MOSPEC

DARLINGTON COPLEMENTARY SILICON POWER TRANSISTORS

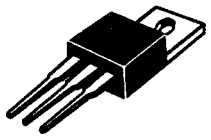
...designed for general-purpose amplifier and low speed switching applications

NPN	PNP
BDX53	BDX54
BDX53A	BDX54A
BDX53B	BDX54B
BDX53C	BDX54C

8 AMPERE
DARLINGTON
COMPLEMENTARY SILICON
POWER TRANSISTORS
45-100 VOLTS
60 WATTS

FEATURES:

* Collector-Emitter Sustaining Voltage-
  $V_{CEO(SUS)}$ = 45 V (Min) - BDX53,BDX54
  = 60 V (Min) - BDX53A,BDX54A
  = 80 V (Min) - BDX53B,BDX54B
  = 100 V(Min) - BDX53C,BDX54C
* Monolithic Construction with Built-in Base-Emitter Shunt Resistor



TO-220

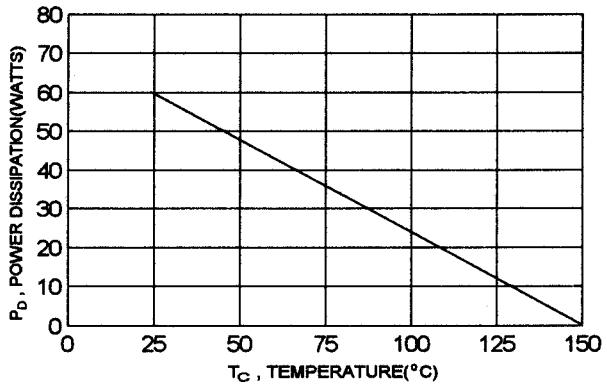
MAXIMUM RATINGS

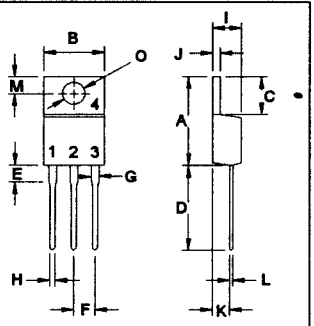
Characteristic	Symbol	BDX53 BDX54	BDX53A BDX54A	BDX53B BDX54B	BDX53C BDX54C	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	100	V
Collector-Base Voltage	V_{CBO}	45	60	80	100	V
Emitter-Base Voltage	V_{EBO}	5.0				V
Collector Current - Continuous Peak	I_C I_{CM}	8.0 12				A
Base Current	I_B	0.2				A
Total Power Dissipation @T_C = 25°C Derate above 25°C	P_D	60 0.48				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	2.08	°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

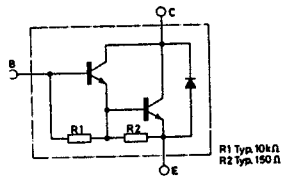
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage(1) (I_C= 100 mA, I_B= 0)	BDX53, BDX54 BDX53A, BDX54A BDX53B, BDX54B BDX53C, BDX54C	$V_{CEO(sus)}$	45 60 80 100		V
Collector Cutoff Current (V_{CE}= 22 V, I_B= 0) (V_{CE}= 30 V, I_B= 0) (V_{CE}= 40 V, I_B= 0) (V_{CE}= 50 V, I_B= 0)	 BDX53, BDX54 BDX53A, BDX54A BDX53B, BDX54B BDX53C, BDX54C	I_{CEO}		 0.5 0.5 0.5 0.5	mA
Collector-Base Cutoff Current (V_{CB}= Rated V_{CB}, I_E= 0)		I_{CBO}		200	uA
Emitter-Base Cutoff Current (V_{EB}= 5.0 V, I_C= 0)		I_{EBO}		2.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C= 3.0 A, V_{CE}= 3.0 V)		hFE	750		
Collector-Emitter Saturation Voltag (I_C= 3.0 A, I_B= 12 mA)		$V_{CE(sat)}$		2.0	V
Base-Emitter Saturation Voltage (I_C= 3.0 A, I_B= 12 mA)		$V_{BE(sat)}$		2.5	V
Diode Forward-Voltage (I_F= 3.0 A)		V_F		2.5	V

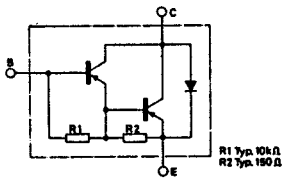
(1) Pulse Test: Pulse Width =300 us,Duty Cycle ≦ 2.0%

