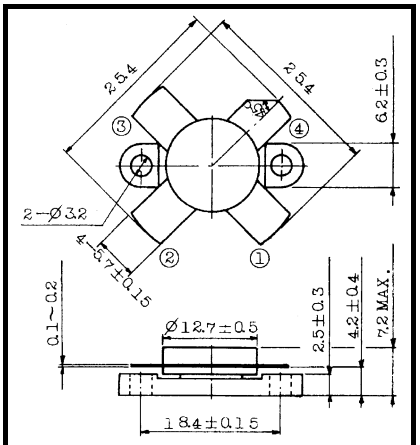
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC2510A

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

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2−13B1A

Weight: 5.2g

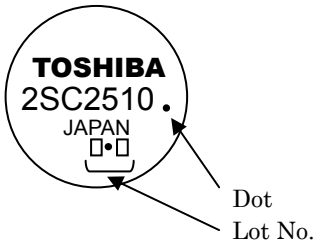
- Specified 28V, 28MHz Characteristics
- Output Power : P_O = 150W$_{PEP}$ (Min.)
- Power Gain : G_p = 12.2dB (Min.)
- Collector Efficiency : η_C = 35% (Min.)
- Intermodulation Distortion: IMD = −30dB (Max.)

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

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

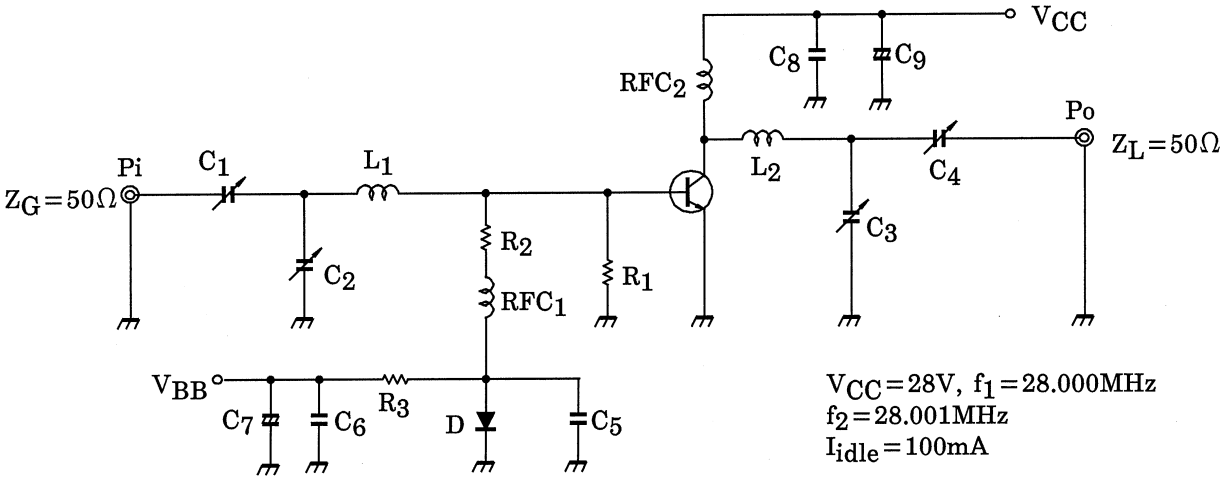


ELECTRICAL CHARACTERISTICS (Tc = 25°C)

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 Po = 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, Po = 150W_{PEP}	—	1.4 −j0.9	—	Ω
Series Equivalent Output Impedance	Z_{out}		—	2.3 −j0.9	—	Ω

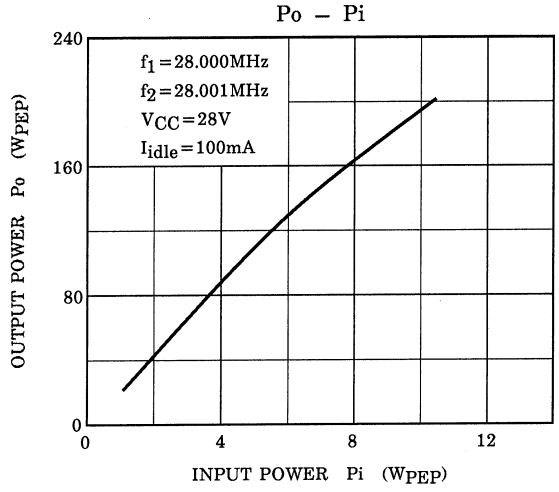
* Pulse Test: Pulse Width ≤ 100μs, Duty Cycle ≤ 3%

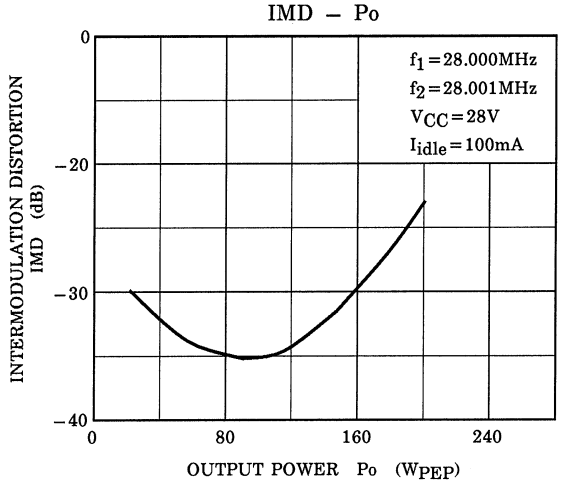
Fig. Pi TEST CIRCUIT



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

C_1, C_2	: 7~150pF	L_1	: ϕ0.8 ENAMEL COATED COPPER WIRE, 14ID, 4T, 4P
C3, C4	: 7~150pF 2KWV	L_2	: ϕ1.2 ENAMEL COATED COPPER WIRE, 14ID, 3 1/2T, 3P
C_5, C6	: 0.022μF	RFC_1	: ϕ0.8 ENAMEL COATED COPPER WIRE, 10ID, 9T (Ferrite Core TDK K2)
C_7	: 47μF 10WV		
C_8	: 0.04μF	RFC_2	: ϕ0.8 ENAMEL COATED COPPER WIRE, 14ID, 20T
C_9	: 100μF 50WV	R_1	: 10Ω (1W)
		R_2	: 2Ω (1/2W)
		R_3	: 10Ω (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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