

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 POWER TRANSISTOR ARRAY MEDIUM SWITCHING USE

DESCRIPTION

The μ PA1424 is NPN silicon epitaxial Power Transistor Array that built in resistance and 4 circuits designed for driving solenoid, relay, lamp and so on.

FEATURES

- Easy mount by 0.1 inch of terminal interval.
- Zener Diode built in, for Surge Absorbing.
- Bias Resistance built in.
 - $R_1 = 680 \Omega$, $R_2 = 10 \text{ k}\Omega$
- Low Power loss when driving actuator.
 - $V_{OL} \leq 0.4 \text{ V}$ @ $V_{in} = 4.2 \text{ V}$, $I_c = 0.8 \text{ A}$
 - $V_{OL} \leq 0.5 \text{ V}$ @ $V_{in} = 4.2 \text{ V}$, $I_c = 1.0 \text{ A}$

ORDERING INFORMATION

Part Number	Package	Quality Grade
μ PA1424H	10 Pin SIP	Standard

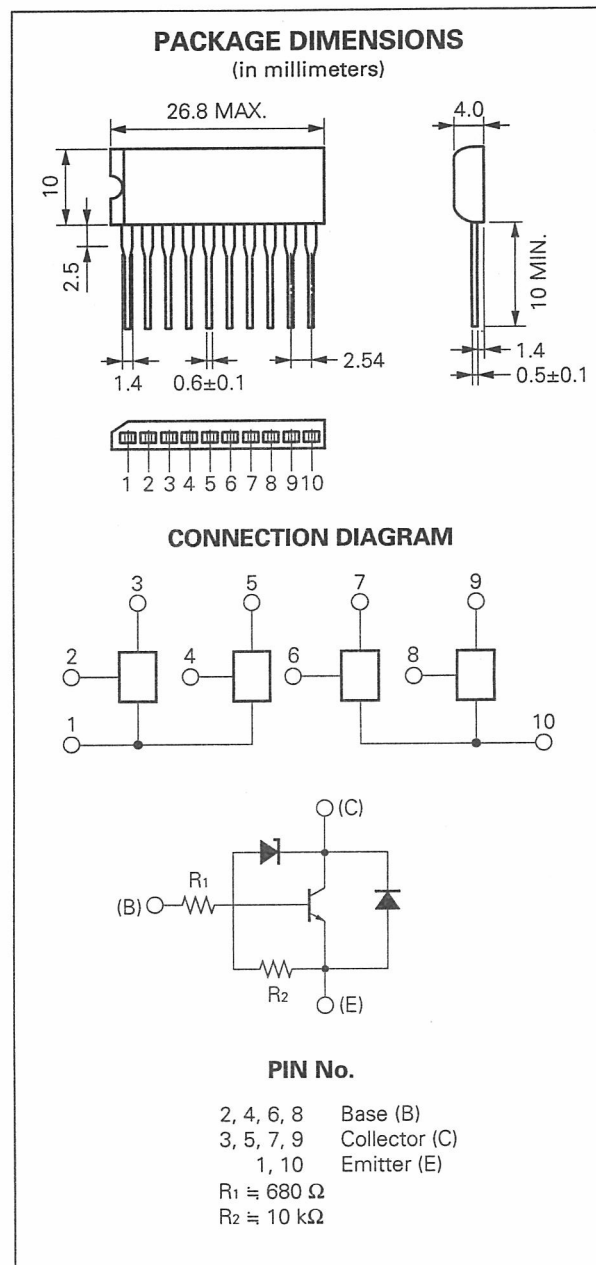
Please refer to "Quality grade on NEC Semiconductor Device" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

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

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	A/unit
Collector Current (pulse)	$I_{C(pulse)^*}$	± 3	A/unit
Base Current (DC)	$I_{B(DC)}$	0.03	A/unit
Total Power Dissipation ($T_a = 25 \text{ }^\circ\text{C}$)	P_{T1}^{**}	3.5	W
Total Power Dissipation ($T_c = 25 \text{ }^\circ\text{C}$)	P_{T2}^{**}	28	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 $\leq 50 \%$

** 4 Circuits



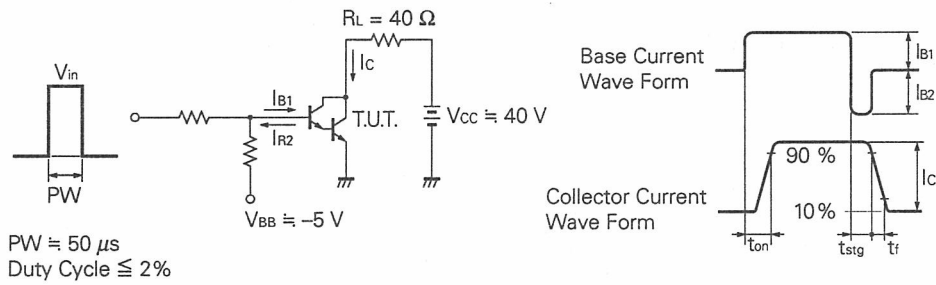
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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

