

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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**Phase-out/Discontinued**

**μPA1476**

**NPN SILICON POWER TRANSISTOR ARRAY  
LOW SPEED SWITCHING USE (DARLINGTON TRANSISTOR)  
INDUSTRIAL USE**

**DESCRIPTION**

The μPA1476 is NPN silicon epitaxial Darlington Power Transistor Array that built in 4 circuits designed for driving solenoid, relay, lamp and so on.

**FEATURES**

- Easy mount by 0.1 inch of terminal interval.
- High  $h_{FE}$  for Darlington Transistor.
- Surge Absorber (Zener Diode) built in.

**ORDERING INFORMATION**

Part Number	Package	Quality Grade
μPA1476H	10 Pin SIP	Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (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<sub>A</sub> = 25 °C)**

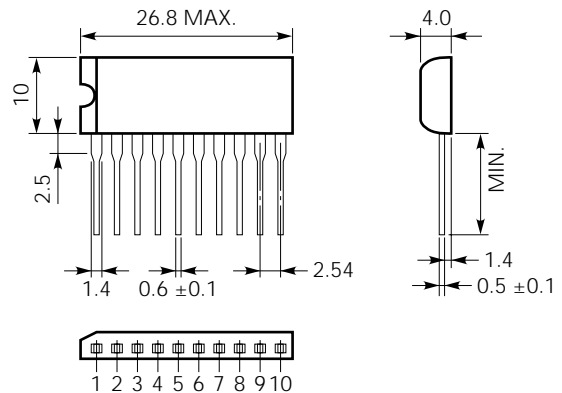
Collector to Base Voltage	V <sub>CB0</sub>	100 ±15	V
Collector to Emitter Voltage	V <sub>CEO</sub>	100 ±15	V
Emitter to Base Voltage	V <sub>EBO</sub>	8	V
Collector Current (DC)	I <sub>C(DC)</sub>	±2	A/unit
Collector Current (pulse)	I <sub>C(pulse)*</sub>	±3	A/unit
Base Current (DC)	I <sub>B(DC)</sub>	0.2	A/unit
Total Power Dissipation	P <sub>T1**</sub>	3.5	W
Total Power Dissipation	P <sub>T2***</sub>	28	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

