

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC2099

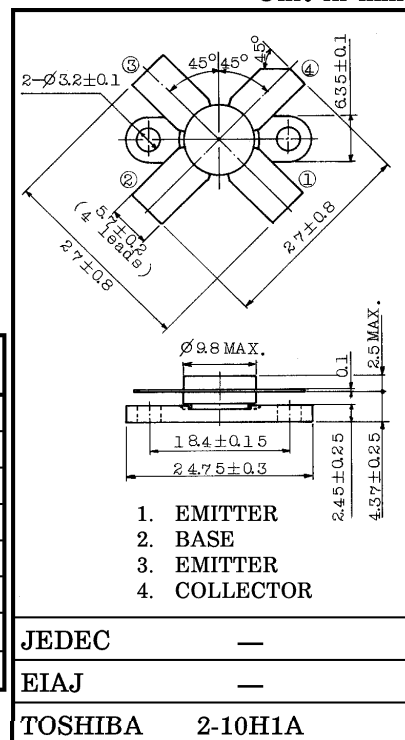
2~30MHz SSB LINEAR POWER AMPLIFIER APPLICATIONS
(LOW SUPPLY VOLTAGE USE)

Unit in mm

- Specified 12.5V, 28MHz Characteristics
- Output Power : $P_o = 20W_{PEP}$ (Min.)
- Power Gain : $G_p = 12dB$ (Min.)
- Collector Efficiency : $\eta_C = 35%$ (Min.)
- Intermodulation Distortion : $IMD = -30dB$ (Max.)

MAXIMUM RATINGS ($T_c = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CES}	40	V
Collector-Emitter Voltage	V_{CEO}	18	V
Emitter-Base Voltage	V_{EBO}	4	V
Collector Current	I_C	6	A
Collector Power Dissipation	P_C	60	W
Junction Temperature	T_j	175	$^\circ C$
Storage Temperature Range	T_{stg}	-65~175	$^\circ C$



ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ C$)

Weight : 4.0g

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50mA, I_B = 0$	18	—	—	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C = 50mA, V_{EB} = 0$	40	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1mA, I_C = 0$	4	—	—	V
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 5A$ *	20	—	185	
Transition Frequency	f_T	$V_{CE} = 5V, I_C = 0.5A$	—	100	—	MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = 12.5V, I_E = 0$ $f = 1MHz$	—	—	250	pF
Power Gain	G_p	$V_{CC} = 12.5V, f_1 = 28.000$	12.0	—	—	dB
Input Power	P_i	MHz, $f_2 = 28.001MHz$	—	—	1.2	W_{PEP}
Collector Efficiency	η_C	$I_{idle} = 25mA$	35	45	—	%
Intermodulation Distortion	IMD	$P_o = 20W_{PEP}$ (Fig.)	—	—	-30	dB
Series Equivalent Input Impedance	Z_{in}	$V_{CC} = 12.5V, f_1 = 28.000$	—	1.1 -j0.25	—	Ω
Series Equivalent Output Impedance	Z_{out}	MHz, $f_2 = 28.001MHz$ $P_o = 20W_{PEP}$	—	3.0 -j0.75	—	Ω