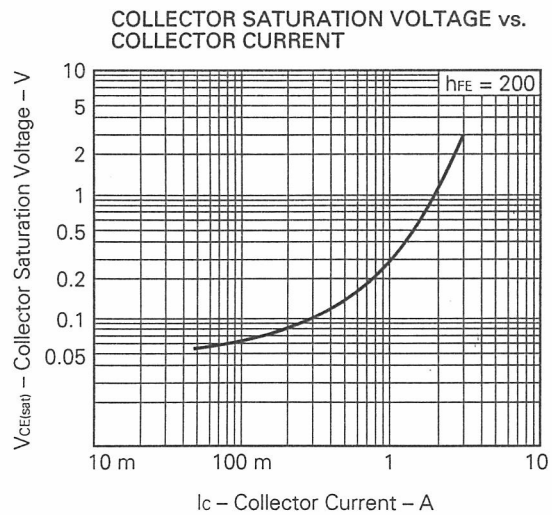
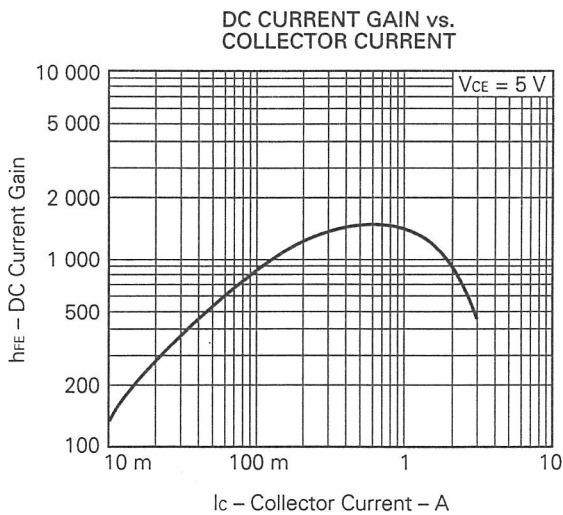
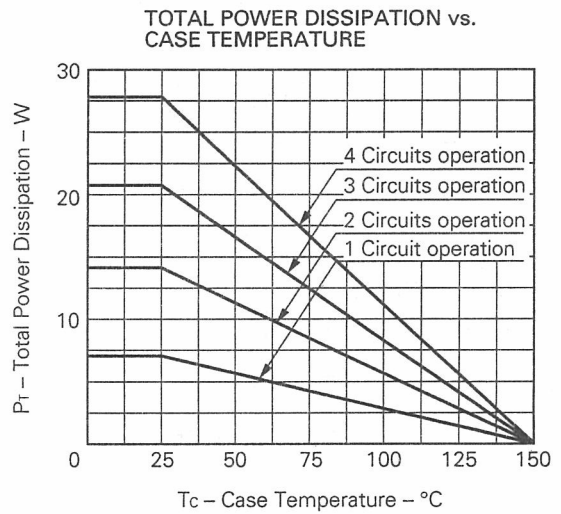
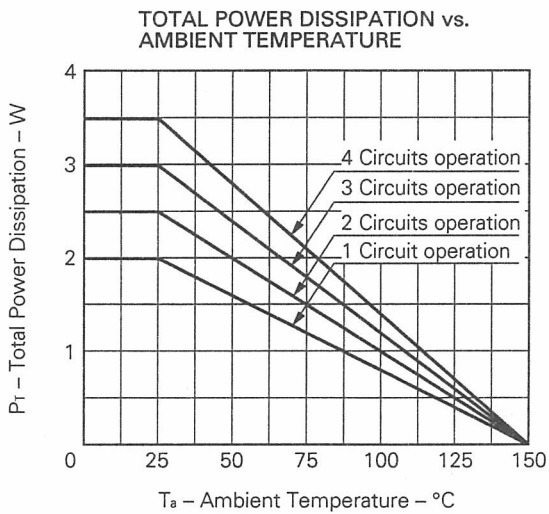
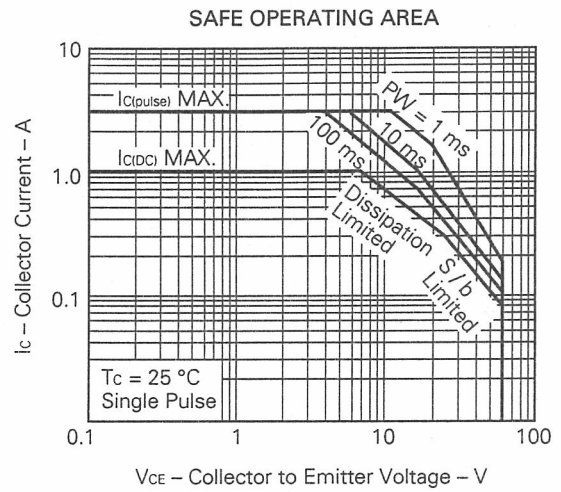
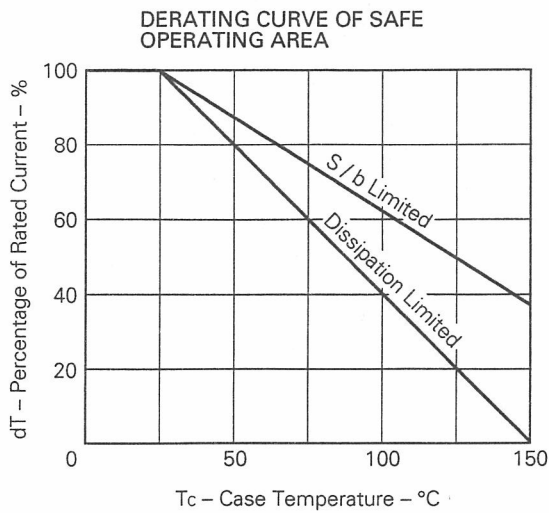
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector to Emitter Voltage	V _{CEO(sus)}	50	60		V	I _c = 2 A, I _B = 5 mA, L = 6 mH
Collector Leakage Current	I _{CB0}			100	nA	V _{CB} = 40 V, I _E = 0
DC Current Gain	h _{FE1} *	700	1 200		—	V _{CE} = 5 V, I _c = 0.2 A
DC Current Gain	h _{FE2} *	1 000	1 700	3 000	—	V _{CE} = 5 V, I _c = 1 A
DC Current Gain	h _{FE3} *	500	1 300		—	V _{CE} = 5 V, I _c = 2 A
Low-Level Output Voltage	V _{OL1} *			0.4	V	V _{in} = 4.2 V, I _c = 0.8 A
Low-Level Output Voltage	V _{OL2} *			0.5	V	V _{in} = 4.2 V, I _c = 1 A
Low-Level Input Voltage	V _{IL} *	400			mV	V _{CE} = 12 V, I _c = 0.1 mA
Input Resistance 1	R ₁	476	680	884	Ω	
Input Resistance 2	R ₂	7	10	13	k Ω	
Turn On Time	t _{on}		0.4		μ s	I _c = 1 A, see Fig. 1
Storage Time	t _{stg}		1.4		μ s	I _{B1} = -I _{B2} = 10 mA
Fall Time	t _f		0.5		μ s	V _{CC} = 20 V, R _L = 20 Ω

