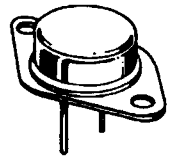
MOSPEC

DARLINGTON COMPLEMENTARY SILICON-POWER TRANSISTORS

...designed for general-purpose power amplifier and low frequency switching applications

PNP	NPN
2N6050	2N6057
2N6051	2N6058
2N6052	2N6059

DARLINGTON
12 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60-100 VOLTS
150 WATTS



TO-3

FEATURES:

* Monolithic Construction with Bult-in Base-Emitter Shunt Resistors.
* High DC Current Gain -
  hFE = 3500 (typ)@ I_C = 5.0 A

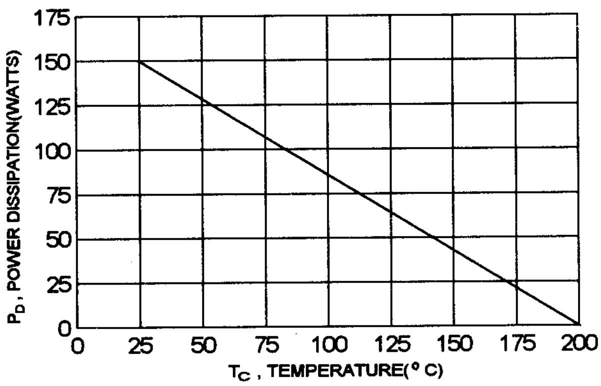
MAXIMUM RATINGS

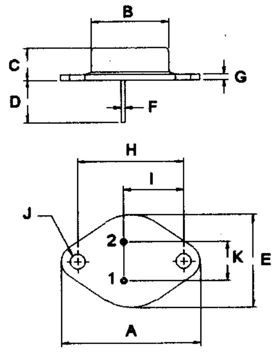
Characteristic	Symbol	2N6050 2N6057	2N6051 2N6058	2N6052 2N6059	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	100	V
Collector-Base Voltage	V_{CBO}	60	80	100	V
Emitter-Base Voltage	V_{EBO}	5			V
Collector Current - Continuous -Peak	I_C	12 20			A
Base Current	I_B	0.2			A
Total Power Dissipation@T_C = 25°C Derated above 25°C	P_D	150 0.857			W W/°C
Operating and Storage Junction Temperature Range	T_J ,T_{STG}	-65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	1.17	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

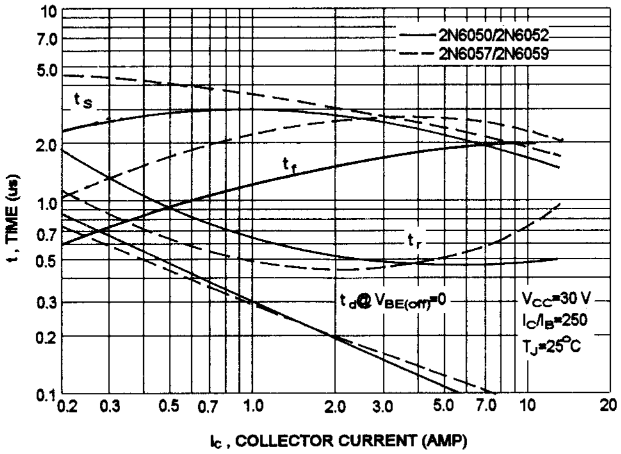
ELECTRICAL CHARACTERISTICS (T_c = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0) 2N6050, 2N6057 2N6051, 2N6058 2N6052, 2N6059	$V_{CEO(SUS)}$	60 80 100		V
Collector Cutoff Current (V_{CE} = 30 V, I_B = 0) 2N6050, 2N6057 (V_{CE} = 40 V, I_B = 0) 2N6051, 2N6058 (V_{CE} = 50 V, I_B = 0) 2N6052, 2N6059	I_{CEO}		1.0 1.0 1.0	mA
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, $V_{BE(off)}$ = 1.5 V) (V_{CE} = Rated V_{CEO}, $V_{BE(off)}$ = 1.5 V, T_C = 150°C)	I_{CEX}		0.5 5.0	mA
Emitter Cutoff Current (V_{EB} = 5.0 V , I_C = 0)	I_{EBO}		2.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain (I_C = 6.0 A, V_{CE} = 3.0 V) (I_C = 12 A, V_{CE} = 3.0 V)	hFE	750 100	18000	
Collector-Emitter Saturation Voltage (I_C = 6.0 A, I_B = 24 m A) (I_C = 12 A, I_B = 120 mA)	$V_{CE(sat)}$		2.0 3.0	V
Base-Emitter On Voltage (I_C = 6.0 A, V_{CE} = 3.0 V)	$V_{BE(on)}$		2.8	V
Base-Emitter Saturation Voltage (I_C = 12 A, I_B=120 m A)	$V_{BE(sat)}$		4.0	V
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product (2) (I_C = 5.0 A, V_{CE} = 3.0 V, f = 1.0 MHz)	f_T	4.0		MHz
Small-Signal Current Gain (I_C = 5.0 A, V_{CE} = 3.0 V, f = 1.0 KHZ)	h_{fe}	300		

