2N6055, 2N6056

File Number **563**

8-Ampere Silicon N-P-N Darlington Power Transistors

60- and 80-Volt, 100-Watt Types
With Gain of 750 at 4 Amperes

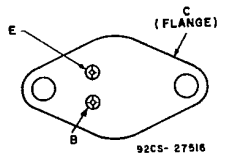
Features:

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

Applications:

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

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The RCA-2N6055 and 2N6056 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 (VERSAWATT) plastic package.

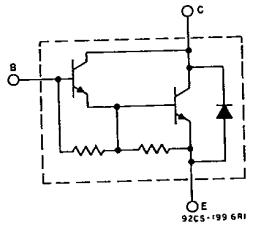


Fig. 1 – Schematic diagram of 2N6055 and 2N6056 Darlington power transistors.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	2N6055	2N6056	
* V_{CBO}	60	80	V
$V_{CER(sus)}$ $R_{BE} = 100\ \Omega$	60	80	V
* V_{CEO}	60	80	V
$V_{CEV(sus)}$ $V_{BE} = -1.5$ V	60	80	V
* V_{EBO}	5	5	V
* I_C	8	8	A
I_{CM}	16	16	A
* I_B	120	120	mA
* P_T $T_C \leq 25^oC$	100	100	W
$T_C > 25^oC$	– See Figs. 2 and 4 –		
* T_{stg}, T_J	—— –65 to +200 ——		^oC
* T_L At distances ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max.	—— 235 ——		^oC

* In accordance with JEDEC registration 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
	DC VOLTAGE V			DC CURRENT A			2N6055		2N6056		
	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN.	MAX.	MIN.	MAX.	
* I_{CEO}	30 40					0 0	– –	0.5 –	– –	– 0.5	mA
I_{CEX}	60 80		−1.5 −1.5				– –	0.5 –	– –	– 0.5	
I_{CEX} T_C = 150°C	60 80		−1.5 −1.5				– –	5 –	– –	– 5	
* I_{EBO}		5		0			–	2	–	2	mA
* h_{FE}	3 3			8[a] 4[a]			100 750	– 18,000	100 750	– 18,000	
$V_{CEO(sus)}$				0.1[a]			60[a]	–	80[a]	–	V
$V_{CER(sus)}$ R_{BE} = 100 Ω				0.1[a]			60[a]	–	80[a]	–	
$V_{CEX(sus)}$			−1.5	0.1[a]			60[a]	–	80[a]	–	
* $V_{CE(sat)}$				4[a] 8[a]		0.016 0.08	– –	2 3	– –	2 3	V
* V_{BE}	3			4[a]			–	2.8	–	2.8	V
$V_{BE(sat)}$				8[a]		0.08	–	4	–	4	
* $\|h_{fe}\|$ f = 1 MHz	3			3			4	–	4	–	
* C_{obo} f = 0.1 MHz, V_{CB} = 10 V					0		–	200	–	200	pF
* h_{fe} f = 1 kHz	3			3			300	–	300	–	
$I_{S/b}$ t = 1 s, non rep.	33.3 40						3 –	– –	3 2	– –	A
$R_{\theta JC}$							–	1.75	–	1.75	°C/W

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

a Pulsed: Pulse duration = 300 μs, duty factor = 2%.

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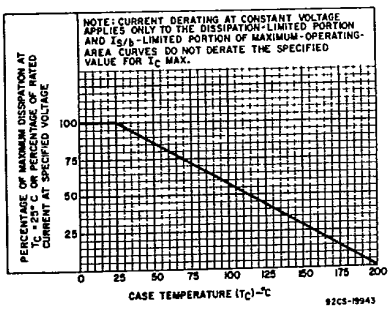

Fig.2 – Derating curve for both types.

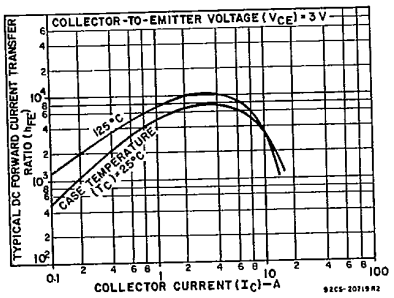

Fig.3 – Typical dc beta characteristics for both types.

