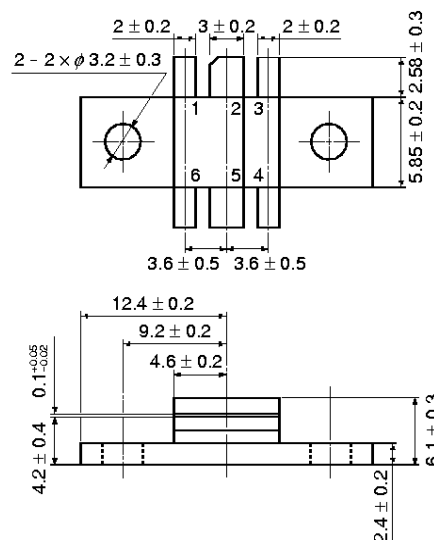


NPN SILICON EPITAXIAL TRANSISTOR
FOR 1500-MHz BAND POWER AMPLIFIER
INDUSTRIAL USE

FEATURES

- High efficiency, high power output and excellent linearity obtainable at 1500-MHz band
 $P_{out} = 1.0 \text{ W}$, Gain = 8.0 dB TYP.
 @ $V_{CC} = 13.5 \text{ V}$, $I_q = 5 \text{ mA}$, class AB
- Internal emitter balance resistor

PACKAGE DIMENSIONS (in millimeters)



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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	V_{CBO}	35	V
Collector to Emitter Voltage	V_{CEO}	18	V
Emitter to Base Voltage	V_{EBO}	2.5	V
Collector Current	I_C	0.5	A
Thermal Resistance (junction to case)	$R_{th(j-c)}$	21	$^\circ\text{C/W}$
Total Power Dissipation	$P_T (T_C = 25 \text{ }^\circ\text{C})$	8.3	W
Junction Temperature	T_j	200	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

PIN CONNECTIONS

- | | |
|------------|--------------|
| 1. Emitter | 4. Emitter |
| 2. Base | 5. Collector |
| 3. Emitter | 6. Emitter |

Flange is connected to the emitter

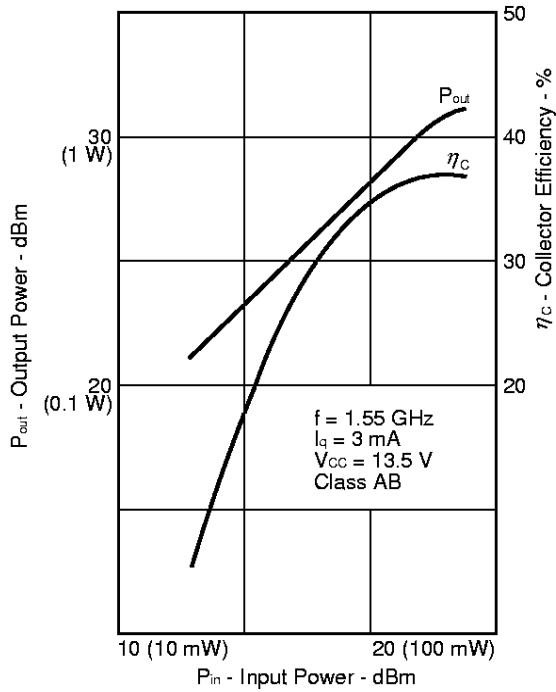
ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 20 \text{ V}$, $I_E = 0$			0.1	mA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1.5 \text{ V}$, $I_C = 0$			0.1	mA
DC Current Gain	h_{FE}	$V_{CE} = 10 \text{ V}$, $I_C = 0.1 \text{ A}$ (pulse)	20	60	200	-
Output Capacitance	C_{ob} ^{Note}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$			5	pF
Output Power	P_{out}	$V_{CC} = 13.5 \text{ V}$, $I_q = 3 \text{ mA}$ $f = 1 \text{ 550 MHz}$	29.4	30		dBm
			0.87	1.0		W
Collector Efficiency	η_c	$P_{in} = 22 \text{ dBm}$ (0.16 W)	30	36		%

