

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC2290

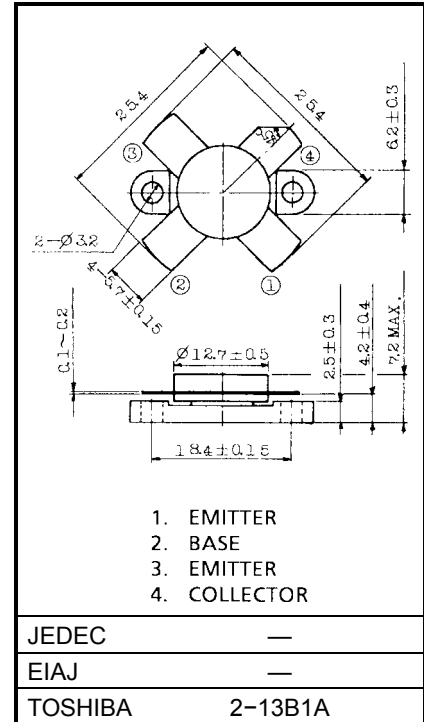
2~30MHz SSB LINEAR POWER AMPLIFIER APPLICATIONS
(LOW SUPPLY VOLTAGE USE)

Unit in mm

- Specified 12.5V, 28MHz Characteristics
- Output Power : $P_o = 60W_{PEP}$ (Min.)
- Power Gain : $G_p = 11.8dB$ (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}	45	V
Collector-Emitter Voltage	V_{CES}	45	V
Collector-Emitter Voltage	V_{CEO}	18	V
Emitter-Base Voltage	V_{EBO}	4	V
Collector Current	I_C	20	A
Collector Power Dissipation	P_C	175	W
Junction Temperature	T_j	175	$^\circ C$
Storage Temperature Range	T_{stg}	-65~175	$^\circ C$



Weight: 5.2g

000707EAA1

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (T_c = 25°C)

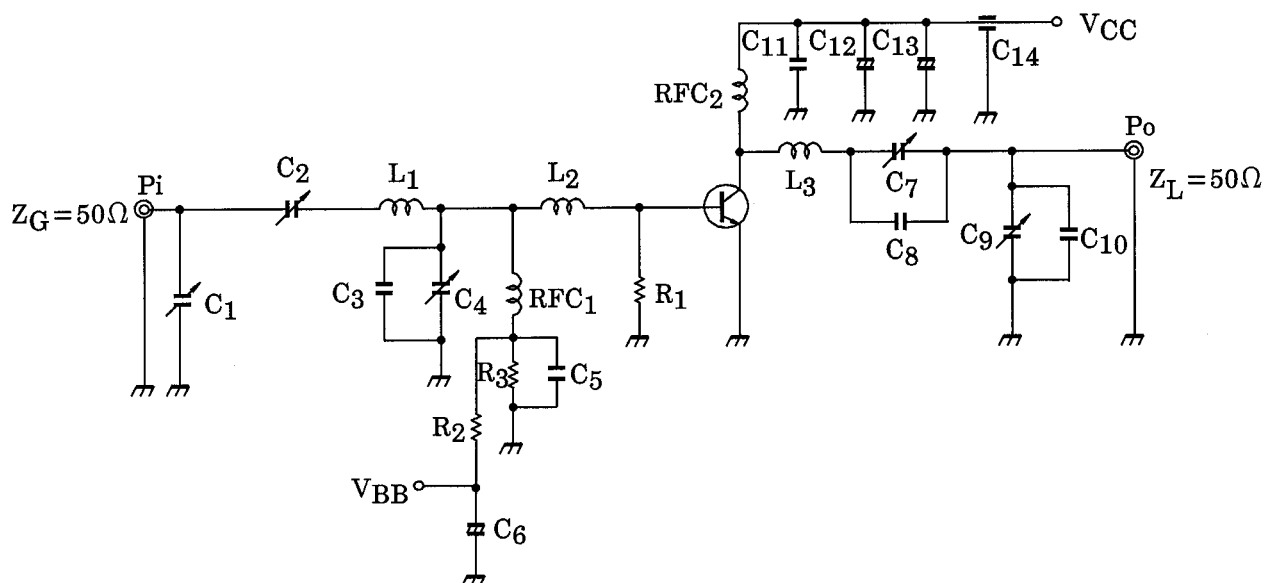
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector-Emitter Breakdown Voltage	V _(BR) CEO	I _C = 100mA, I _B = 0	18	—	—	V
Collector-Emitter Breakdown Voltage	V _(BR) CES	I _C = 100mA, V _{EB} = 0	45	—	—	V
Emitter-Base Breakdown Voltage	V _(BR) EBO	I _E = 1mA, I _C = 0	4	—	—	V
DC Current Gain	h _{FE}	V _{CE} = 5V, I _C = 10A *	10	—	150	—
Collector Output Capacitance	C _{ob}	V _{CB} = 12.5V, I _E = 0 f = 1MHz	—	—	500	pF
Power Gain	G _p	V _{CC} = 12.5V, f ₁ = 28.000MHz, f ₂ = 28.001MHz I _{idle} = 50mA P _o = 60W _{PEP} (Fig.)	11.8	13.8	—	dB
Input Power	P _i		—	2.5	4	W _{PEP}
Collector Efficiency	η _C		35	—	—	%
Intermodulation Distortion	IMD		—	—	-30	dB
Series Equivalent Input Impedance	Z _{in}	V _{CC} = 12.5V, f ₁ = 28.000MHz, f ₂ = 28.001MHz P _o = 60W _{PEP}	—	1.02 -j0.17	—	Ω
Series Equivalent Output Impedance	Z _{out}		—	0.86 -j0.21	—	Ω

