

2N6043, 2N6044, 2N6045

File Number 1151

8-Ampere N-P-N Darlington Power Transistors

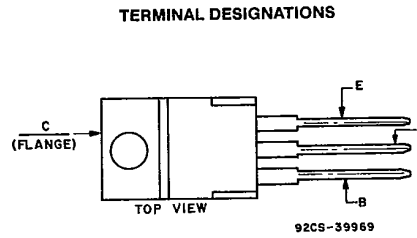
60-, 80-, 100-Volts, 75 Watts
 Gain of 1000 at 4 A (2N6043, 2N6044)
 Gain of 1000 at 3 A (2N6045)

Features:

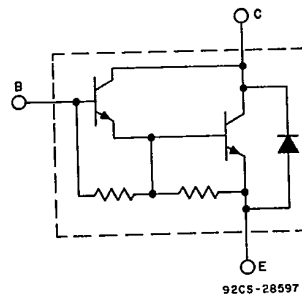
- Operates from IC without predriver

Applications:

- Power switching
- Hammer drivers
- Audio amplifiers
- Series and shunt regulators



JEDEC TO-220AB



The 2N6043, 2N6044, and 2N6045 are monolithic silicon n-p-n Darlington transistors 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:

	2N6043	2N6044	2N6045	
*V _{CEO}	60	80	100	V
V _{CEO(sus)}	60	80	100	V
*V _{EB0}	5	5	5	V
*I _C	8	8	8	A
I _{CM}	16	16	16	A
*I _B	0.12	0.12	0.12	A
*P _T	75	75	75	W
T _C ≥ 25°C	See Fig. 2			
T _C > 25°C	-65 to 150			°C
*T _{stg} T _J	-65 to 150			°C
*T _L	235			°C
At distances ≥ 1/8 in. (3.17 mm) from case for 10 s max.				

*In accordance with JEDEC registration data.

2N6043, 2N6044, 2N6045

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

CHARACTERISTIC SYMBOL	TEST CONDITIONS				LIMITS						UNITS
	VOLTAGE		CURRENT		2N6043		2N6044		2N6045		
	V _{dc}	V _{dc}	A _{dc}	A _{dc}	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
* I _{CEO}	100 80 60			0 0 0	- - -	- - 20	- - -	- 20 -	- - -	20 - -	μA
* I _{CEV}	100 80 60	-1.5 -1.5 -1.5			- - -	- - 20	- - -	- 20 -	- - -	20 - -	
T _C =125°C	100 80 60	-1.5 -1.5 -1.5			- - -	- - 200	- - -	- 200 -	- - -	200 - -	
* I _{EBO}		5		0	-	2	-	2	-	2	mA
* V _{CEO(sus)}			0.1 ^a	0	60	-	80	-	100	-	V
I _{CBO}	100 ^b 80 ^b 60 ^b				- - -	- - 20	- - -	- 20 -	- - -	20 - -	μA
* h _{FE}	4 4 4		4 3 8		1000 - 100	20,000 - -	1000 - 100	20,000 - -	- - 1000 100	- - 20,000 -	
* V _{BE}	4 4		4 3		- -	2.8 -	- -	2.8 -	- -	- 2.8	V
* V _{BE(sat)}			8	0.08	-	4.5	-	4.5	-	4.5	
* V _{CE(sat)}			4 3 8	0.016 0.012 0.08	- - -	2 - 4	- - -	2 - 4	- - -	- 2 4	V
V _F			-8 ^a		-	4	-	4	-	4	V
* h _{fe} f=1 kHz	4		3		300	-	300	-	300	-	
* h _{fe} f=1 MHz	4		3		4	-	4	-	4	-	
* C _{obo} f=1 MHz	10 ^b				-	200	-	200	-	200	pF
I _{S/b} t=1 s, nonrep.	30				2.5	-	2.5	-	2.5	-	A
R _{θJC}					-	1.67	-	1.67	-	1.67	°C/W

* In accordance with JEDEC registration data.

^a Pulsed: Pulse duration = 300 μs, duty factor = 1.8%.

^b V_{CB} value.

2N6043, 2N6044, 2N6045

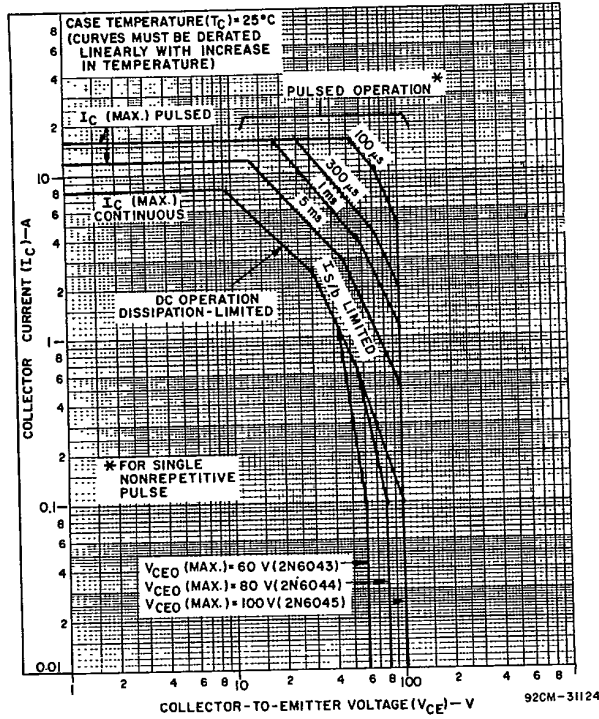


Fig. 2 - Maximum operating areas for all types ($T_C = 25^\circ C$).

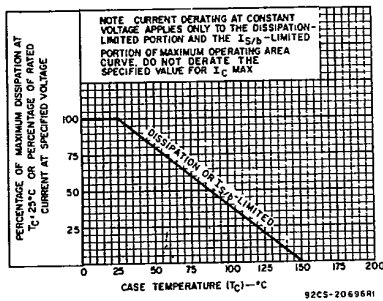


Fig. 3 - Derating curve for all types.

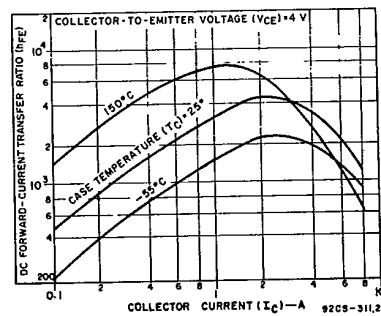


Fig. 4 - Typical dc beta characteristics for all types.

2N6043, 2N6044, 2N6045

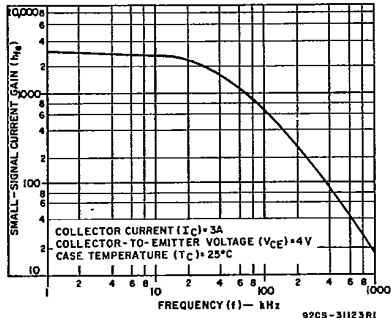


Fig. 5 — Typical small-signal gain for all types.

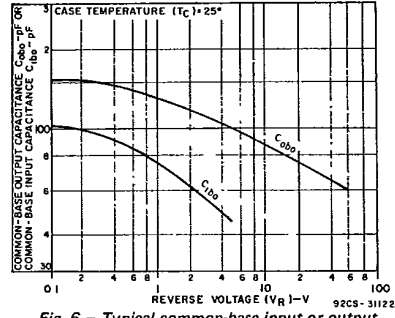


Fig. 6 — Typical common-base input or output capacitance characteristics as a function of reverse voltage for all types.