

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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HIGH SPEED SWITCHING  
NPN SILICON EPITAXIAL TRANSISTOR  
POWER MINI MOLD

DESCRIPTION

The 2SC3736 is designed for power amplifier and high speed switching applications.

FEATURES

- High speed, high voltage switching
- Low collector saturation voltage
- Complementary to the 2SA1460 PNP transistor.

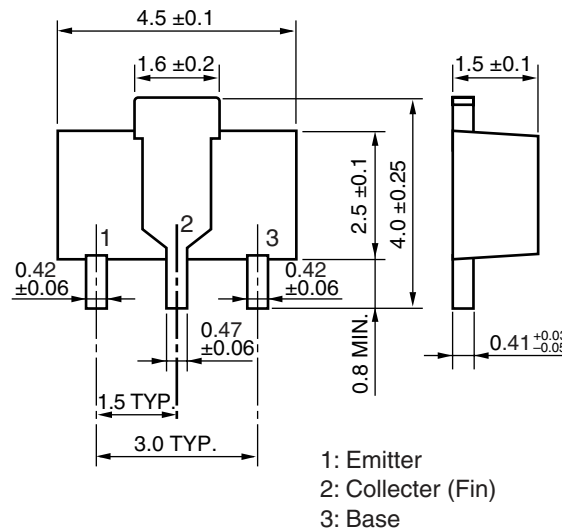
ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Collector to Base Voltage	V <sub>CBO</sub>	80	V
Collector to Emitter Voltage	V <sub>CEO</sub>	45	V
Emitter to Base Voltage	V <sub>EBO</sub>	5.0	V
Collector Current (DC)	I <sub>C(DC)</sub>	1.0	A
Collector Current (pulse) <sup>Note1</sup>	I <sub>C(pulse)</sub>	2.0	A
Total Power Dissipation <sup>Note2</sup>	P <sub>T</sub>	2.0	W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

Notes 1. PW ≤ 10 ms, Duty Cycle ≤ 50%

2. Mounted on ceramic substrate of 16 cm<sup>2</sup> x 0.7 mm

★ PACKAGE DRAWING (Unit: mm)



