

DISCRIPTION

2SC2800 is a silicon NPN epitaxial planer type transistor for liner power amplifiers in UHF band.

FEATURES

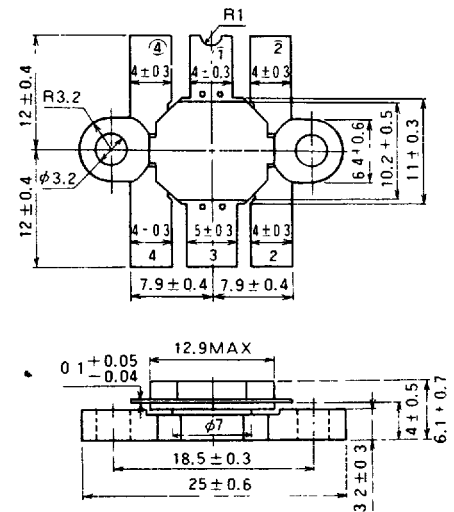
- High power gain: $G_{pe} \geq 4.3\text{dB}$ (Class AB)
@ $V_{CC} = 24\text{V}$, $f = 770\text{MHz}$, $P_O = 40\text{W}$, $I_D = 100\text{mA}$
- Low thermal resistance ceramic package with flange.
- Ability of withstanding more than 8.8:1 load VSWR all phase when operated at $V_{CC} = 24\text{V}$, $f = 770\text{MHz}$, $P_O = 40\text{W}$, $I_D = 100\text{mA}$, class AB condition
- High Input-Impedance Transistor (HI^2T)

APPLICATION

Broadband liner amplifiers in UHF band.

OUTLINE DRAWING

Dimensions in mm



- 1 COLLECTOR
- 2 EMITTER
- 3 BASE
- 4 EMITTER

NOTE EMITTER ELECTRODES ARE CONNECTED WITH FLANGE

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

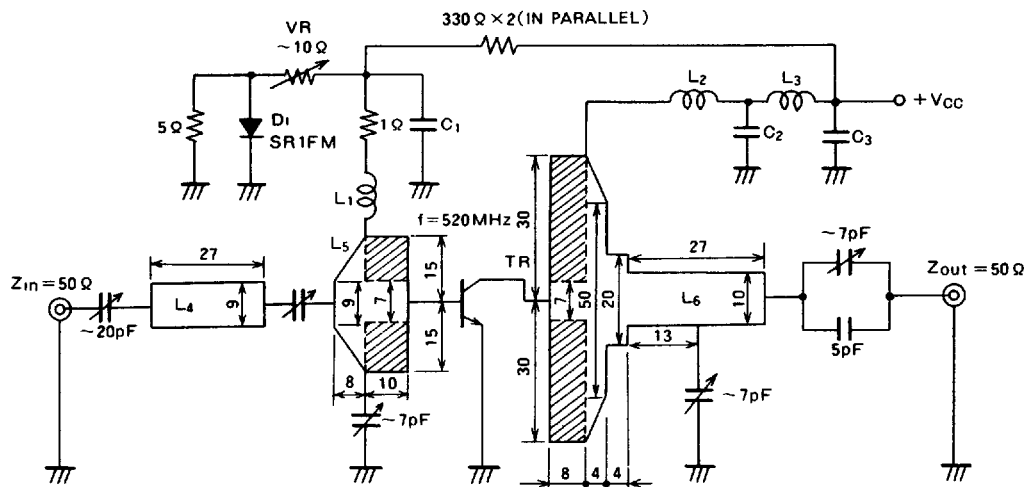
Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		45	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	Collector to emitter voltage	$R_{BE} = \infty$	35	V
I_C	Collector current		6	A
P_C	Collector dissipation	$T_C = 25^\circ\text{C}$	75	W
T_J	Junction temperature		+175	C
T_{stg}	Storage temperature		-55 ~ +175	C
R_{th-c}	Thermal resistance	Junction to case	2	$^\circ\text{C/W}$

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

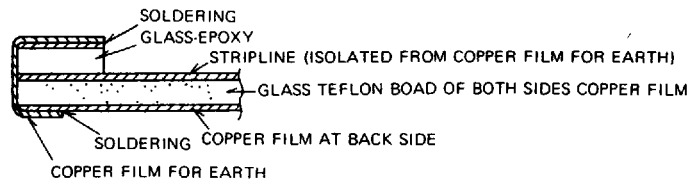
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Tyr	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 10\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$, $I_E = 0$	45			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 50\text{mA}$, $R_{BE} = \infty$	35			V
I_{CBO}	Collector cutoff current	$V_{CB} = 25\text{V}$, $I_E = 0$			2	mA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			1	mA
h_{FE}	DC forward current gain *	$V_{CE} = 25\text{V}$, $I_C = 0.2\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 24\text{V}$, $f = 770\text{MHz}$, $P_{in} = 15\text{W}$	40	42		W
η_C	Collector efficiency	$I_D = 100\text{mA}$ **	50	55		%

