

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

DESCRIPTION

The  $\mu$ PA1476 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 |
|---------------|------------|---------------|
| $\mu$ PA1476H | 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 ( $T_A = 25\text{ }^\circ\text{C}$ )

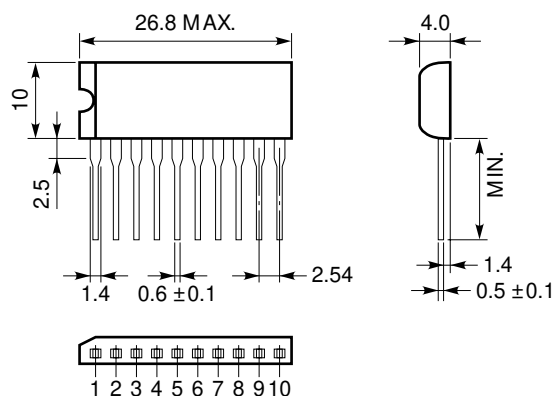
|                              |                  |              |                  |
|------------------------------|------------------|--------------|------------------|
| Collector to Base Voltage    | $V_{CBO}$        | $100 \pm 15$ | V                |
| Collector to Emitter Voltage | $V_{CEO}$        | $100 \pm 15$ | V                |
| Emitter to Base Voltage      | $V_{EBO}$        | 8            | V                |
| Collector Current (DC)       | $I_{C(DC)}$      | $\pm 2$      | A/unit           |
| Collector Current (pulse)    | $I_{C(pulse)^*}$ | $\pm 3$      | A/unit           |
| Base Current (DC)            | $I_{B(DC)}$      | 0.2          | A/unit           |
| Total Power Dissipation      | $PT_1^{**}$      | 3.5          | W                |
| Total Power Dissipation      | $PT_2^{***}$     | 28           | W                |
| Junction Temperature         | $T_J$            | 150          | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$        | -55 to +150  | $^\circ\text{C}$ |

\*  $PW \leq 300\ \mu s$ , Duty Cycle  $\leq 10\%$

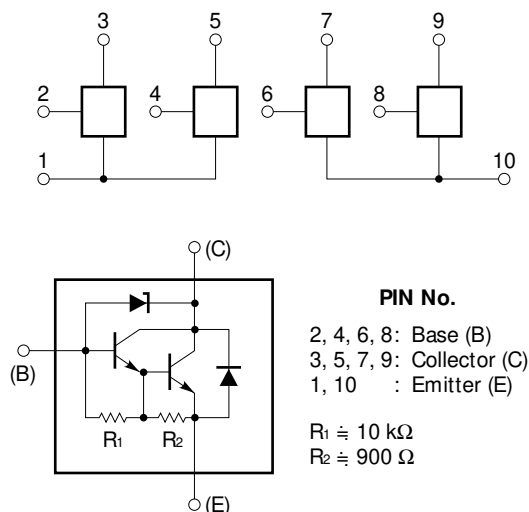
\*\* 4 Circuits,  $T_a = 25\text{ }^\circ\text{C}$

\*\*\* 4 Circuits,  $T_c = 25\text{ }^\circ\text{C}$

PACKAGE DIMENSION  
(in millimeters)



CONNECTION DIAGRAM



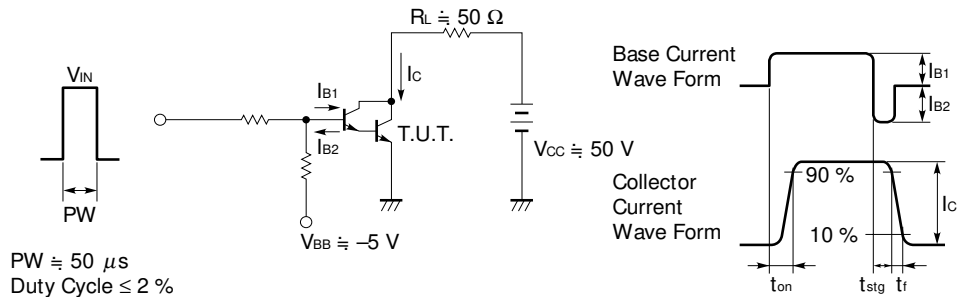
The information in this document is subject to change without notice.

