

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

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

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NPN SILICON EPITAXIAL TRANSISTOR  
FOR LOW-FREQUENCY POWER AMPLIFIERS AND MID-SPEED SWITCHING

FEATURES

- Large current capacity and low  $V_{CE(sat)}$ :  
 $I_{C(DC)} = 5.0 \text{ A}$ ,  $I_{C(pulse)} = 8.0 \text{ A}$   
 $V_{CE(sat)} = 0.1 \text{ V TYP. (@ } I_C = 2.0 \text{ A, } I_B = 0.2 \text{ A)}$
- Large power dissipation TO-126 type power transistor  
 $P_T = 1.3 \text{ W (@ } T_a = 25^\circ\text{C)}$ ,  $20 \text{ W (@ } T_c = 25^\circ\text{C)}$
- Complementary transistor: 2SB1151

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	60	V
Collector to emitter voltage	$V_{CEO}$	60	V
Emitter to base voltage	$V_{EBO}$	7.0	V
Collector current (DC)	$I_{C(DC)}$	5.0	A
Collector current (pulse)	$I_{C(pulse)^*}$	8.0	A
Base current (DC)	$I_{B(DC)}$	1.0	A
Total power dissipation	$P_T (T_a = 25^\circ\text{C})$	1.3	W
Total power dissipation	$P_T (T_c = 25^\circ\text{C})$	20	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*  $PW \leq 10 \text{ ms}$ , duty cycle  $\leq 50\%$

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

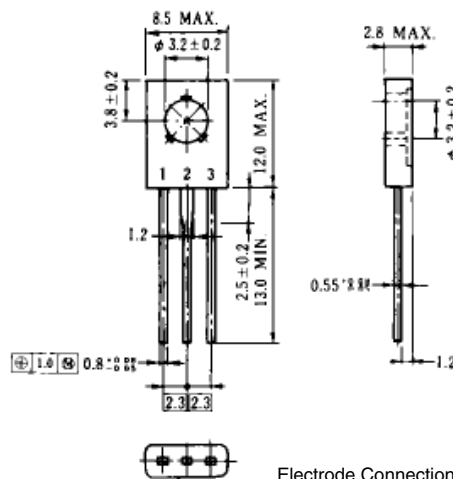
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 50 \text{ V, } I_E = 0$			10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 7.0 \text{ V, } I_C = 0$			10	$\mu\text{A}$
DC current gain	$h_{FE1}^{**}$	$V_{CE} = 1.0 \text{ V, } I_C = 0.1 \text{ A}$	60			
DC current gain	$h_{FE2}^{**}$	$V_{CE} = 1.0 \text{ V, } I_C = 2.0 \text{ A}$	100		400	
DC current gain	$h_{FE3}^{**}$	$V_{CE} = 1.0 \text{ V, } I_C = 5.0 \text{ A}$	50			
Collector saturation voltage	$V_{CE(sat)}^{**}$	$I_C = 2.0 \text{ A, } I_B = 0.2 \text{ A}$		0.1	0.3	V
Base saturation voltage	$V_{BE(sat)}^{**}$	$I_C = 2.0 \text{ A, } I_B = 0.2 \text{ A}$		0.9	1.2	V
Turn-on time	$t_{on}$	$I_C = 2.0 \text{ A, } I_{B1} = -I_{B2} = 0.2 \text{ A}$		0.2	1.0	$\mu\text{s}$
Storage time	$t_{stg}$	$R_L = 5.0 \Omega, V_{CC} \equiv 10 \text{ V}$		1.1	2.5	$\mu\text{s}$
Fall time	$t_f$			0.2	1.0	$\mu\text{s}$

\*\* Pulse test  $PW \leq 350 \mu\text{s}$ , duty cycle  $\leq 2\%$

$h_{FE}$  CLASSIFICATION

Marking	M	L	K
$h_{FE2}$	100 to 200	160 to 320	200 to 400

PACKAGE DRAWING (UNIT: mm)