\* PW ≤ 300 μs, Duty Cycle ≤ 10 %

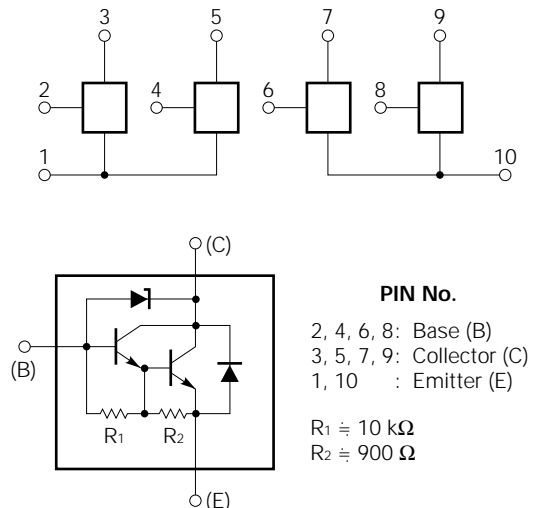
\*\* 4 Circuits, T<sub>a</sub> = 25 °C

\*\*\* 4 Circuits, T<sub>c</sub> = 25 °C

**PACKAGE DIMENSION  
(in millimeters)**



**CONNECTION DIAGRAM**



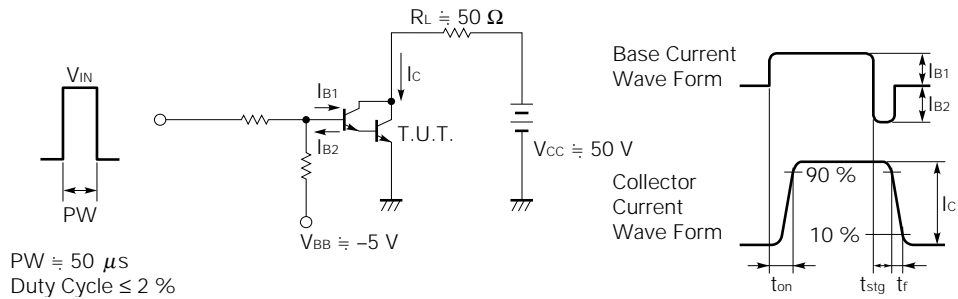
The information in this document is subject to change without notice.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Leakage Current	I <sub>CBO</sub>			1.0	μA	V <sub>CB</sub> = 75 V, I <sub>E</sub> = 0
Emitter Leakage Current	I <sub>EBO</sub>			1.0	mA	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE1</sub> *	2000		20000	—	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 1 A
DC Current Gain	h <sub>FE2</sub> *	500			—	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 2 A
Collector Saturation Voltage	V <sub>CE(sat)</sub> *			1.5	V	I <sub>C</sub> = 1 A, I <sub>B</sub> = 1 mA
Base Saturation Voltage	V <sub>BE(sat)</sub> *			2	V	I <sub>C</sub> = 1 A, I <sub>B</sub> = 1 mA
Turn On Time	t <sub>on</sub>		1		μS	I <sub>C</sub> = 1 A
Storage Time	t <sub>stg</sub>		1.2		μS	I <sub>B1</sub> = -I <sub>B2</sub> = 2 mA V <sub>CC</sub> ≐ 50 V, R <sub>L</sub> ≐ 50 Ω
Fall Time	t <sub>f</sub>		0.4		μS	See test circuit