**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<br>V <sub>CC</sub> ≐ 50 V, R <sub>L</sub> ≐ 50 Ω |
| Fall Time                    | t <sub>f</sub>         |      | 0.4  |       | μs   | See test circuit   |

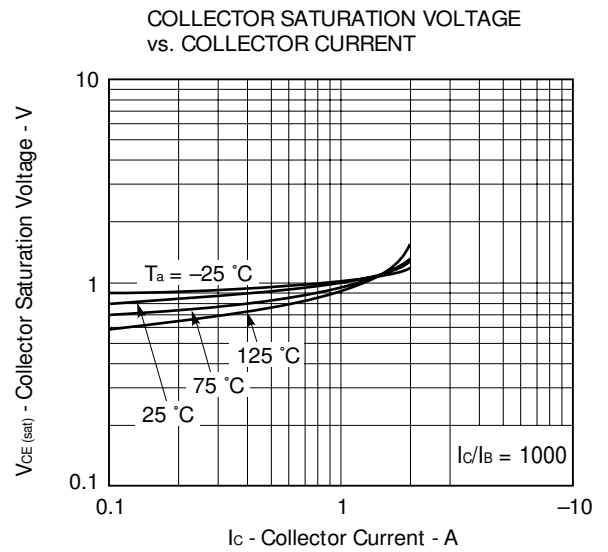
