

SILICON TRANSISTOR

2SD1699

NPN SILICON EPITAXIAL TRANSISTOR

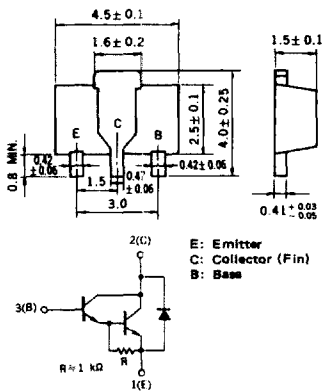
POWER MINI MOLD

DESCRIPTION

The 2SD1699 is NPN silicon epitaxial darlington transistor designed for pulse motor, printer driver, solenoid driver. Circuits.

PACKAGE DIMENSIONS

In millimeters



FEATURES

- High DC Current gain.
- Includes a diumper diode at E-C.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

| | | | |
|------------------------------|-----------|------|---|
| Collector to Base Voltage | V_{CBO} | 100 | V |
| Collector to Emitter Voltage | V_{CEO} | 80 | V |
| Emitter to Base Voltage | V_{EBO} | 8.0 | V |
| Collector Current (DC) | I_C | ±0.8 | A |
| Collector Current (Pulse)* | I_C | ±1.2 | A |

Maximum Power Dissipation

| | | | |
|---|-------|-----|---|
| Total Power Dissipation at 25°C Ambient Temperature** | P_T | 2.0 | W |
|---|-------|-----|---|

Maximum Temperatures

| | | | |
|---------------------------|-----------|-------------|------------------|
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

* $PW \leq 10$ ms, Duty Cycle $\leq 50\%$

** When mounted on ceramic substrate of $2.5\text{ cm}^2 \times 0.7\text{ mm}$

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

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|------------------------------|---------------------|------|------|-------|---------------|---|
| DC Current Gain | h_{FE1}^{***} | 4000 | | 50000 | | $V_{CE} = 2.0\text{ V}, I_C = 0.3\text{ A}$ |
| DC Current Gain | h_{FE2}^{***} | 1000 | | | | $V_{CE} = 2.0\text{ V}, I_C = 0.8\text{ A}$ |
| Turn-on Time | t_{on} | | 0.5 | | μs | $I_C = 0.5\text{ A}$ |
| Storage Time | t_{stg} | | 2.5 | | μs | $I_{B1} = -I_{B2} = 1.0\text{ mA}$ |
| Fall Time | t_f | | 1.0 | | μs | $V_{CC} = 40\text{ V}, R_L = 80\ \Omega$ |
| Collector Saturation Voltage | $V_{CE(sat)}^{***}$ | | 0.9 | 1.2 | V | $I_C = 0.5\text{ A}, I_B = 1.0\text{ mA}$ |
| Base Saturation Voltage | $V_{BE(sat)}^{***}$ | | 1.5 | 2.0 | V | $I_C = 0.5\text{ A}, I_B = 1.0\text{ mA}$ |
| Collector to Base Voltage | V_{CBO} | 100 | | | V | $I_C = 0.1\text{ mA}, I_E = 0$ |
| Collector to Emitter Voltage | V_{CEO} | 80 | | | V | $I_C = 5.0\text{ mA}, I_B = 0$ |
| Collector Cutoff Current | I_{CBO} | | | 1.0 | μA | $V_{CB} = 80\text{ V}, I_E = 0$ |
| Emitter Cutoff Current | I_{EBO} | | | 1.0 | μA | $V_{EB} = 5.0\text{ V}, I_C = 0$ |

*** Pulsed: $PW \leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

h_{FE} Classification

| MARKING | TR | TQ |
|----------|---------------|---------------|
| h_{FE} | 4000 to 12000 | 8000 to 50000 |

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