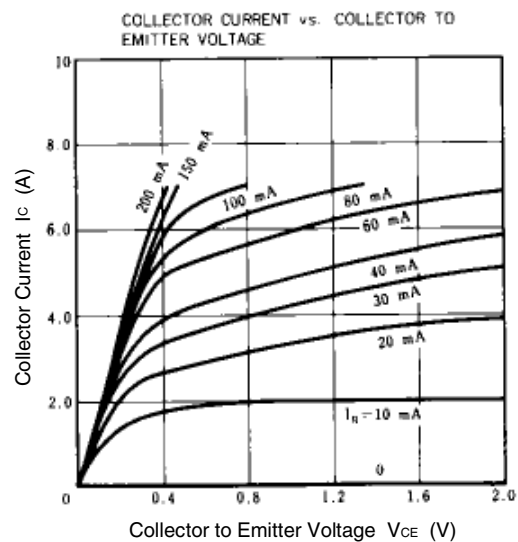
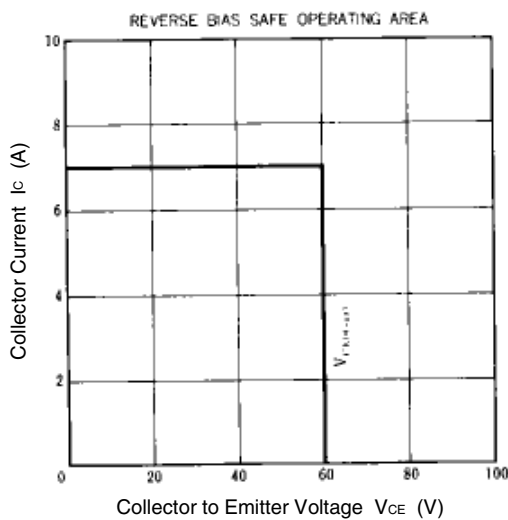
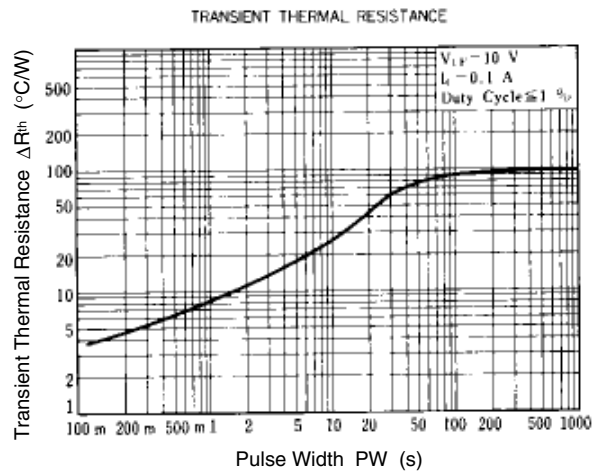
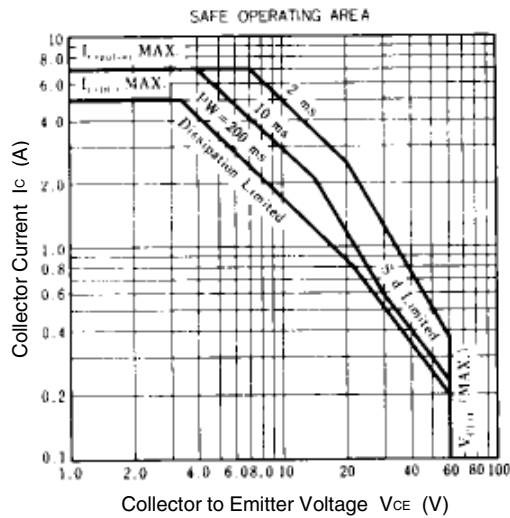
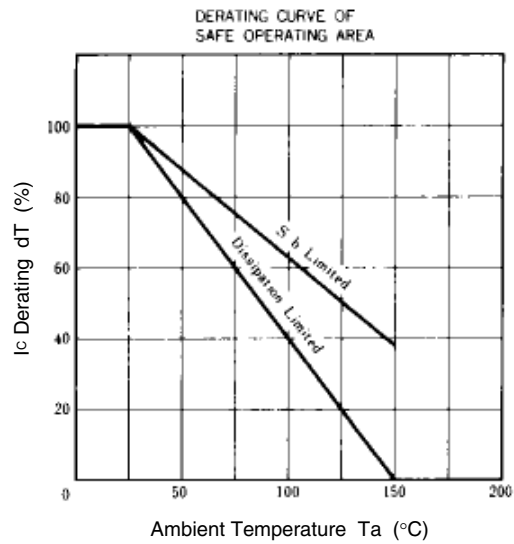
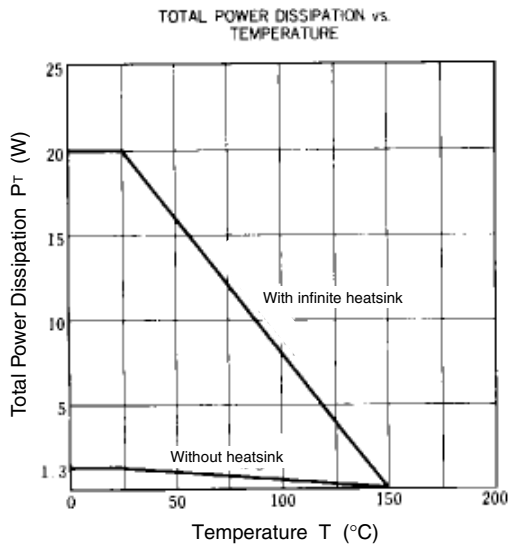


