

## NPN SILICON DARLINGTON TRANSISTOR 2SD1692

**DESCRIPTION** The 2SD1692 is a darlington transistor built-in diode at E-C.

It is suitable for use to operate from IC without predriver, such as hammer driver.

- FEATURES**
- High DC Current Gain.
  - Low Collector Saturation Voltage.
  - Built-in a diode at E-C.
  - High Power Dissipation:  $P_T = 1.3 \text{ W}$  (at  $T_a = 25^\circ\text{C}$ )

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures

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

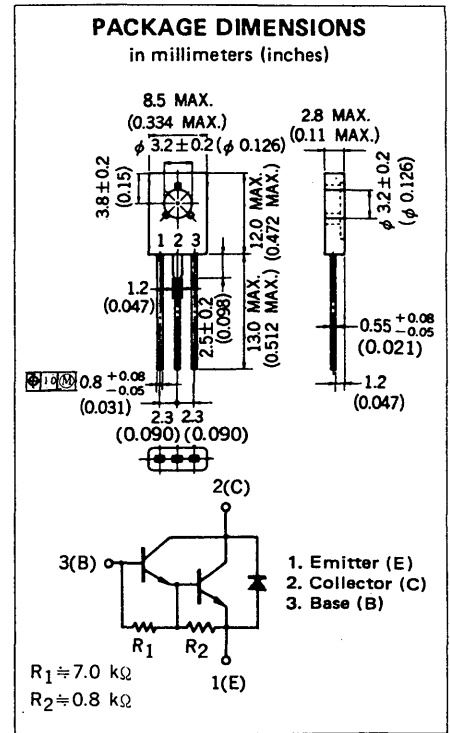
Maximum Power Dissipations

Total Power Dissipation ( $T_a = 25^\circ\text{C}$ ) .....  $1.3 \text{ W}$   
 Total Power Dissipation ( $T_c = 25^\circ\text{C}$ ) .....  $15 \text{ W}$

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

$V_{CBO}$  Collector to Base Voltage .....  $150 \text{ V}$   
 $V_{CEO}$  Collector to Emitter Voltage .....  $100 \text{ V}$   
 $V_{EBO}$  Emitter to Base Voltage .....  $8.0 \text{ V}$   
 $I_{C(DC)}$  Collector Current .....  $\pm 3.0 \text{ A}$   
 $I_{C(pulse)}$  Collector Current .....  $\pm 5.0 \text{ A}$

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



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

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}^{**}$	DC Current Gain	2000		20000	—	$V_{CE} = 2.0 \text{ V}$ , $I_C = 1.5 \text{ A}$
$h_{FE2}^{**}$	DC Current Gain	1000			—	$V_{CE} = 2.0 \text{ V}$ , $I_C = 3.0 \text{ A}$
$t_{on}$	Turn On Time		0.5		$\mu\text{s}$	$I_C = 1.5 \text{ A}$ , $R_L = 27 \Omega$ $I_{B1} = -I_{B2} = 1.5 \text{ mA}$ , $V_{CC} \cong 40 \text{ V}$ See Test Circuit.
$t_{stg}$	Storage Time		2.0		$\mu\text{s}$	
$t_f$	Fall Time		1.0		$\mu\text{s}$	
$I_{CBO}$	Collector Cutoff Current			10	$\mu\text{A}$	$V_{CB} = 100 \text{ V}$ , $I_E = 0$
$I_{EBO}$	Emitter Cutoff Current			1.0	$\text{mA}$	$V_{EB} = 5.0 \text{ V}$ , $I_C = 0$
$V_{CE(sat)}^{**}$	Collector Saturation Voltage		0.9	1.2	$\text{V}$	$I_C = 1.5 \text{ A}$ , $I_B = 1.5 \text{ mA}$
$V_{BE(sat)}^{**}$	Base Saturation Voltage		1.5	2.0	$\text{V}$	$I_C = 1.5 \text{ A}$ , $I_B = 1.5 \text{ mA}$