* Note Pulse test, $P_w = 150\mu\text{s}$, duty 5% ** Note Class AB operation

TEST CIRCUIT

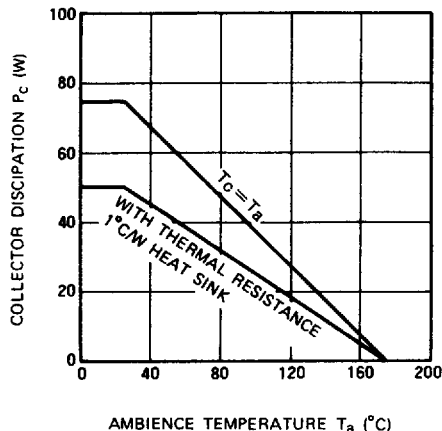


- L₁ 6T, 2 5P, 0.4mmφ enameled wire (Bakelite ribbon)
 - L₂ W = 3mm, T = 0.15mm, L = 23mm copper plate
 - L₃ 20T, 1P, 0.4mmφ enameled wire (Bakelite ribbon)
 - L_{4~6} Microstrip line
 - C₁ 1000pF, 0.01μF in parallel
 - C₂ 100pF, 1000pF, 0.01μF, 1μF in parallel
 - C₃ 100pF, 1000pF, 0.1μF, 10μF in parallel
- NOTE 1 Board for formation microstrip line glass-teflon board $\epsilon_s = 2.7$, $t = 1.6$ mm
 2 Dimensions mm
 3 T Turn number of coil, P Pitch of coil
 4 Sectional plan of oblique lines

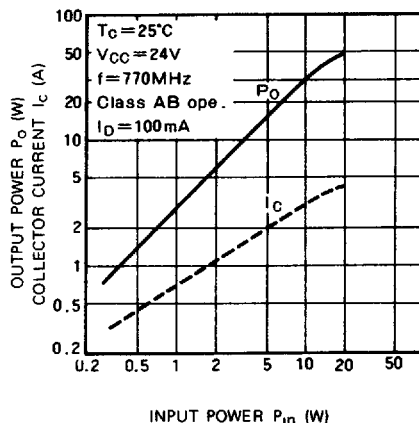


TYPICAL PERFORMANCE DATE

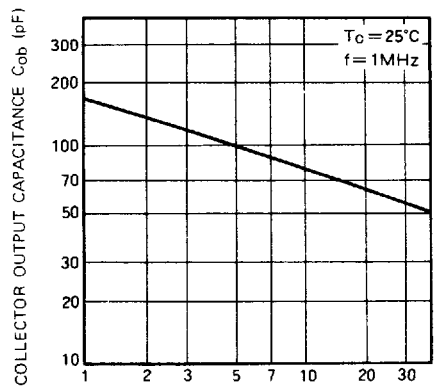
COLLECTOR DISSIPATION VS. AMBIENCE TEMPERATURE CHARACTERISTICS



OUTPUT POWER, COLLECTOR CURRENT VS. INPUT POWER CHARACTERISTICS

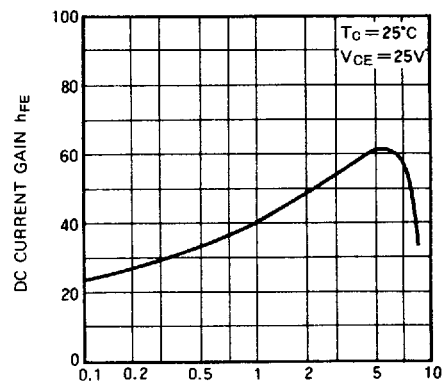


**COLLECTOR OUTPUT CAPACITANCE
VS. COLLECTOR TO EMITTER VOLTAGE
CHARACTERISTICS**



COLLECTOR TO EMITTER VOLTAGE V_{CB} (V)

**DC CURRENT GAIN VS. COLLECTOR
CURRENT CHARACTERISTICS**



COLLECTOR CURRENT I_C (A)