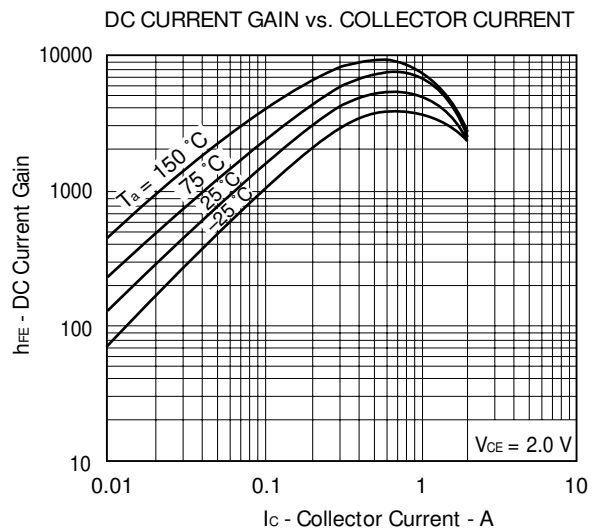
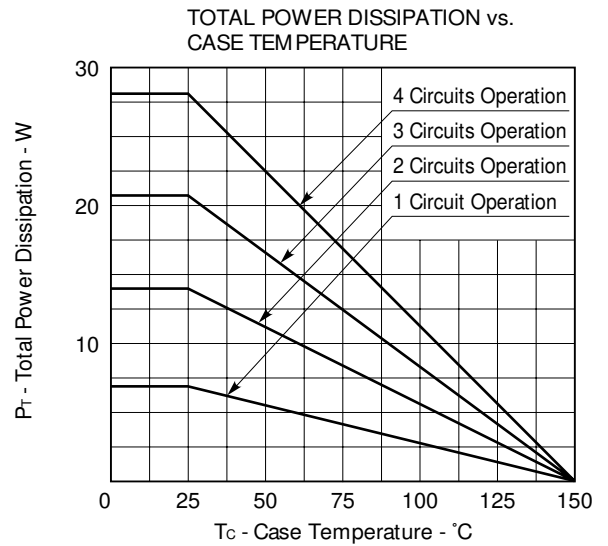
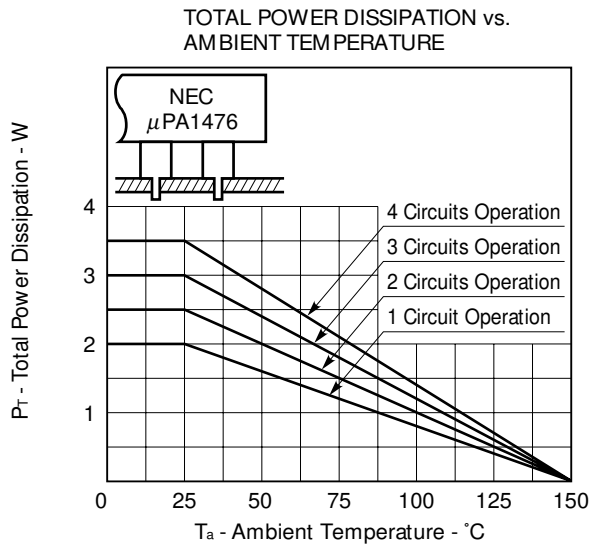
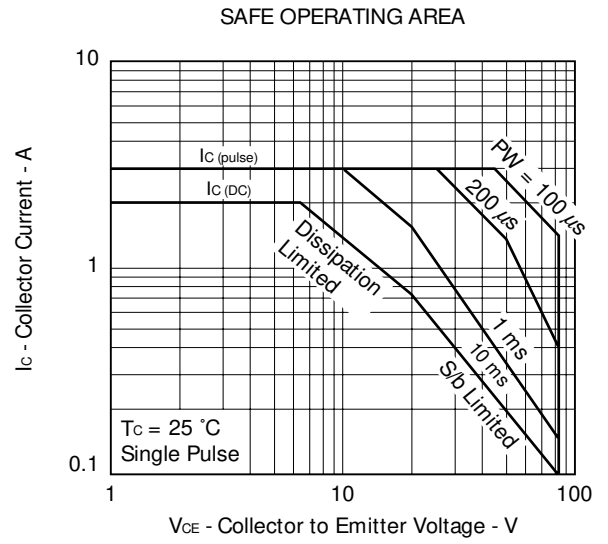
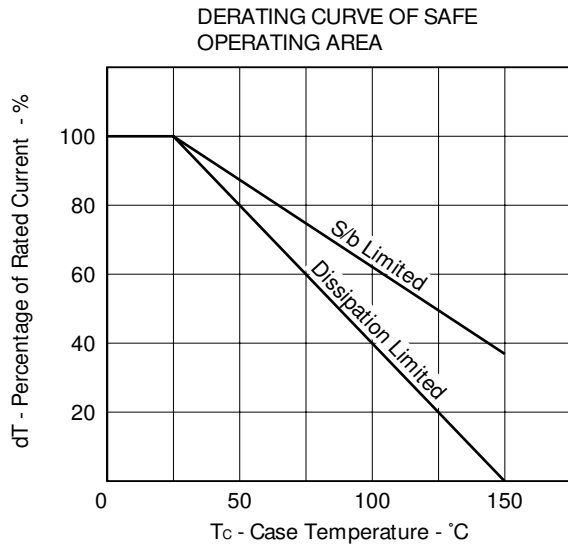
\* PW ≤ 350 μs, Duty Cycle ≤ 2 % / pulsed