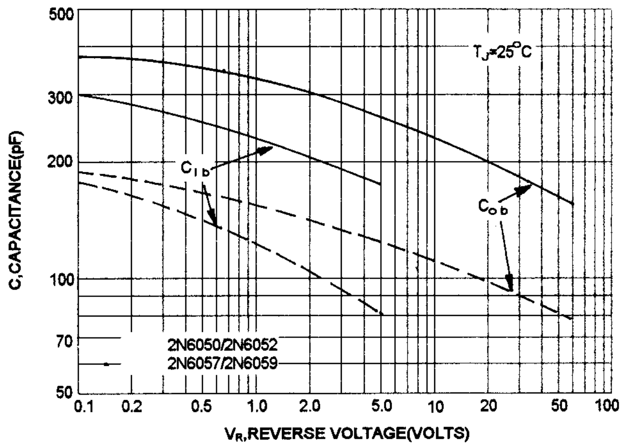
(1) Pulse Test: Pulse width ≦ 300 us , Duty Cycle ≦ 2.0%

(2) $f_T = |h_{fe}| \cdot f_{test}$

SWITCHING TIME

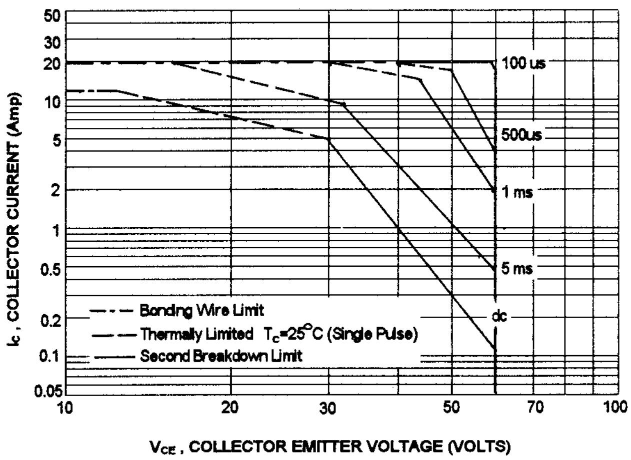


CAPACITANCES

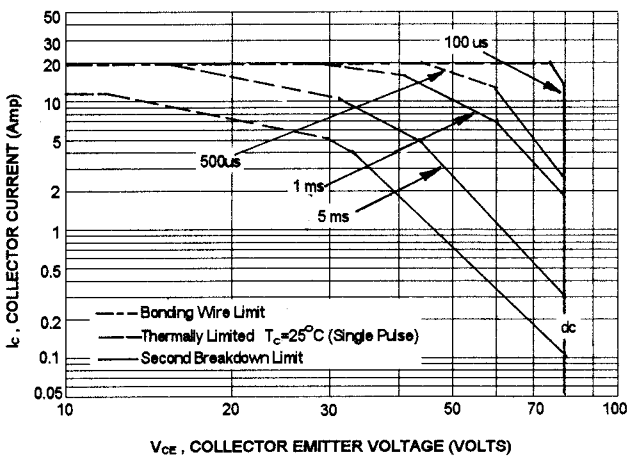


ACTIVE-REGION SAFE OPERATING AREA (SOA)

2N6050,2N6057

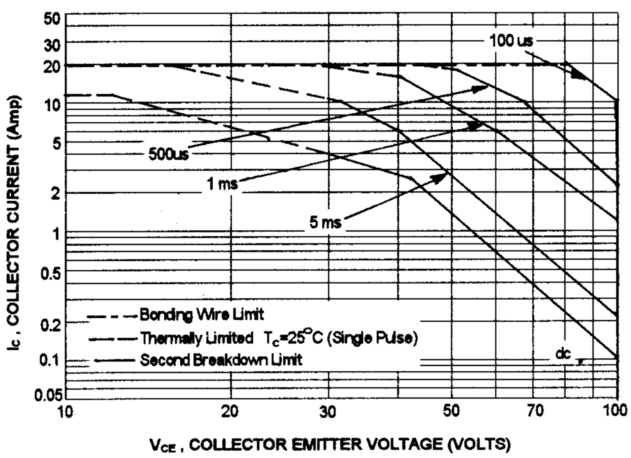


2N6051,2N6058



ACTIVE-REGION SAFE OPERATING AREA (SOA)