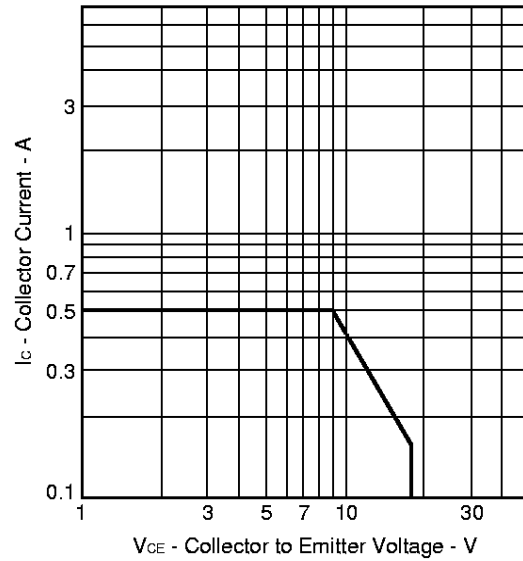
Note Emitter and case are grounded

TYPICAL CHARACTERISTICS (T_A = 25 °C)

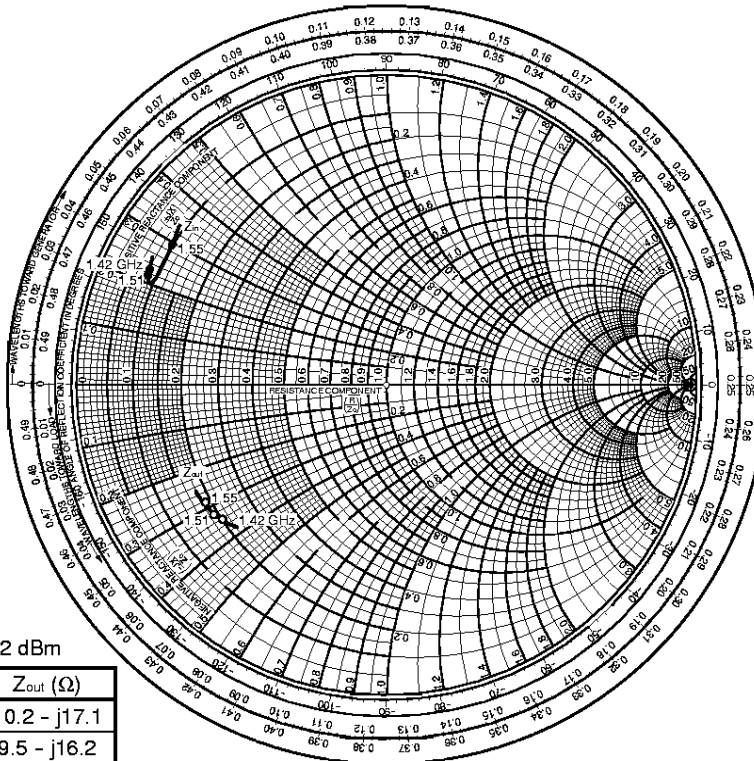
OUTPUT POWER AND COLLECTOR EFFICIENCY vs. INPUT POWER CURVE



SAFE OPERATING AREA



INPUT AND OUTPUT IMPEDANCE DATA



V_{CC} = 13.5 V, I_q = 3 mA, P_{in} = 22 dBm

f (GHz)	Z _{in} (Ω)	Z _{out} (Ω)
1.42	3.9 + j11.5	10.2 - j17.1
1.51	3.9 + j11.0	9.5 - j16.2
1.55	4.1 + j15.2	9.3 - j14.3

Z₀ = 50 Ω

[MEMO]

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.

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NEC devices are classified into the following three quality grades:

"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

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.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.