

File Number 609

2N6383, 2N6384, 2N6385

10-Ampere N-P-N Darlington Power Transistors

40-60-80 Volts, 100 Watts
 Gain of 1000 at 5 A

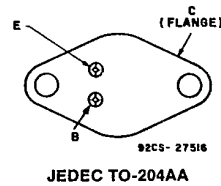
Features:

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

Applications:

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

TERMINAL DESIGNATIONS



The 2N6383, 2N6384, and 2N6385[•] are monolithic n-p-n silicon Darlington transistors designed for low- and medium-frequency power applications. The construction of these devices provides good forward-bias second-breakdown capability; their high gain makes it possible for them to be driven directly from integrated circuits.

These devices are supplied in the JEDEC TO-204AA steel hermetic package.

[•]Formerly RCA Dev. Nos. TA8349, TA8486, and TA8348.

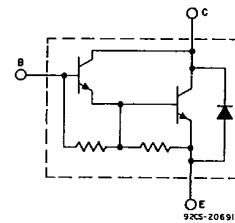


Fig.1 - Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N6385	2N6384	2N6383	
*V _{CBO}	80	60	40	V
V _{CER(sus)} R _{BE} = 100 Ω	80	60	40	V
*V _{CEO(sus)}	80	60	40	V
*V _{CEX} V _{BE} = -1.5 V, R _{BB} = 100 Ω	80	60	40	V
*V _{EBO}	5	5	5	V
*I _C	10	10	10	A
I _{CM}	15	15	15	A
*I _B	0.25	0.25	0.25	A
*P _T T _C ≤ 25°C	100	100	100	W
T _C > 25°C	See Fig.2			
*T _{stg} , T _J	-65 to +200			°C
*T _L At distances ≥ 1/32 in. (0.8mm) from seating plane for 10 s max.	235			°C

* In accordance with JEDEC registration data format JS-6 RDF-2.

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

CHARACTERISTIC SYMBOL	TEST CONDITIONS				LIMITS						UNITS	
	VOLTAGE V dc			CURRENT A dc		2N6385		2N6384		2N6383		
	VCE	VEB	VBE	IC	IB	MIN.	MAX.	MIN.	MAX.	MIN.		MAX.
* ICEO	80				0	-	1	-	-	-	-	mA
	60				0	-	-	-	1	-	-	
	40				0	-	-	-	-	-	1	
* ICEV $T_C = 150^\circ\text{C}$	80		-1.5			-	0.3	-	-	-	-	mA
	60		-1.5			-	-	-	0.3	-	-	
	40		-1.5			-	-	-	-	-	0.3	
* IEBO		5		0		-	5	-	5	-	5	mA
* VCEO(sus)				0.2 ^a	0	80	-	60	-	40	-	V
* VCER(sus) RBE=100Ω				0.2 ^a		80	-	60	-	40	-	V
* VCEV(sus)			-1.5	0.2 ^a		80	-	60	-	40	-	V
* hFE	3			5 ^a		1000	20,000	1000	20,000	1000	20,000	
	3			10 ^a		100	-	100	-	100	-	
* VBE	3			5 ^a		-	2.8	-	2.8	-	2.8	V
	3			10 ^a		-	4.5	-	4.5	-	4.5	
* VCE(sat)				5 ^a	0.01 ^a	-	2	-	2	-	2	V
				10 ^a	0.1 ^a	-	3	-	3	-	3	
* VF				-10		-	4	-	4	-	4	
* hfe f = 1 kHz	5			1		1000	-	1000	-	1000	-	
* hfe f = 1 MHz	5			1		20	-	20	-	20	-	
* Cobo f = 1 MHz	VCB = 10				IE=0	-	200	-	200	-	200	pF
IS/b t=1 s, non rep.	75					0.22	-	-	-	-	-	A
	55					-	-	0.55	-	-	-	
	30					3.33	-	3.33	-	3.33	-	
RθJC						-	1.75	-	1.75	-	1.75	°C/W

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

* In accordance with JEDEC registration data format JS-6 RDF-2.

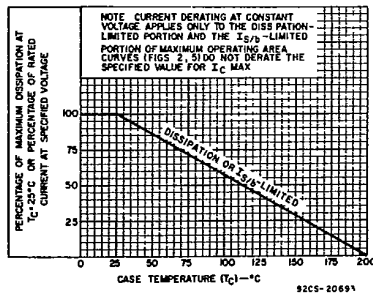


Fig. 2 - Derating curves for all types.

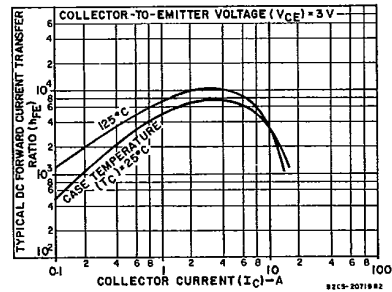


Fig. 3 - Typical dc-beta characteristics for all types.