INTERNAL SCHEMATIC DIAGRAM

BDX53 Series NPN

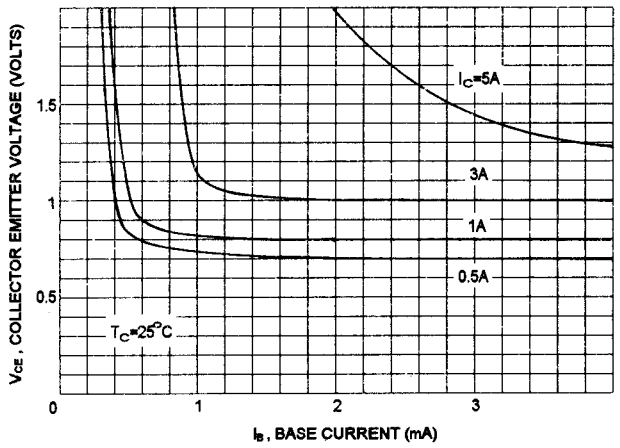


BDX54 Series PNP

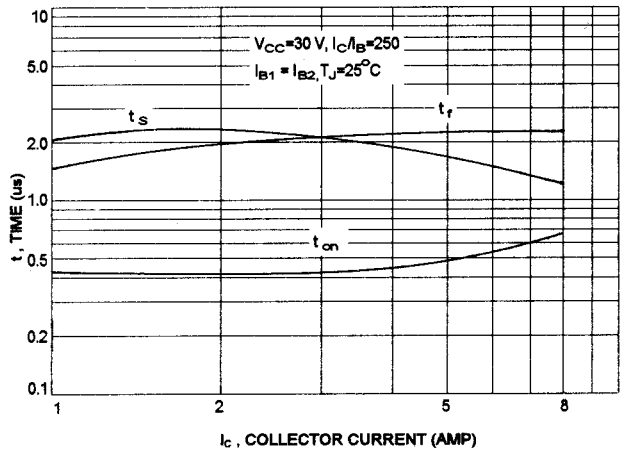


NPN BDX53,A,B,C

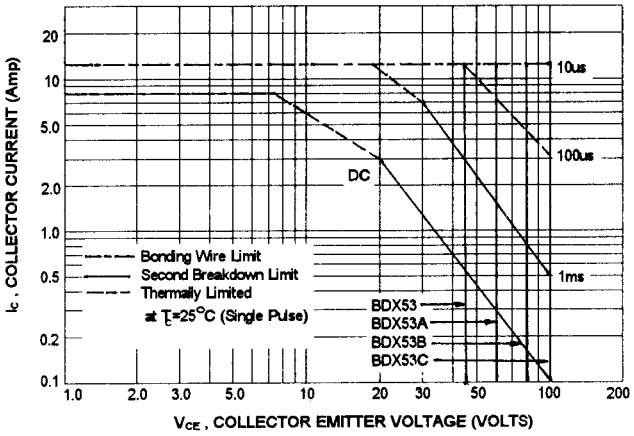
COLLECTOR SATURATION REGION



SWITCHING TIME

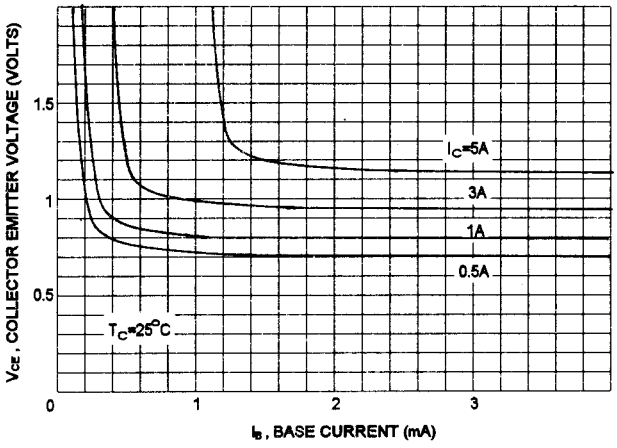


SAFE OPERATING AREA

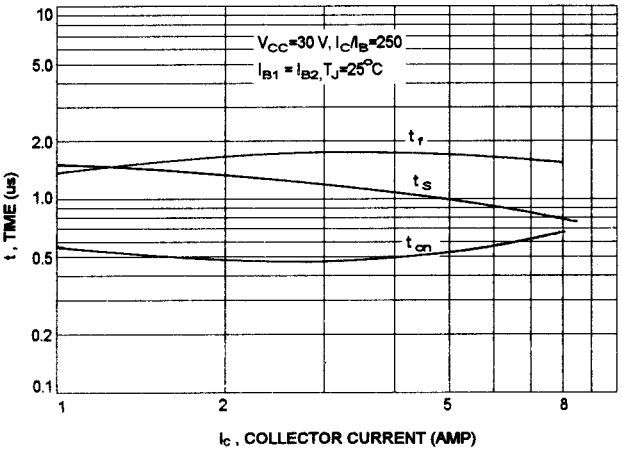


PNP BDX54,A,B,C

COLLECTOR SATURATION REGION



SWITCHING TIME



