

NPN SILICON POWER TRANSISTOR 2SD1694

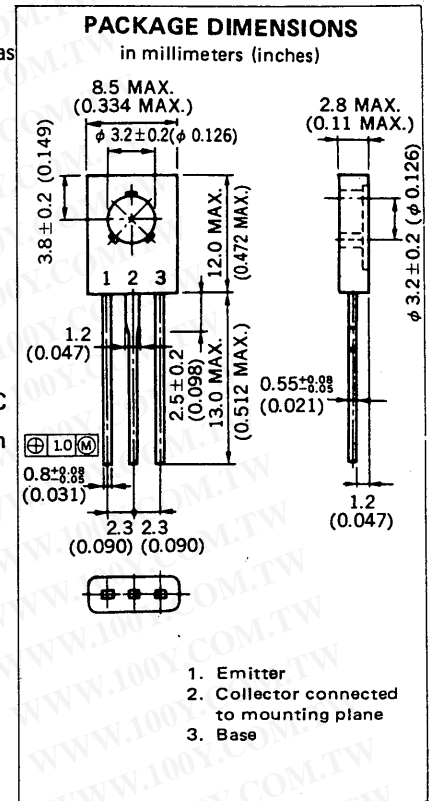
DESCRIPTION The 2SD1694 is High h_{FE} and Low $V_{CE(sat)}$ transistor. It is suitable for use to operate from IC without predriver, such as hammer driver.

- FEATURES**
- High DC Current Gain : $h_{FE} = 800$ to 3200 .
 - Low Collector Saturation Voltage.
 $V_{CE(sat)} = 0.4$ V MAX. (@ $I_C/I_B = 2.0$ A/20 mA)
 - High Total Power Dissipation : $P_T = 1.3$ W

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperature	..... -55 to +150 °C
Junction Temperature	..... +150 °C Maximum
Maximum Power Dissipations	
Total Power Dissipation ($T_a = 25$ °C)	..... 1.3 W
Total Power Dissipation ($T_c = 25$ °C)	..... 20 W
Maximum Voltages and Currents ($T_a = 25$ °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	..... 3.0 A
$I_C(pulse)^*$ Collector Current	..... 5.0 A
$I_B(DC)$ Base Current	..... 0.5 A

* $PW \leq 10$ ms, Duty Cycle ≤ 50 %



1. Emitter
2. Collector connected to mounting plane
3. Base

ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}^{**}	DC Current Gain	700	1400		—	$V_{CE} = 5.0$ V, $I_C = 50$ mA
h_{FE2}^{**}	DC Current Gain	800	1500	3200	—	$V_{CE} = 5.0$ V, $I_C = 0.5$ A
h_{FE3}^{**}	DC Current Gain	500	1200		—	$V_{CE} = 5.0$ V, $I_C = 3.0$ A
t_{on}	Turn-On Time		0.9	2.0	μ s	$I_C = 2.0$ A, $I_{B1} = -I_{B2} = 20$ mA $R_L = 5$ Ω , $V_{CC} \approx 10$ V
t_{stg}	Storage Time		2.6	4.0	μ s	
t_f	Fall Time		1.0	2.0	μ s	
$V_{CE(sat)}^{**}$	Collector Saturation Voltage		0.2	0.4	V	$I_C = 2.0$ A, $I_B = 20$ mA
$V_{BE(sat)}^{**}$	Base Saturation Voltage		0.85	1.2	V	$I_C = 2.0$ A, $I_B = 20$ mA
I_{CBO}	Collector Cutoff Current			10	μ A	$V_{CB} = 60$ V, $I_E = 0$
I_{EBO}	Emitter Cutoff Current			10	μ A	$V_{EB} = 5.0$ V, $I_C = 0$
f_T	Gain Bandwidth Product	100	250		MHz	$V_{CE} = 5.0$ V, $I_C = 1.0$ A
C_{ob}	Output Capacitance		50	60	pF	$V_{CB} = 10$ V, $I_E = 0$, $f = 1$ MHz