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

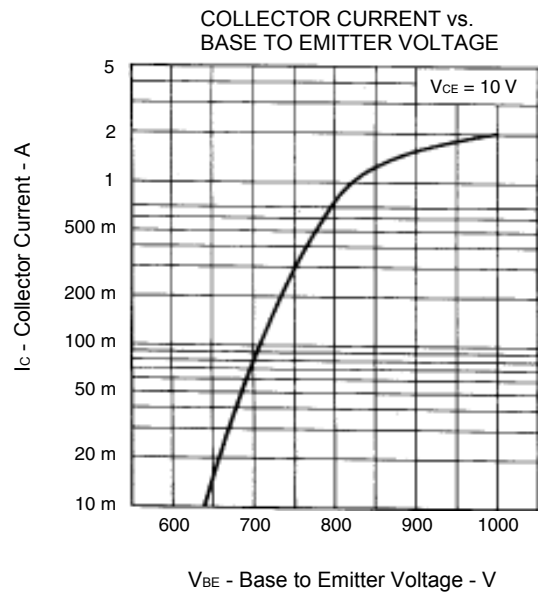
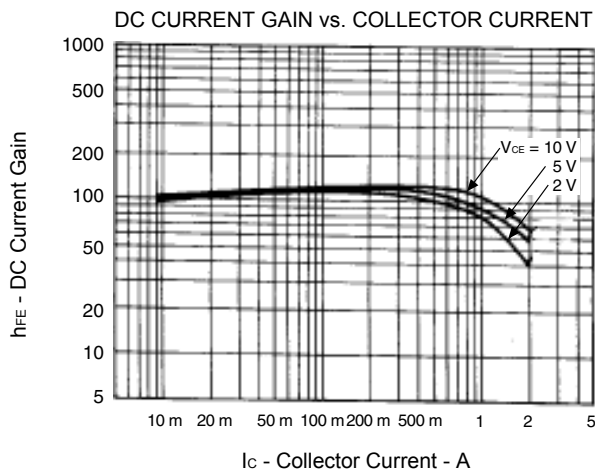
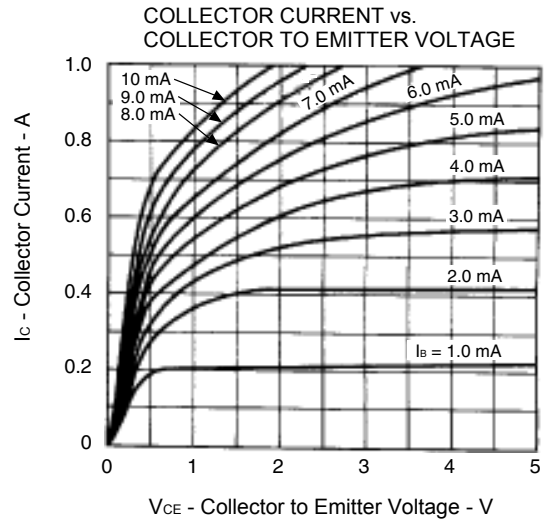
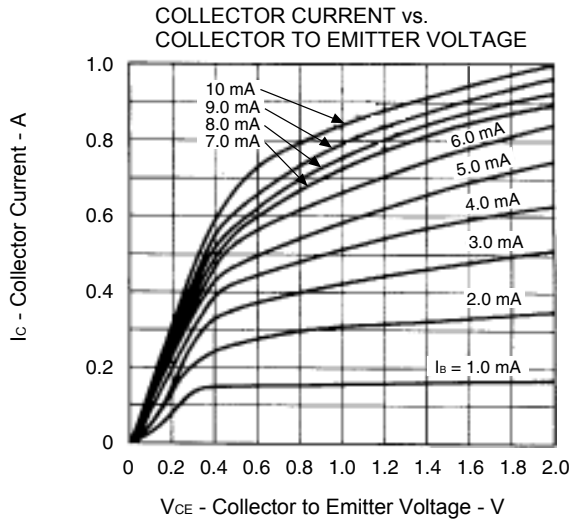
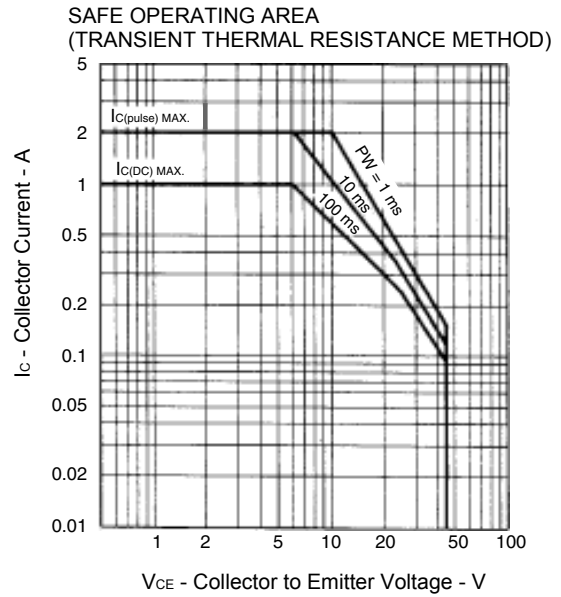
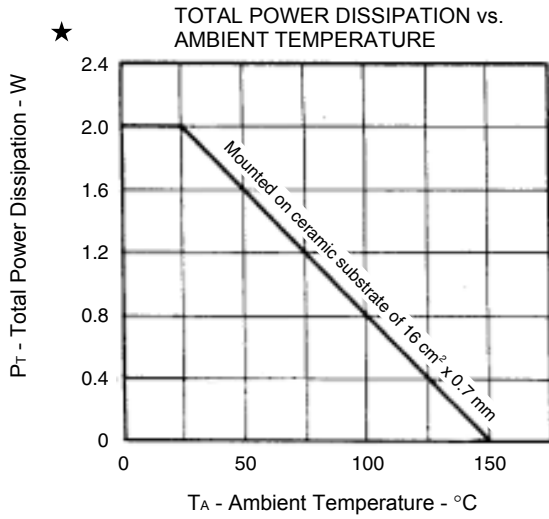
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I <sub>CES</sub>	V <sub>CE</sub> = 45 V, R <sub>BE</sub> = 0 Ω			0.5	μA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 4.0 V, I <sub>C</sub> = 0 A			0.5	μA
★ DC Current Gain <sup>Note</sup>	h <sub>FE1</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 50 mA	60		200	
	h <sub>FE2</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 500 mA	60			
Collector Saturation Voltage <sup>Note</sup>	V <sub>CE(sat)</sub>	I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA		0.17	0.4	V
Base Saturation Voltage <sup>Note</sup>	V <sub>BE(sat)</sub>			0.90	1.2	V
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 10 V, I <sub>E</sub> = -100 mA	300	380		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0 MHz		6.7	10	pF
Turn-on Time	t <sub>on</sub>	I <sub>C</sub> = 500 mA, I <sub>B1</sub> = -I <sub>B2</sub> ≐ 50 mA		20	40	ns
Storage Time	t <sub>stg</sub>			55	80	ns
Turn-off Time	t <sub>off</sub>			72	100	ns

