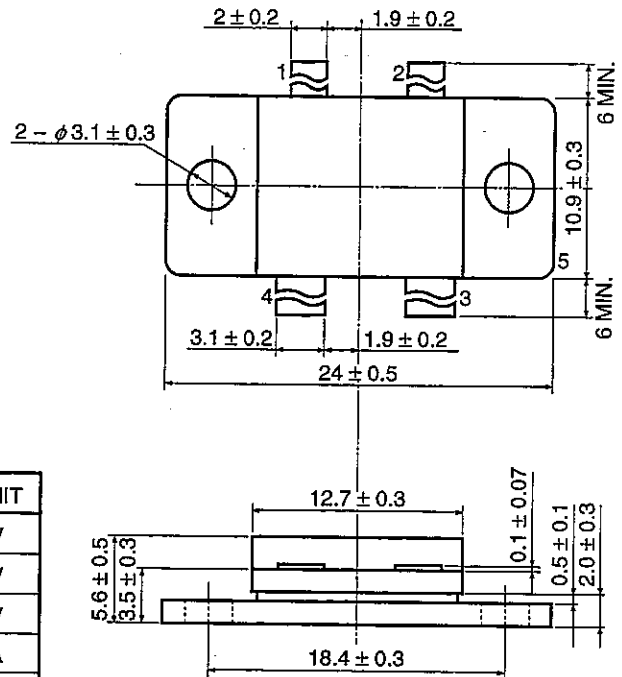


NPN SILICON EPITAXIAL TRANSISTOR  
FOR 230-MHz WIDEBAND POWER AMPLIFIER  
INDUSTRIAL USE

FEATURES

- High gain and high power output at 230 MHz  
 $P_{out} = 140 \text{ W}$  @  $V_{CC} = 28 \text{ V}$ ,  $P_{in} = 10 \text{ W}$ , class AB
- Push-pull structure allows easy design of wideband amplifier
- Internal emitter balance resistor
- Withstand up to  $VSWR = \infty$
- Internal impedance matching circuit
- High reliability due to gold electrodes

PACKAGE DIMENSIONS (in millimeters)



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25 \text{ }^\circ\text{C}$ )

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	$V_{CBO}$	55	V
Collector to Emitter Voltage	$V_{CEO}$	32	V
Emitter to Base Voltage	$V_{EBO}$	3	V
Collector Current	$I_C$	24	A
Thermal Resistance (junction to case)	$R_{th(j-c)}$	0.63	$^\circ\text{C/W}$
Total Power Dissipation	$P_T (T_C = 25 \text{ }^\circ\text{C})$	280	W
Junction Temperature	$T_j$	200	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$

PIN CONNECTIONS

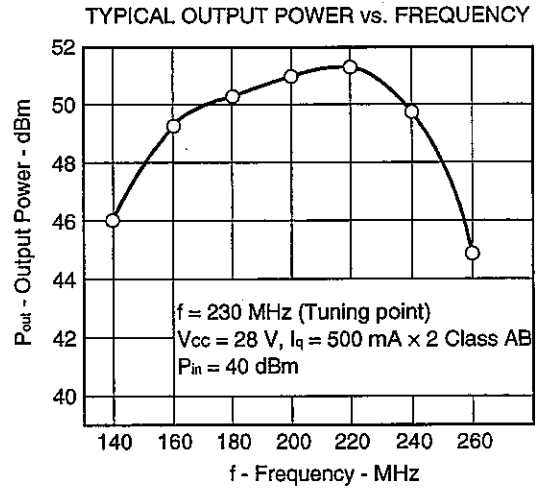
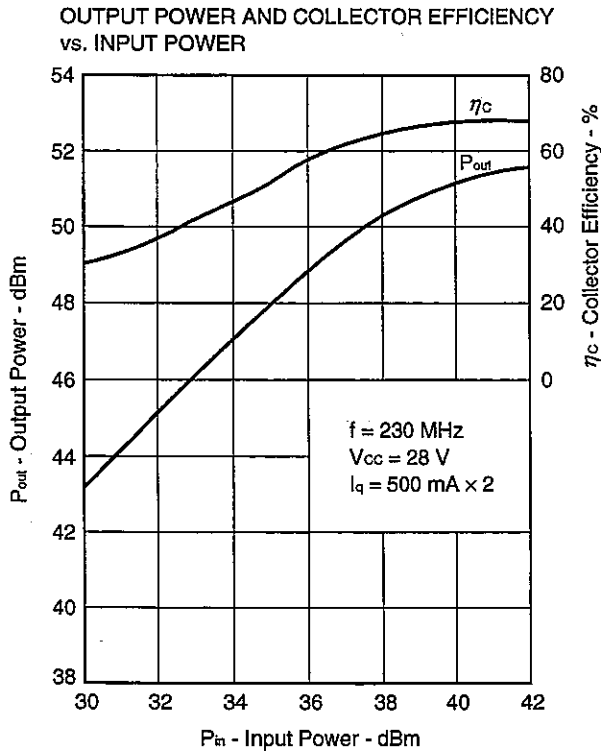
1. Collector
2. Collector
3. Base
4. Base
5. Emitter (heat sink)

ELECTRICAL CHARACTERISTICS ( $T_A = 25 \text{ }^\circ\text{C}$ )

