

## HIGH VOLTAGE DARLINGTON POWER TRANSISTORS

... designed for use in high-voltage switching igniter application

### FEATURES:

\*Collector-Emitter Sustaining Voltage-

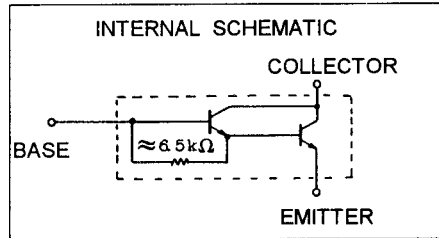
$$V_{CEO(SUS)} = 250 \text{ V (Min)}$$

\* Collector-Emitter Saturation Voltage -

$$V_{CE(sat)} = 2.0 \text{ V (Max.) @ } I_C = 4.0 \text{ A, } I_B = 40\text{mA}$$

\* High DC current Gain

$$hFE = 2000 \text{ (Min) @ } I_C = 2.0\text{A, } V_{CE} = 2.0\text{V}$$

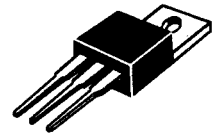


**NPN**  
**2SD1088**

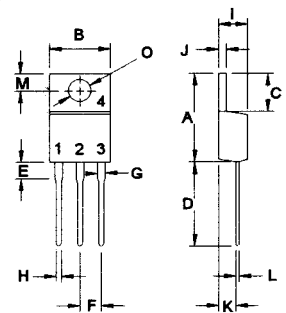
**6 AMPERE**  
**POWER DARLINGTON**  
**TRANSISTORS**  
**250 VOLTS**  
**30 WATTS**

### MAXIMUM RATINGS

Characteristic	Symbol	2SD1088	Unit
Collector-Emitter Voltage	$V_{CEO}$	250	V
Collector-Base Voltage	$V_{CBO}$	300	V
Emitter-Base Voltage	$V_{EBO}$	5.0	V
Collector Current - Continuous	$I_C$	6.0	A
- Peak	$I_{CM}$	10	
Base current	$I_B$	1.0	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	30 0.24	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$



**TO-220**



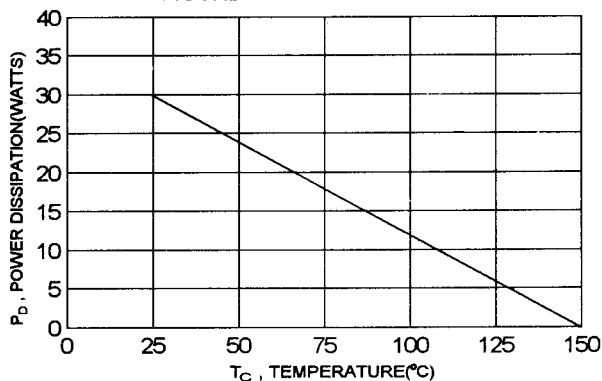
PIN 1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR(CASE)

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	4.16	$^\circ\text{C/W}$

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

FIGURE -1 POWER DERATING



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

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Sustaining Voltage ( $I_C = 0.5\text{ A}$ , $L = 40\text{ mH}$ )	$V_{CE(sus)}$	250		V
Collector Cutoff Current ( $V_{CB} = 300\text{ V}$ , $I_E = 0$ )	$I_{CBO}$		500	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5.0\text{ V}$ , $I_C = 0$ )	$I_{EBO}$		500	$\mu\text{A}$

**ON CHARACTERISTICS (1)**

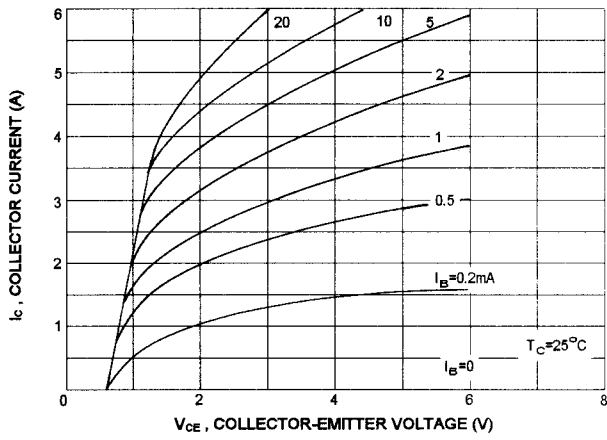
DC Current Gain ( $I_C = 2.0\text{ A}$ , $V_{CE} = 2.0\text{ V}$ ) ( $I_C = 4.0\text{ A}$ , $V_{CE} = 2.0\text{ V}$ )	hFE	2000 200		
Collector-Emitter Saturation Voltage ( $I_C = 4.0\text{ A}$ , $I_B = 40\text{ mA}$ )	$V_{CE(sat)}$		2.0	V
Base-Emitter Saturation Voltage ( $I_C = 4.0\text{ A}$ , $I_B = 40\text{ mA}$ )	$V_{BE(sat)}$		2.5	V

