

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**

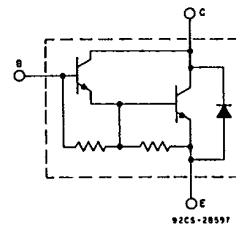
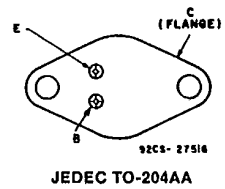


Fig. 1 - Schematic diagram for all types.

**MAXIMUM RATINGS, Absolute-Maximum Values:**

	2N6576	2N6577	2N6578	
* V <sub>CB0</sub>	60	90	120	V
* V <sub>CEO(sus)</sub>	60	90	120	V
* V <sub>EB0</sub>		7		V
* I <sub>C</sub>		15	15	A
* I <sub>CM</sub>		30	30	A
* I <sub>B</sub>		0.25		A
* P <sub>T</sub>		120		W
T <sub>C</sub> ≤ 25°C				
T <sub>C</sub> > 25°C		See Fig. 2		
* T <sub>stg</sub> , T <sub>J</sub>		-65 to 200		°C
* T <sub>L</sub>		235		°C

At distances ≥ 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 <sub>CE</sub>	V <sub>EB</sub>	V <sub>BE</sub>	I <sub>C</sub>	I <sub>B</sub>	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
* I <sub>CB0</sub>	60 <sup>a</sup> 90 <sup>a</sup> 120 <sup>a</sup>					-	0.5	-	-	-	-	mA
* I <sub>CEO</sub>	60 90 120				0 0 0	-	1	-	-	-	-	
* I <sub>CER</sub> R <sub>BE</sub> = 10K T <sub>C</sub> = 150°C	60 90 120					-	5	-	-	-	-	
* I <sub>CEx</sub> T <sub>C</sub> = 175°C	60 90 120		-1.5 -1.5 -1.5			-	5	-	-	-	-	
* I <sub>EBO</sub>		7		0		-	7.5	-	7.5	-	7.5	
* V <sub>CEO(sus)</sub>				0.2 <sup>b</sup>	0	60	-	90	-	120	-	
* h <sub>FE</sub>	3 3 3 4			0.4 <sup>b</sup> 4 <sup>b</sup> 10 <sup>b</sup> 15 <sup>b</sup>		200 2000 500 100	-	200 2000 500 100	-	200 2000 500 100	-	
* V <sub>BE(sat)</sub>			10 15	0.1 <sup>b</sup> 0.15 <sup>b</sup>		-	3.5 4.5	-	3.5 4.5	-	3.5 4.5	
* V <sub>CE(sat)</sub>				10 <sup>b</sup> 15 <sup>b</sup>	0.1 0.15	-	2.8 4	-	2.8 4	-	2.8 4	
* V <sub>F</sub>				-15		-	4.5	-	4.5	-	4.5	
* h <sub>fe</sub> f = 1 MHz	3			3		4	40	4	40	4	40	
* t <sub>d</sub> <sup>c</sup>				10	0.1	-	0.15	-	0.15	-	0.15	μs
* t <sub>r</sub> <sup>c</sup>				10	0.1	-	1	-	1	-	1	
* t <sub>s</sub> <sup>c</sup>				10	0.1 <sup>d</sup>	-	2	-	2	-	2	
* t <sub>f</sub> <sup>c</sup>				10	0.1 <sup>d</sup>	-	7	-	7	-	7	
I <sub>S</sub> /b t = 1 s, non rep.	20					6	-	6	-	6	-	A
R <sub>θJC</sub>						-	1.46	-	1.46	-	1.46	°C/W

<sup>a</sup> In accordance with JEDEC registration data.

<sup>b</sup> V<sub>CB</sub> value.

<sup>c</sup> Pulsed: Pulse duration = 300 μs, duty factor = 1.8%.

<sup>c</sup> V<sub>CC</sub> = 30 V, t<sub>p</sub> = 300 μs, duty cycle = 2%.

<sup>d</sup> I<sub>B1</sub> = -I<sub>B2</sub>.

2N6576, 2N6577, 2N6578

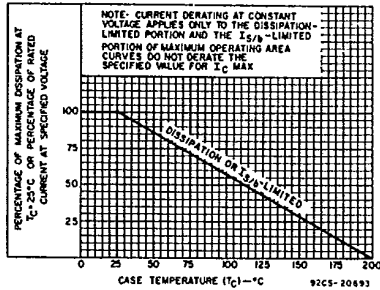


Fig. 2 - Derating curves for all types.

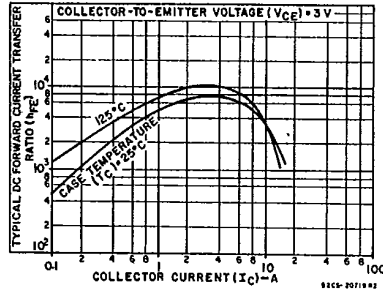


Fig. 3 - Typical dc-beta characteristics for all types.

