

## DARLINGTON SILICON POWER TRANSISTORS

...designed for general-purpose amplifier, hammer drive, pulse motor drive and low speed switching, applications.

### FEATURES:

\* Collector-Emitter Sustaining Voltage-

$V_{CE0(sus)} = 60 \text{ V (Min) - 2SD635}$

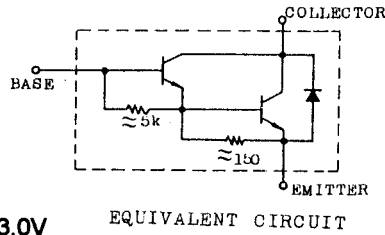
$= 80 \text{ V (Min) - 2SD634}$

$= 100 \text{ V (Min) - 2SD633}$

\* Collector-Emitter Saturation Voltage

$V_{CE(sat)} = 2.0 \text{ V (Max.) @ } I_C = 7.0 \text{ A, } I_B = 14 \text{ mA}$

\* DC Current Gain  $h_{FE} = 2000(\text{Min}) @ I_C = 3.0 \text{ A, } V_{CE} = 3.0 \text{ V}$



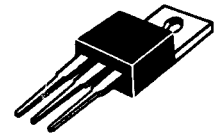
**NPN**  
**2SD633**  
**2SD634**  
**2SD635**

**7 AMPERE**  
**DARLINGTON**  
**POWER TRANSISTORS**  
**NPN SILICON**  
**60-100 VOLTS**  
**40 WATTS**

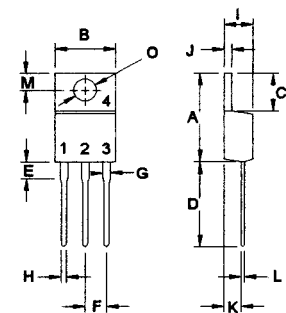
www.DataSheet4U.com

### MAXIMUM RATINGS

Characteristic	Symbol	2SD635	2SD634	2SD633	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	100	V
Collector-Base Voltage	$V_{CBO}$	60	80	100	V
Emitter-Base Voltage	$V_{EBO}$	5.0			V
Collector Current-Continuous -Peak	$I_C$ $I_{CM}$	7.0 10			A
Base Current	$I_B$	0.2			A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	40 0.32			W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +150			$^\circ\text{C}$



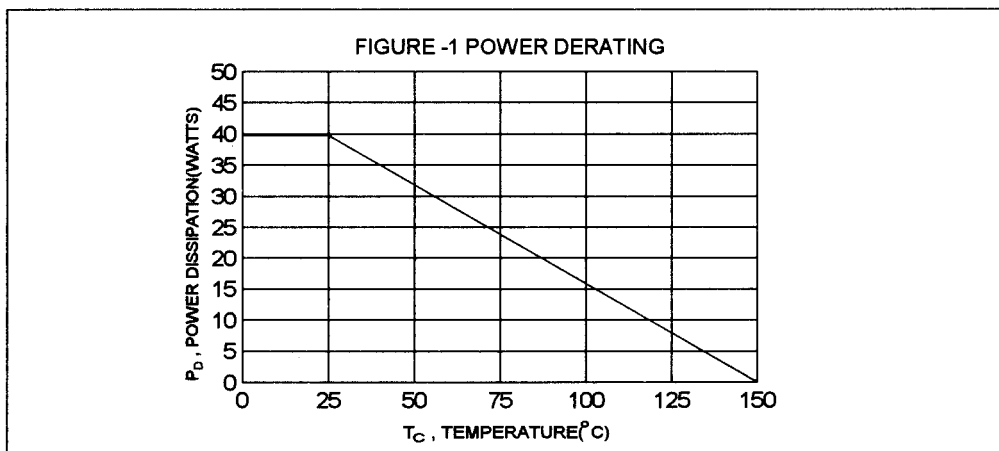
TO-220



PIN 1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR(CASE)

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	3.125	$^\circ\text{C/W}$



DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

**ELECTRICAL CHARACTERISTICS (  $T_c = 25^\circ\text{C}$  unless otherwise noted )**

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector - Emitter Breakdown Voltage ( $I_c = 50 \text{ mA}, I_B = 0$ )	2SD633 2SD634 2SD635	$V_{(BR)CEO}$	100 80 60	V
Collector Cutoff Current ( $V_{CE} = 100 \text{ V}, I_E = 0$ ) ( $V_{CE} = 80 \text{ V}, I_E = 0$ ) ( $V_{CE} = 60 \text{ V}, I_E = 0$ )	2SD633 2SD634 2SD635	$I_{CBO}$	100 100 100	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5.0 \text{ V}, I_C = 0$ )		$I_{EBO}$	3.0	mA

