

DARLINGTON POWER TRANSISTOR 2SC4810

NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION) FOR HIGH-SPEED SWITCHING

The 2SC4810 is a high-speed Darlington power transistor. This transistor is ideal for high-precision control such as PWM control for pulse motors or brushless motors in OA and FA equipment.

In addition, this transistor features a package that can be auto-mounted in radial taping specifications, thus contributing to mounting cost reduction.

FEATURES

- Auto-mounting possible in radial taping specifications
- Resin-molded insulation type package with power rating of 1.8 W in stand-alone conditions
- On-chip C-to-E reverse diode
- Fast switching speed

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Parameter | Symbol | Ratings | Unit |
|------------------------------|------------------------|-------------|------|
| Collector to base voltage | V _{CBO} | 100 | V |
| Collector to emitter voltage | V _{CEO} | 100 | V |
| Emitter to base voltage | V _{EBO} | 8.0 | V |
| Collector current (DC) | I _{C(DC)} | ±5.0 | A |
| Collector current (pulse) | I _{C(pulse)*} | ±10 | A |
| Base current (DC) | I _{B(DC)} | 0.5 | A |
| Total power dissipation | P _T | 1.8 | W |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

* PW ≤ 300 μs, duty cycle ≤ 10%

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

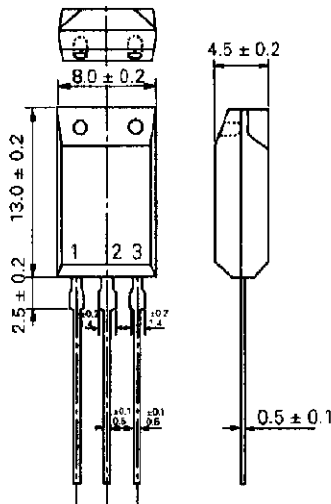
| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|------------------------------|-----------------|---|-------|------|--------|---------------|
| Collector to emitter voltage | $V_{CE0(SUS)}$ | $I_C = 5\text{ A}$, $I_B = 5\text{ mA}$, $L = 180\ \mu\text{H}$ | 100 | | | V |
| Collector to emitter voltage | $V_{CEX(SUS)}$ | $I_C = 5\text{ A}$, $I_B = 5\text{ mA}$ $L = 180\ \mu\text{H}$, clamped | 100 | | | V |
| Collector cutoff current | I_{CBO} | $V_{CB} = 100\text{ V}$, $I_E = 0$ | | | 1.0 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = 5\text{ V}$, $I_C = 0$ | | | 5.0 | mA |
| DC current gain | h_{FE1}^* | $V_{CE} = 2.0\text{ V}$, $I_C = 2.0\text{ A}$ | 2,000 | | 20,000 | - |
| DC current gain | h_{FE2}^* | $V_{CE} = 2.0\text{ V}$, $I_C = 4.0\text{ A}$ | 500 | | | - |
| Collector saturation voltage | $V_{CE(sat)}^*$ | $I_C = 2.0\text{ A}$, $I_B = 2.0\text{ mA}$ | | 0.9 | 1.5 | V |
| Base saturation voltage | $V_{BE(sat)}^*$ | $I_C = 2.0\text{ A}$, $I_B = 2.0\text{ mA}$ | | 1.5 | 2.0 | V |
| Turn-on time | t_{on} | $I_C = 2.0\text{ A}$, $I_{B1} = -I_{B2} = 2.0\text{ mA}$ | | 0.5 | | μs |
| Storage time | t_{stg} | $R_L = 25\ \Omega$, $V_{CC} \cong 50\text{ V}$ Refer to the test circuit. | | 2.5 | | μs |
| Fall time | t_f | | | 0.6 | | μs |

