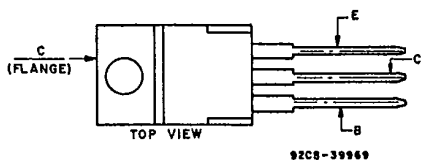
4-Ampere N-P-N Darlington Power Transistors

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

TERMINAL DESIGNATIONS



JEDEC TO-220AB

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.

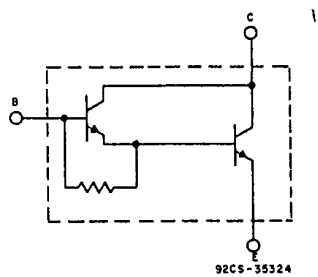


Fig. 1 - Schematic diagram for all types.

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 ≥ 1/8 in. (3.17 mm) from case for 10 s max.	235		°C

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]	—	—	—	—	0.2	—	—	mA
	300[a]	—	—	—	—	—	—	0.2	
I_{CEO}	200	—	—	0	—	0.5	—	—	
	250	—	—	0	—	—	—	0.5	
I_{EBO}	—	-9	0	—	—	1	—	1	mA
$V_{CEO}(sus)$[c]	—	—	.03[b]	0	250	—	300	—	V
h_{FE}	3.0	—	2[b]	—	500	—	500	—	
	3.0	—	4[b]	—	100	—	100	—	
V_{BE}	3.0	—	4[b]	—	—	2.5	—	2.5	V
$V_{CE}(sat)$	—	—	2[b]	.1	—	1.5	—	1.5	V
	—	—	4[b]	.2	—	2.0	—	2.0	
C_{obo} $V_{CB} = 10$ V $f = 1$ MHz	—	—	—	—	100 Typ.		100 Typ.		pF
$I_{s/b}$ 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.
[b] Pulsed, pulse duration = 300 μs, duty factor ≤ 2%.
[c] Caution: Sustaining voltage, $V_{CEO}(sus)$, must not be measured on a curve tracer.

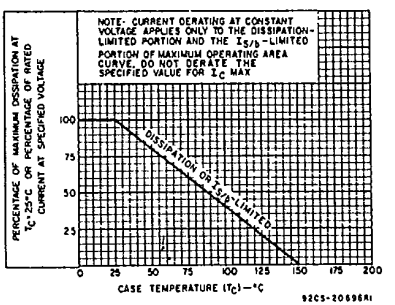


Fig. 2 - Derating curve for all types.

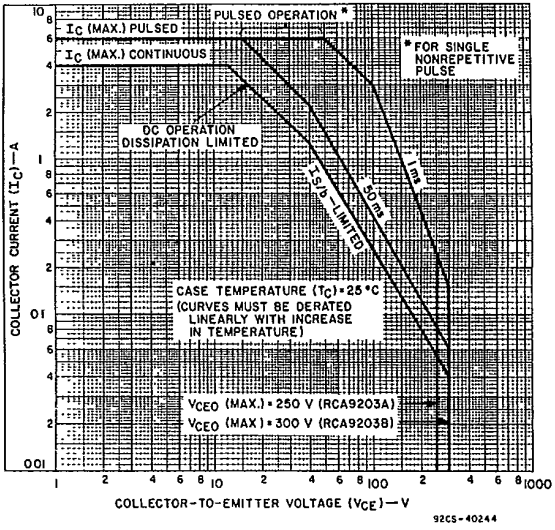


Fig. 3 - Maximum operating areas for all types.

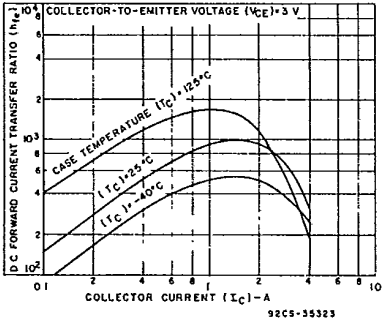


Fig. 4 - Typical dc beta characteristics for all types.

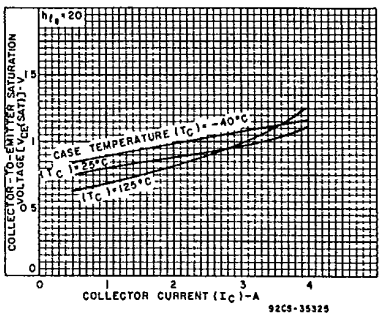


Fig. 5 - Typical saturation characteristics for all types.

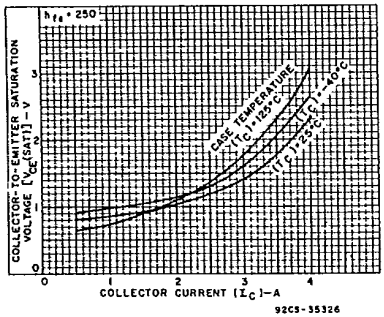


Fig. 6 - Typical saturation characteristics for all types.

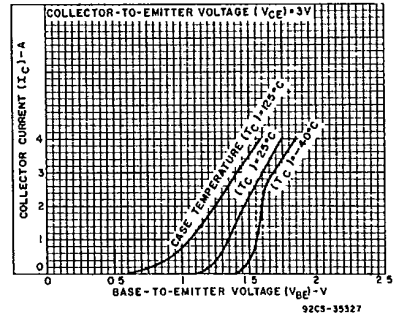


Fig. 7 - Typical transfer characteristics for all types.

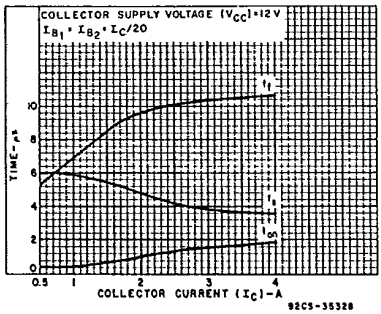


Fig. 8 - Typical saturated switching characteristics for all types.

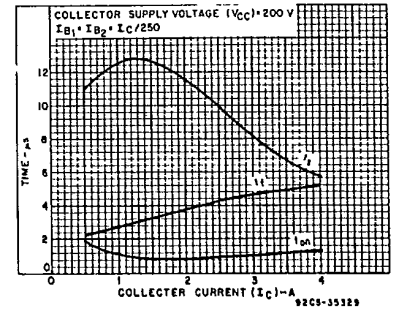


Fig. 9 - Typical saturated switching characteristics for all types.

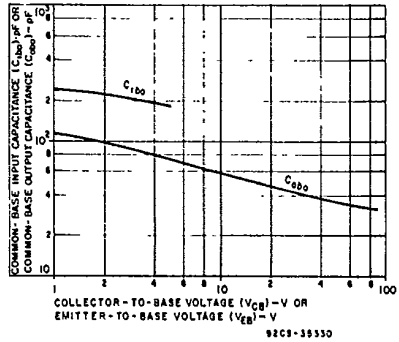


Fig. 10 - Typical common-base input (C_{ibo}) or output (C_{obo}) capacitance characteristics (all types).