

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:

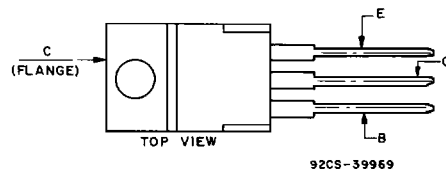
- Operates from IC without predriver

Applications:

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

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.

TERMINAL DESIGNATIONS



JEDEC TO-220AB

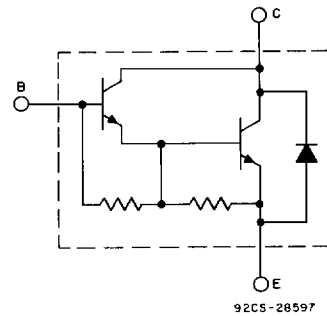


Fig. 1 — Schematic diagram for all types.

2
POWER TRANSISTORS

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N6043	2N6044	2N6045	
*V _{CB0}	60	80	100	V
V _{CEO(sus)}	60	80	100	V
*V _{EBO}	_____	5	_____	V
*I _C	_____	8	_____	A
I _{CM}	_____	16	_____	A
*I _B	_____	0.12	_____	A
*P _T	_____	_____	_____	W
T _C ≥ 25°C	_____	75	_____	
T _C > 25°C	_____	See Fig. 2	_____	
*T _{stg} , T _J	_____	-65 to 150	_____	°C
*T _L	_____	_____	_____	°C
At distances ≥ 1/8 in. (3.17 mm) from case for 10 s max.	_____	235	_____	

*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 V dc		CURRENT A dc		2N6043		2N6044		2N6045		
	V _{CE}	V _{BE}	I _C	I _B	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.

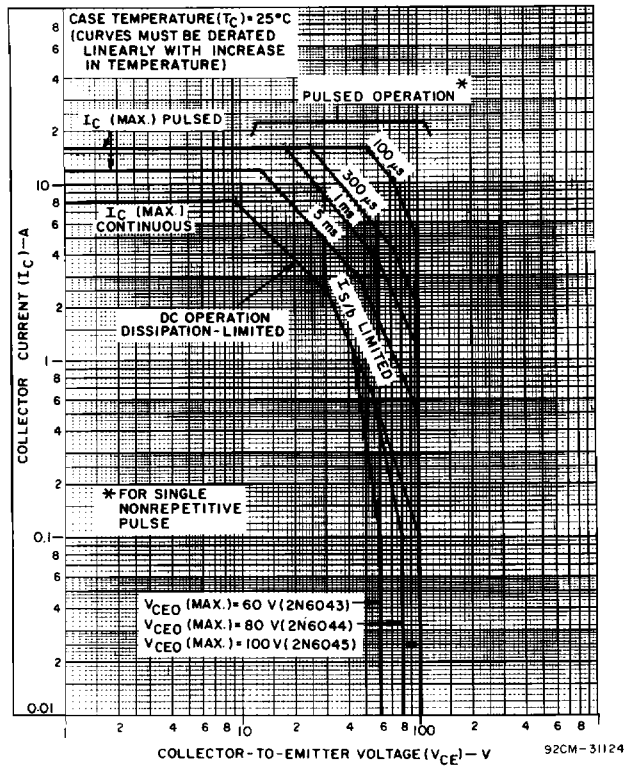


Fig. 2 - Maximum operating areas for all types ($T_C = 25^\circ\text{C}$).

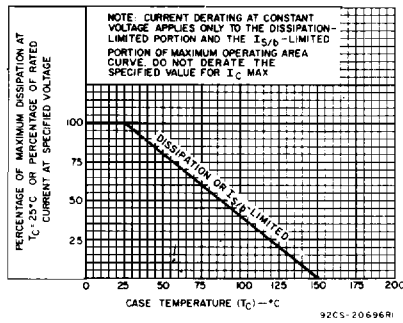


Fig. 3 - Derating curve for all types.

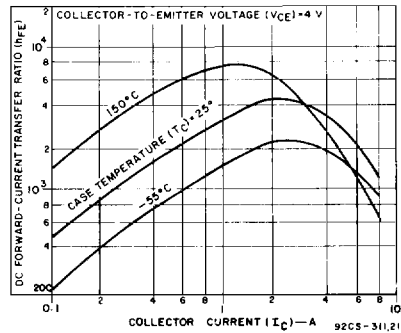


Fig. 4 - Typical dc beta characteristics for all types.

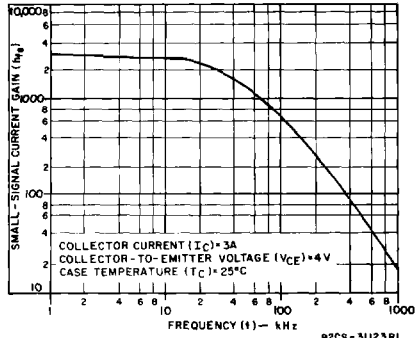


Fig. 5 — Typical small-signal gain for all types.

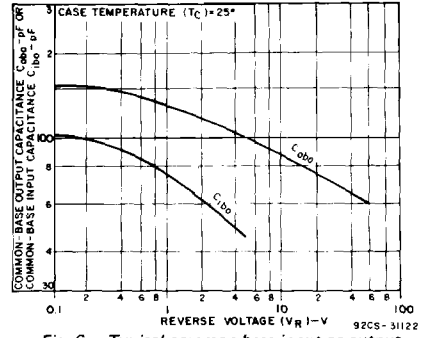


Fig. 6 — Typical common-base input or output capacitance characteristics as a function of reverse voltage for all types.