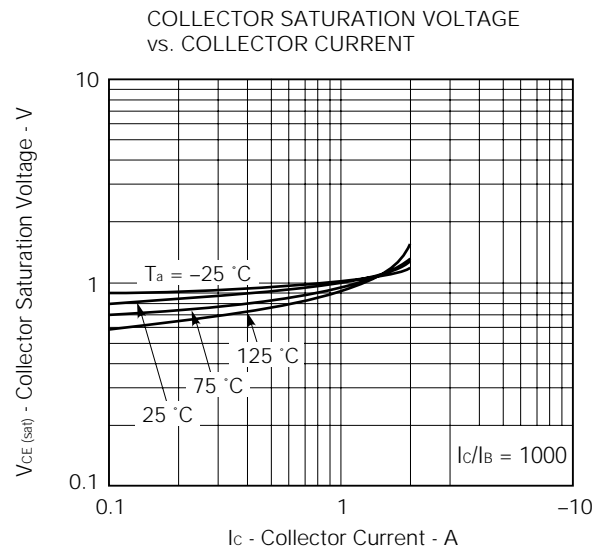
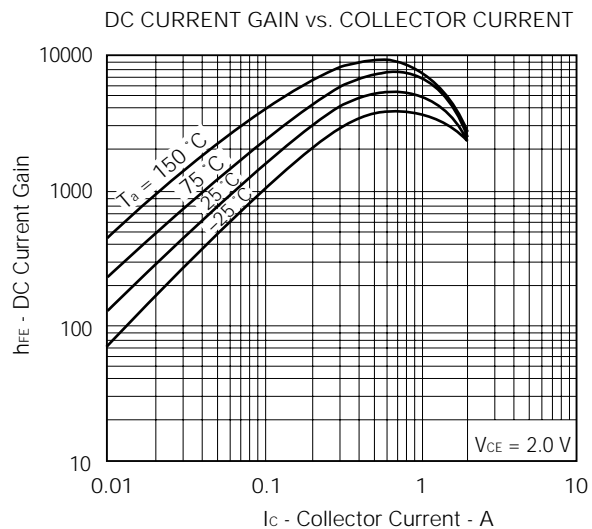
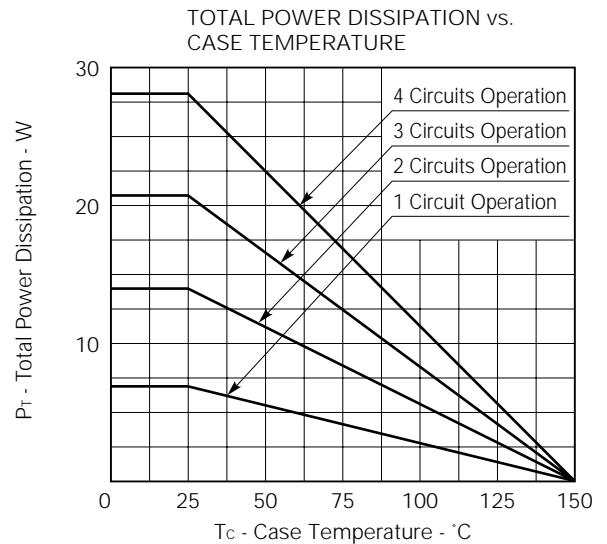
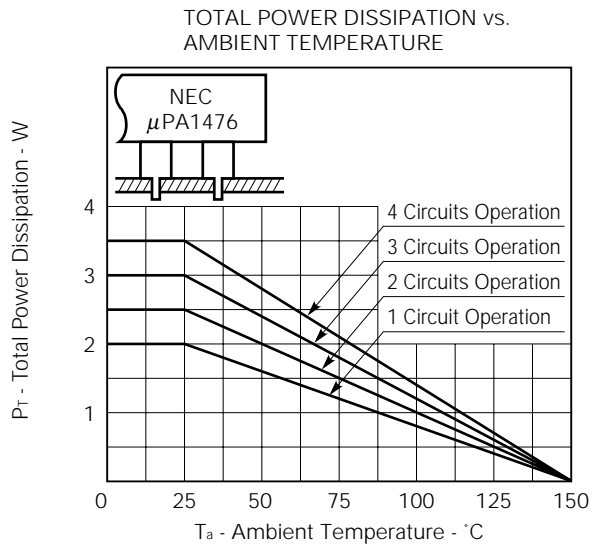
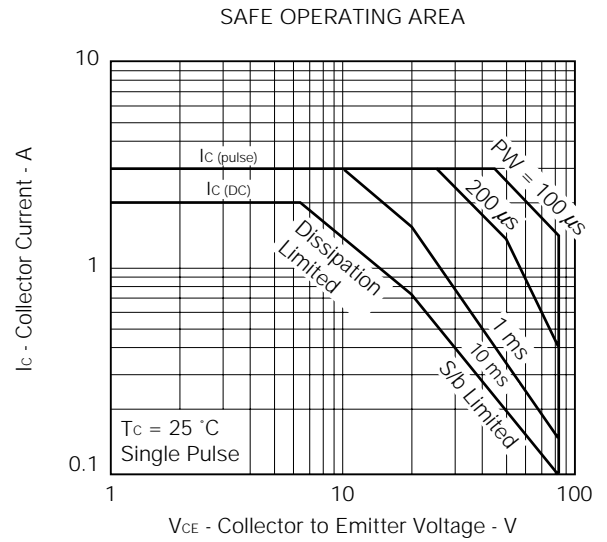
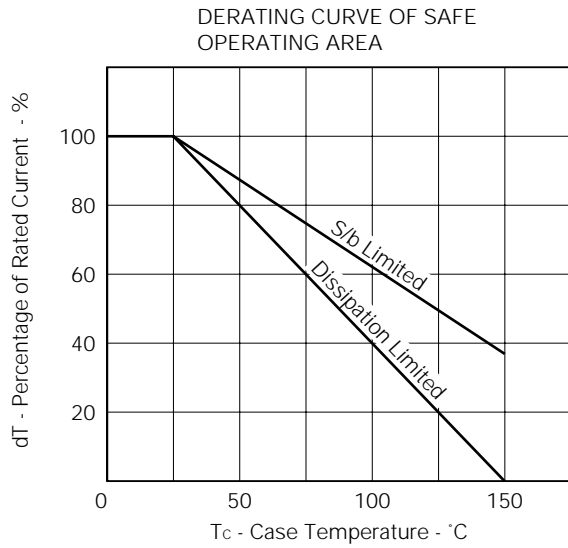
\* PW ≤ 350 μs, Duty Cycle ≤ 2 % / pulsed