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

h_{FE} CLASSIFICATION

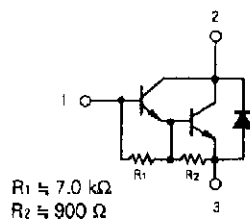
| Marking | M | L | K |
|-----------|----------------|-----------------|-----------------|
| h_{FE1} | 2,000 to 5,000 | 4,000 to 10,000 | 8,000 to 20,000 |

PACKAGE DRAWING (UNIT: mm)

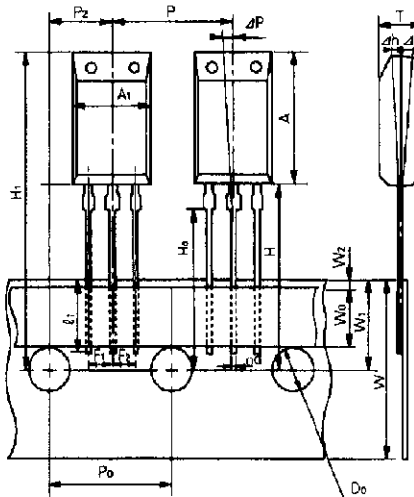


Electrode Connection

- 1. Base
- 2. Collector
- 3. Emitter

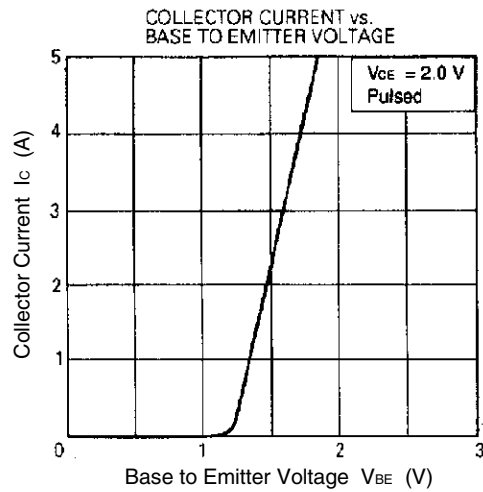
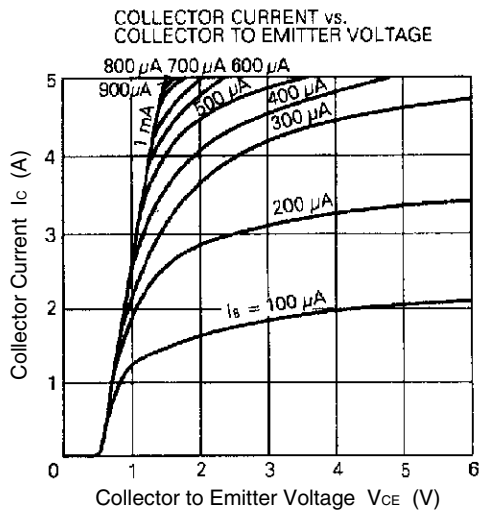
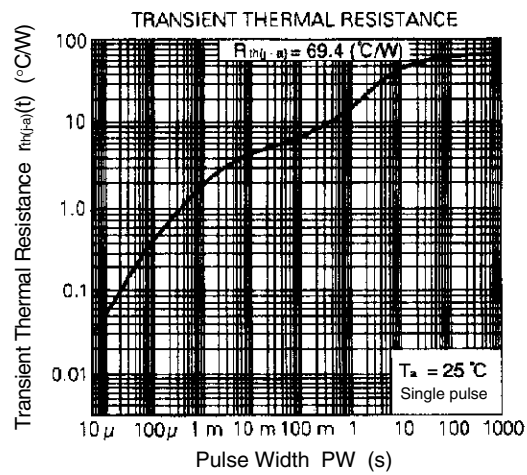
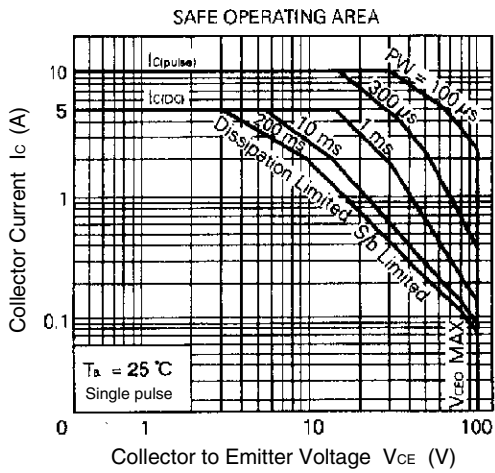
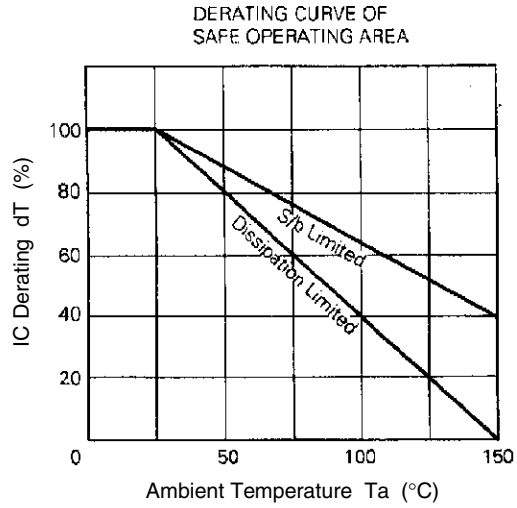
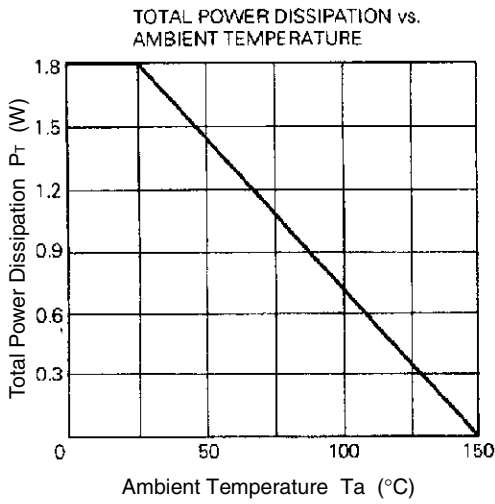


