

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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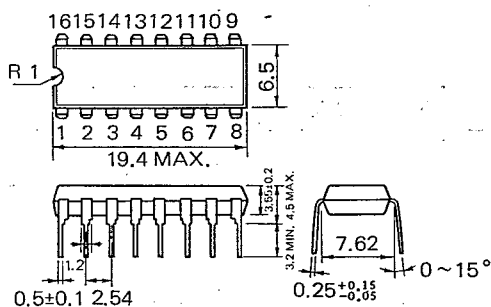
NPN SILICON EPITAXIAL DARLINGTON TRANSISTOR ARRAY

DESCRIPTION

The μ PA2001C, 2002C, 2003C and 2004C are monolithic arrays of seven darlington transistors. These devices are especially suited for driving relays, solenoids, LED, lamps, and other devices with up to 0.3 A output current per unit.

PACKAGE DIMENSIONS

in millimeters

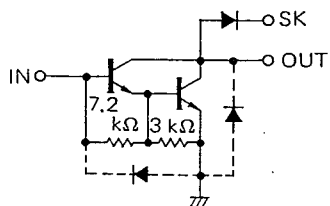


FEATURES

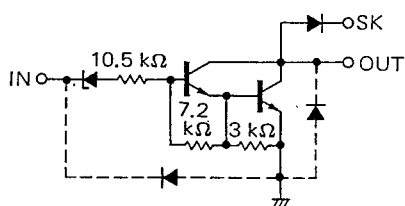
- Transient Protected Outputs
- High DC Current Gain
- High Output Drive Current
- High Output Voltage
- Package is 16 pin PLASTIC DIP.

EQUIVALENT CIRCUIT (1 Unit)

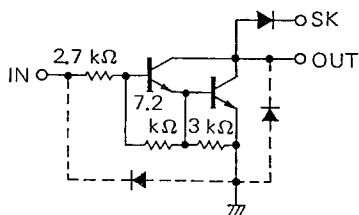
μ PA2001C



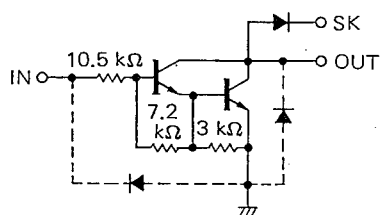
μ PA2002C



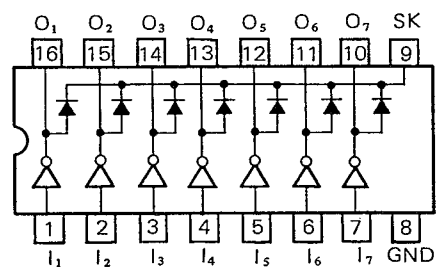
μ PA2003C



μ PA2004C



CONNECTION DIAGRAM (Top View)



- I : Input (Base)
O : Output (Collector)
GND : (Common Emitter)
SK : Surge Killer

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents (Ta = 25 °C)

Output Voltage	VO	60	V
Input Voltage (except μPA2001C)	VI	−0.5 to +30	V
Input Current (only μPA2001C)	II	25	mA/unit
Output Current	IO	500	mA/unit
Output Current	IO*	2.3	A/package
Reverse Voltage (Clamp Diode)	VR	60	V
Forward Current (Clamp Diode)	IF	500	mA/unit

Maximum Power Dissipation

Total Power Dissipation	Pd	900	mW/package
Total Power Dissipation	Pd*	2.5	W/package

