

### DISCRIPTION

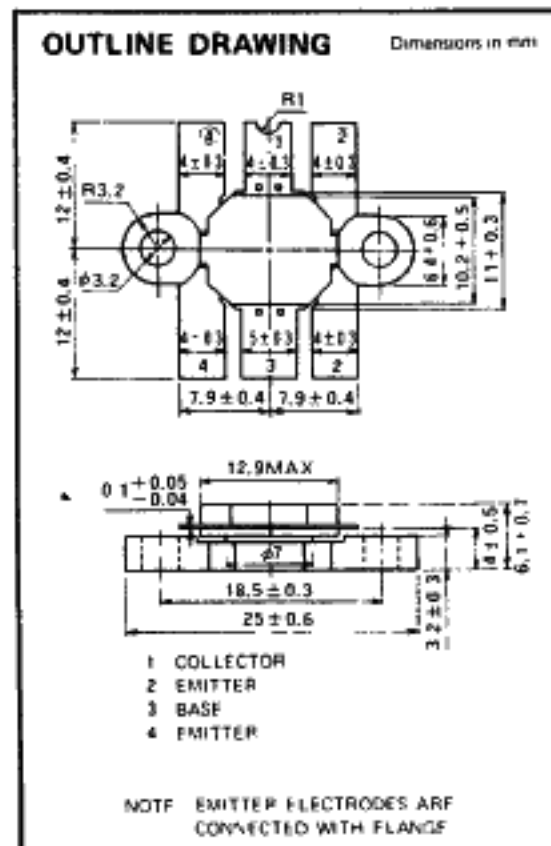
2SC2800 is a silicon NPN epitaxial planar type transistor for liner power amplifiers in UHF band.

### FEATURES

- High power gain:  $G_{p0} \geq 4.3\text{dB}$  (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.



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

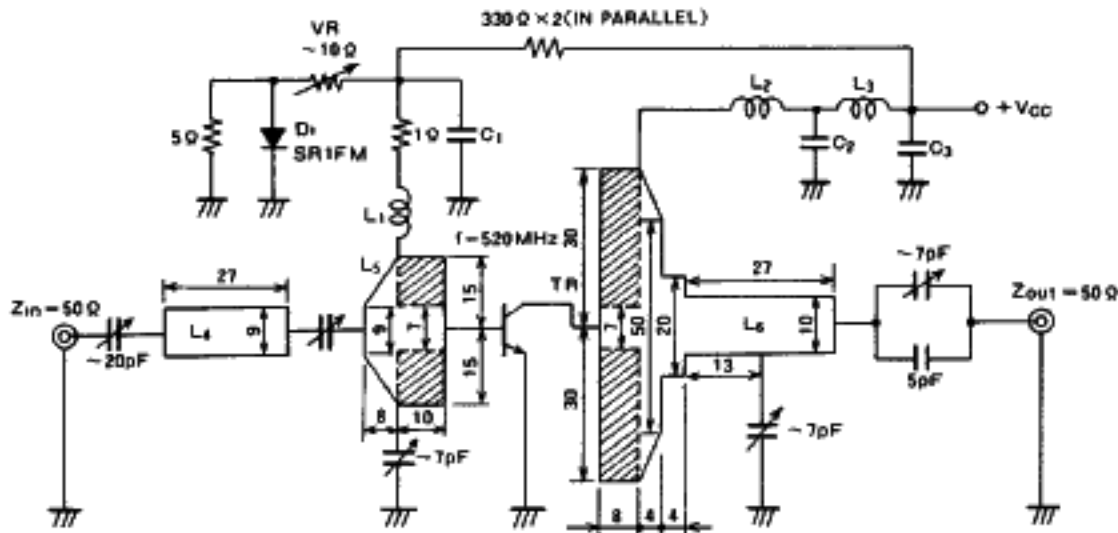
Symbol	Parameter	Conditions	Rating	Unit
$V_{CBO}$	Collector to base voltage		45	V
$V_{EBO}$	Emitter to base voltage		4	V
$V_{CEO}$	Collector to emitter voltage	$R_{EC} = \infty$	35	V
$I_C$	Collector current		6	A
$P_C$	Collector dissipation	$T_C = 25^\circ\text{C}$	75	W
$T_J$	Junction temperature		+175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