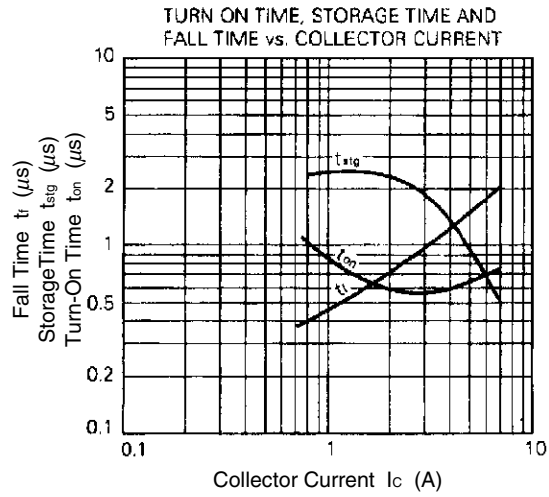
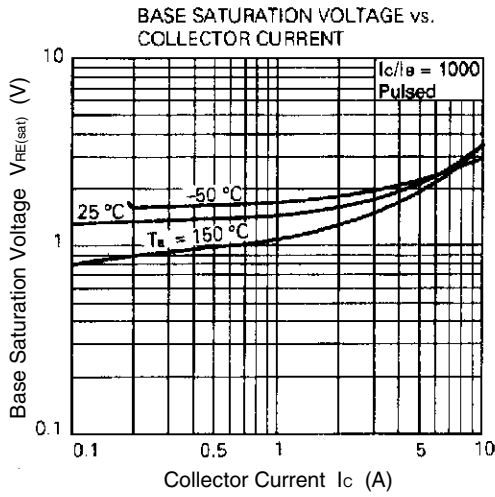
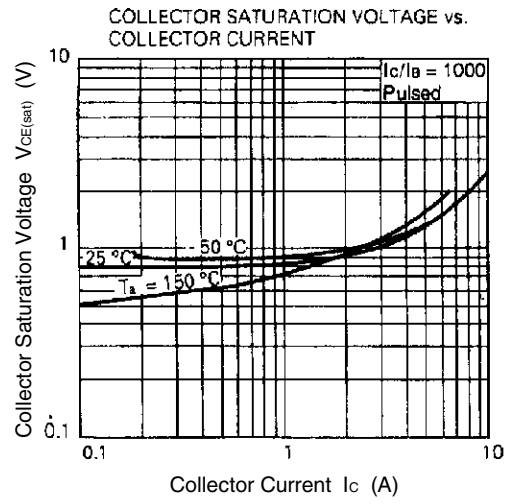
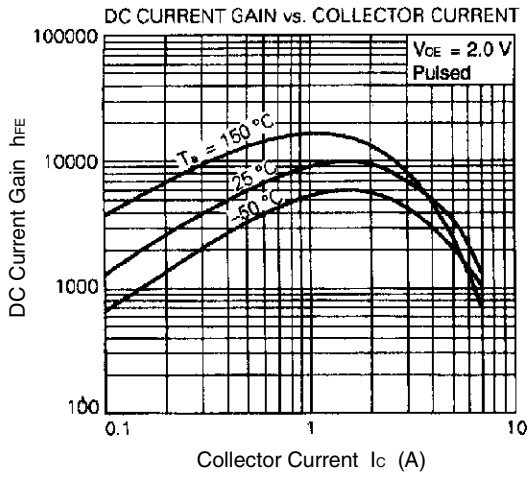
TAPING SPECIFICATION