**Note** Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2%

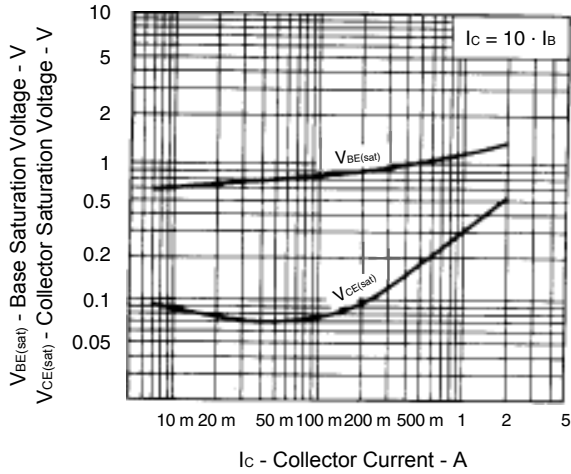
**h<sub>FE</sub> CLASSIFICATION**

MARKING	OL	OK
h <sub>FE1</sub>	60 to 120	100 to 200

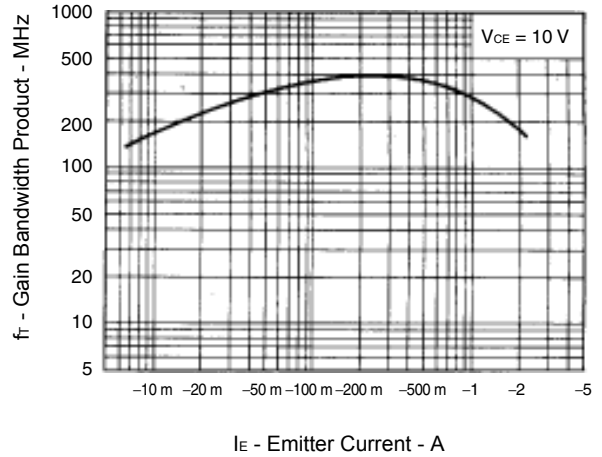
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



