

DESCRIPTION The 2SD1697 is NPN silicon epitaxial darlington transistor designed for pulse motor, printer driver, solenoid driver.

- FEATURES**
- High DC current gain
 - Includes a dumper diode of E-C.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature -55 to +150 °C

Junction Temperature 150 °C Maximum

Maximum Power Dissipation (T_a = 25 °C)

Total Power Dissipation 1.0 W

Maximum Voltages and Currents (T_a = 25 °C)

V_{CB0} Collector to Base Voltage 100 V

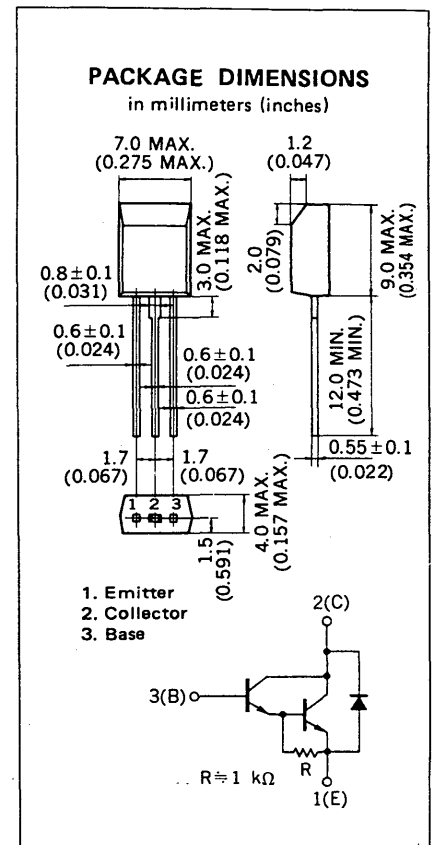
V_{CEO} Collector to Emitter Voltage 80 V

V_{EB0} Emitter to Base Voltage 8.0 V

I_C Collector Current (DC) ±0.8 A

I_C Collector Current (pulse)* ±1.2 A

* PW ≤ 10 ms, Duty Cycle ≤ 50 %



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| SYMBOL | CHARACTERISTIC | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|-------------------------|------------------------------|------|------|-------|------|--|
| h _{FE1} ** | DC Current Gain | 4000 | | 50000 | | V _{CE} = 2.0 V, I _C = 0.3 A |
| h _{FE2} ** | DC Current Gain | 1000 | | | | V _{CE} = 2.0 V, I _C = 0.8 A |
| t _{on} | Turn-on Time | | 0.5 | | μs | (I _C = 0.5 A I _{B1} = -I _{B2} = 1.0 mA V _{CC} = 40 V, R _L = 80 Ω) |
| t _{stg} | Storage Time | | 2.5 | | μs | |
| t _f | Fall Time | | 1.0 | | μs | |
| V _{CE(sat)} ** | Collector Saturation Voltage | | 0.9 | 1.2 | V | I _C = 0.5 A, I _B = 1.0 mA |
| V _{BE(sat)} ** | Base Saturation Voltage | | 1.5 | 2.0 | V | I _C = 0.5 A, I _B = 1.0 mA |
| V _{CB0} | Collector to Base Voltage | 100 | | | V | I _C = 0.1 mA, I _E = 0 |
| V _{CEO} | Collector to Emitter Voltage | 80 | | | V | I _C = 5.0 mA, I _B = 0 |
| I _{CB0} | Collector Cutoff Current | | | 1.0 | μA | V _{CB} = 80 V, I _E = 0 |
| I _{EBO} | Emitter Cutoff Current | | | 1.0 | μA | V _{EB} = 5.0 V, I _C = 0 |

** Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

Classification of h_{FE1}

| Rank | L | K |
|-------|---------------|---------------|
| Range | 4000 to 12000 | 8000 to 50000 |

Test Conditions: V_{CE} = 2.0 V, I_C = 0.3 A

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

