MOSPEC

DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

General-purpose power amplifier and low frequency switching applications

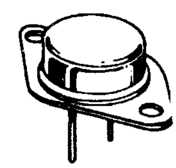
FEATURES:

* Low Collector-Emitter Saturation Voltage -
  $V_{CE(SAT)}$=2.0V(Max.)@I_C=4.0A
  =3.0V(Max.)@I_C=8.0A

*Monolithic Construction With Built-In Base-Emitter Shunt Resistors

PNP	NPN
2N6053	2N6055
2N6054	2N6056

DARLINGTON
8 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60 - 80 Volts
100 Watts



TO-3

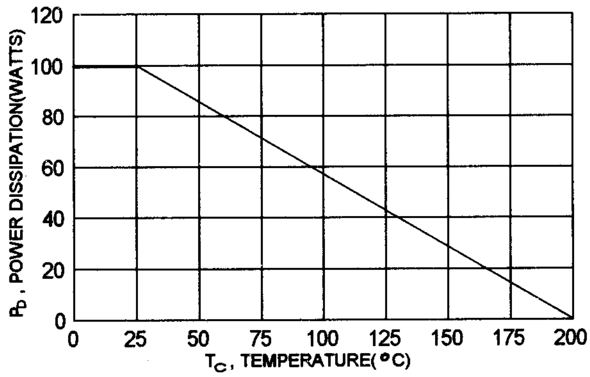
MAXIMUM RATINGS

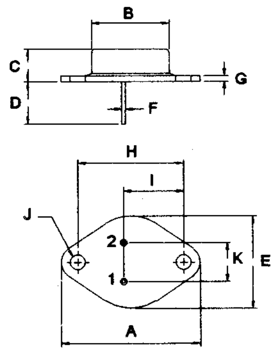
Characteristic	Symbol	2N6053 2N6055	2N6054 2N6056	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	V
Collector-Base Voltage	V_{CBO}	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current-Continuous -Peak	I_C I_{CM}	8.0 16		A
Base Current	I_B	120		mA
Total Power Dissipation@T_C=25°C Derate above 25°C	P_D	100 0.571		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	1.75	°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

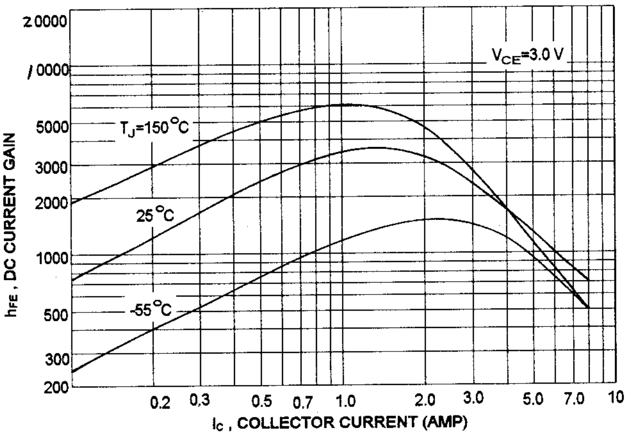
ELECTRICAL CHARACTERISTICS (T_c = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0)	 2N6053, 2N6055 2N6054, 2N6056	$V_{CEO(SUS)}$	 60 80		V
Collector Cutoff Current (V_{CE} = 30 V, I_B = 0) (V_{CE} = 40 V, I_B = 0)	 2N6053, 2N6055 2N6054, 2N6056	I_{CEO}		 0.5 0.5	mA
Collector Cutoff Current (V_{CE} = 60 V, $V_{BE(off)}$ = 1.5 V) (V_{CE} = 80 V, $V_{BE(off)}$ = 1.5 V) (V_{CE} = 60 V, $V_{BE(off)}$ = 1.5 V, T_C = 150°C) (V_{CE} = 80 V, $V_{BE(off)}$ = 1.5 V, T_C = 150°C)	 2N6053, 2N6055 2N6054, 2N6056 2N6053, 2N6055 2N6054, 2N6056	I_{CEX}		 0.5 0.5 5.0 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 = 4.0 A, V_{CE} = 3.0 V) (I_C = 8.0 A, V_{CE} = 3.0 V)		hFE	 750 100	 18000	
Collector-Emitter Saturation Voltage (I_C = 4.0 A, I_B = 16mA) (I_C = 8.0 A, I_B = 80mA)		$V_{CE(sat)}$		 2.0 3.0	V
Base-Emitter On Voltage (I_C = 4 A, V_{CE} = 3.0 V)		$V_{BE(on)}$		2.8	V
Base-Emitter Saturation Voltage (I_C = 8.0 A, I_B = 80mA)		$V_{BE(sat)}$		4.0	V
DYNAMIC CHARACTERISTICS					
Output capacitance (V_{CB} = 10 V, I_E = 0, f = 0.1 MHz)	2N6053,2N6054 2N6055,2N6056	C_{ob}		350 220	pF
Small-Signal Current Gain (I_C = 3.0 A, V_{CE} = 3.0 V, f = 1.0 KHZ)		h_{fe}	300		

