

File Number 1152

2N6576, 2N6577, 2N6578

15-Ampere N-P-N Darlington Power Transistors

60, 90, 120 Volts, 120 Watts
Gain of 2000 at 4 A

Features:

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

Applications:

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

The 2N6576, 2N6577, and 2N6578 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-break-down capability; their high gain makes it possible for them to be driven directly from integrated circuits.

All types utilize the steel JEDEC TO-204AA/ TO-3 hermetic package.

TERMINAL DESIGNATIONS

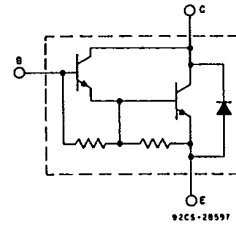
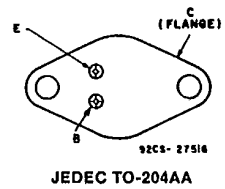


Fig. 1 - Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N6576	2N6577	2N6578	
* V_{CBO}	60	90	120	V
* $V_{CEO(sus)}$	60	90	120	V
* V_{EBO}		7		V
* I_C		15	15	A
* I_{CM}		30	30	A
* I_B		0.25		A
* P_T		120		W
$T_C \leq 25^\circ C$				
$T_C > 25^\circ C$		See Fig. 2		
* T_{stg}, T_J		-65 to 200		$^\circ C$
* T_L		235		$^\circ C$

At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.

* In accordance with JEDEC registration data.

Darlington Power Transistors

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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		2N6576		2N6577		2N6578		
	V _{CE}	V _{EB}	V _{BE}	I _C	I _B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
* I _{CB0}	60 ^a 90 ^a 120 ^a					-	0.5	-	-	-	-	
* I _{CEO}	60 90 120				0 0 0	-	1	-	-	-	1	mA
* I _{CER} R _{BE} = 10K T _C = 150°C	60 90 120					-	5	-	-	-	5	
* I _{CEX} T _C = 175°C	60 90 120		-1.5 -1.5 -1.5			-	5	-	-	-	5	
* I _{EBO}		7		0		-	7.5	-	7.5	-	7.5	mA
* V _{CEO(sus)}				0.2 ^b	0	60	-	90	-	120	-	V
* h _{FE}	3 3 3 4			0.4 ^b 4 ^b 10 ^b 15 ^b		200 2000 500 100	-	200 2000 500 100	-	200 2000 500 100	-	
* V _{BE(sat)}			10 15	0.1 ^b 0.15 ^b		-	3.5 4.5	-	3.5 4.5	-	3.5 4.5	V
* V _{CE(sat)}				10 ^b 15 ^b	0.1 0.15	-	2.8 4	-	2.8 4	-	2.8 4	V
V _F				-15		-	4.5	-	4.5	-	4.5	
* h _{fe} f = 1 MHz	3			3		4	40	4	40	4	40	
* t _d ^c				10	0.1	-	0.15	-	0.15	-	0.15	μs
* t _r ^c				10	0.1	-	1	-	1	-	1	
* t _s ^c				10	0.1 ^d	-	2	-	2	-	2	
* t _f ^c				10	0.1 ^d	-	7	-	7	-	7	
I _S /b t = 1 s, non rep.	20					6	-	6	-	6	-	A
R _{θJC}						-	1.46	-	1.46	-	1.46	°C/W

^a In accordance with JEDEC registration data.

^b V_{CB} value.

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

^c V_{CC} = 30 V, t_p = 300 μs, duty cycle = 2%.

^d I_{B1} = -I_{B2}.

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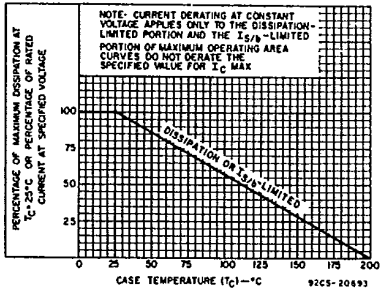


Fig. 2 - Derating curves for all types.

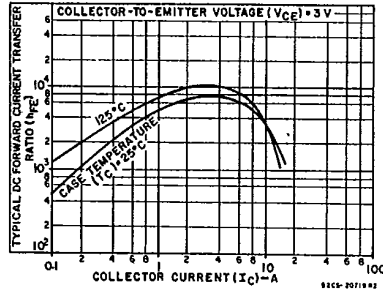


Fig. 3 - Typical dc-beta characteristics for all types.