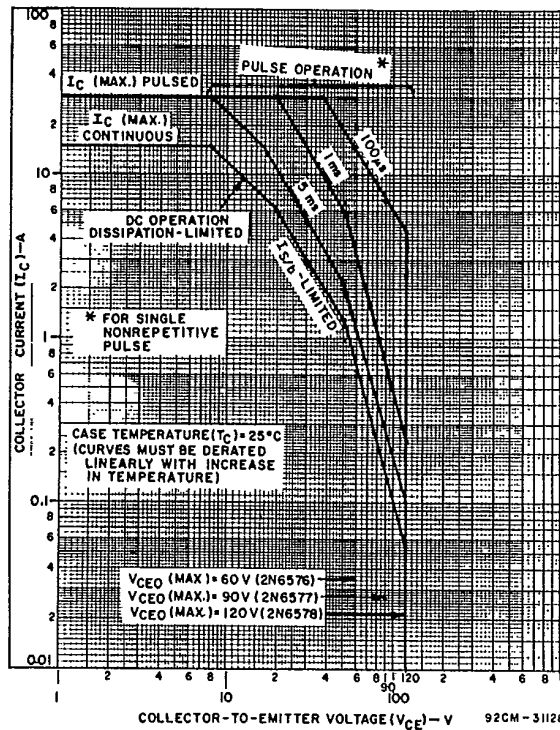


Fig. 4 - Maximum operating areas for all types.

2N6576, 2N6577, 2N6578

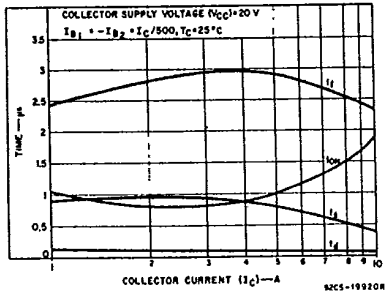


Fig. 5 - Typical saturated switching time characteristics for all types.

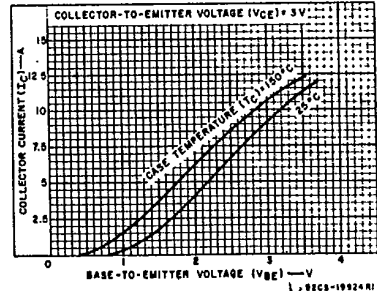


Fig. 6 - Typical transfer characteristics for all types.

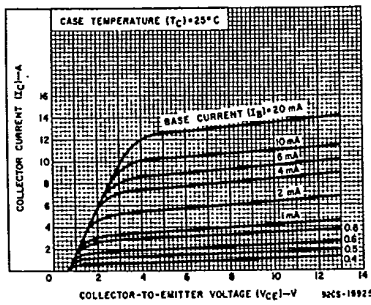


Fig. 7 - Typical output characteristics for all types.

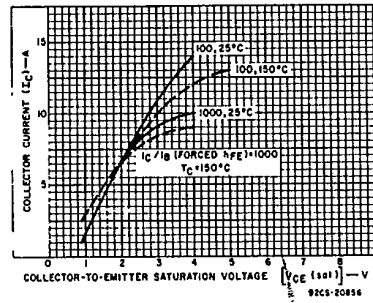


Fig. 8 - Typical saturation characteristics for all types.

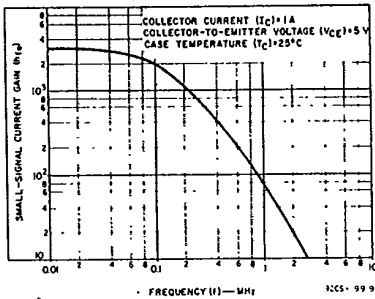


Fig. 9 - Typical small-signal gain for all types.

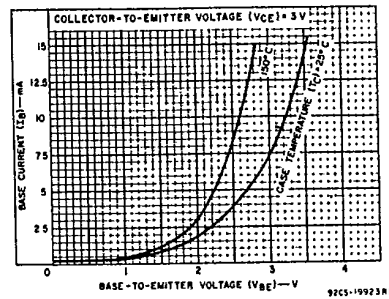


Fig. 10 - Typical input characteristics for all types.

2N6576, 2N6577, 2N6578

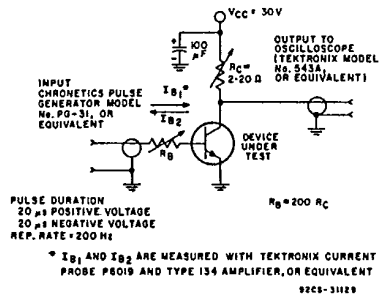
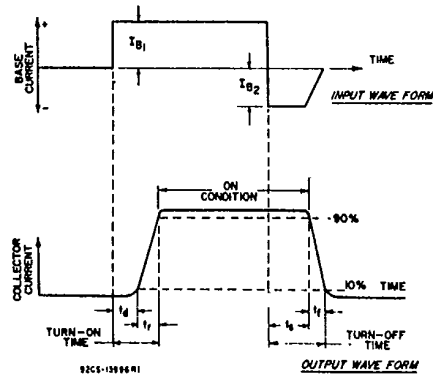


Fig. 11 - Circuit used to measure saturated-switching times.



This datasheet has been downloaded from:

[www.DatasheetCatalog.com](http://www.DatasheetCatalog.com)

Datasheets for electronic components.