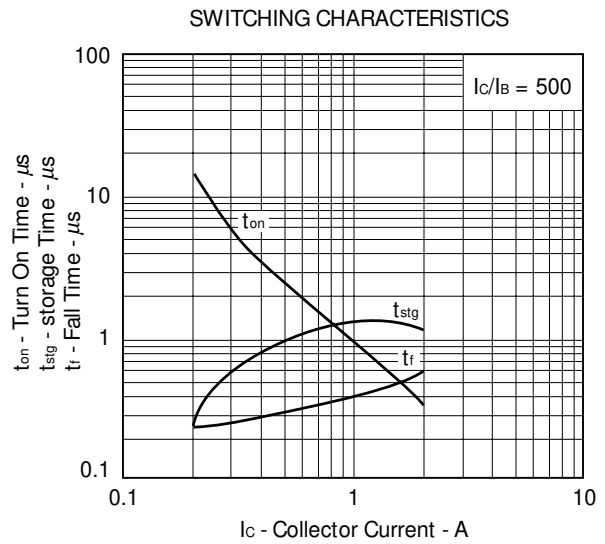
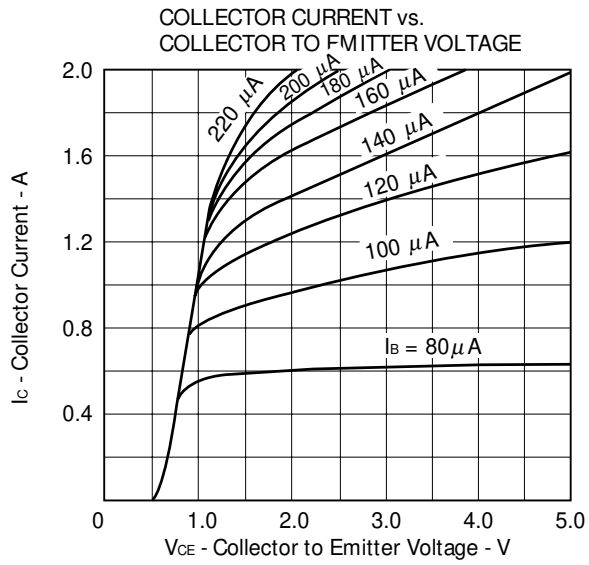
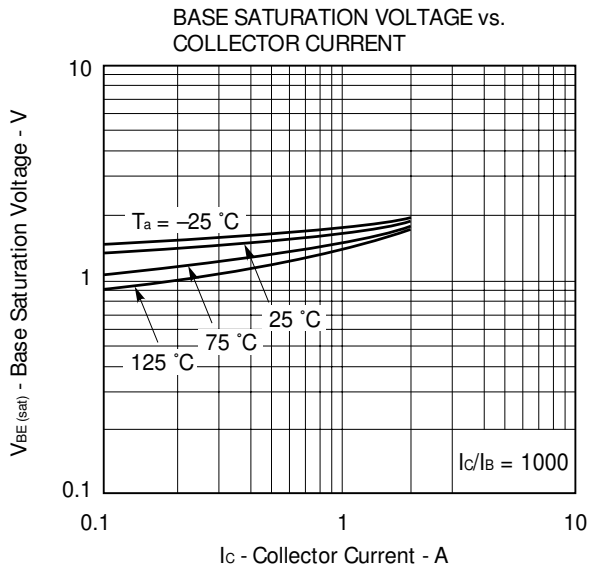
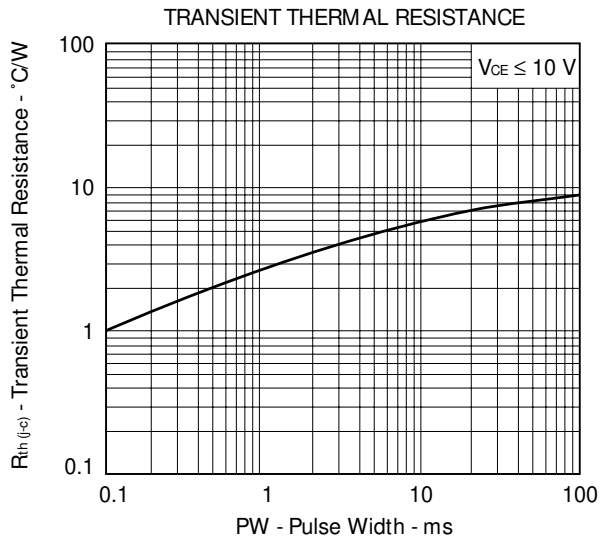
**SWITCHING TIME TEST CIRCUIT**



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

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





**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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Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.