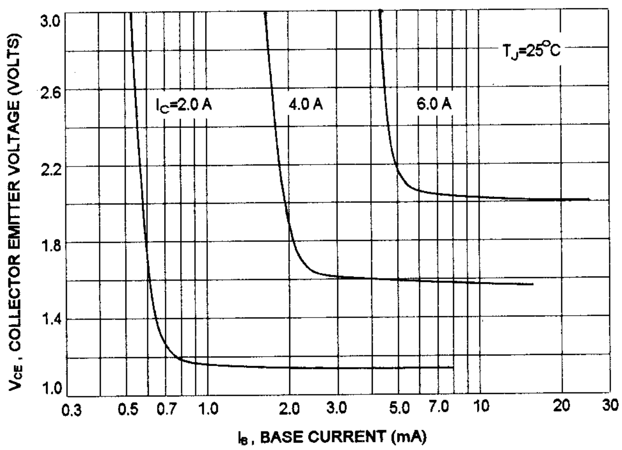
(1) Pulse Test: Pulse width ≦ 300 μs , Duty Cycle ≦ 2.0%

PNP 2N6053,2N6054

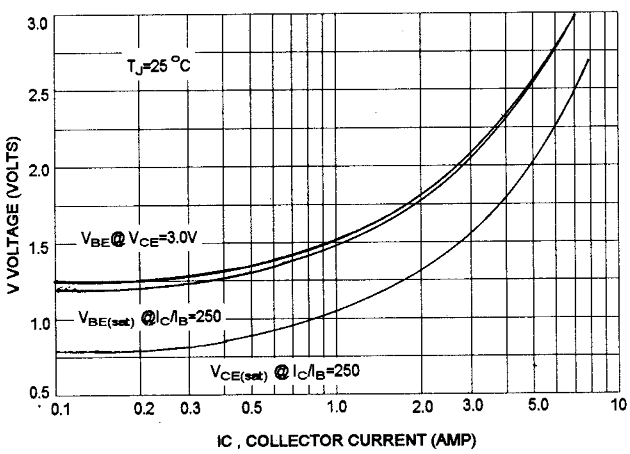
DC CURRENT GAIN



COLLECTOR SATURATION REGION

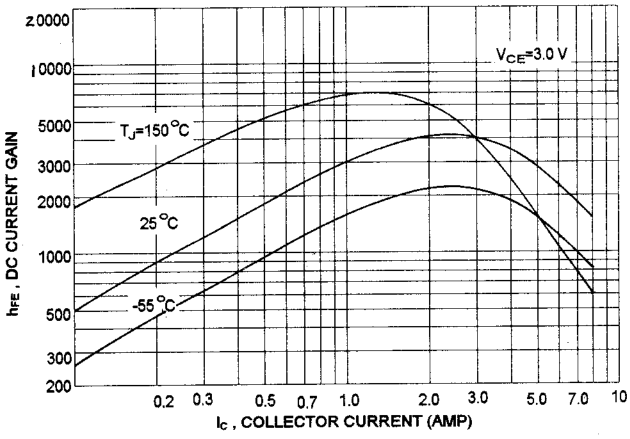


"ON" VOLTAGES

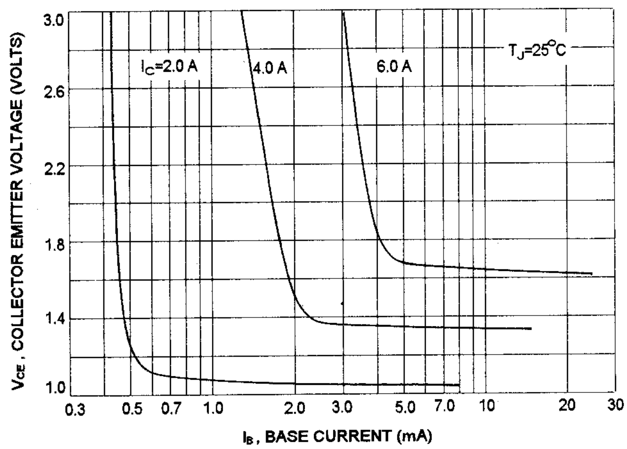


NPN 2N6055,2N6056

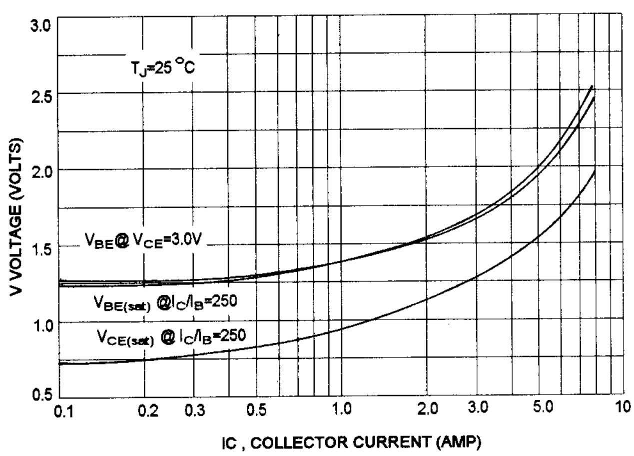
