

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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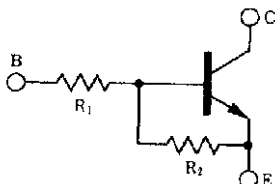
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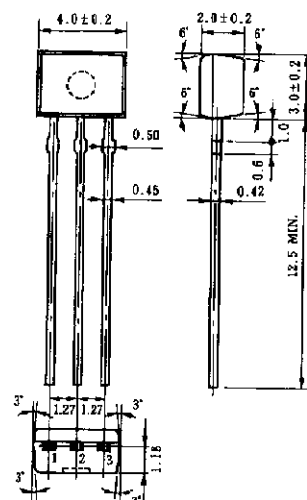
on-chip resistor NPN silicon epitaxial transistor  
For mid-speed switching

FEATURES

- On-chip bias resistor  
( $R_1 = 1.0\text{ k}\Omega$ ,  $R_2 = 10\text{ k}\Omega$ )
- Complementary transistor with BN1A3Q



PACKAGE DRAWING (UNIT: mm)



Electrode Connection  
1. Emitter  
2. Collector  
3. Base

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	$V_{CEO}$	50	V
Emitter to base voltage	$V_{EBO}$	5	V
Collector current (DC)	$I_{C(DC)}$	100	mA
Collector current (Pulse)	$I_{C(pulse)}$ *	200	mA
Total power dissipation	$P_T$	250	mW
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  $\leq 50\%$

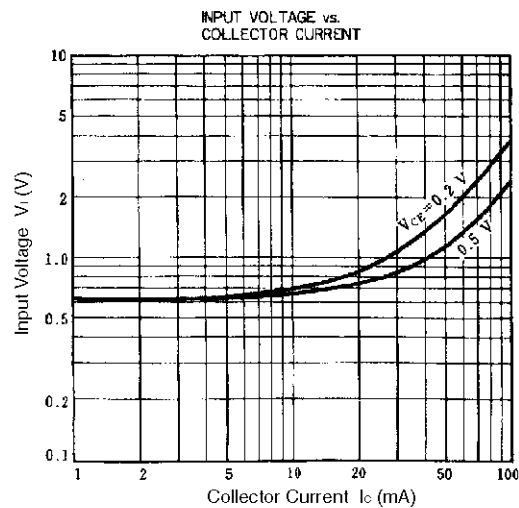
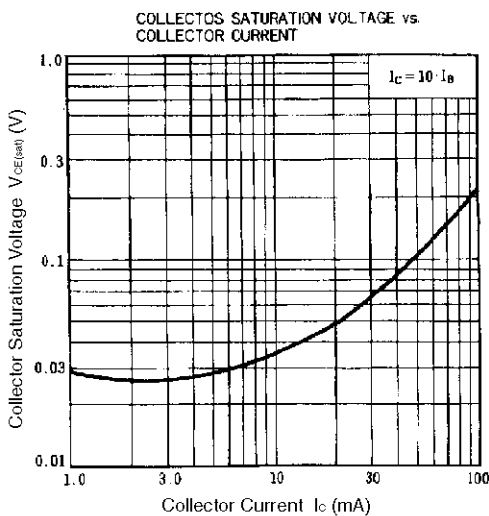
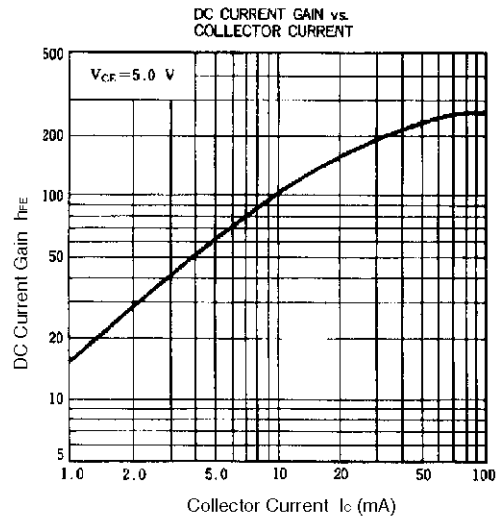
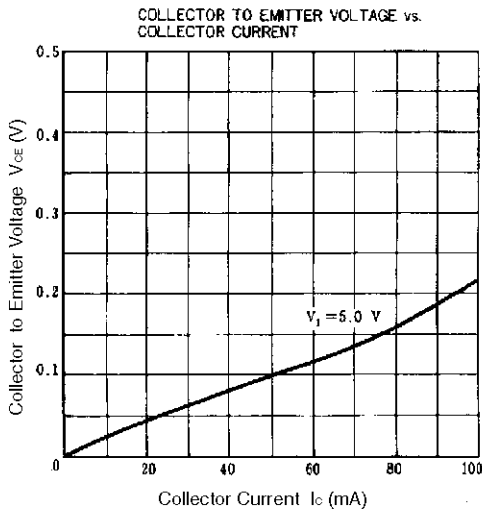
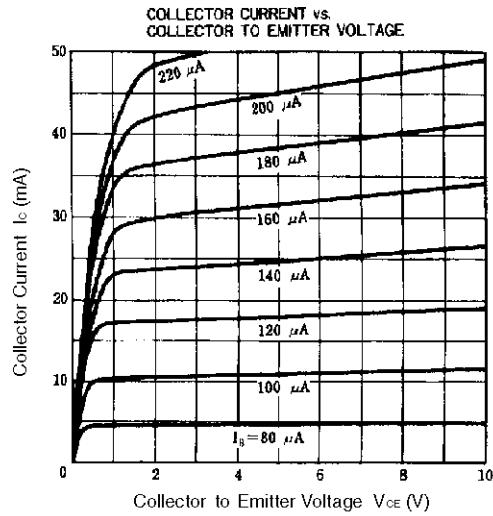
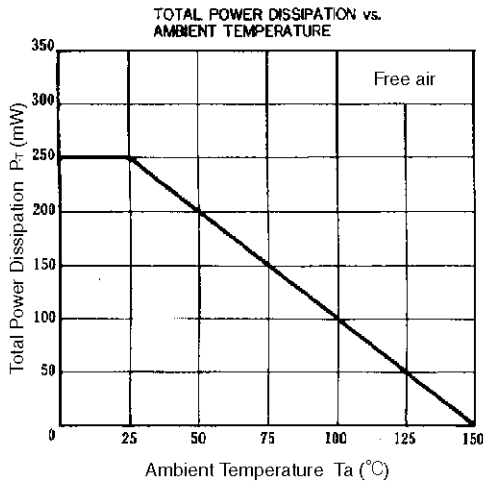
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