Maximum Temperature

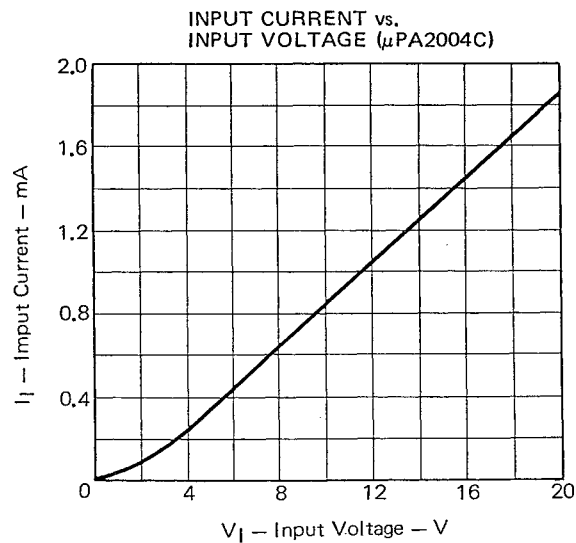
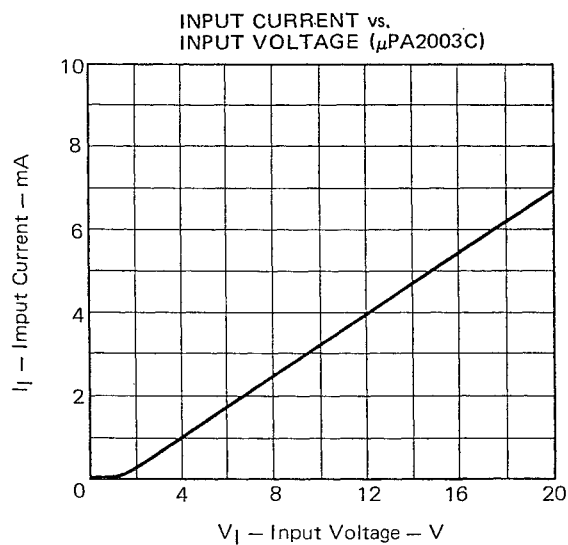
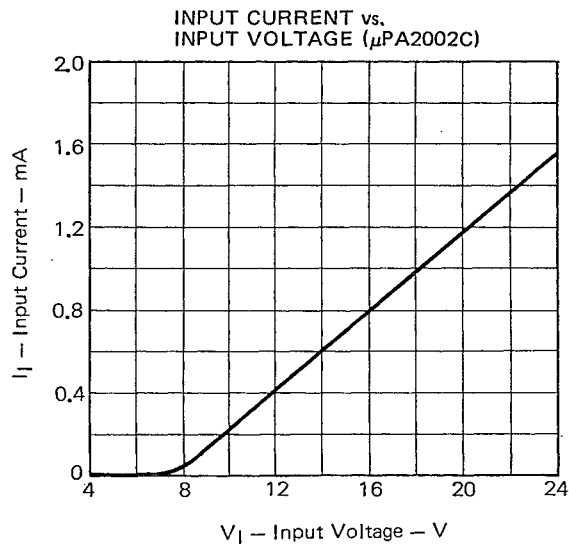
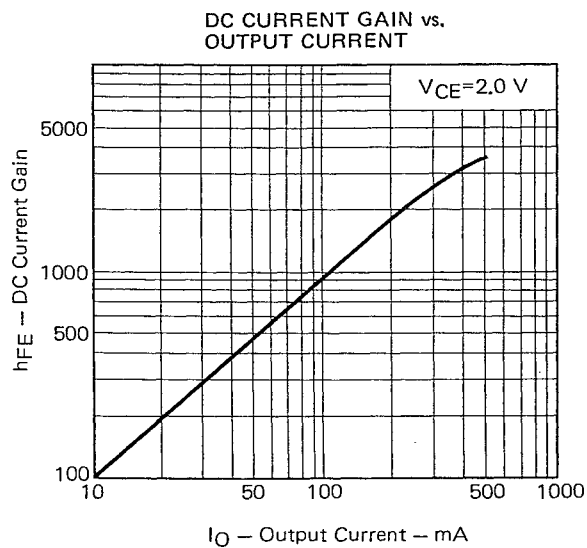
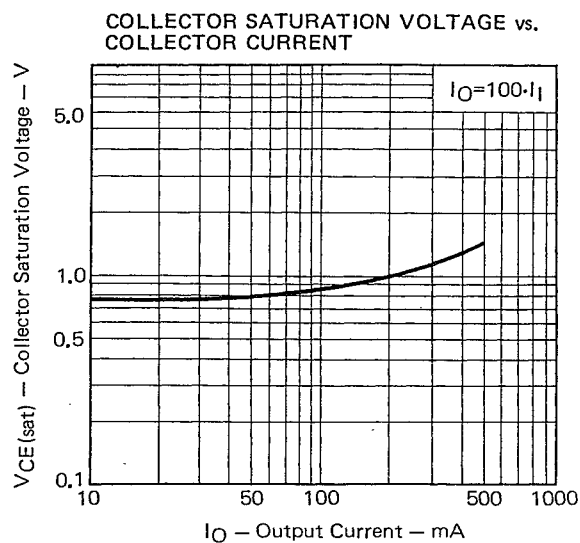
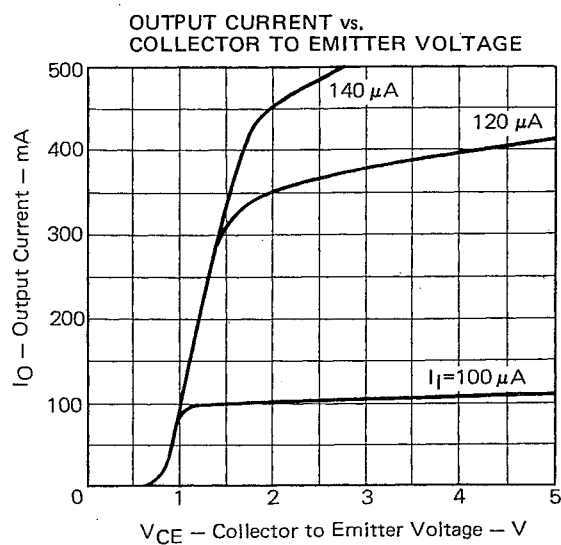
Operating Temperature	Topt	−30 to + 75	°C
Storage Temperature	Tstg	−55 to +150	°C