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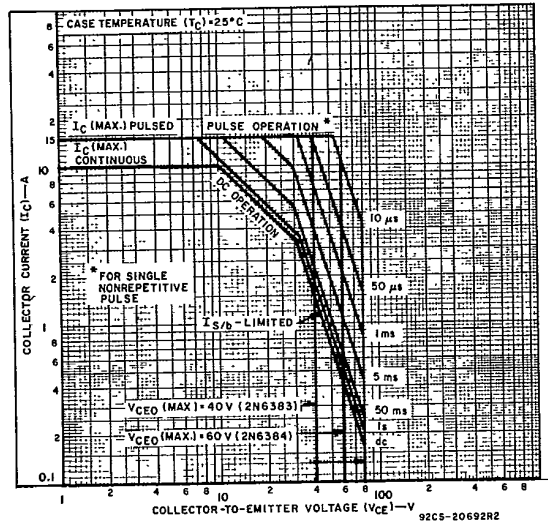


Fig.4 - Maximum operating area for all types.

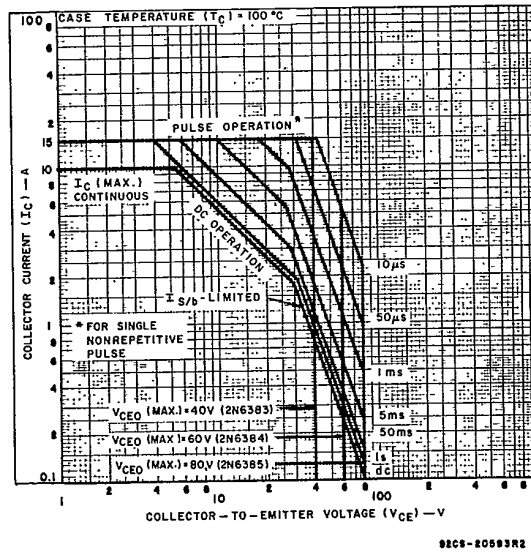


Fig.5 - Maximum operating area for all types.

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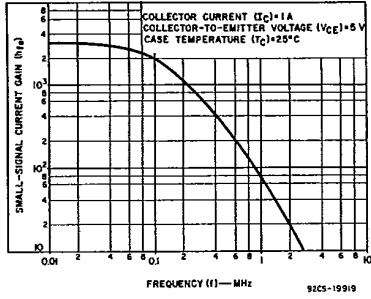


Fig. 6 — Typical small-signal gain for all types.

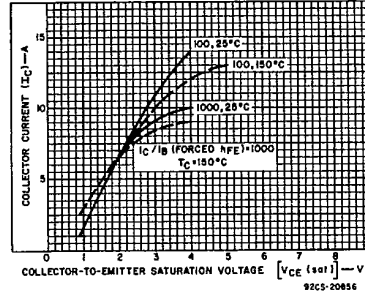


Fig. 7 — Typical saturation characteristics for all types.

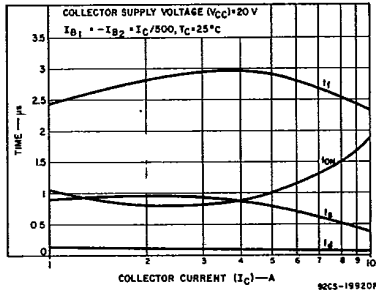


Fig. 8 — Typical saturated switching-time characteristics for all types.

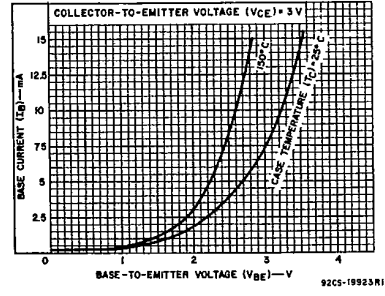


Fig. 9 — Typical input characteristics for all types.

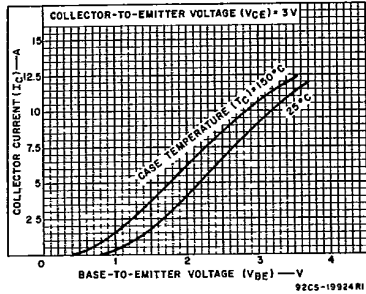


Fig. 10 — Typical transfer characteristics for all types.

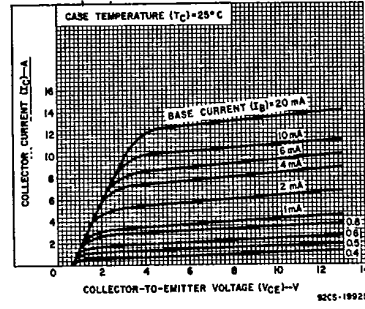


Fig. 11 — Typical output characteristics for all types.

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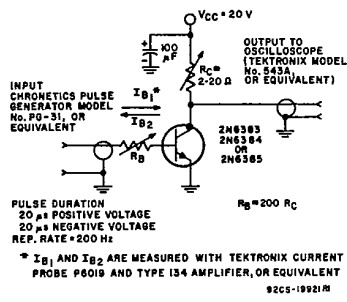


Fig. 12 — Circuit used to measure saturated-switching-times.

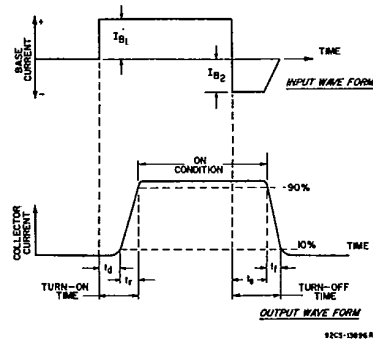


Fig. 13 — Phase relationship between input current and output current showing reference points for specification of switching-times (test circuit shown in Fig. 14).