** $PW \leq 350$ μ s, Duty Cycle ≤ 2 %

Classification of h_{FE2}

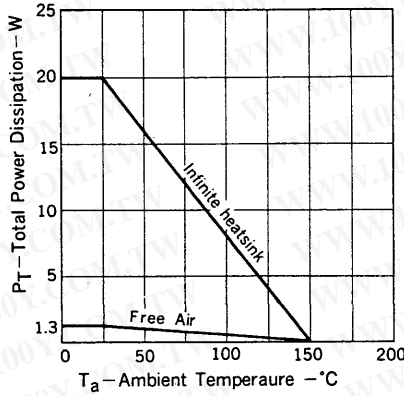
Rank	M	L	K
Range	800 to 1600	1000 to 2000	1600 to 3200

Test Conditions: $V_{CE} = 5.0$ V, $I_C = 0.5$ A

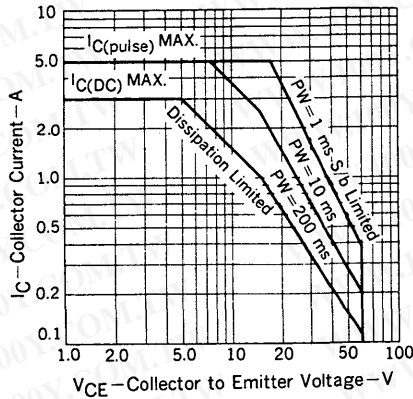
勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

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

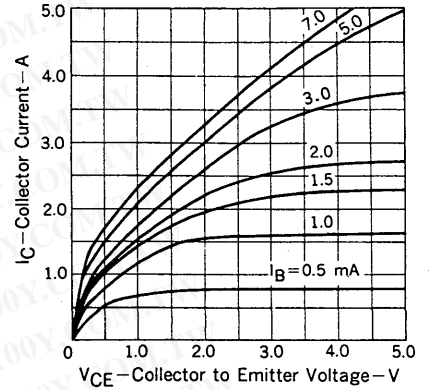
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



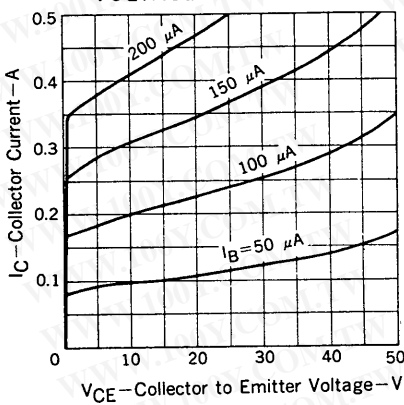
SAFE OPERATING AREA



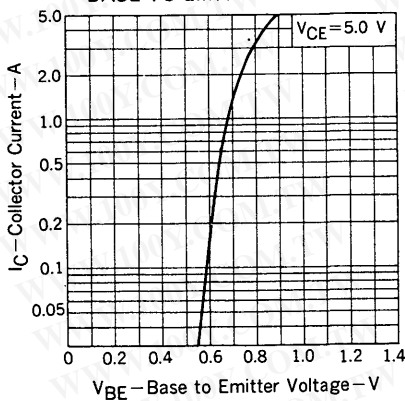
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



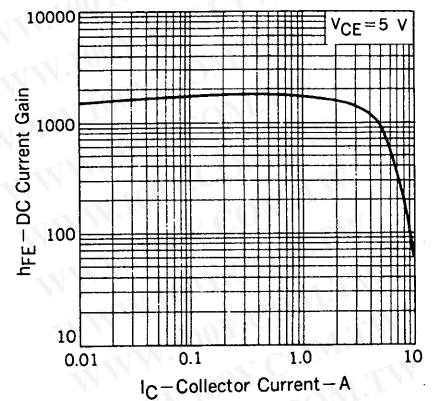
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



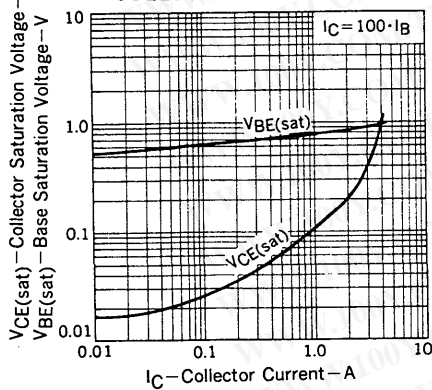
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT

