

File Number 1413

RCA9203A, RCA9203B

4-Ampere N-P-N Darlington Power Transistors

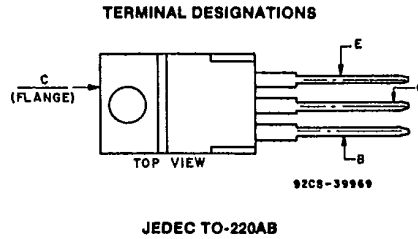
250 and 300 Volts, 50 Watts
Gain of 500 at 2 A

Features

- Direct IC Input without predriver
- No R_2 , no anti-parallel diode
- Hard glass passivation
- Wire bonded construction

Applications

- General purpose
- Small engine ignition
- Voltage regulator



The RCA9203A, and RCA9203B* 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-220AB (VERSAWATT) plastic package.

*Formerly RCA Dev. No. TA9203A, and TA9203B.

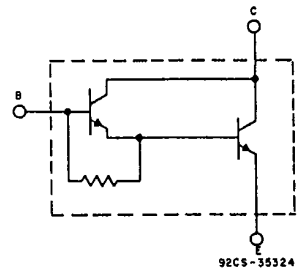


Fig. 1 - Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	RCA9203A	RCA9203B	UNITS
V_{CBO}	250	300	V
$V_{CEO(SUS)}$	250	300	V
V_{EBO}	9	9	V
I_C	4	4	A
I_{CM}	6	6	A
I_B	0.25	0.25	A
P_T			
T_C up to 25°C	50	50	W
T_C above 25°C	Derate linearly at 0.4		W/°C
T_{stg}, T_J	-65 to 150		°C
T_L			
At distance $\geq 1/8$ in. (3.17 mm) from case for 10 s max.	235		°C

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01E 17320 D T-33-29

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ELECTRICAL CHARACTERISTICS, At Case Temperature (T_c) = 25°C

CHARACTERISTIC	TEST CONDITIONS				LIMITS				UNITS
	VOLTAGE V dc		CURRENT A dc		RCA9203A		RCA9203B		
	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	
I_{CBO} $I_E = 0$	250 ^a 300 ^a	—	—	—	—	0.2	—	—	mA
I_{CEO}	200 250	—	—	0 0	—	0.5	—	— 0.5	
I_{EBO}	—	-9	0	—	—	1	—	1	mA
$V_{CEO}(SUS)^C$	—	—	.03 ^b	0	250	—	300	—	V
h_{FE}	3.0 3.0	—	2 ^b 4 ^b	—	500 100	—	500 100	—	
V_{BE}	3.0	—	4 ^b	—	—	2.5	—	2.5	V
$V_{CE}(sat)$	—	—	2 ^b 4 ^b	.1 .2	—	1.5 2.0	—	1.5 2.0	V
C_{obo} $V_{CB} = 10 V$ $f = 1 MHz$	—	—	—	—	100 Typ.		100 Typ.		pF
$t_{s/b}$ $t = 0.5 s$ non- rep. pulse	40	—	—	—	1.25	—	1.25	—	A
$R_{\theta JC}$	—	—	—	—	—	2.5	—	2.5	°C/W

^a V_{CB} value.
^bPulsed, pulse duration = 300 μs , duty factor $\leq 2\%$.
^cCaution: Sustaining voltage, $V_{CEO}(SUS)$, must not be measured on a curve tracer.

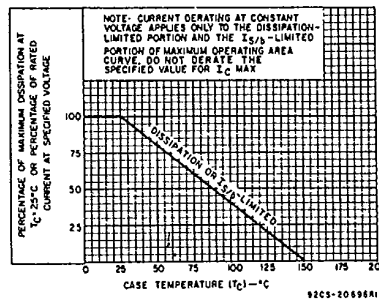


Fig. 2 - Derating curve for all types.