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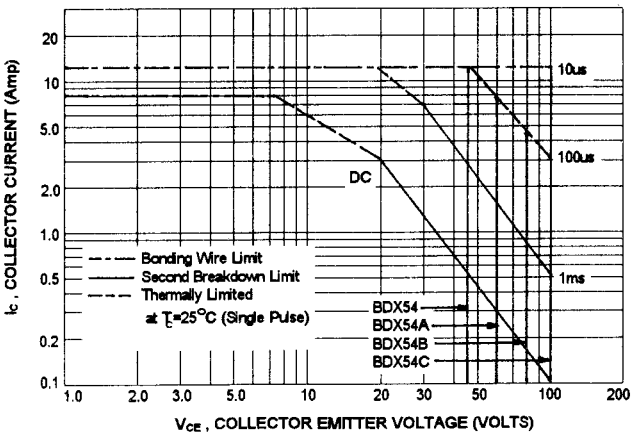
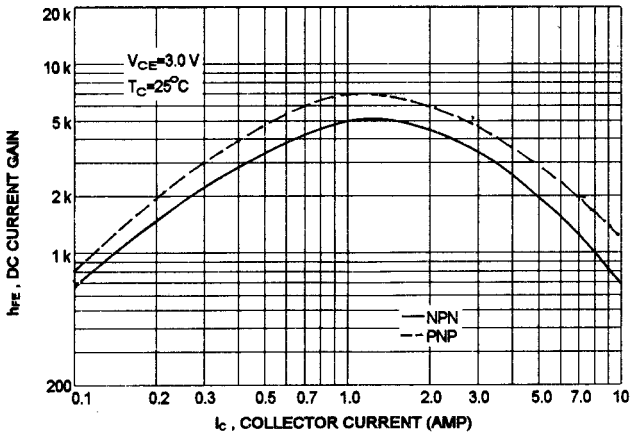
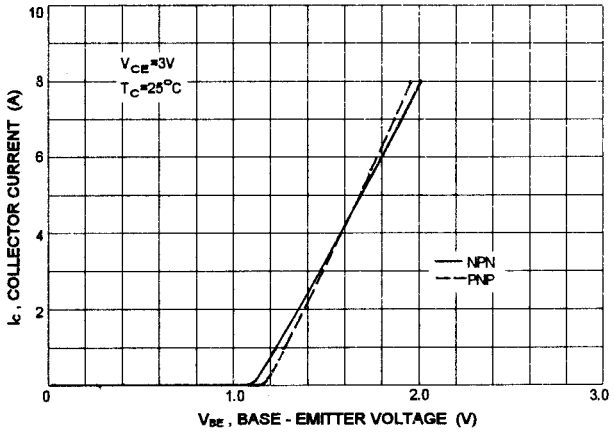


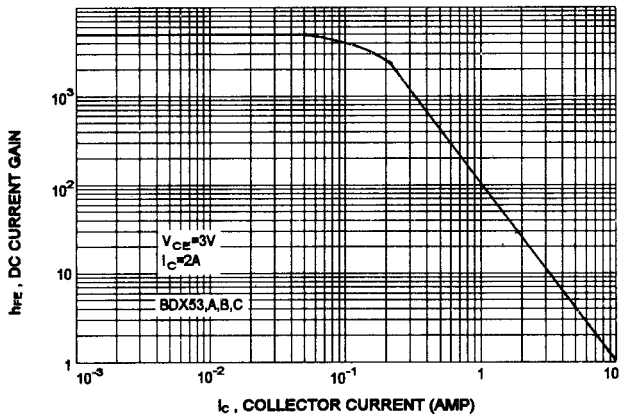
DC CURRENT GAIN



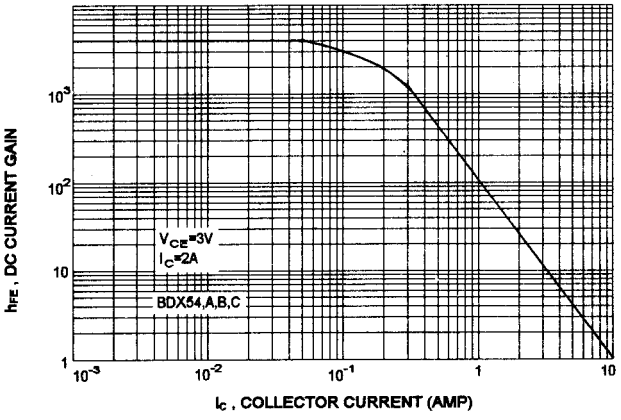
Ic - Vbe



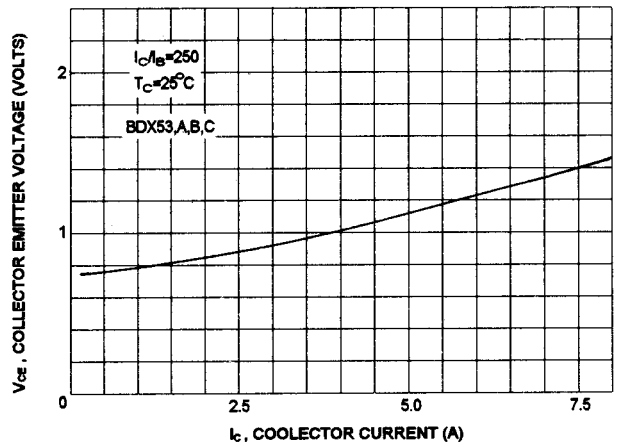
SMALL SIGNAL CURRENT GAIN



SMALL SIGNAL CURRENT GAIN



VCE(sat) - Ic



VCE(sat) - Ic