

NPN SILICON POWER TRANSISTOR 2SD1691

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 $-55 \text{ to } +150 \text{ }^\circ\text{C}$
Junction Temperature $+150 \text{ }^\circ\text{C}$ Maximum

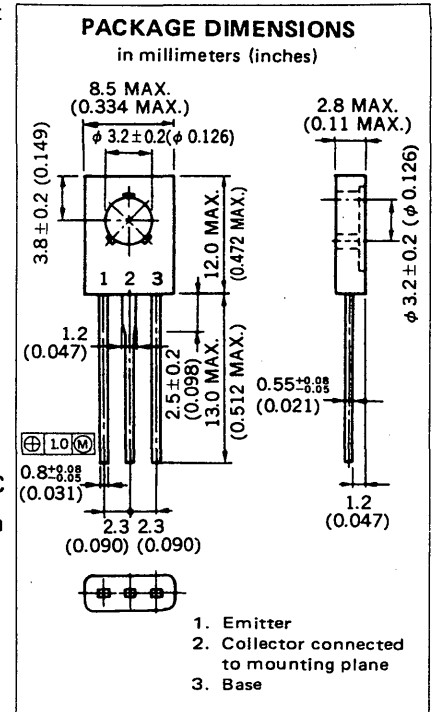
Maximum Power Dissipations

Total Power Dissipation ($T_a = 25 \text{ }^\circ\text{C}$) 1.3 W
Total Power Dissipation ($T_c = 25 \text{ }^\circ\text{C}$) 20 W

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

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

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