**SWITCHING TIME TEST CIRCUIT**

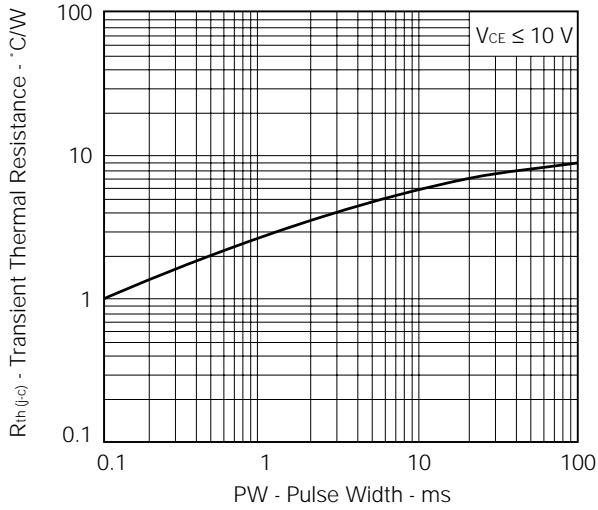


The application circuits and their parameters are for references only and are not intended for use in actual design-in's.

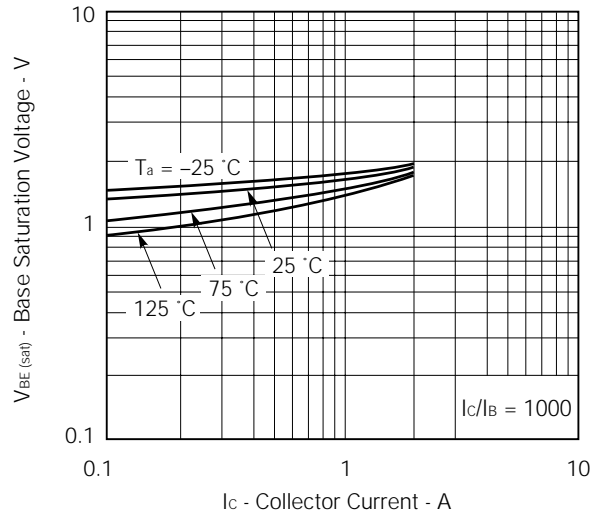
TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )



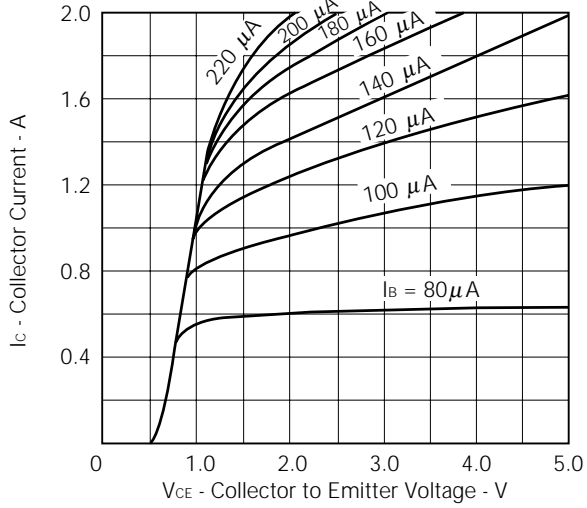
TRANSIENT THERMAL RESISTANCE



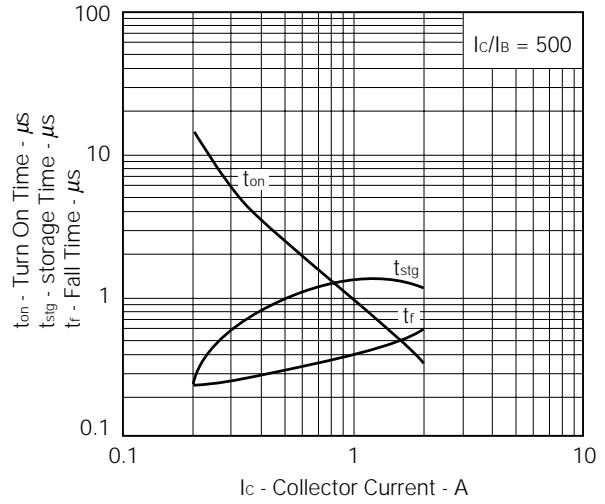
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



SWITCHING CHARACTERISTICS



**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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