

To our customers,

Old Company Name in Catalogs and Other Documents

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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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COMPOUND TRANSISTOR

CE1A3Q

on-chip resistor NPN silicon epitaxial transistor

For mid-speed switching

The CE1A3Q is a transistor of on-chip high hFE resistor incorporating dumper diode in collector to emitter and zener diode in collector to base as protect elements. This transistor is ideal for actuator drives of OA equipments and electric equipments.

FEATURES

- On-chip zener diode for surge voltage absorption
- 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

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60 ± 10	V
Collector to emitter voltage	V_{CEO}	60 ± 10	V
Emitter to base voltage	V_{EBO}	15	V
Collector current (DC)	$I_{C(DC)}$	± 2.0	A
Collector current (Pulse)	$I_{C(pulse)}$ *	± 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 $\leq 50 \%$

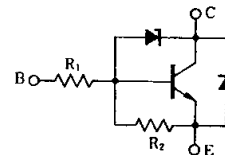
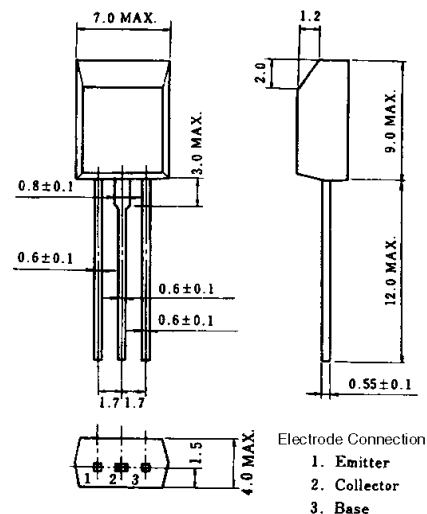
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CE0(SUS)}$	$I_C = 2.0 \text{ A}$, $I_B = 5.0 \text{ mA}$, $L = 6.0 \text{ mH}$	50	60		V
Collector cutoff current	I_{CBO}	$V_{CB} = 40 \text{ V}$, $I_E = 0$			100	nA
DC current gain	h_{FE1} **	$V_{CE} = 5.0 \text{ V}$, $I_C = 0.2 \text{ A}$	700	1200		—
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} **	$V_{CE} = 12 \text{ V}$, $I_C = 100 \mu\text{A}$		0.46	0.4	V
Input resistance 1	R_1		0.7	1.0	1.3	$\text{k}\Omega$
Input resistance 2	R_2		7.0	10.0	13.0	$\text{k}\Omega$
Turn-on time	t_{on}	$I_C = 1.0 \text{ A}$		0.4		μs
Storage time	t_{stg}	$I_{B1} = -I_{B2} = 10 \text{ mA}$		1.4		μs
Fall time	t_f	$V_{CC} = 20 \text{ V}$, $R_L = 20 \Omega$		0.5		μs