* Pulsed : PW \leq 350 μ s, Duty Cycle \leq 2 %

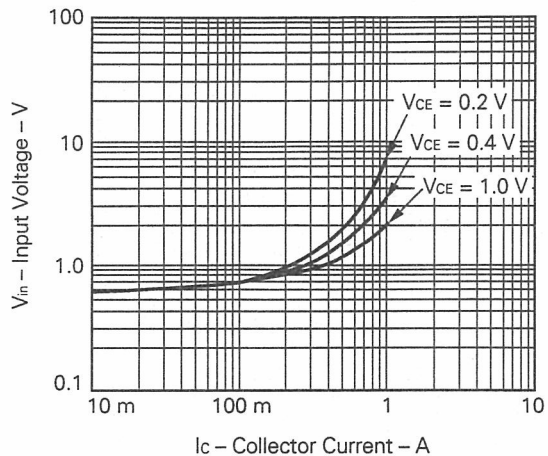
Fig. 1. SWITCHING TIME TEST CIRCUIT



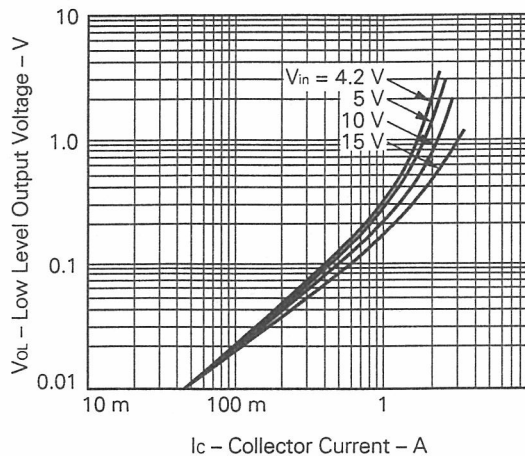
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



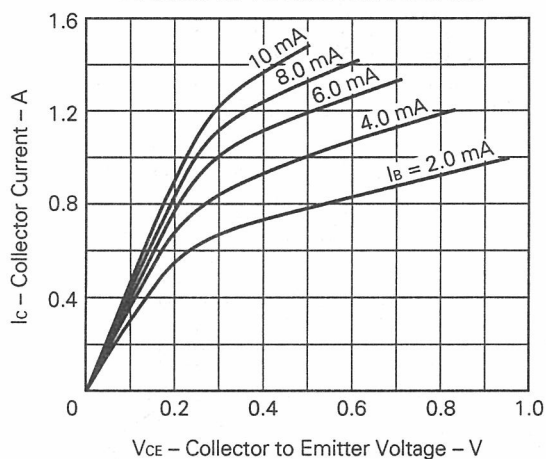
INPUT VOLTAGE vs. COLLECTOR CURRENT



LOW LEVEL OUTPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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