

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

The CE2A3Q is a transistor of on-chip high hFE resistor incorporating dumper diode in collector to emitter as protect elements. This transistor is ideal for actuator drives of OA equipments and electric equipments.

FEATURES

- On-chip bias resistor:  $R_1 = 1.0 \text{ k}\Omega$ ,  $R_2 = 10 \text{ k}\Omega$
- Low power consumption during driving:  
 $V_{OL} = 0.12 \text{ V}$  @  $V_I = 5.0 \text{ V}$ ,  $I_c = 0.5 \text{ A}$
- On-chip dumper diode for reverse cable

QUALITY GRADES

- Standard

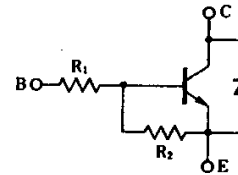
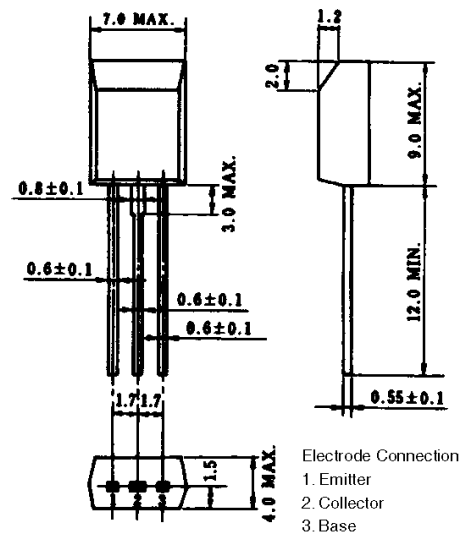
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ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	60	V
Collector to emitter voltage	$V_{CEO}$	60	V
Emitter to base voltage	$V_{EBO}$	15	V
Collector current (DC)	$I_{C(DC)}$	$\pm 2.0$	A
Collector current (Pulse)	$I_{C(pulse)}$ *	$\pm 3.0$	A
Base current (DC)	$I_{B(DC)}$	0.03	A
Total power dissipation	$P_T$	1.0	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  $\leq 50 \%$

PACKAGE DRAWING (UNIT: mm)