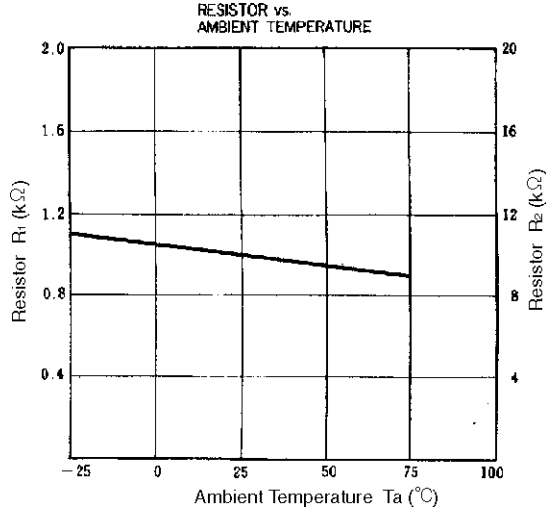
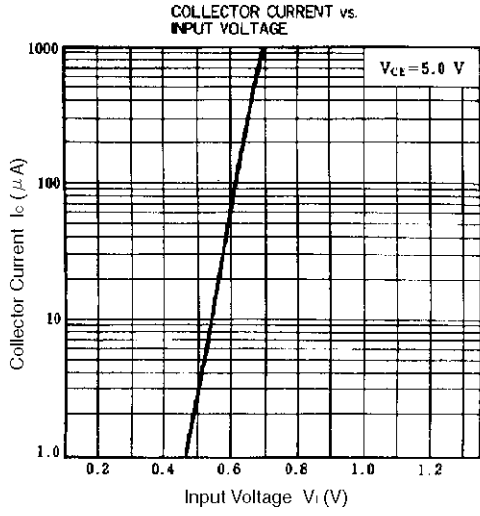
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 50\text{ V}$ , $I_E = 0$			100	nA
DC current gain	$h_{FE1}$ **	$V_{CE} = 5.0\text{ V}$ , $I_C = 5.0\text{ mA}$	35	60	100	-
DC current gain	$h_{FE2}$ **	$V_{CE} = 5.0\text{ V}$ , $I_C = 50\text{ mA}$	80	230		-
Collector saturation voltage	$V_{CE(sat)}$ **	$I_C = 5.0\text{ mA}$ , $I_B = 0.25\text{ mA}$		0.05	0.2	V
Low level input voltage	$V_{IL}$ **	$V_{CE} = 5.0\text{ V}$ , $I_C = 100\text{ }\mu\text{A}$		0.7	0.5	V
High level input voltage	$V_{IH}$ **	$V_{CE} = 0.2\text{ V}$ , $I_C = 5.0\text{ mA}$	2.0	1.0		V
Input resistance	$R_1$		0.7	1.0	1.3	$\text{k}\Omega$
E-to-B resistance	$R_2$		7	10	13	$\text{k}\Omega$
Turn-on time	$t_{on}$	$V_{CC} = 5\text{ V}$ , $R_L = 1\text{ k}\Omega$			0.2	$\mu\text{s}$
Storage time	$t_{stg}$	$V_i = 5\text{ V}$ , $PW = 2\text{ }\mu\text{s}$			5.0	$\mu\text{s}$
Turn-off time	$t_{off}$	duty cycle $\leq 2\%$			6.0	$\mu\text{s}$

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

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