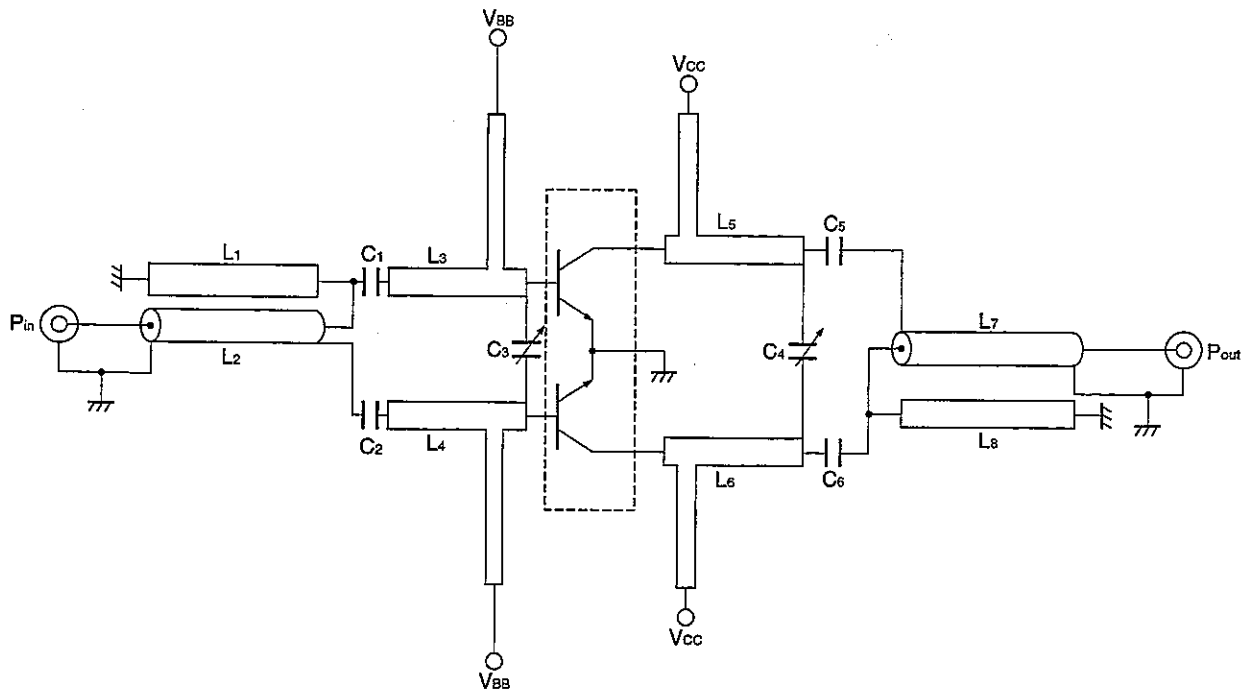
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30 \text{ V}$ , $I_E = 0$			4	mA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 2 \text{ V}$ , $I_C = 0$			4	mA
DC Current Gain	$h_{FE}$ <small>Note</small>	$V_{CE} = 10 \text{ V}$ , $I_C = 2 \text{ A}$ (pulse)	20	60	150	-
Output Power	$P_{out}$	$f = 230 \text{ MHz}$ , $V_{CC} = 28 \text{ V}$ $P_{in} = 10 \text{ W}$ (40 dBm)	50	51.4		dBm
			100	140		W
Collector Efficiency	$\eta_C$	$I_q = 500 \text{ mA} \times 2$ , class AB	55	65		%
Feedback Capacitance	$C_{re}$ <small>Note</small>	$V_{CB} = 28 \text{ V}$ , $f = 1 \text{ MHz}$		170	240	pF

Note Per unit

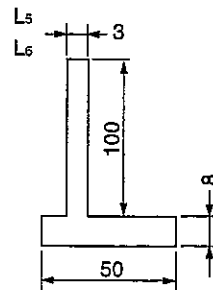
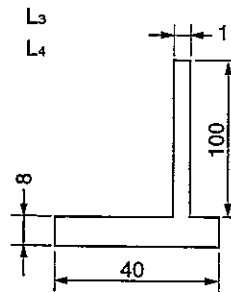
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)



APPLICATION CIRCUIT EXAMPLE



- C<sub>1</sub> = C<sub>2</sub> = 51 pF
- C<sub>3</sub> = 40 pF
- C<sub>4</sub> = 35 pF
- C<sub>5</sub> = C<sub>6</sub> = 39 pF
- L<sub>1</sub> = L<sub>8</sub> = Micro-strip line 70 × 5 mm
- L<sub>2</sub> = L<sub>7</sub> = 50 Ω Semi-rigid cable 70 mm
- L<sub>3 to 6</sub> = Micro-strip line (in millimeters)



Substrate material: Glass-epoxy t = 1.6 mm

**CAUTIONS ON HANDLING DEVICES**

This device employs beryllia ceramics (beryllium oxide) internally. Inhalation of beryllium oxide powder or vapor into the human respiratory system may cause hazards such as breathing difficulties and other problems.

Therefore, do not disintegrate or chemically process this device.

Moreover, when disposing of this device, be sure to separate it from general industrial waste and domestic garbage.

[MEMO]



[MEMO]



[MEMO]

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.

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