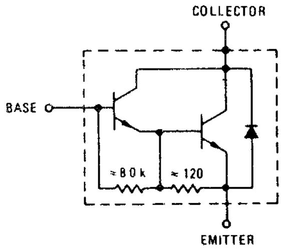
MOSPEC

DARLINGTON SILICON POWER TRANSISTORS

...designed for general-purpose amplifier and low speed switching applications

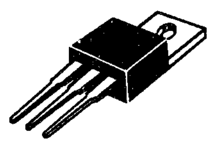
FEATURES:

* Collector-Emitter Sustaining Voltage-
  $V_{CEO(SUS)}$ = 40 V (Min) - 2N6386
  = 60 V (Min) - 2N6387
  = 80 V (Min) - 2N6388
* Collector-Emitter Saturation Voltage
  $V_{CE(sat)}$ = 2.0 V (Max.) @ I_C = 3.0 A - 2N6386
  = 2.0 V (Max.) @ I_C = 5.0 A - 2N6387, 2N6388
* DC Current Gain hFE = 2500(Typ) @ I_C = 4.0 A
* Complementary to 2N6666, 2N6667, 2N6668



NPN
2N6386
2N6387
2N6388

8 AND 10 AMPERE
DARLINGTON
POWER TRANSISTORS
NPN SILICON
40-80 VOLTS
65 WATTS



TO-220

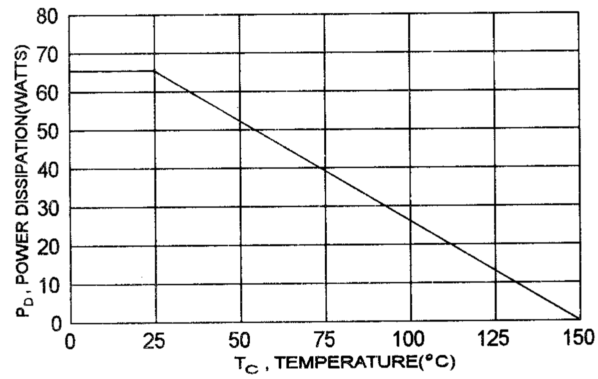
MAXIMUM RATINGS

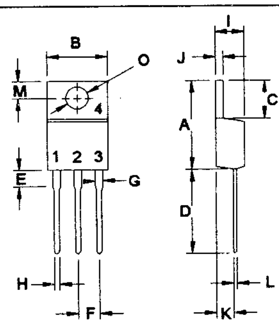
Characteristic	Symbol	2N6386	2N6387	2N6388	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	80	V
COllector-Base Voltage	V_{CBO}	40	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0			V
Collector Current-Continuous -Peak	I_C I_{CM}	8.0 15	10 15	10 15	A
Base Current	I_B	0.25			A
Total Power Dissipation @T_C= 25°C Derate above 25°C	P_D	65 0.52			W W/°C
Operating and Storage Junction Temperature Range	T_J ,T_{STG}	- 65 to +150			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	1.92	°C/W

FIGURE -1 POWER DERATING





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

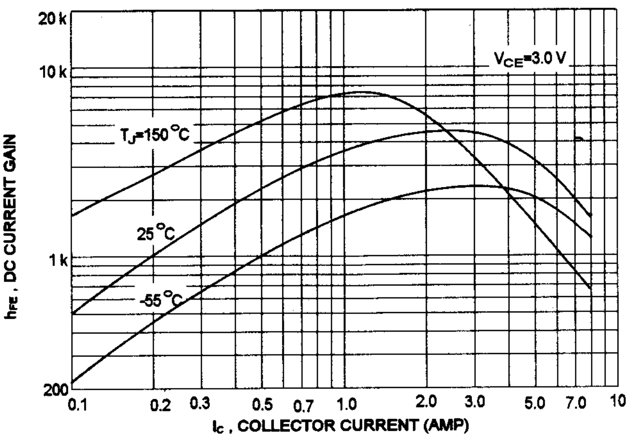
DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