**SWITCHING CHARACTERISTICS**

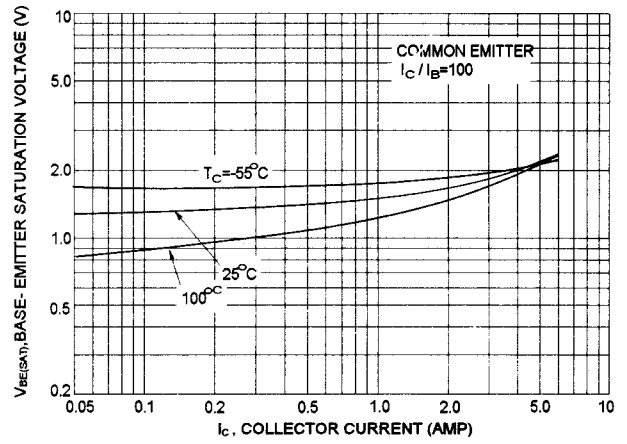
On Time	$V_{CC} = 100\text{ V}$ , $I_C = 4.0\text{ A}$ $I_{B1} = -I_{B2} = 40\text{ mA}$ $R_L = 25\text{ ohm}$	$t_{on}$	1.0(typ)		$\mu\text{s}$
Storage Time		$t_s$	8.0(typ)		$\mu\text{s}$
Fall Time		$t_f$	5.0(typ)		$\mu\text{s}$

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

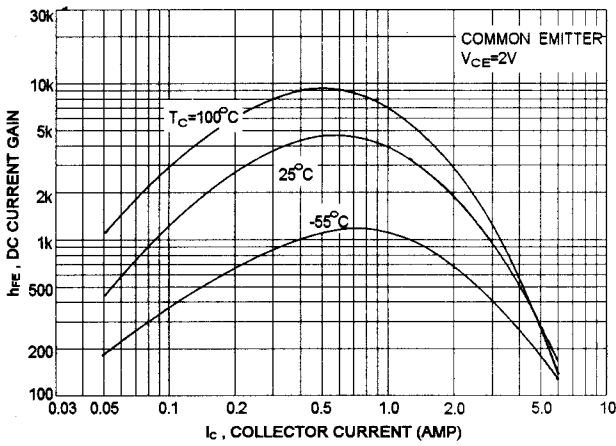
$I_c - V_{ce}$



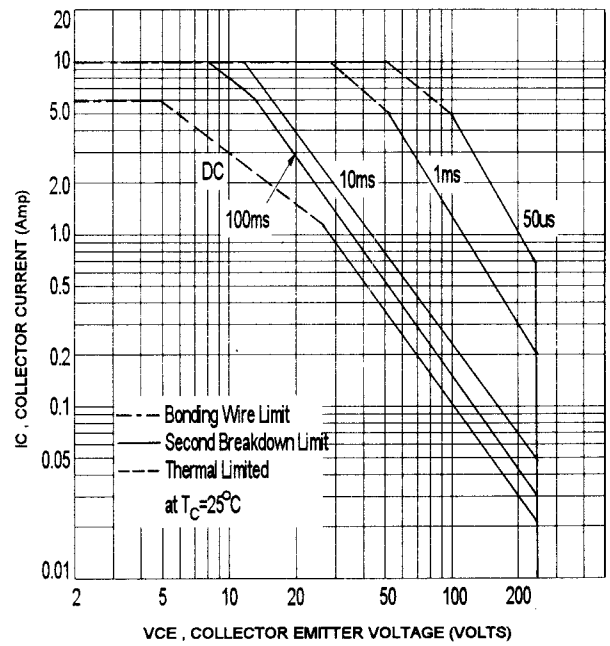
$V_{BE(sat)} - I_c$



DC CURRENT GAIN



SAFE OPERATING AREA (SOA)



$V_{CE(sat)} - I_c$