**ON CHARACTERISTICS (1)**

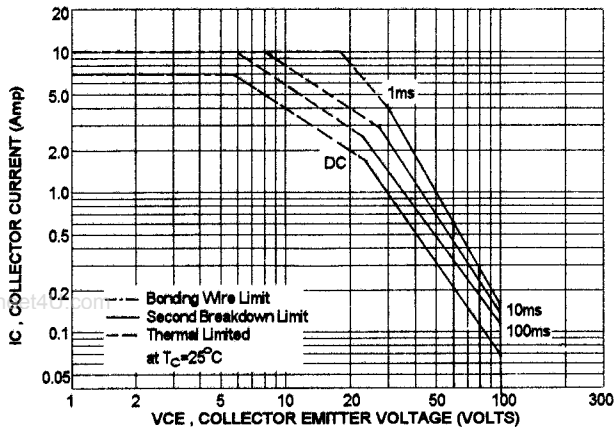
DC Current Gain ( $I_c = 3.0 \text{ A}, V_{CE} = 3.0 \text{ V}$ ) ( $I_c = 7.0 \text{ A}, V_{CE} = 3.0 \text{ V}$ )		hFE	2000 1000	15000
Collector-Emitter Saturation Voltage ( $I_c = 3.0 \text{ A}, I_B = 6.0 \text{ mA}$ ) ( $I_c = 7.0 \text{ A}, I_B = 14 \text{ mA}$ )		$V_{CE(sat)}$	1.5 2.0	V
Base-Emitter On Voltage ( $I_c = 3.0 \text{ A}, I_B = 6.0 \text{ mA}$ )		$V_{BE(sat)}$	2.5	V

**SWITCHING CHARACTERISTICS**

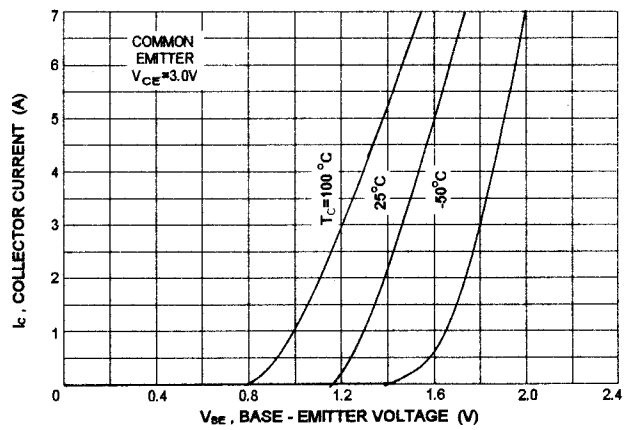
On Time	$I_c = 3.0 \text{ A}, V_{CC} = 45 \text{ V}$ $I_{B1} = -I_{B2} = 6.0 \text{ mA}$ PW= 20 $\mu\text{s}$ , Duty<1%	$t_{on}$	1.2	$\mu\text{s}$
Storage Time		$t_s$	3.5	$\mu\text{s}$
Fall Time		$t_f$	3.0	$\mu\text{s}$

(1) Pulse Test: Pulse width = 300  $\mu\text{s}$  , Duty Cycle  $\leq 2.0\%$

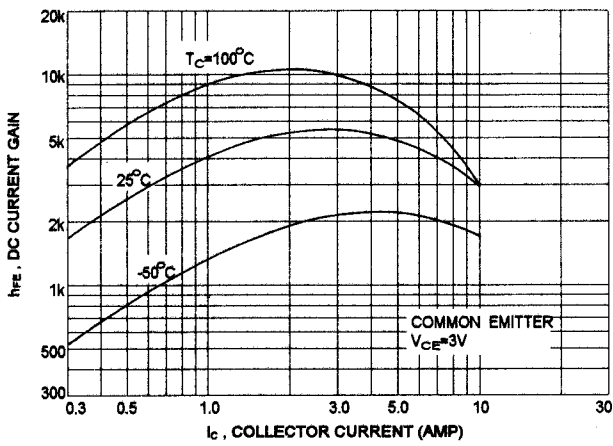
SAFE OPERATING AREA



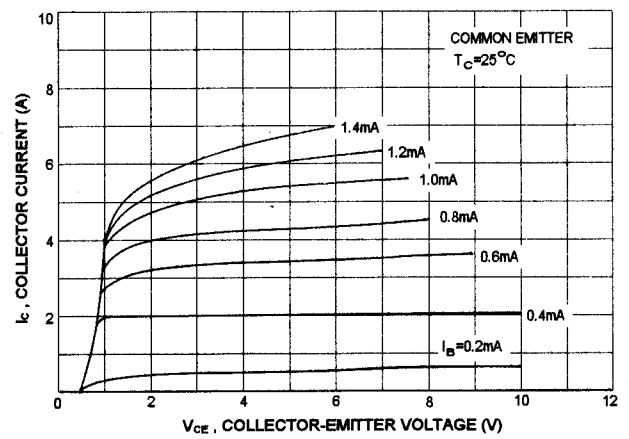
$I_C - V_{BE}$



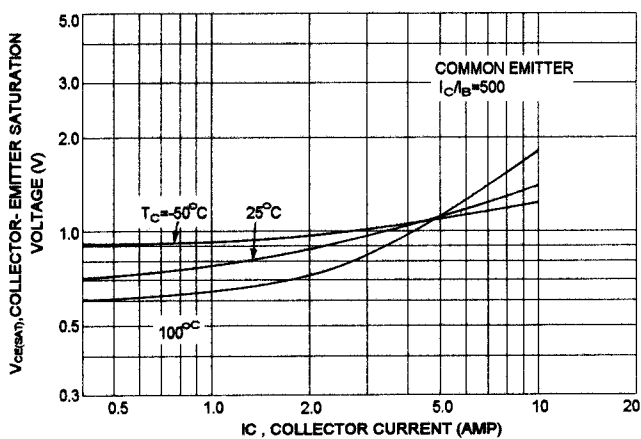
DC CURRENT GAIN



$I_C - V_{CE}$



$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$