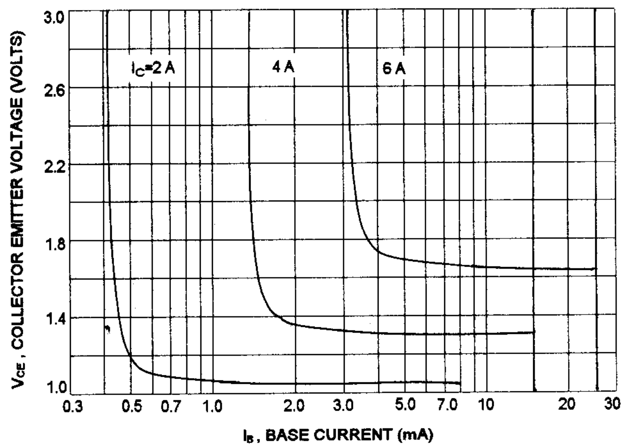
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1)		$V_{CEO(sus)}$			V
(I_C = 200 mA, I_B = 0)	2N6386		40		
	2N6387		60		
	2N6388		80		
Collector Cutoff Current		I_{CEO}			mA
(V_{CE} = 40 V, I_B = 0)	2N6386			1.0	
(V_{CE} = 60 V, I_B = 0)	2N6387			1.0	
(V_{CE} = 80 V, I_B = 0)	2N6388			1.0	
Collector Cutoff Current		I_{CEX}			mA
(V_{CE} = 40 V, $V_{BE(OFF)}$ = 1.5 V)	2N6386			0.3	
(V_{CE} = 60 V, $V_{BE(OFF)}$ = 1.5 V)	2N6387			0.3	
(V_{CE} = 80 V, $V_{BE(OFF)}$ = 1.5 V)	2N6388			0.3	
(V_{CE} = 40 V, $V_{BE(OFF)}$ = 1.5 V, T_C = 125°C)	2N6386			3.0	
(V_{CE} = 60 V, $V_{BE(OFF)}$ = 1.5 V, T_C = 125°C)	2N6387			3.0	
(V_{CE} = 80 V, $V_{BE(OFF)}$ = 1.5 V, T_C = 125°C)	2N6388			3.0	
Emitter Cutoff Current		I_{EBO}			mA
(V_{EB} = 5.0 V, I_C= 0)				5.0	
ON CHARACTERISTICS (1)					
DC Current Gain		hFE			
(I_C = 3.0 A, V_{CE} = 3.0 V)	2N6386		1000	20000	
(I_C = 5.0 A, V_{CE} = 3.0 V)	2N6387, 2N6388		1000	20000	
(I_C = 8.0 A, V_{CE} = 3.0 V)	2N6386		100		
(I_C = 10 A, V_{CE} = 3.0 V)	2N6387, 2N6388		100		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			V
(I_C = 3.0 A, I_B = 6 mA)	2N6386			2.0	
(I_C = 5.0 A, I_B = 10 mA)	2N6387, 2N6388			2.0	
(I_C = 8.0 A, I_B = 80 mA)	2N6386			3.0	
(I_C = 10 A, I_B = 100 mA)	2N6387, 2N6388			3.0	
Base-Emitter On Voltage		$V_{BE(on)}$			V
(I_C = 3.0 A, V_{CE} = 3.0 V)	2N6386			2,8	
(I_C = 5.0 A, V_{CE} = 3.0 V)	2N6387, 2N6388			2.8	
(I_C = 8.0 A, V_{CE} = 3.0 V)	2N6386			4.5	
(I_C = 10 A, V_{CE} = 3.0 V)	2N6387, 2N6388			4.5	
DYNAMIC CHARACTERISTICS					
Small-Signal Current Gain		h_{fe}			
(I_C = 1.0 A, V_{CE} = 5.0 V, f = 1.0 KHz)			1000		
Output Capacitance		C_{ob}			pF
(V_{CB} = 10 V, I_E = 0 , f = 1.0 MHZ)				200	

(1) Pulse Test: Pulse width = 300 μs , Duty Cycle ≦ 2.0%

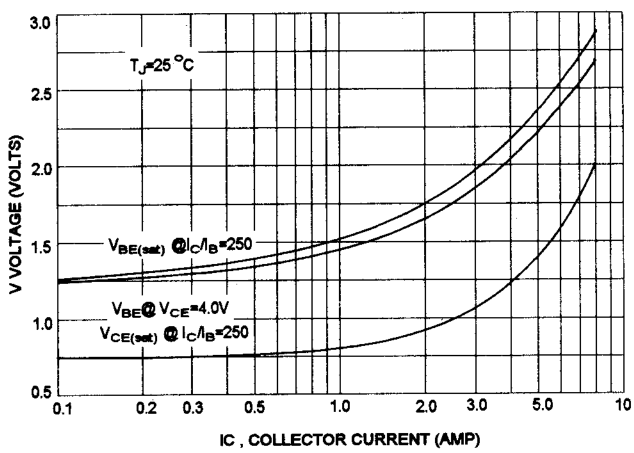
DC CURRENT GAIN



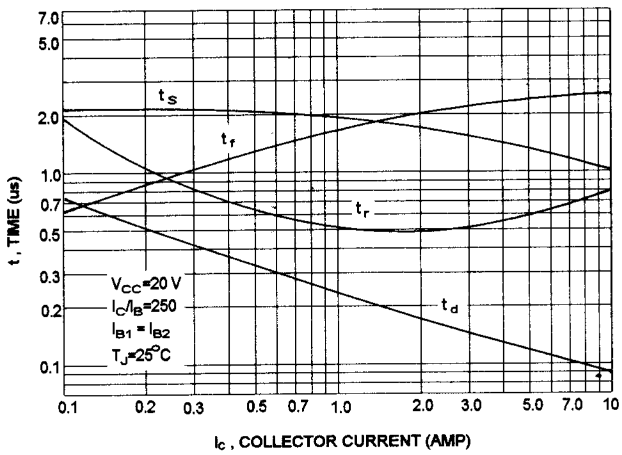
COLLECTOR SATURATION REGION



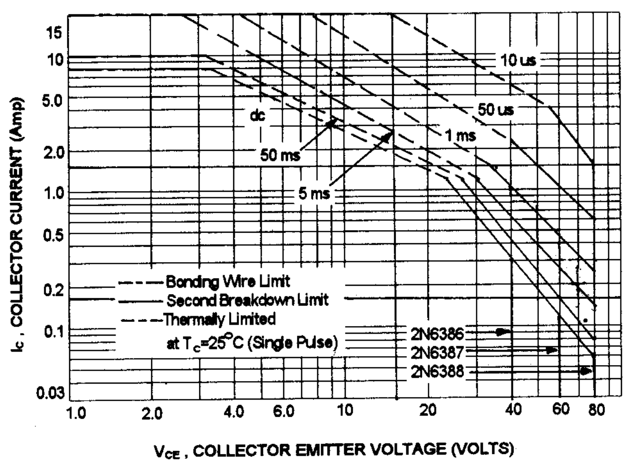
"ON" VOLTAGES



SWITCHING TIME



ACTIVE-REGION SAFE OPERATING AREA (SOA)



There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on $T_{J(PK)}$=150 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \le 150$°C,At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.