* Pulse Test: Pulse Width $\leq 100\mu s$, Duty Cycle $\leq 3%$

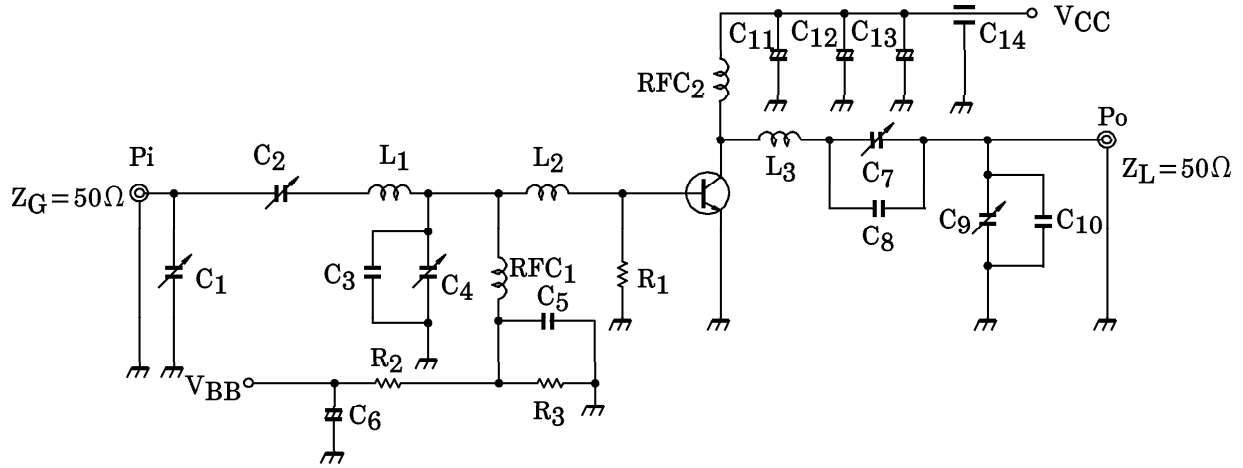
CAUTION

Beryllia Ceramics is used in this product. The dust or vapor can be dangerous to humans. Do not break, cut, crush or dissolve chemically. Dispose of this product properly according to law. Do not intermingle with normal industrial or domestic waste.

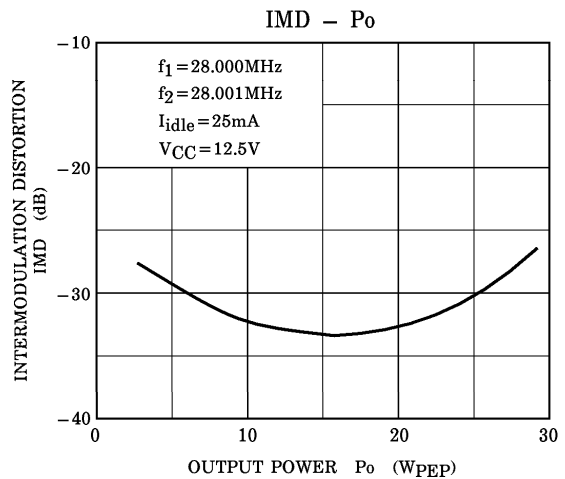
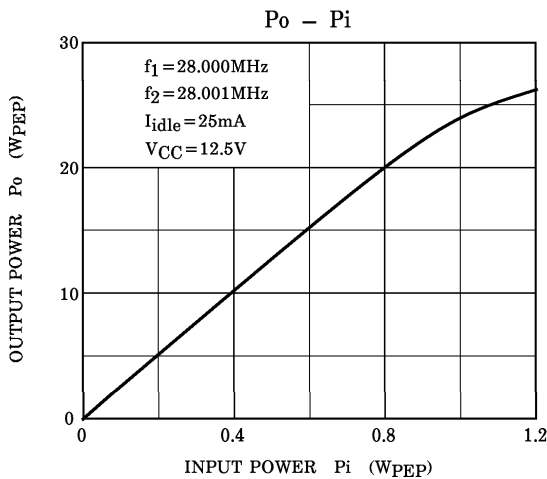
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Fig. Pi TEST CIRCUIT



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|-----------------------------------|---|
| C_1, C_2, C_4, C_7 : 7~150pF | L_1 : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 9ID, 6T |
| C_3 : 250pF | L_2 : $\phi 1$ SILVER PLATED COPPER WIRE, 9ID, 2T |
| C_5 : $0.4\mu F$ | L_3 : $\phi 1.5$ ENAMEL COATED COPPER WIRE, 9ID, 5T |
| C_6 : $100\mu F$ 10WV | RFC_1 : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 9ID, 20T |
| C_8 : 150pF | RFC_2 : $\phi 1.5$ ENAMEL COATED COPPER WIRE, 12ID, 15T |
| C_9 : 10~200pF | R_1 : 5.6Ω (1/2W) |
| C_{10} : 600pF | R_2 : 5Ω (5W) |
| C_{11}, C_{12} : $22\mu F$ 35WV | R_3 : 1.5Ω (10W) |
| C_{13} : $0.04\mu F$ | |
| C_{14} : 1000pF | |
- (FEED THROUGH)



CAUTION

These are only typical curves and devices are not necessarily guaranteed at these curves.

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