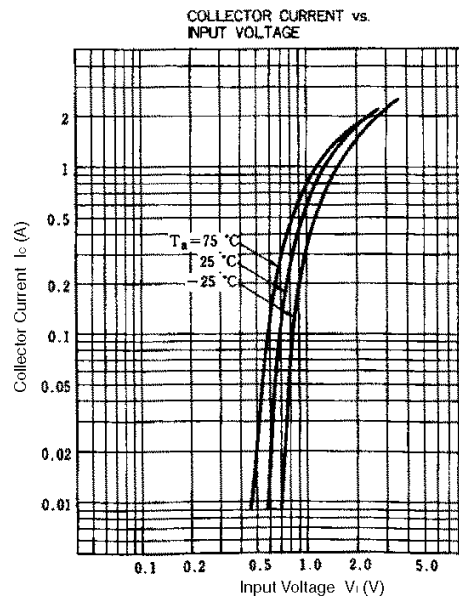
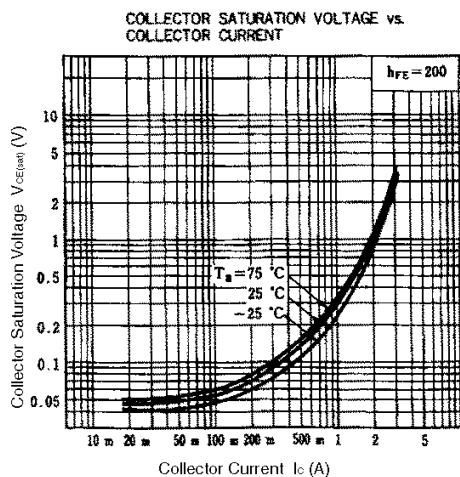
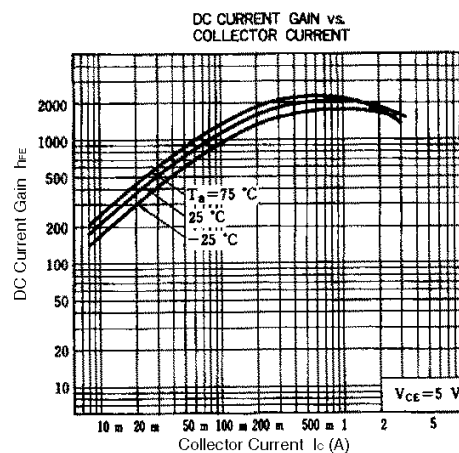
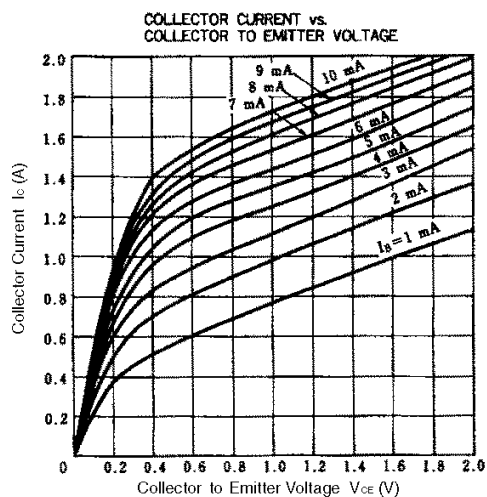
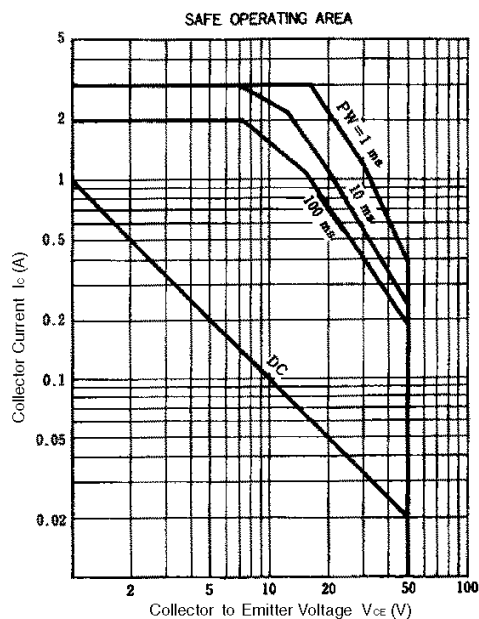
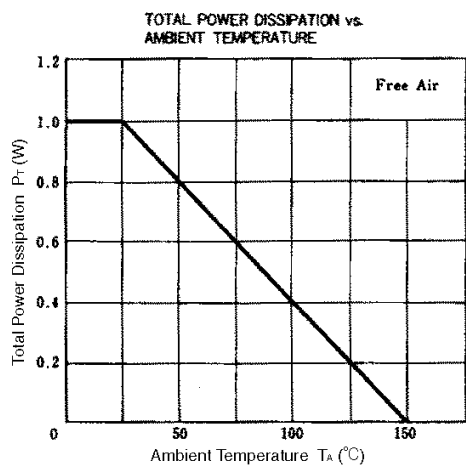
** Pulse test $PW \leq 350 \mu\text{s}$, duty cycle $\leq 2 \%$

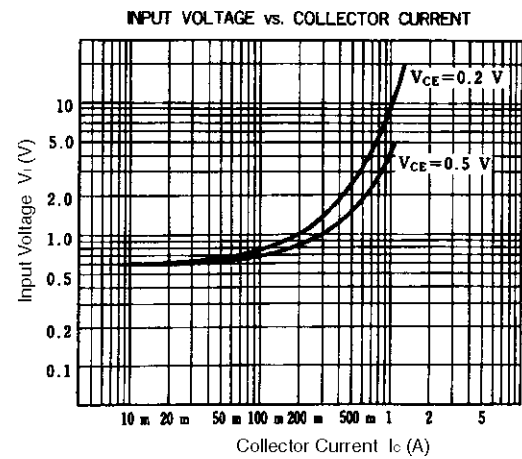
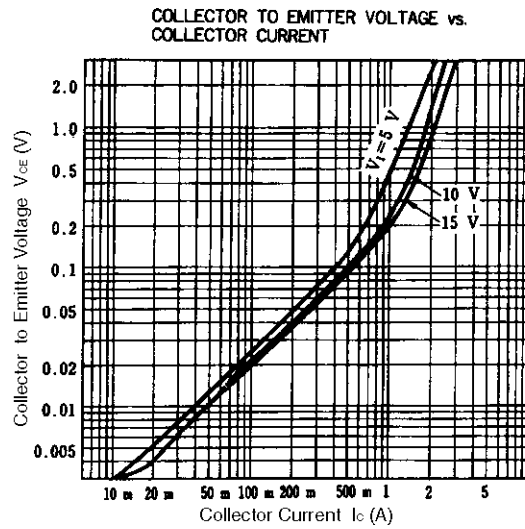
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PACKAGE DRAWING (UNIT: mm)



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





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