2N6052,2N6059

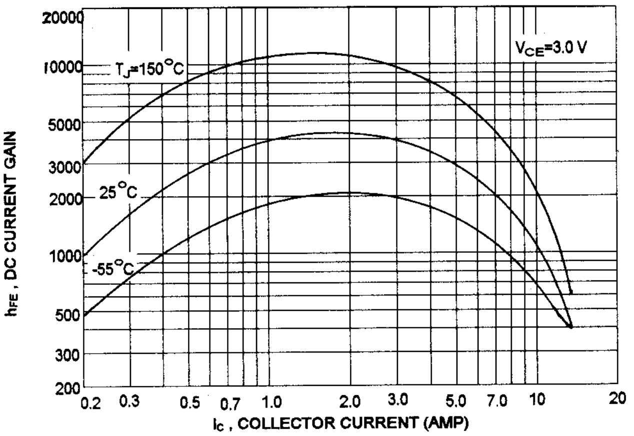


There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

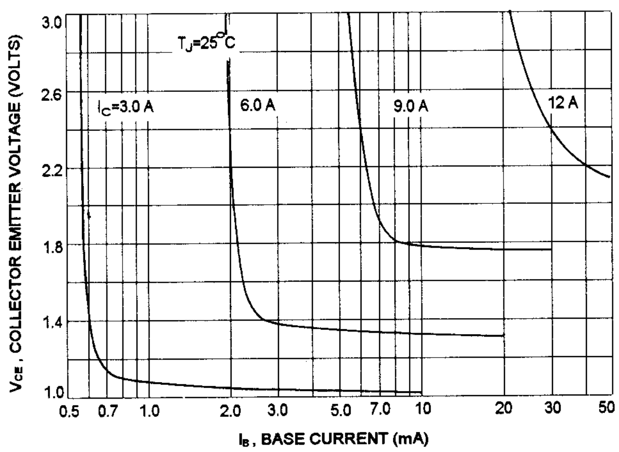
The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}\leq$200°C,At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

PNP 2N6050,2N6051,2N6052

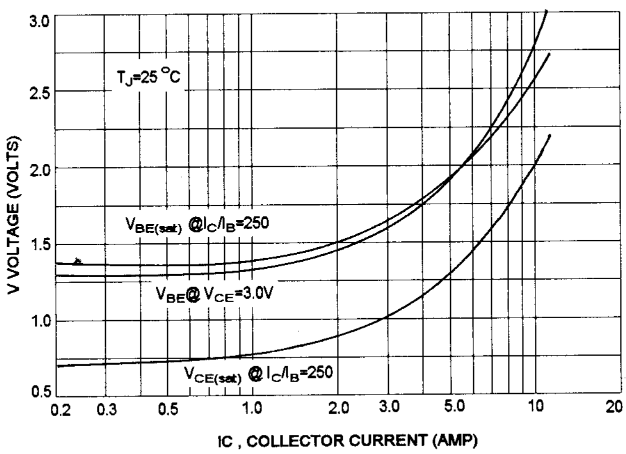
DC CURRENT GAIN



COLLECTOR SATURATION REGION

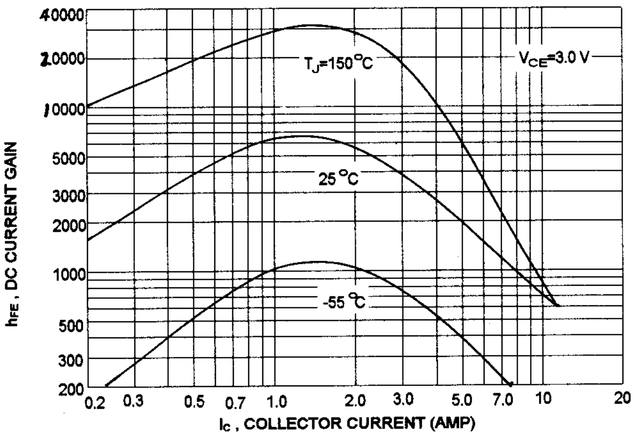


"ON" VOLTAGES

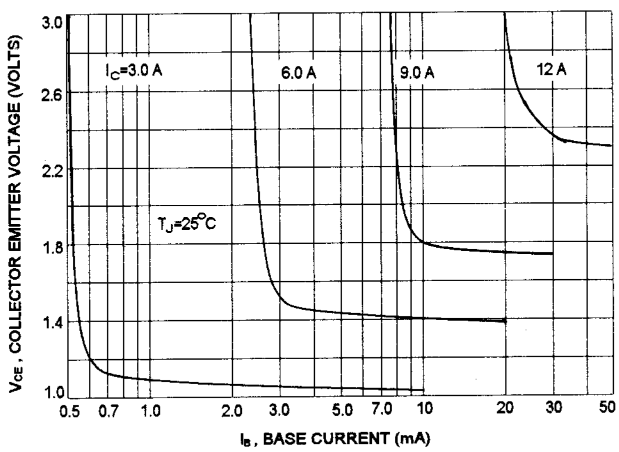


NPN 2N6057,2N6058,2N6059

DC CURRENT GAIN



COLLECTOR SATURATION REGION



"ON" VOLTAGES