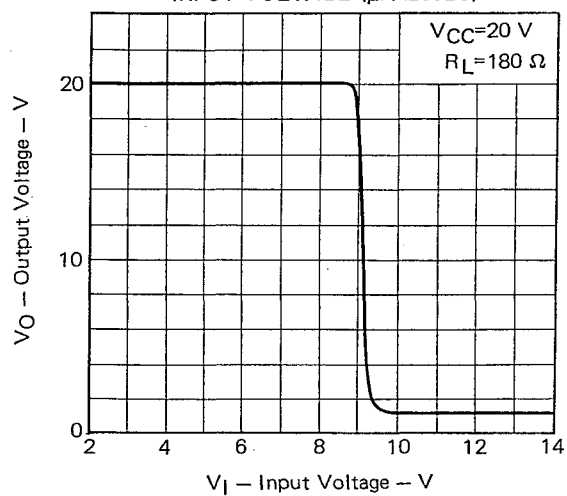
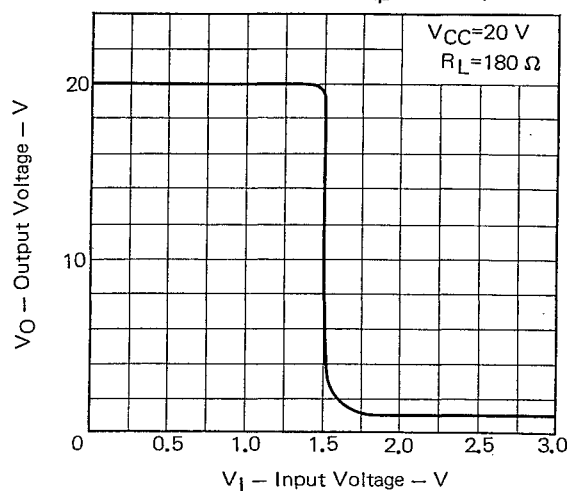
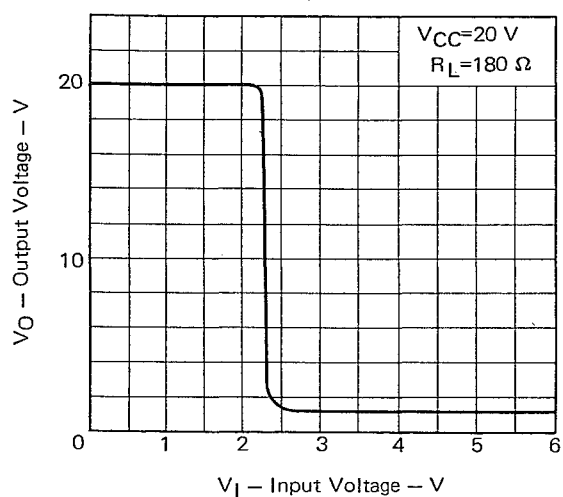
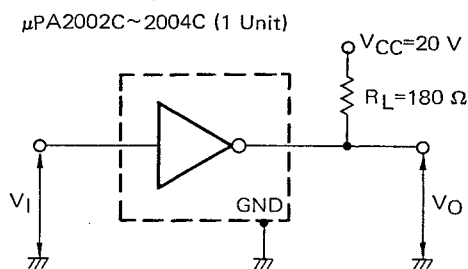
* PW ≤ 20 ms, duty cycle ≤ 10 %