* Pulse Test: Pulse Width ≤ 100μs, Duty Cycle ≤ 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.

Fig. Pi TEST CIRCUIT



C_1, C_2, C_4, C_7 : 7~150pF

C_3 : 250pF

C_5 : 0.4 μ F

C_6 : 100 μ F 10WV

C_8 : 150pF

C_9 : 10~200pF

C_{10} : 600pF

C_{11} : 0.4 μ F

C_{12}, C_{13} : 22 μ F 35WV

C_{14} : 1000pF

(FEED THROUGH)

L_1 : ϕ 0.8 ENAMEL COATED COPPER WIRE, 9ID, 6T

L_2 : ϕ 1 SILVER PLATED COPPER WIRE, 9ID, 2T

L_3 : ϕ 1.5 ENAMEL COATED COPPER WIRE, 9ID, 5T

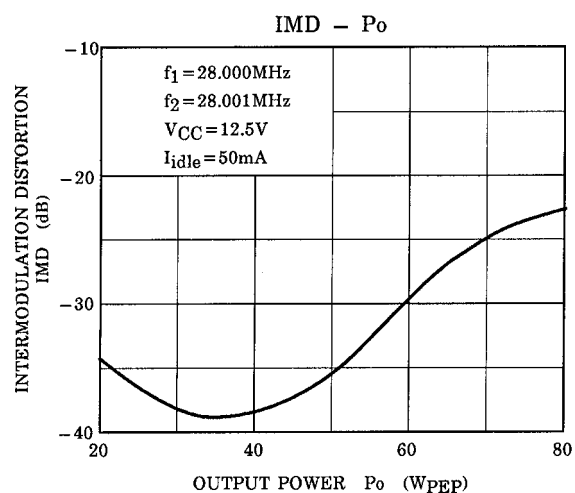
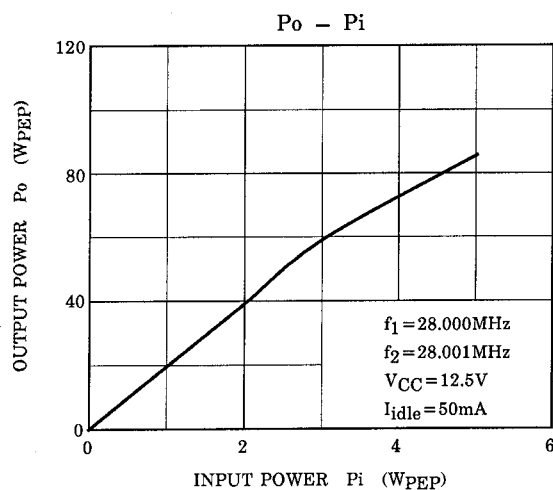
RFC_1 : ϕ 0.8 ENAMEL COATED COPPER WIRE, 9ID, 20T

RFC_2 : ϕ 1.5 ENAMEL COATED COPPER WIRE, 12ID, 15T

R_1 : 5.6 Ω (1/2W)

R_2 : 5 Ω (5W)

R_3 : 1.5 Ω (10W)



CAUTION

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