

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

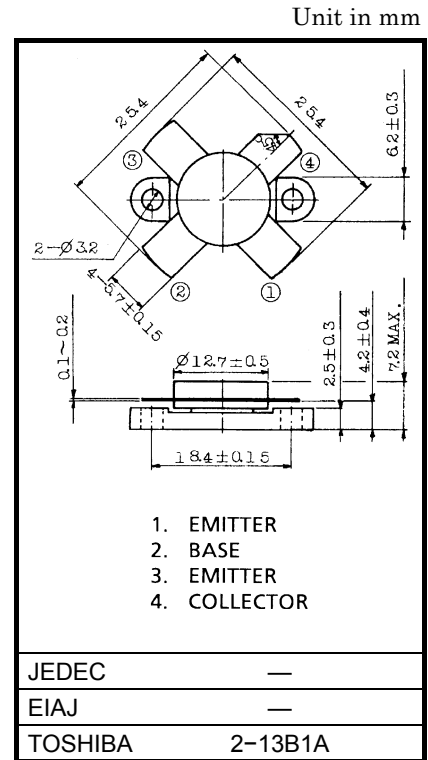
# 2SC2510A

2~30MHz SSB LINEAR POWER AMPLIFIER APPLICATIONS  
(28V SUPPLY VOLTAGE USE)

- Specified 28V, 28MHz Characteristics
- Output Power :  $P_o = 150W_{PEP}$  (Min.)
- Power Gain :  $G_p = 12.2dB$  (Min.)
- Collector Efficiency :  $\eta_C = 35%$  (Min.)
- Intermodulation Distortion:  $IMD = -30dB$  (Max.)

### ABSOLUTE MAXIMUM RATINGS (Tc = 25°C)

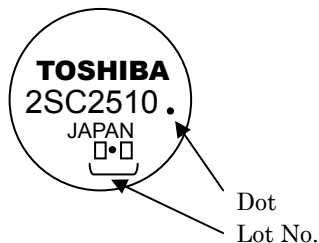
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CES}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	35	V
Emitter-Base Voltage	$V_{EBO}$	4	V
Collector Current	$I_C$	20	A
Collector Power Dissipation	$P_C$	250	W
Junction Temperature	$T_j$	175	°C
Storage Temperature Range	$T_{stg}$	-65~175	°C