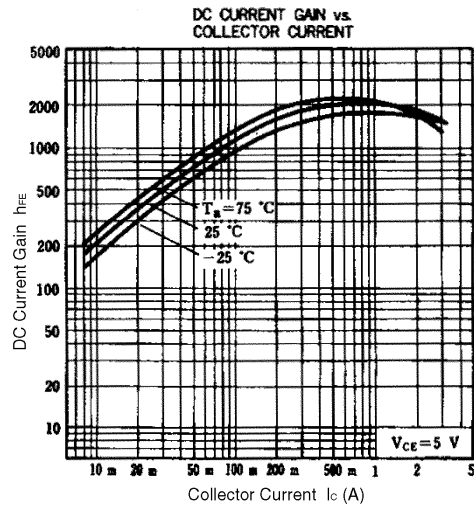
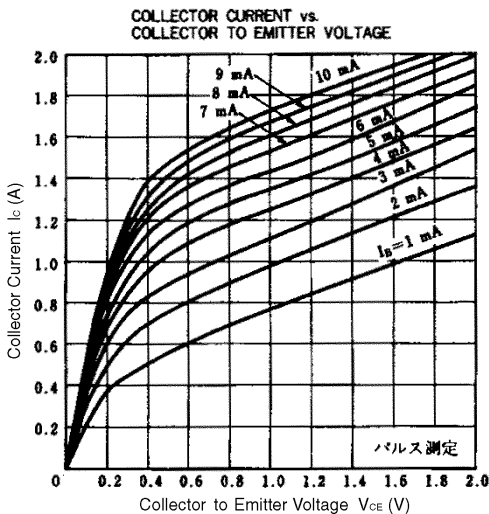
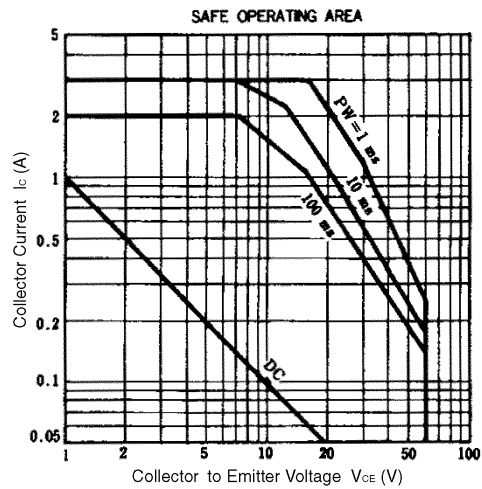
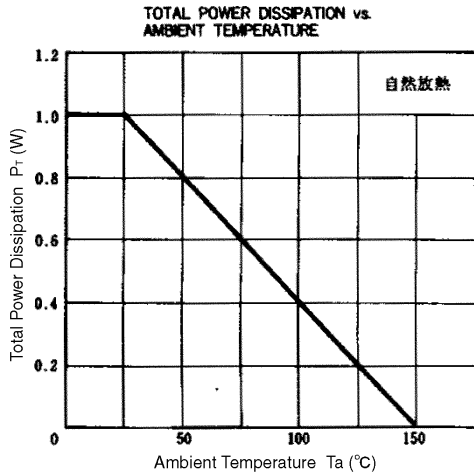
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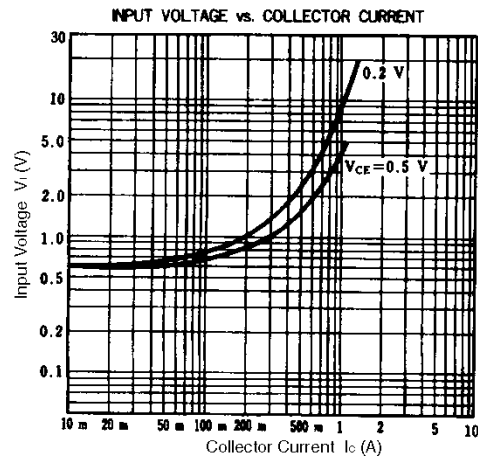
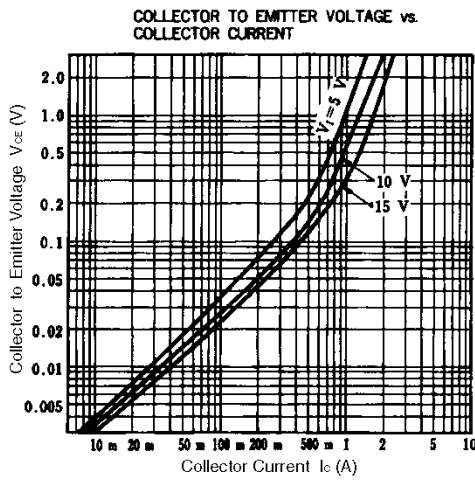
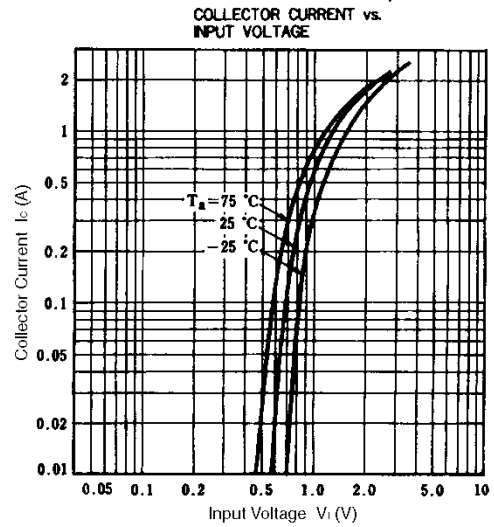
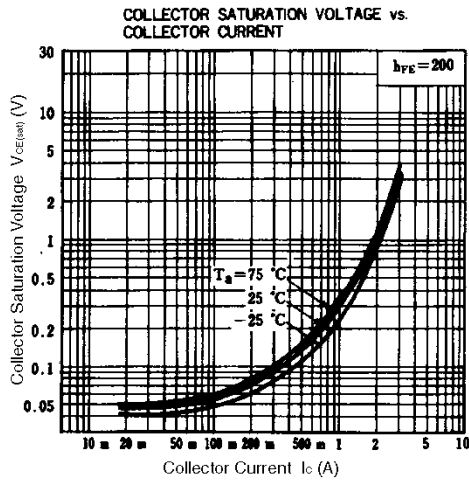
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

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	$h_{FE1}^{**}$	$V_{CE} = 50\text{ V}, I_C = 0.2\text{ A}$	700	1300		—
DC current gain	$h_{FE2}^{**}$	$V_{CE} = 5.0\text{ V}, I_C = 1.0\text{ A}$	1000	1700	3000	—
DC current gain	$h_{FE3}^{**}$	$V_{CE} = 5.0\text{ V}, I_C = 2.0\text{ A}$	500	1300		—
Low level output voltage	$V_{OL}^{**}$	$V_I = 5.0\text{ V}, I_C = 0.5\text{ A}$		0.12	0.3	V
Low level input voltage	$V_{IL}^{**}$	$V_{CE} = 12\text{ V}, I_C = 100\text{ }\mu\text{A}$		0.46	0.4	V
Input resistance 1	$R_1$		0.7	1.0	1.3	k $\Omega$
Input resistance 2	$R_2$		7.0	10.0	13.0	k $\Omega$
Turn-on time	$t_{on}$	$I_C = 1.0\text{ A}$		0.4		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = -I_{B2} = 10\text{ mA}$		1.4		$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = 20\text{ V}, R_L = 20\text{ }\Omega$		0.5		$\mu\text{s}$

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

**TYPICAL CHARACTERISTICS (Ta = 25°C)**





**RECOMMENDED SOLDERING CONDITIONS**

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