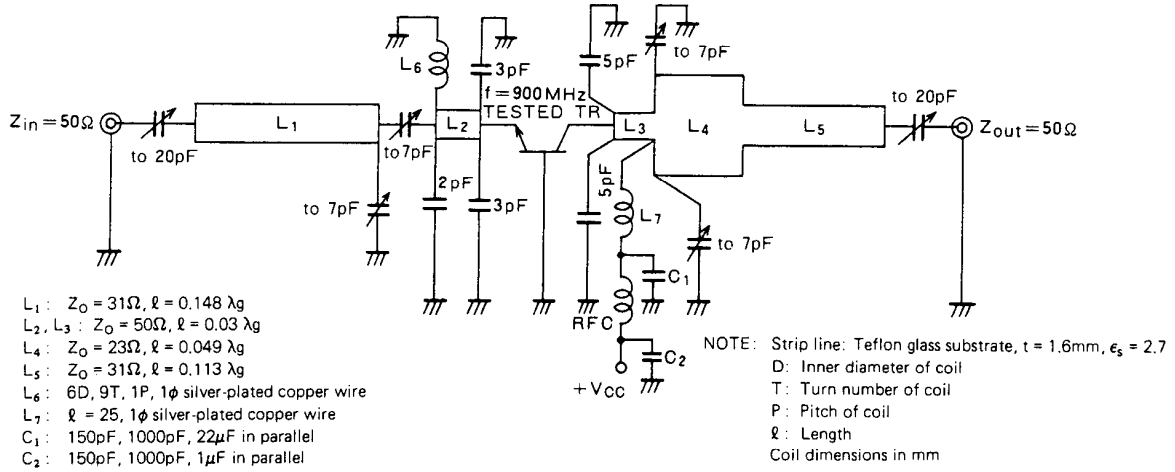
Note. Above parameters are guaranteed independently.

**ELECTRICAL CHARACTERISTICS** ( $T_0 = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 10\text{mA}$ , $I_C = 0$	3			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	$I_C = 0.1\text{A}$ , $R_{BE} = \infty$	17			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 15\text{V}$ , $I_E = 0$			2	mA
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 2\text{V}$ , $I_C = 0$			3	mA
$h_{FE}$	DC current gain *	$V_{CE} = 10\text{V}$ , $I_C = 0.2\text{A}$	10	50	180	—
$P_O$	Output power	$f = 900\text{MHz}$ , $V_{CC} = 12.5\text{V}$ , $P_{in} = 3\text{W}$	14	16		W
$\eta_C$	Collector efficiency		50	60		%

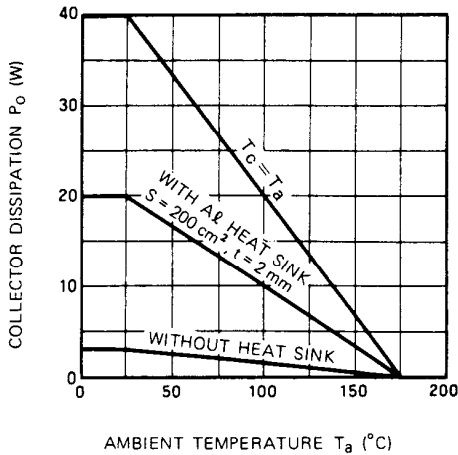
Note. \* Pulse test,  $P_W = 150\mu\text{s}$ , duty = 5%.  
 Above parameters, ratings, limits and conditions are subject to change.

**TEST CIRCUIT**

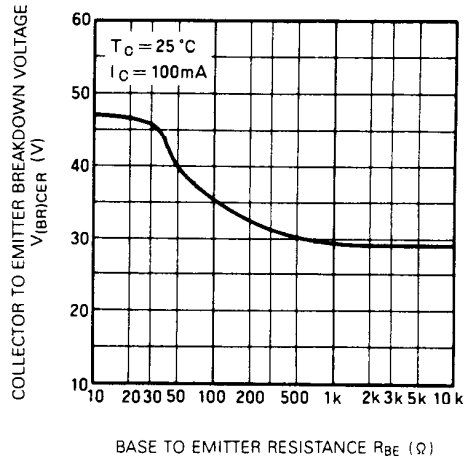


**TYPICAL PERFORMANCE DATA**

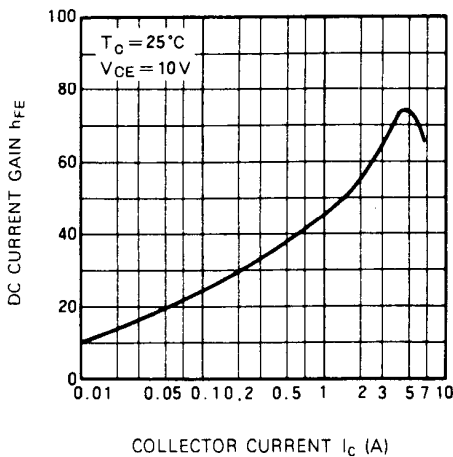
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**



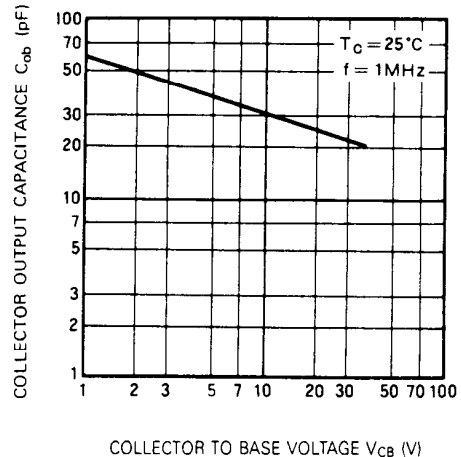
**COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE**



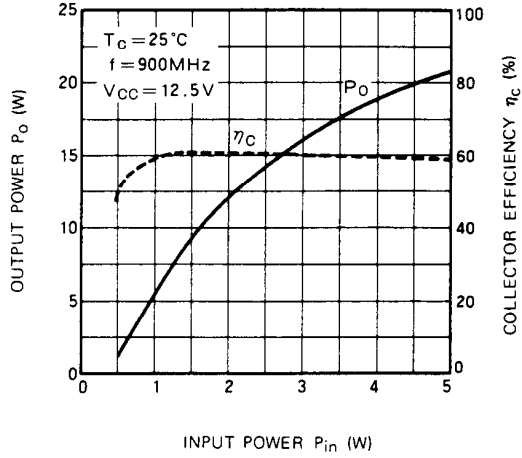
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE**



**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER**



**OUTPUT POWER, COLLECTOR SUPPLY VOLTAGE VARIATION**