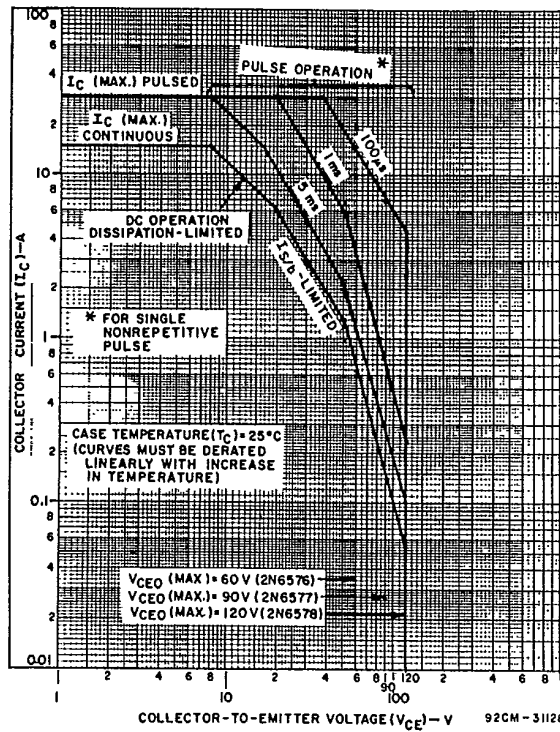


Fig. 4 - Maximum operating areas for all types.

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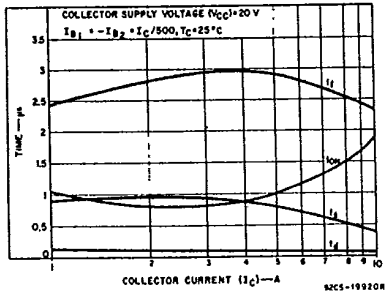


Fig. 5 - Typical saturated switching time characteristics for all types.

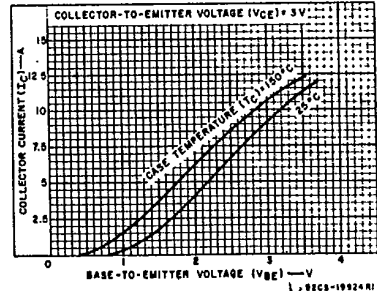


Fig. 6 - Typical transfer characteristics for all types.

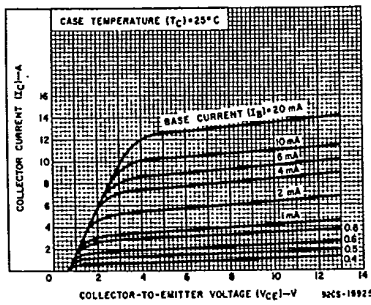


Fig. 7 - Typical output characteristics for all types.

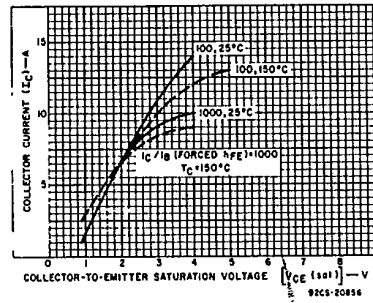


Fig. 8 - Typical saturation characteristics for all types.

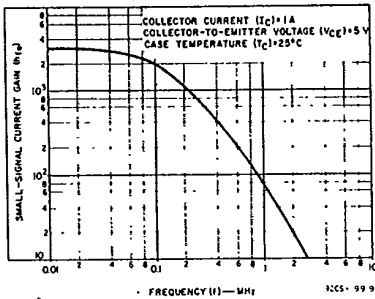


Fig. 9 - Typical small-signal gain for all types.

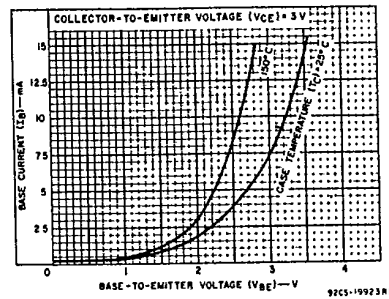


Fig. 10 - Typical input characteristics for all types.

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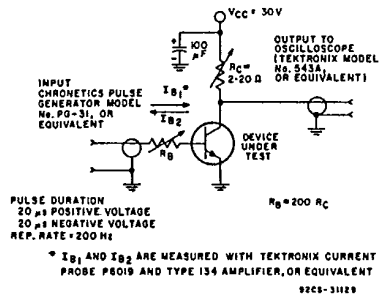


Fig. 11 - Circuit used to measure saturated-switching times.

