

G E SOLID STATE

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3875081 G E SOLID STATE  
Darlington Power Transistors

01E 17308

D T-33-29

RCA1000, RCA1001

File Number 594

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

For Use as Output Devices in General-Purpose  
Switching and Amplifier Applications

**Features:**

- High dc current gain:  
 $h_{FE} = 1000$  min. at  $I_C = 3$  A
- Monolithic construction

RCA1000 and 1001 are monolithic silicon n-p-n Darlington transistors intended for medium-power applications as output devices. The construction of these units 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 hermetic steel package.

**TERMINAL DESIGNATIONS**

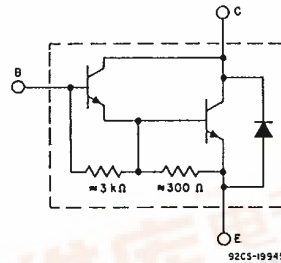
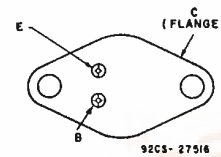


Fig. 1 — Schematic diagram for all types.

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

	RCA-1000	RCA-1001	
<b>COLLECTOR-TO-BASE VOLTAGE:</b>			
With emitter open	$V_{CBO}$ 60	80	V
<b>COLLECTOR-TO-EMITTER VOLTAGE:</b>			
With base open	$V_{CEO}$ 60	80	V
<b>EMITTER-TO-BASE VOLTAGE:</b>			
With collector open	$V_{EBO}$ 5	5	V
<b>COLLECTOR CURRENT:</b>			
Continuous	$I_C$ 8	8	A
Pulsed	15	15	A
<b>BASE CURRENT (Continuous)</b>	$I_B$ 0.1	0.1	A
<b>TRANSISTOR DISSIPATION:</b>			
At case temperatures up to 25°C	$P_T$ 90	90	W
At case temperatures above 25°C, derate linearly at	0.515		W/°C
<b>TEMPERATURE RANGE:</b>			
Storage & Operating (Junction)	-55 to +200		°C
<b>LEAD TEMPERATURE (During Soldering):</b>			
At distance $\geq$ 1/8 in. (3.17 mm) from case to 10 s max.	235		°C



RCA1000, RCA1001

ELECTRICAL CHARACTERISTICS, At Case Temperature ( $T_C$ ) = 25°C unless otherwise specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS				UNITS
		DC VOLTAGE (V)			DC CURRENT (A)		RCA 1000		RCA 1001		
		V <sub>CB</sub>	V <sub>CE</sub>	V <sub>BE</sub>	I <sub>C</sub>	I <sub>B</sub>	MIN.	MAX.	MIN.	MAX.	
Collector Cutoff Current: With base open	I <sub>CEO</sub>		30 40			0 0	— —	500 —	— 500	— —	μA
With external base-to-emitter resistance (R <sub>BE</sub> ) = 1 kΩ At T <sub>C</sub> = 150°C	I <sub>CER</sub>	60 80					— —	1 —	— —	— 1	mA
Emitter Cutoff Current	I <sub>EBO</sub>			5	0	0	—	2	—	2	mA
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>				0.1 <sup>a</sup> 0.1 <sup>a</sup>	0 0	60 —	— —	— 80	— —	V
DC Forward Current Transfer Ratio	h <sub>FE</sub>		3 3		3 4		1000 750	— —	1000 750	— —	
Base-to-Emitter Voltage	V <sub>BE</sub>		3		3 <sup>a</sup>		—	2.5	—	2.5	V
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>				3 <sup>a</sup> 8 <sup>a</sup>	0.012 0.04	— —	2 4	— —	2 4	V
Thermal Resistance (Junction-to-Case)	R <sub>θJC</sub>						—	1.94	—	1.94	°C/W

<sup>a</sup> Pulsed: Pulse duration ≤ 300 μs, duty factor ≤ 2%.

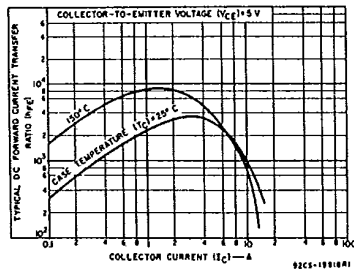


Fig. 2 — Typical dc beta characteristics for both types.

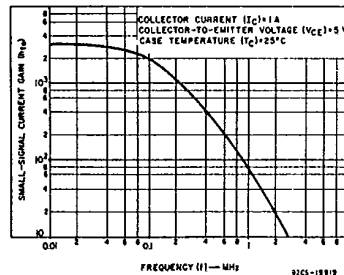


Fig. 3 — Typical small-signal gain for both types.

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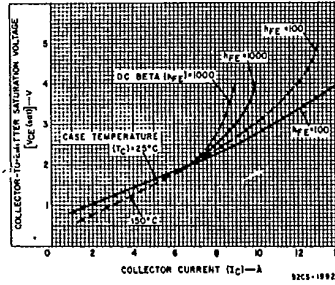


Fig. 4 — Typical saturation characteristics for both types.

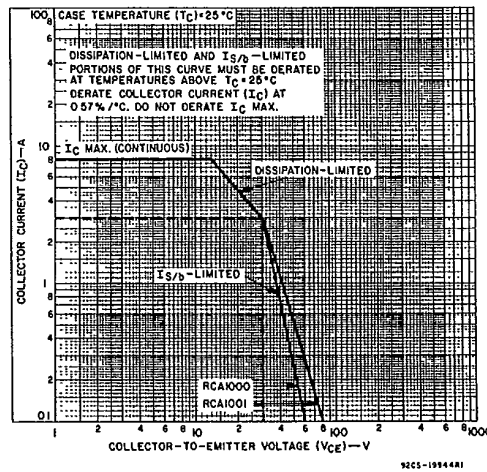


Fig. 5 — DC safe-area-of-operation for both types.