

3875081 G E SOLID STATE

01E 17292 D T-33-29

Darlington Power Transistors

BDX53, BDX53A, BDX53B, BDX53C

File Number **1213**

8-Ampere N-P-N Darlington Power Transistors

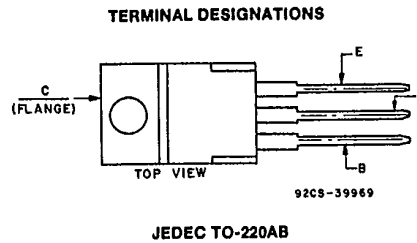
45-60-80-100 Volts, 60 Watts
Gain of 750 at 3 A

Features:

- Operates from IC without predriver
- Low leakage at high temperature

Applications:

- Hammer drivers
- Power switching
- Series and shunt regulators



The RCA-BDX53, BDX53A, BDX53B, and BDX53C monolithic silicon Darlington transistors are designed for low- and medium-frequency power applications. The high gain of these devices makes it possible for them to be driven directly from integrated circuits.

These devices are supplied in the JEDEC TO-220AB (VERSAWATT) plastic package.

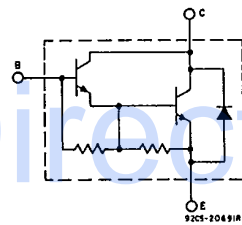


Fig. 1—Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	BDX53	BDX53A	BDX53B	BDX53C	
V _{CB0}	45	60	80	100	V
V _{CE0(sus)}	45	60	80	100	V
V _{EB0}			5		V
I _C			8		A
I _B			0.2		A
P _T					
T _C < 25°C.....			60		W
T _C > 25°C.....			Derate linearly 0.48		W/°C
T _{stg} , T _J			-65 to +150		°C
T _L					
At distances > 1/18 in. (3.17 mm) from case for 10 s max.....			235		°C

BDX53, BDX53A, BDX53B, BDX53C

ELECTRICAL CHARACTERISTICS, At Case Temperature (TC) = 25°C
Unless Otherwise Specified

CHARACTERISTIC	TEST CONDITIONS					LIMITS				UNITS
	VOLTAGE V dc			CURRENT A dc		BDX53		BDX53A		
	V _{CB}	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	
I _{CEO}		22 30			0 0	— —	500 —	— —	— 500	μA
I _{CBO}	45 60					— —	200 —	— —	— 200	
I _{EBO}			—5	0		—	2	—	2	mA
V _{CEO(sus)}				0.1 ^a	0	45	—	60	—	V
h _{FE}		3		3 ^a		750	—	750	—	
V _{BE(sat)}				3 ^a	0.012	—	2.5	—	2.5	V
V _{CE(sat)}				3 ^a	0.012	—	2	—	2	
V _F				3 ^b 8 ^b		— 2.5 ^c	1.8 —	— 2.5 ^c	1.8 —	
R _{θJC}						—	2.08	—	2.08	°C/W

^a Pulsed: Pulse duration = 300 μs, duty factor = 1.5%. ^b I_F value. ^c Typical value.

ELECTRICAL CHARACTERISTICS, At Case Temperature (TC) = 25°C
Unless Otherwise Specified

CHARACTERISTIC	TEST CONDITIONS					LIMITS				UNITS
	VOLTAGE V dc			CURRENT A dc		BDX53B		BDX53C		
	V _{CB}	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	
I _{CEO}		40 50			0 0	— —	500 —	— —	— 500	μA
I _{CBO}	80 100					— —	200 —	— —	— 200	
I _{EBO}			—5	0		—	2	—	2	mA
V _{CEO(sus)}				0.1 ^a	0	80	—	100	—	V
h _{FE}		3		3 ^a		750	—	750	—	
V _{BE(sat)}				3 ^a	0.012	—	2.5	—	2.5	V
V _{CE(sat)}				3 ^a	0.012	—	2	—	2	
V _F				3 ^b 8 ^b		— 2.5 ^c	1.8 —	— 2.5 ^c	1.8 —	
R _{θJC}						—	2.08	—	2.08	°C/W

^a Pulsed: Pulse duration = 300 μs, duty factor = 1.5%. ^b I_F value. ^c Typical value.