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

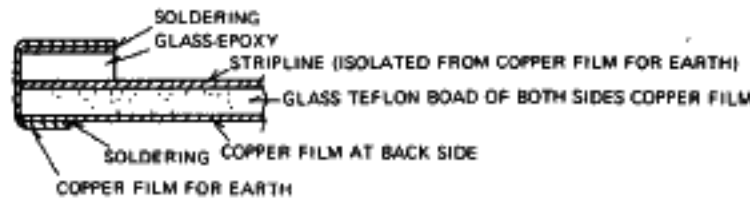
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 10\text{mA}, I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}, I_E = 0$	45			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 50\text{mA}, R_{EC} = \infty$	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
$\eta_C$	Collector efficiency	$I_D = 100\text{mA}^{**}$	50	55		%

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

**TEST CIRCUIT**

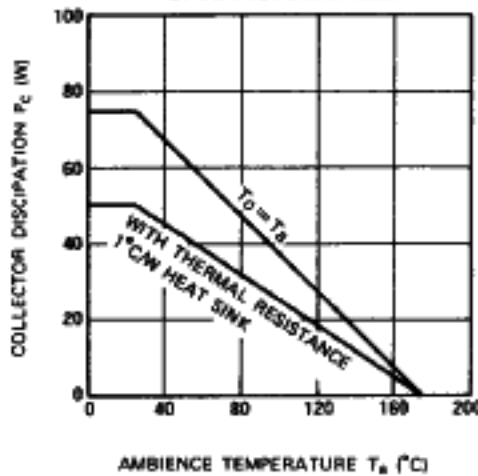


- L<sub>1</sub> 6T, 2.5P, 0.4mmφ enameled wire (Bakelite ribbon)
  - L<sub>2</sub> W = 3mm, T = 0.15mm, L = 23mm copper plate
  - L<sub>3</sub> 20T, 1P, 0.4mmφ enameled wire (Bakelite ribbon)
  - L<sub>4-6</sub> Microstrip line
  - C<sub>1</sub> 1000pF, 0.01μF in parallel
  - C<sub>2</sub> 100pF, 1000pF, 0.01μF, 1μF in parallel
  - C<sub>3</sub> 100pF, 1000pF, 0.1μF, 10μF in parallel
- NOTE 1 Board for formation microstrip line: glass-teflon board  $\epsilon_s = 2.7, t = 1.6\text{mm}$   
 2 Dimensions: mm  
 3 T: Turn number of coil, P: Pitch of coil  
 4 Sectional plan of oblique lines

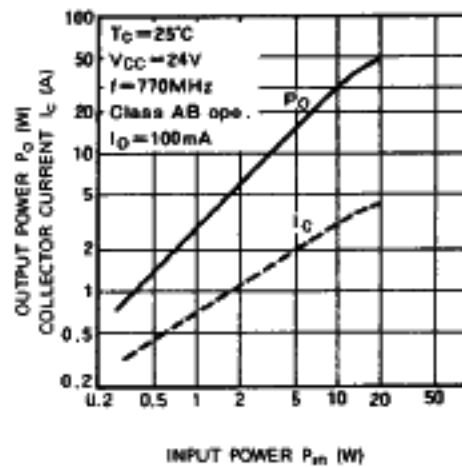


**TYPICAL PERFORMANCE DATE**

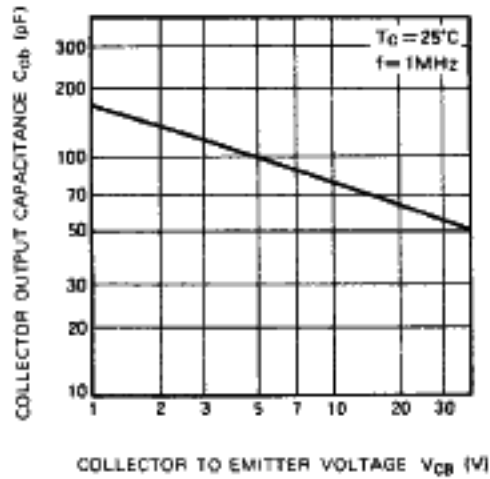
**COLLECTOR DISSIPATION VS. AMBIENCE TEMPERATURE CHARACTERISTICS**



**OUTPUT POWER, COLLECTOR CURRENT VS. INPUT POWER CHARACTERISTICS**



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



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