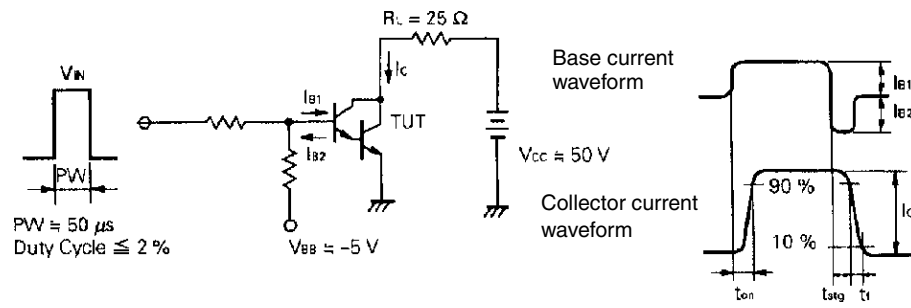
| | |
|----------------|--------------------------------------|
| A ₁ | 8.0 ± 0.2 |
| A | 13.0 ± 0.2 |
| D ₀ | φ4.0 ± 0.2 |
| d | 0.5 ± 0.1 |
| F ₁ | 2.5 ^{+0.4} _{-0.1} |
| F ₂ | 2.5 ^{+0.4} _{-0.1} |
| H | 20.0 MAX. |
| H ₀ | 16.0 ± 0.5 |
| H ₁ | 32.2 MAX. |
| Δh | 0 ± 1.0 |
| l ₁ | 2.5 MIN. |
| P | 12.7 ± 1.0 |
| P ₀ | 12.7 ± 0.3 |
| P ₂ | 6.35 ± 0.5 |
| ΔP | 0 ± 1.3 |
| T | 4.5 ± 0.2 |
| W | 18.0 ^{+1.0} _{-0.5} |
| W ₀ | 5.0 MIN. |
| W ₁ | 9.0 ± 0.5 |
| W ₂ | 0.7 MIN. |

TYPICAL CHARACTERISTICS (Ta = 25°C)





SWITCHING TIME (t_{on} , t_{stg} , t_t) TEST CIRCUIT



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