

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

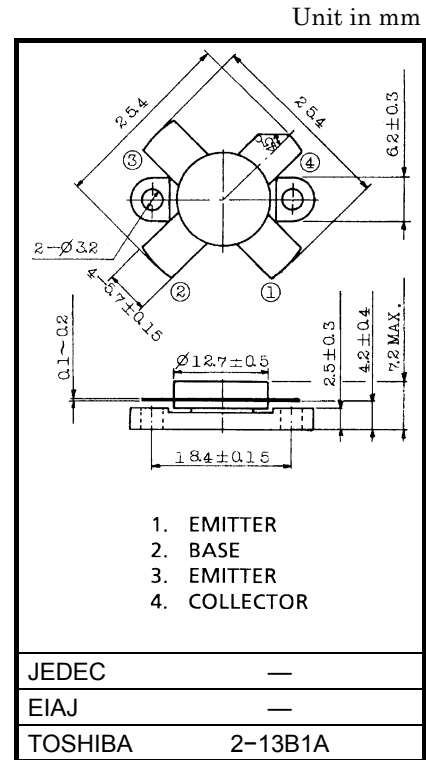
2SC2510A

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 ($T_c = 25^\circ C$)

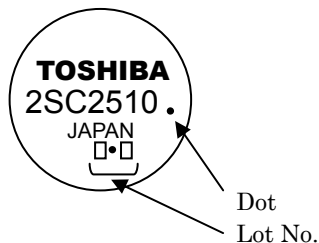
| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage | V_{CBO} | 60 | V |
| Collector-Emitter Voltage | V_{CES} | 60 | V |
| Collector-Emitter Voltage | V_{CEO} | 35 | V |
| Emitter-Base Voltage | V_{EBO} | 4 | V |
| Collector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



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

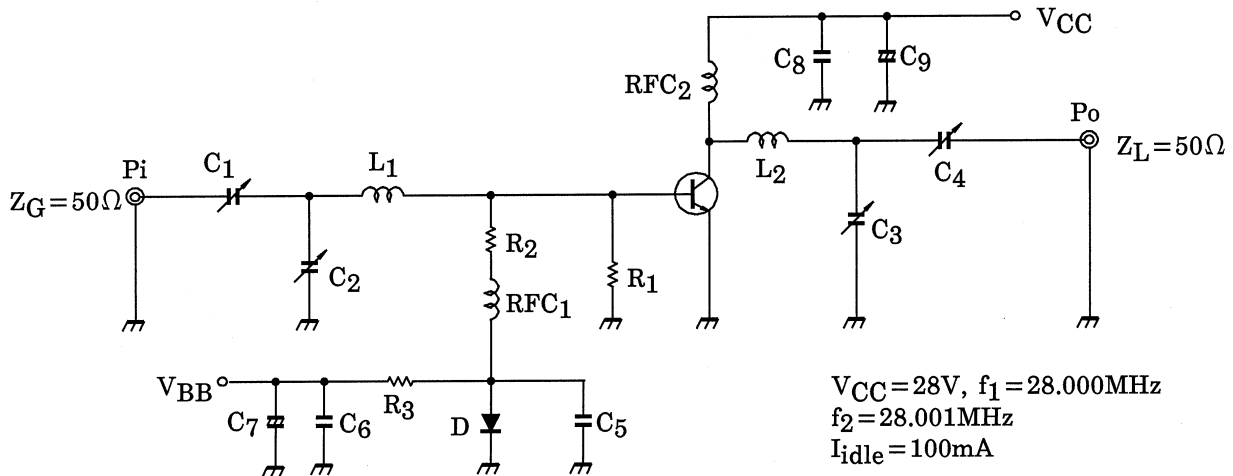


ELECTRICAL CHARACTERISTICS (T_c = 25°C)

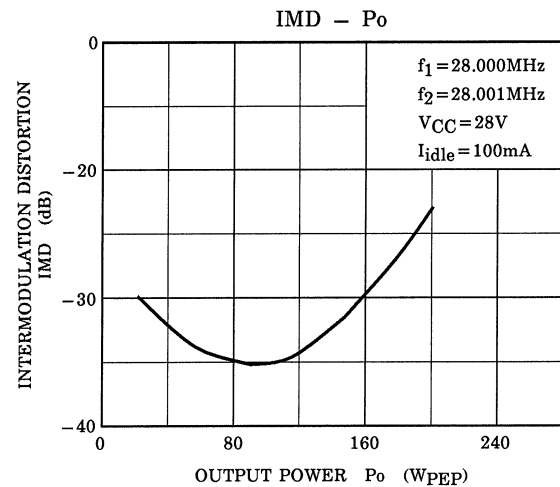
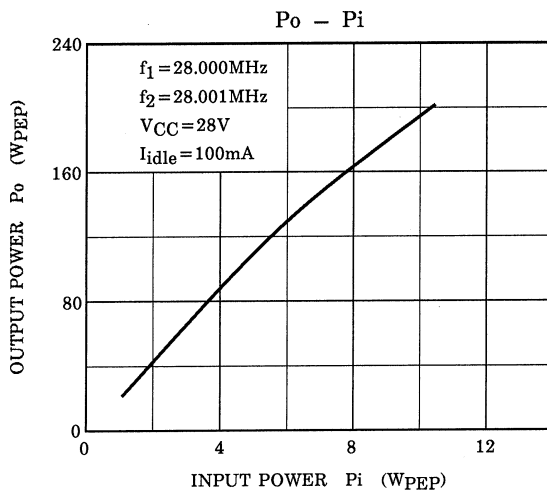
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------|-----------------------|--|------|--------------|------|------------------|
| Collector-Emitter Breakdown Voltage | V _(BR) CEO | I _C = 100mA, I _B = 0 | 35 | — | — | V |
| Collector-Emitter Breakdown Voltage | V _(BR) CES | I _C = 100mA, V _{EB} = 0 | 55 | — | — | 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 | — | — | |
| Collector Output Capacitance | C _{ob} | V _{CB} = 28V, I _E = 0 f = 1MHz | — | 450 | 600 | pF |
| Power Gain | G _p | V _{CC} = 28V, f ₁ = 28.000MHz, f ₂ = 28.001MHz I _{idle} = 100mA P _o = 150W _{PEP} (Fig.) | 12.2 | 13.3 | — | dB |
| Input Power | P _i | | — | 7 | 9 | W _{PEP} |
| Collector Efficiency | η _C | | 35 | — | — | % |
| Intermodulation Distortion | IMD | | — | — | -30 | dB |
| Series Equivalent Input Impedance | Z _{in} | V _{CC} = 28V, f ₁ = 28.000MHz, f ₂ = 28.001MHz, P _o = 150W _{PEP} | — | 1.4 -j0.9 | — | Ω |
| Series Equivalent Output Impedance | Z _{out} | | — | 2.3 -j0.9 | — | Ω |

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

Fig. Pi TEST CIRCUIT



| | | | |
|------------|--------------------|---------|---|
| 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 μ F | RFC_1 | : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 10ID, 9T (Ferrite Core TDK K2) |
| C_7 | : 47 μ F 10WV | RFC_2 | : $\phi 0.8$ ENAMEL COATED COPPER WIRE, 14ID, 20T |
| C_8 | : 0.04 μ F | R_1 | : 10 Ω (1W) |
| C_9 | : 100 μ F 50WV | R_2 | : 2 Ω (1/2W) |
| | | R_3 | : 10 Ω (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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