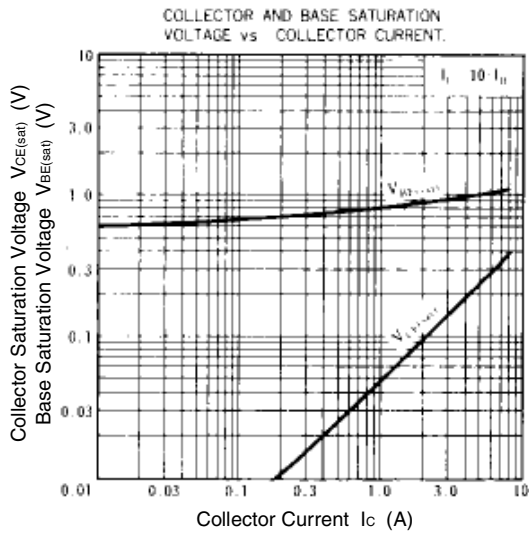
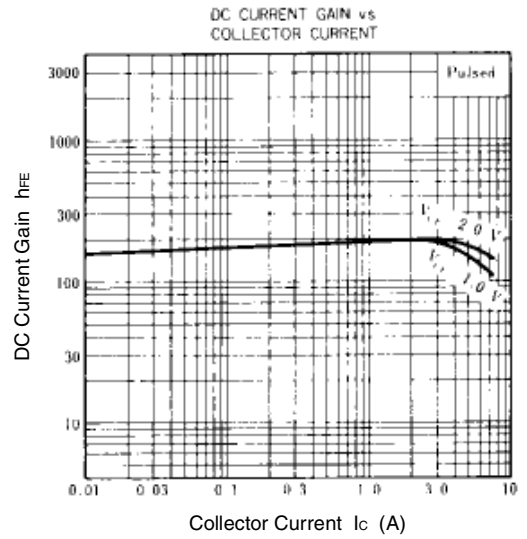
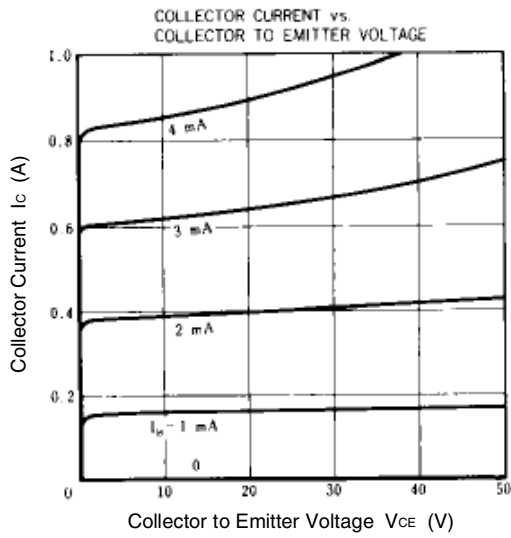
Electrode Connection

1. Emitter (E)
2. Collector (C)
3. Base (B)

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