DC CURRENT GAIN



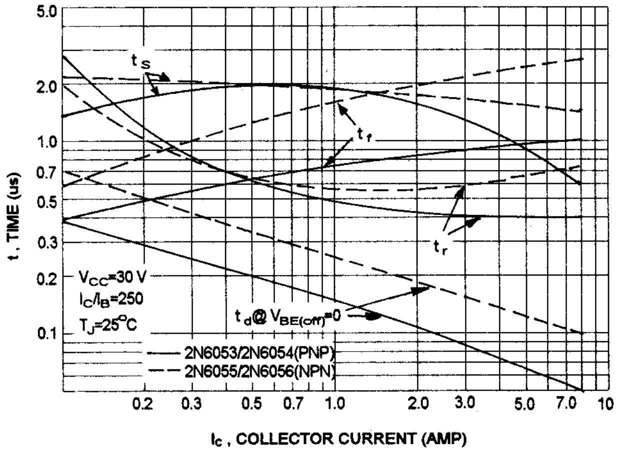
COLLECTOR SATURATION REGION



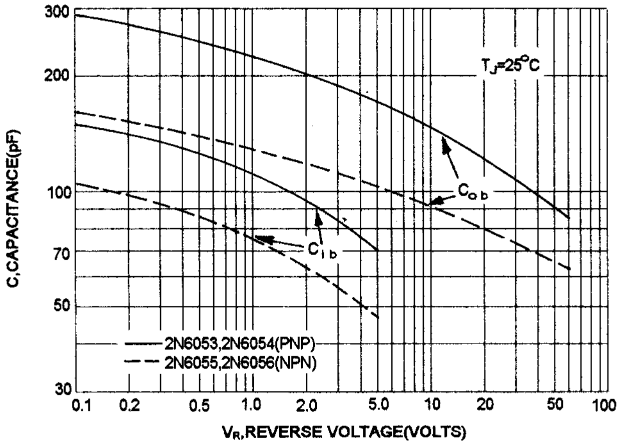
"ON" VOLTAGES



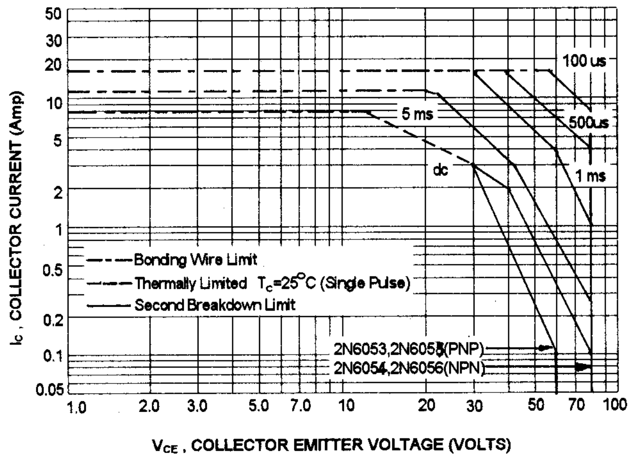
SWITCHING TIME



CAPACITANCES



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 $T_{J(PK)}$=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.