To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

SILICON POWER TRANSISTOR

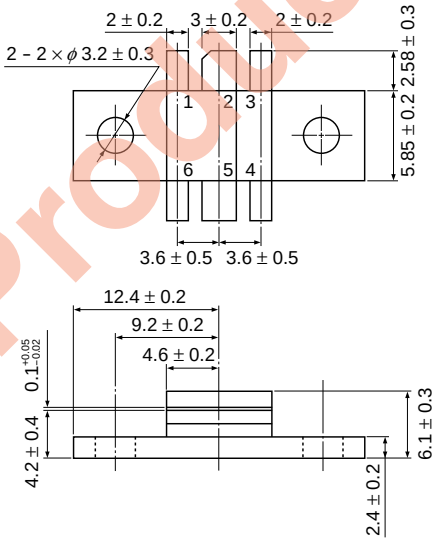
2SC3817

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 W, Gain = 8.0 dB TYP.
  @ V_{CC} = 13.5 V, I_q = 5 mA, class AB
- Internal emitter balance resistor

PACKAGE DIMENSIONS (in millimeters)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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)	$R_{th\ (j\text{-}c)}$	21	°C/W
Total Power Dissipation	$P_{T\ (T_C = 25\ °C)}$	8.3	W
Junction Temperature	T_j	200	°C
Storage Temperature	T_{stg}	-65 to +150	°C

PIN CONNECTIONS

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

Flange is connected to the emitter

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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

Note Emitter and case are grounded

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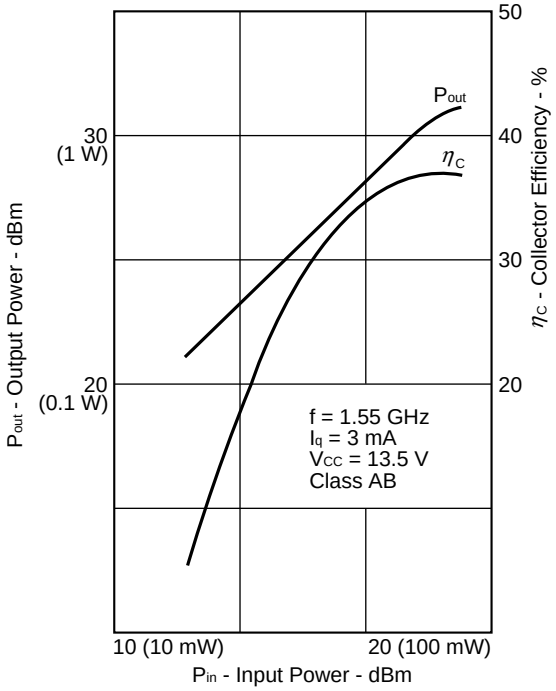
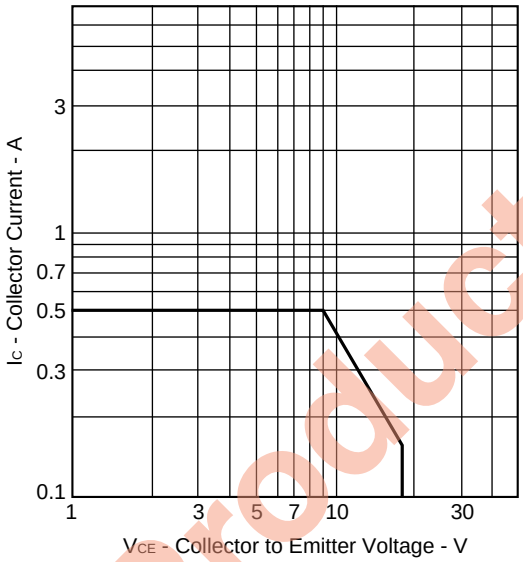
TYPICAL CHARACTERISTICS (T_A = 25 °C)

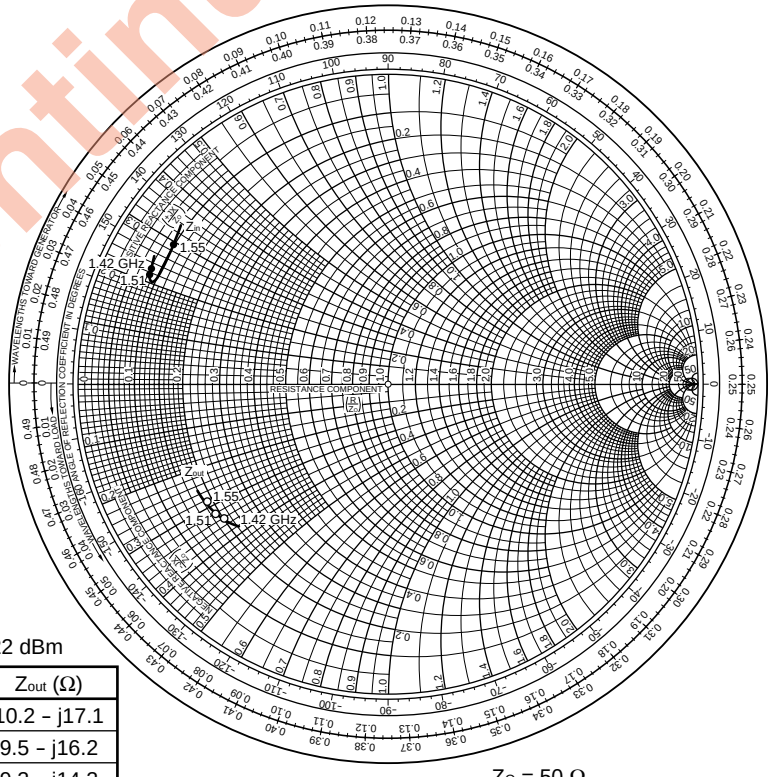
OUTPUT POWER AND COLLECTOR EFFICIENCY vs. INPUT POWER CURVE



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

Z_O = 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.

M4 96.5