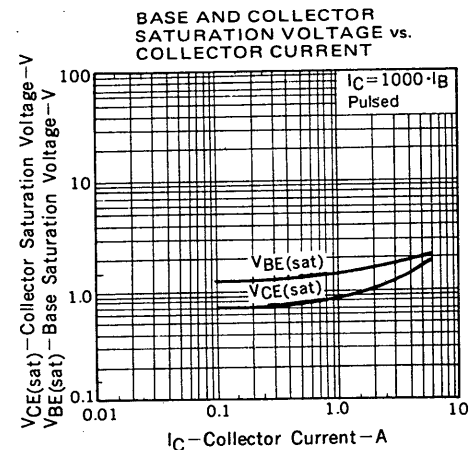
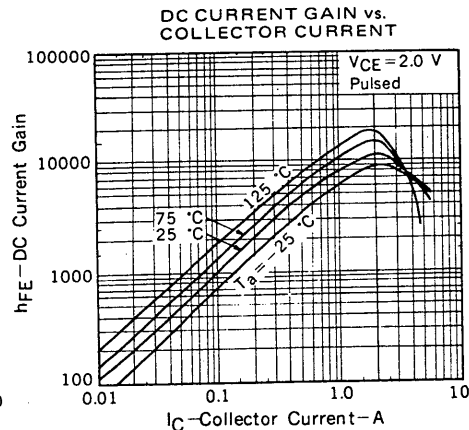
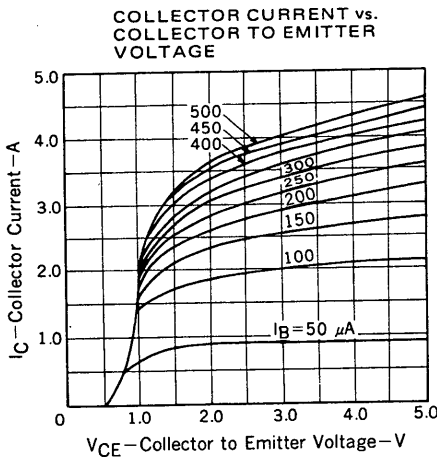
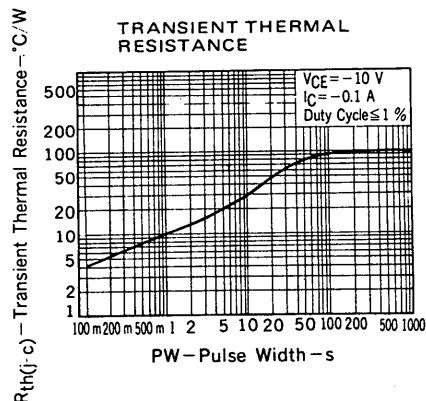
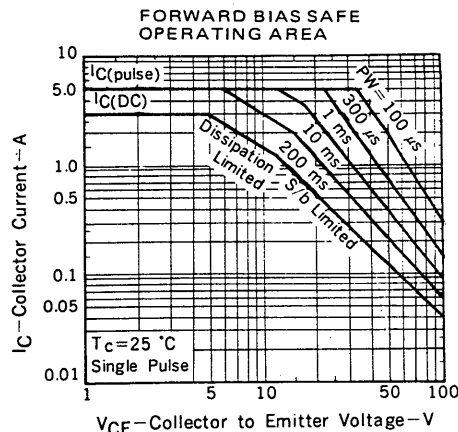
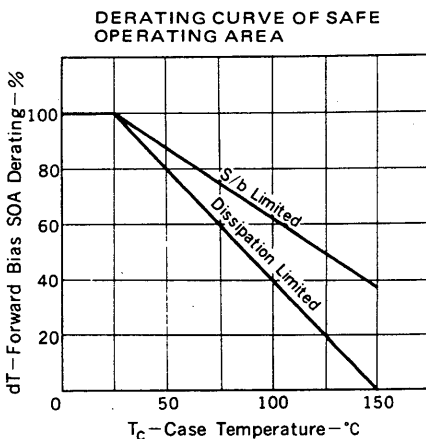
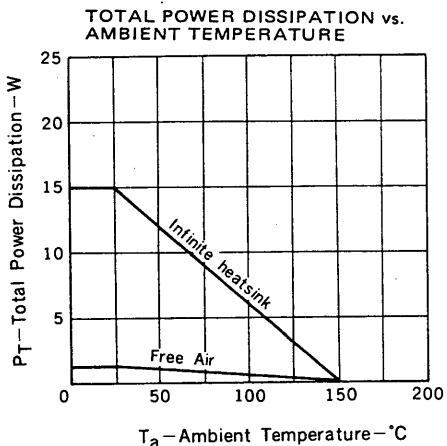
\*\* Pulsed /  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2 \%$

Classification of  $h_{FE1}$

Rank	M	L	K
Range	2000 to 5000	4000 to 10000	8000 to 20000

Test Conditions:  $V_{CE} = 2.0 \text{ V}$ ,  $I_C = 1.5 \text{ A}$

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



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