Weight: 5.2g

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

### MARKING

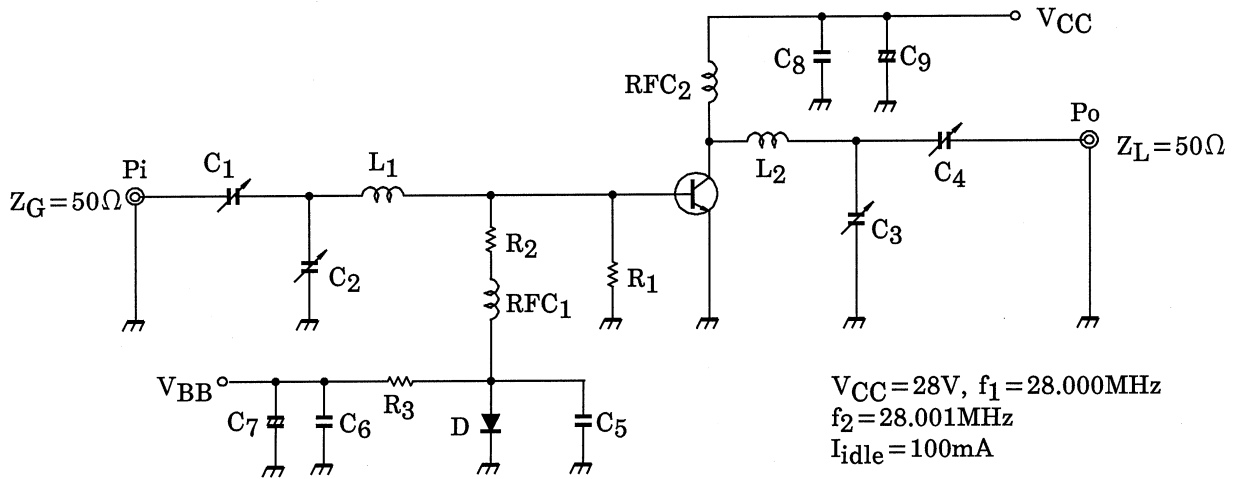


## ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector-Emitter Breakdown Voltage	V <sub>(BR) CEO</sub>	I <sub>C</sub> = 100mA, I <sub>B</sub> = 0	35	—	—	V
Collector-Emitter Breakdown Voltage	V <sub>(BR) CES</sub>	I <sub>C</sub> = 100mA, V <sub>EB</sub> = 0	55	—	—	V
Emitter-Base Breakdown Voltage	V <sub>(BR) EBO</sub>	I <sub>E</sub> = 1mA, I <sub>C</sub> = 0	4	—	—	V
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10A *	10	—	—	
Collector Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 28V, I <sub>E</sub> = 0 f = 1MHz	—	450	600	pF
Power Gain	G <sub>p</sub>	V <sub>CC</sub> = 28V, f <sub>1</sub> = 28.000MHz, f <sub>2</sub> = 28.001MHz I <sub>idle</sub> = 100mA P <sub>o</sub> = 150W <sub>PEP</sub> (Fig.)	12.2	13.3	—	dB
Input Power	P <sub>i</sub>		—	7	9	W <sub>PEP</sub>
Collector Efficiency	η <sub>C</sub>		35	—	—	%
Intermodulation Distortion	IMD		—	—	-30	dB
Series Equivalent Input Impedance	Z <sub>in</sub>		—	1.4 -j0.9	—	Ω
Series Equivalent Output Impedance	Z <sub>out</sub>	—	2.3 -j0.9	—	Ω	

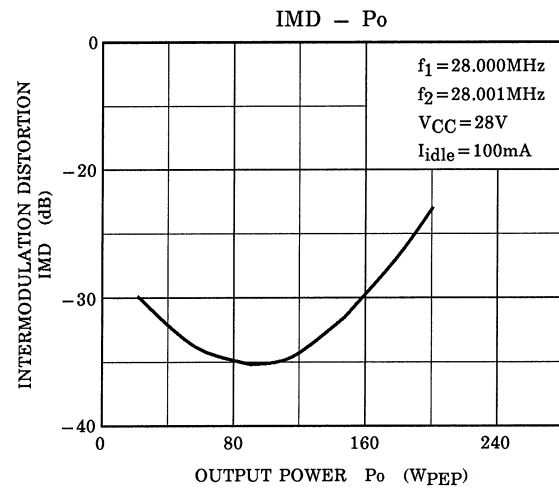
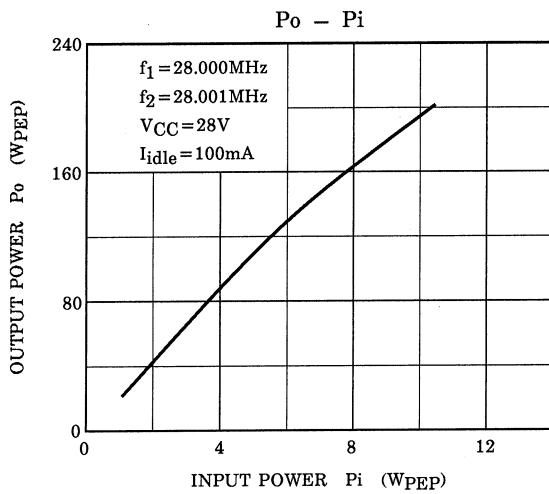
\* Pulse Test: Pulse Width ≤ 100μs, Duty Cycle ≤ 3%

Fig. Pi TEST CIRCUIT



$V_{CC} = 28V$ ,  $f_1 = 28.000MHz$   
 $f_2 = 28.001MHz$   
 $I_{idle} = 100mA$

- |                            |   |
|----------------------------|---|
| $C_1, C_2$ : 7~150pF       | $L_1$ : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 14ID, 4T, 4P                        |
| $C_3, C_4$ : 7~150pF 2KWV  | $L_2$ : $\phi 1.2$ ENAMEL COATED COPPER WIRE, 14ID, 3 1/2T, 3P                    |
| $C_5, C_6$ : 0.022 $\mu$ F | $RFC_1$ : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 10ID, 9T<br>(Ferrite Core TDK K2) |
| $C_7$ : 47 $\mu$ F 10WV    | $RFC_2$ : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 14ID, 20T                         |
| $C_8$ : 0.04 $\mu$ F       | $R_1$ : 10 $\Omega$ (1W)  |
| $C_9$ : 100 $\mu$ F 50WV   | $R_2$ : 2 $\Omega$ (1/2W)   |
|                            | $R_3$ : 10 $\Omega$ (5W)  |
|                            | D : 1S1555  |



## CAUTION

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

**RESTRICTIONS ON PRODUCT USE**

20070701-EN GENERAL

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