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Output Leakage Current		I _L			10	μA	V _{CE} =50 V
					100	μA	V _{CE} =50 V, T _a =70 °C
DC Current Gain		h _{FE}	1000	2800			V _{CE} =2.0 V, I _O =350 mA
Collector Saturation Voltage		V _{CE(sat)}		0.9	1.1	V	I _O =100 mA, I _I =250 μA
				1.0	1.3	V	I _O =200 mA, I _I =350 μA
				1.2	1.6	V	I _O =350 mA, I _I =500 μA
Input Voltage	μPA2002C	V _I			11	V	V _{CE} =2.0 V, I _O =100 mA
					12	V	V _{CE} =2.0 V, I _O =200 mA
					13.5	V	V _{CE} =2.0 V, I _O =350 mA
	μPA2003C				2.0	V	V _{CE} =2.0 V, I _O =100 mA
					2.4	V	V _{CE} =2.0 V, I _O =200 mA
					3.4	V	V _{CE} =2.0 V, I _O =350 mA
	μPA2004C				5.0	V	V _{CE} =2.0 V, I _O =100 mA
					6.0	V	V _{CE} =2.0 V, I _O =200 mA
					8.0	V	V _{CE} =2.0 V, I _O =350 mA
Input Current	μPA2002C	I _I			1.3	mA	V _I =17 V
	μPA2003C				1.35	mA	V _I =3.85 V
	μPA2004C				1.0	mA	V _I =5.0 V
Reverse Current (Clamp Diode)		I _R			50	μA	V _R =50 V
Forward Voltage (Clamp Diode)		V _F			2.0	V	I _F =350 mA
Terminal Capacitance		C _t		15		pF	V _I =0, f=1.0 MHz

Note: Input Voltage and Current of the μPA2001C depend on external resistor.

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

OUTPUT VOLTAGE vs.
INPUT VOLTAGE (μ PA2002C)OUTPUT VOLTAGE vs.
INPUT VOLTAGE (μ PA2003C)OUTPUT VOLTAGE vs.
INPUT VOLTAGE (μ PA2004C) V_O - V_I TEST CIRCUIT

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