

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

MITSUBISHI 2SC2799 is a silicon NPN epitaxial planar type transistor specifically designed for UHF power amplifier applications.

FEATURES

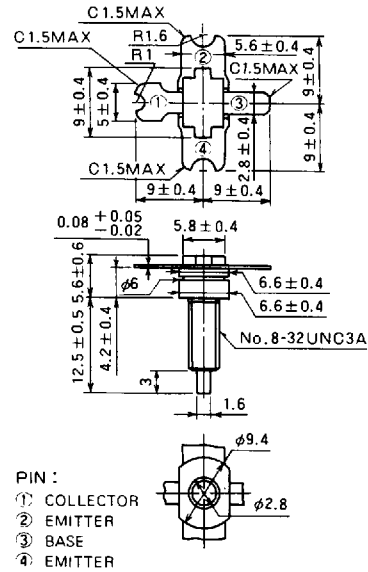
- High power gain: $G_{pe} \geq 4.9\text{dB}$ (Class AB)
@ $V_{CC} = 24\text{V}$, $P_O = 25\text{W}$, $f = 770\text{MHz}$, $I_D = 80\text{mA}$
- Ability to withstanding load VSWR 8.8:1 when operated at $V_{CC} = 24\text{V}$, $P_O = 25\text{W}$, $f = 770\text{MHz}$, $I_D = 80\text{mA}$, class AB condition.

APPLICATION

UHF high voltage (24V) broad-band amplifiers

OUTLINE DRAWING

Dimensions in mm



T-41E 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		4	A
P_C	Collector dissipation	$T_C = 25^\circ\text{C}$	50	W
T_j	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 to 175	$^\circ\text{C}$
R_{th-c}	Thermal resistance	Junction to case	3	$^\circ\text{C/W}$

Note. Above parameters are guaranteed independently.

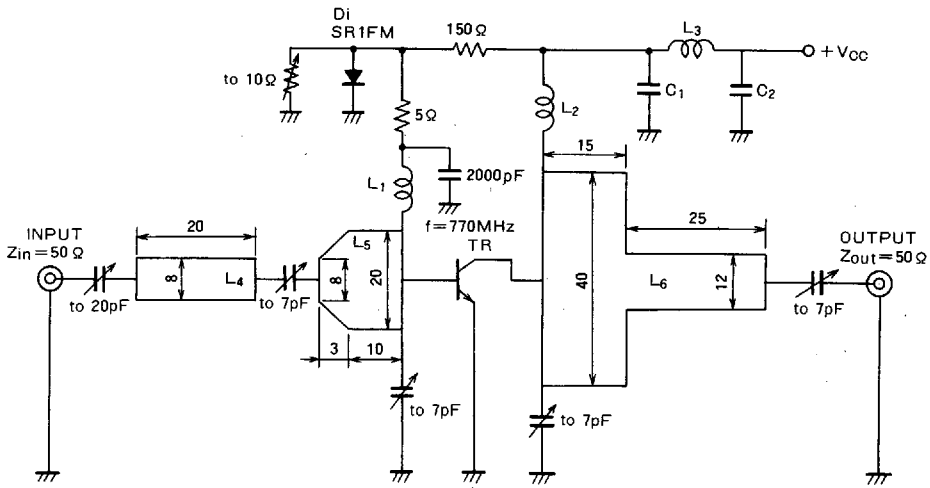
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

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	$I_C = 10\text{mA}$, $I_E = 0$	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	$V_{CB} = 25\text{V}$, $I_E = 0$			1.5	mA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0\text{V}$			500	μA
h_{FE}	DC forward current gain *	$V_{CE} = 25\text{V}$, $I_C = 0.2\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 24\text{V}$, $f = 770\text{MHz}$, $P_{in} = 8\text{W}$.	25	27		W
η_C	Collector efficiency	$I_D = 80\text{mA}$ **	55	60		%

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

NPN EPITAXIAL PLANAR TYPE

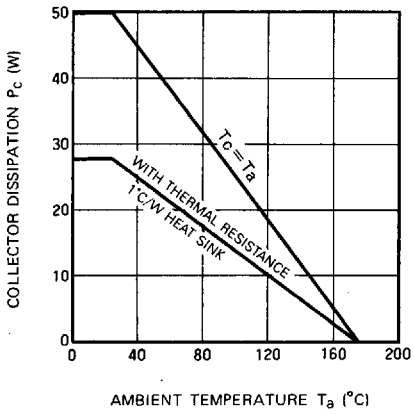
TEST CIRCUIT



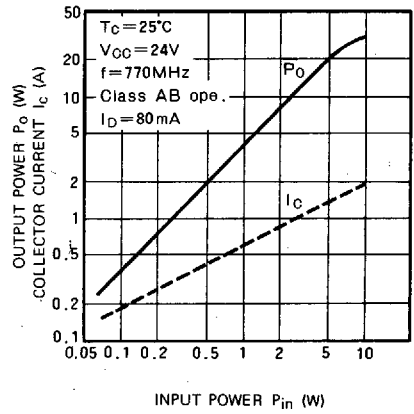
- L1: 0.4mmφ enameled wire 6T, 2P.
 - L2: Width = 3mm, thickness = 0.15mm, lenght = 25mm, copper plate.
 - L3: 0.4mmφ enameled wire 20T, 1P.
 - C1: 100pF, 1000pF, 0.01μF, 1μF, in parallel.
 - C2: 100pF, 1000pF, 0.1μF, 10μF, in parallel.
 - L4~L6: Microstrip line: t = 1.6mm, teflon ε_s = 2.7
- NOTES:
 D: Inner diameter of coil.
 T: Turn numbers of coil.
 P: Pitch of coil.
 Dimension in milli-meter

TYPICAL PERFORMANCE DATA

COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE

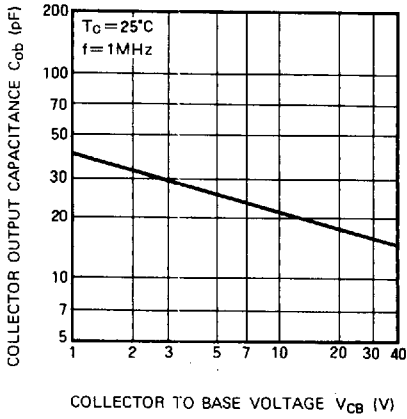


OUTPUT POWER, COLLECTOR CURRENT VS. INPUT POWER



NPN EPITAXIAL PLANAR TYPE

COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT