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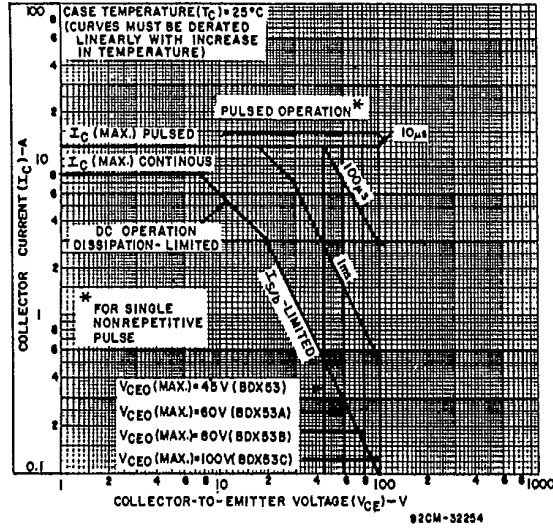


Fig. 2—Maximum operating areas for all types.

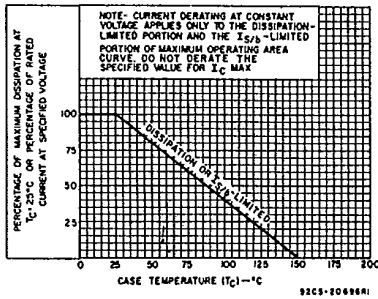


Fig. 3—Derating curve for all types.

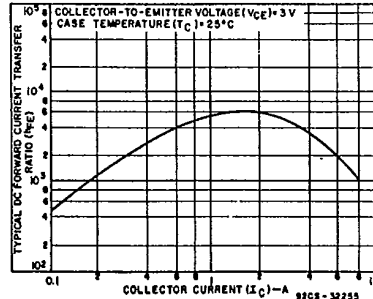


Fig. 4—Typical dc-beta characteristics for all types.

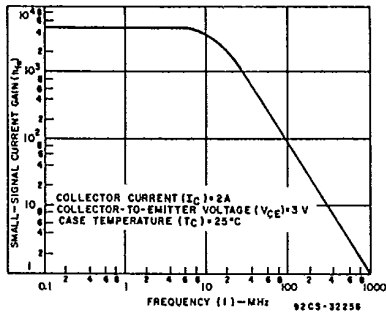


Fig. 5—Typical small-signal gain for all types.

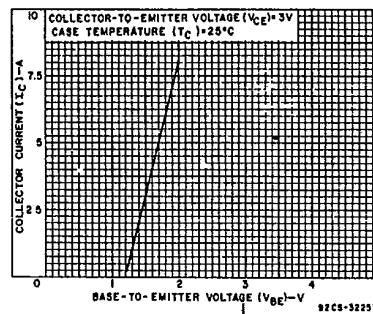


Fig. 6—Typical transfer characteristics for all types.

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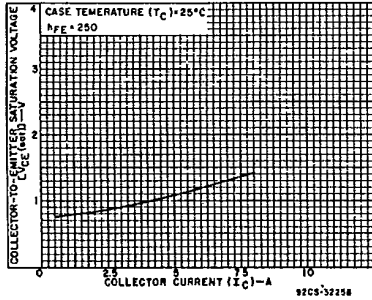


Fig. 7—Typical saturation characteristics for all types.

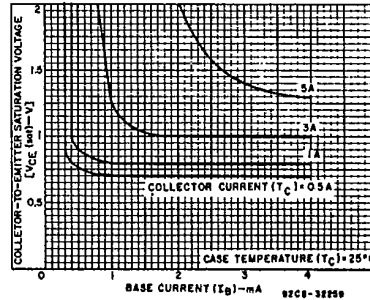


Fig. 8—Typical saturation characteristics for all types.

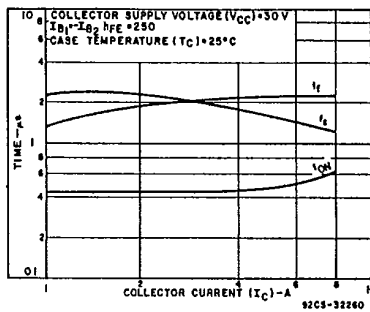


Fig. 9—Typical saturated switching-time characteristics for all types.