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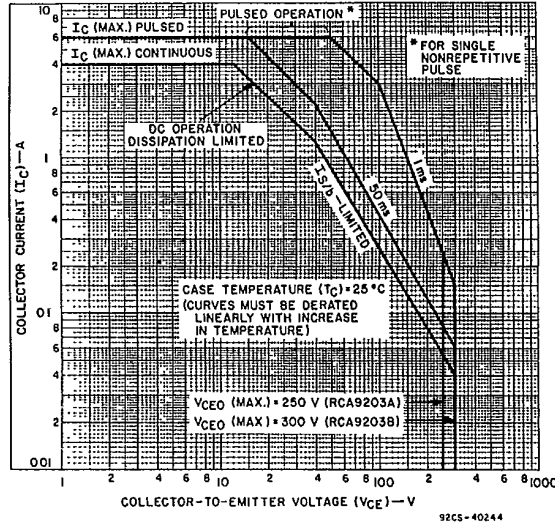


Fig. 3 - Maximum operating areas for all types.

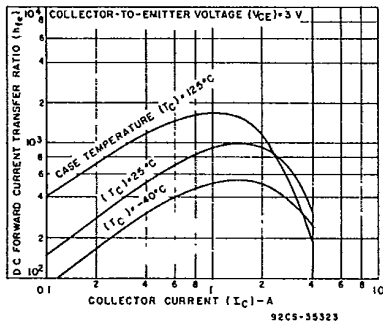


Fig. 4 - Typical dc beta characteristics for all types.

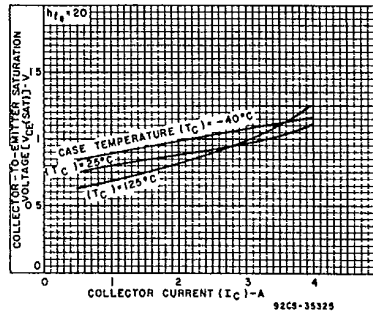


Fig. 5 - Typical saturation characteristics for all types.

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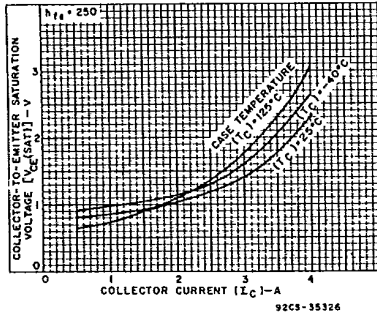


Fig. 6 - Typical saturation characteristics for all types.

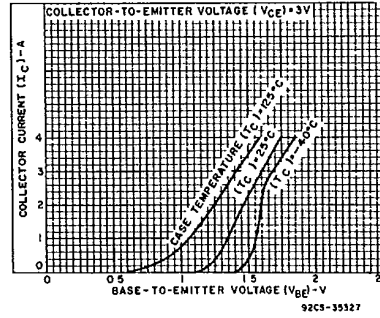


Fig. 7 - Typical transfer characteristics for all types.

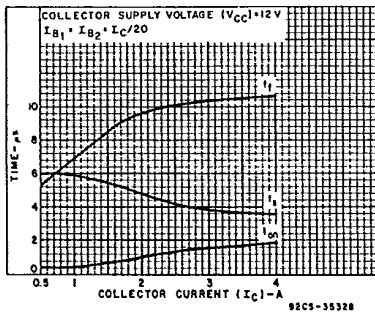


Fig. 8 - Typical saturated switching characteristics for all types.

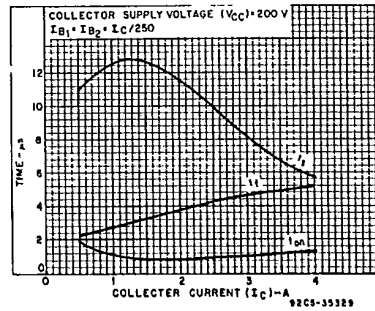


Fig. 9 - Typical saturated switching characteristics for all types.

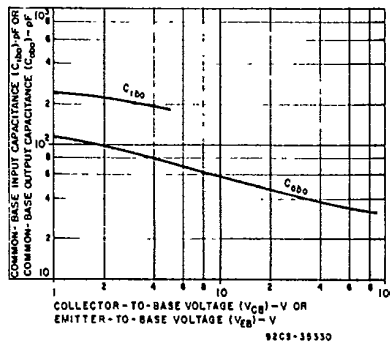


Fig. 10 - Typical common-base input (C_{ibo}) or output (C_{obo}) capacitance characteristics (all types).