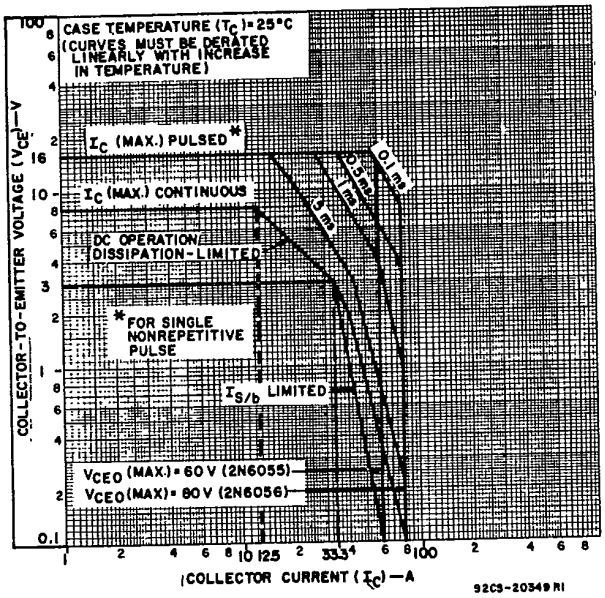

Fig.4 – Maximum operating areas for types 2N6055 and 2N6056.

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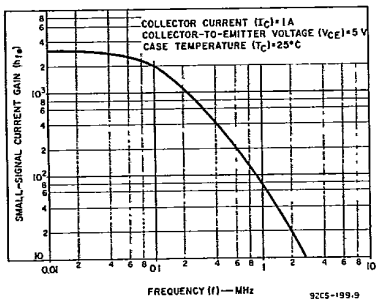

Fig. 5 — Typical small-signal gain for both types.

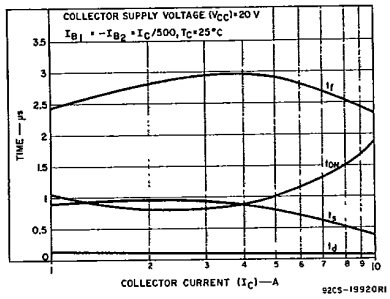

Fig. 6 — Typical saturated switching-time characteristics for both types.

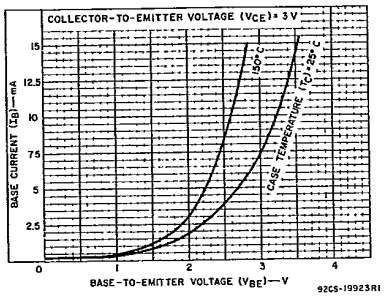

Fig. 7 — Typical input characteristics for both types.

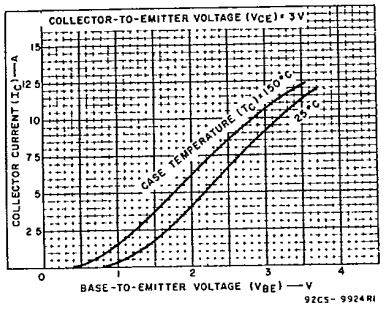

Fig. 8 — Typical transfer characteristics for both types.

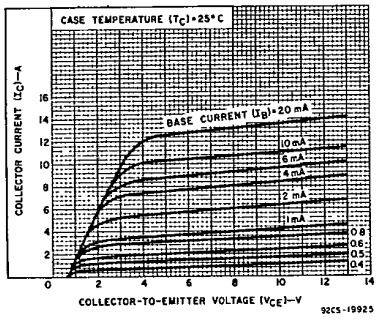

Fig. 9 — Typical output characteristics for both types.

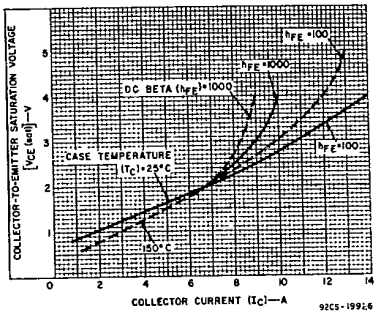

Fig. 10 — Typical saturation-voltage characteristics for both types.

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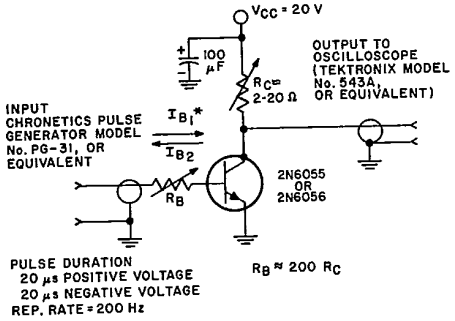

Fig. 11 — Circuit used to measure saturated switching times.

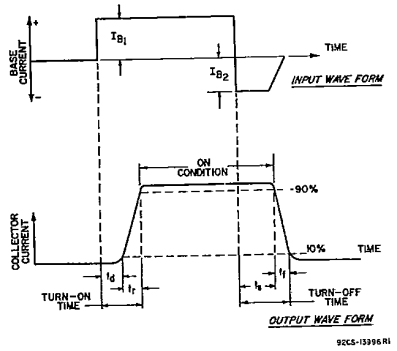

Fig. 12 — Phase relationship between input current and output current showing reference points for specification of switching times.