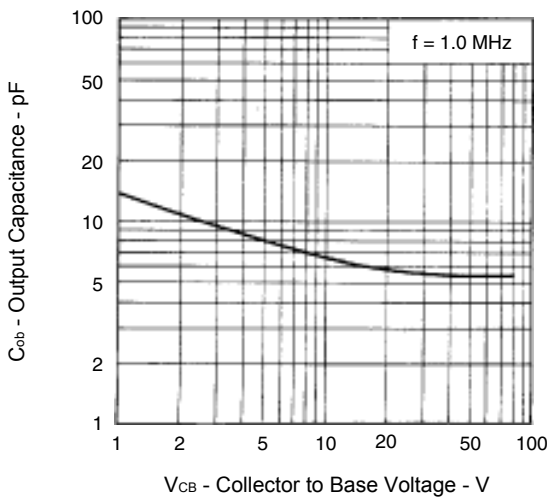
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



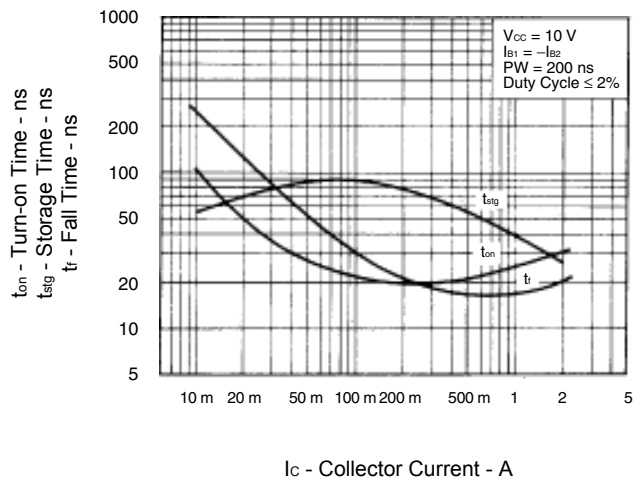
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



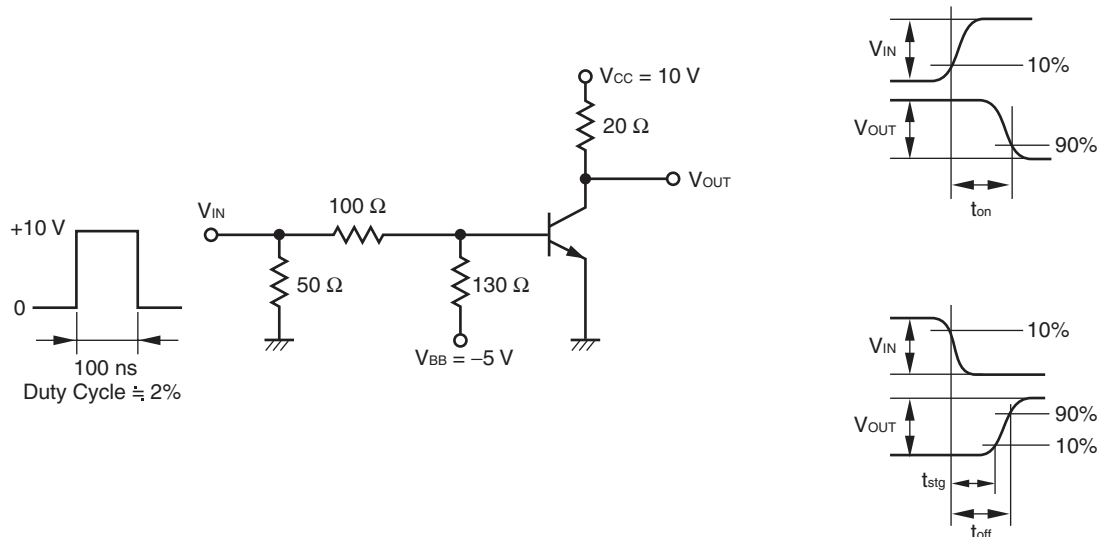
OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



★ SWITCHING TIME vs. COLLECTOR CURRENT



SWITCHING TIME TEST CIRCUIT



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