

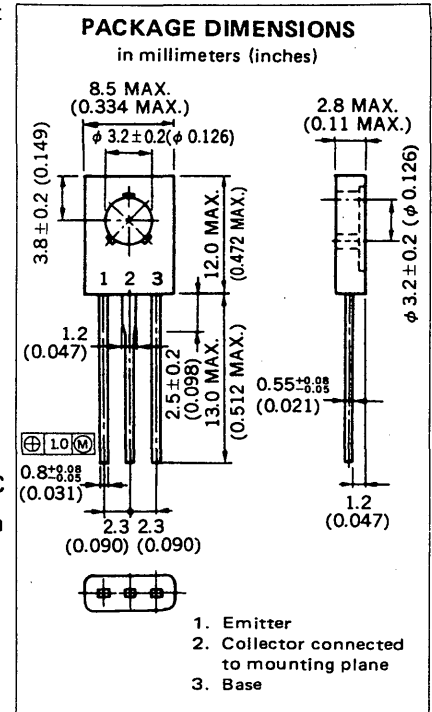
DESCRIPTION The 2SD1691 is a Low $V_{CE(sat)}$ transistor which has a large current capability and wide SOA.
It is suitable for DC-DC converter, or driver of solenoid or motor.

- FEATURES**
- Low Collector Saturation Voltage.
 $V_{CE(sat)} = 0.1 \text{ V TYP. (@ } I_C/I_B = 2.0 \text{ A}/0.2 \text{ A)}$
 - Large Current.
 $I_{C(DC)} = 5.0 \text{ A}, I_{C(pulse)} = 8.0 \text{ A}$
 - High Total Power Dissipation : $P_T = 1.3 \text{ W}$
 - Complementary to 2SB1151.

ABSOLUTE MAXIMUM RATINGS

| | |
|---|-----------------|
| Maximum Temperatures | |
| Storage Temperature | -55 to +150 °C |
| Junction Temperature | +150 °C Maximum |
| Maximum Power Dissipations | |
| Total Power Dissipation ($T_a = 25 \text{ °C}$) | 1.3 W |
| Total Power Dissipation ($T_c = 25 \text{ °C}$) | 20 W |
| Maximum Voltages and Currents ($T_a = 25 \text{ °C}$) | |
| V_{CBO} Collector to Base Voltage | 60 V |
| V_{CEO} Collector to Emitter Voltage | 60 V |
| V_{EBO} Emitter to Base Voltage | 7.0 V |
| $I_{C(DC)}$ Collector Current | 5.0 A |
| $I_{C(pulse)}$ Collector Current* | 8.0 A |
| $I_{B(DC)}$ Base Current | 1.0 A |

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



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

| SYMBOL | CHARACTERISTIC | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|--------------------|------------------------------|------|------|------|---------------|--|
| $V_{CE(sat)}^{**}$ | Collector Saturation Voltage | | 0.1 | 0.3 | V | $I_C = 2.0 \text{ A}, I_B = 0.2 \text{ A}$ |
| $V_{BE(sat)}^{**}$ | Base Saturation Voltage | | 0.9 | 1.2 | V | $I_C = 2.0 \text{ A}, I_B = 0.2 \text{ A}$ |
| h_{FE1}^{**} | DC Current Gain | 60 | | | - | $V_{CE} = 1.0 \text{ V}, I_C = 0.1 \text{ A}$ |
| h_{FE2}^{**} | DC Current Gain | 100 | | 400 | - | $V_{CE} = 1.0 \text{ V}, I_C = 2.0 \text{ A}$ |
| h_{FE3}^{**} | DC Current Gain | 50 | | | - | $V_{CE} = 1.0 \text{ V}, I_C = 5.0 \text{ A}$ |
| I_{CBO} | Collector Cutoff Current | | | 10 | μA | $V_{CB} = 50 \text{ V}, I_E = 0$ |
| I_{EBO} | Emitter Cutoff Current | | | 10 | μA | $V_{EB} = 7.0 \text{ V}, I_C = 0$ |
| t_{on} | Turn On Time | | 0.2 | 1.0 | μs | $I_C = 2.0 \text{ A}, I_{B1} = -I_{B2} = 0.2 \text{ A}$ $R_L = 5.0 \Omega, V_{CC} \approx 10 \text{ V}$ |
| t_{stg} | Storage Time | | 1.1 | 2.5 | μs | |
| t_f | Fall Time | | 0.2 | 1.0 | μs | |

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

Classification of h_{FE2}

| Rank | M | L | K |
|-------|------------|------------|------------|
| Range | 100 to 200 | 160 to 320 | 200 to 400 |

Test Conditions: $V_{CE} = 1.0 \text{ V}, I_C = 2.0 \text{ A}$

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

