

3875081 G E SOLID STATE

01E 17323 D T-33-33

Darlington Power Transistors

File Number 1448

RCA9228A, RCA9228B, RCA9228C, RCA9228D
 RCA9229A, RCA9229B, RCA9229C, RCA9229D

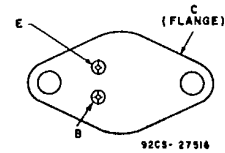
50-A Complementary High Current, Medium Voltage N-P-N and P-N-P Silicon Darlington Power Transistors

Features:

- 300 W at 25°C case temperature
- 50-A rated collector current
- Hard glass passivation
- Wire-bonded construction

Applications:

- General purpose
- Low-speed switching
- DC motor control

TERMINAL DESIGNATIONS

JEDEC TO-204AE

(141 mil diameter pin isolation)

The RCA-9228 Series and the RCA-9229 Series* complementary n-p-n and p-n-p silicon Darlington transistors are designed for general-purpose amplifier and low-speed switching applications. The high gain of these devices makes it possible for them to be driven directly from integrated circuits.

These devices are supplied in the JEDEC TO-204AE hermetic steel package.

*The RCA9228 and RCA9229 Series were formerly RCA developmental numbers TA9228 and TA9229, respectively.

MAXIMUM RATINGS, Absolute-Maximum Values:

	RCA9228A RCA9229A*	RCA9228B RCA9229B*	RCA9228C RCA9229C*	RCA9228D RCA9229D*	
V_{CE0}	60	80	100	120	V
$V_{CE0}(SUS)$	60	80	100	120	V
V_{EBO}			5		V
I_C			50		A
I_B			1		A
P_T					
$T_C \leq 25^\circ\text{C}$			300		W
$T_C > 25^\circ\text{C}$			2.4		W/°C
T_{stg}, T_J			-65 to +150		°C
T_L					
At distances $> 1/8$ in. (3.17 mm) from case for 10 s max.			235		°C

* For p-n-p devices, voltage and current values are negative.

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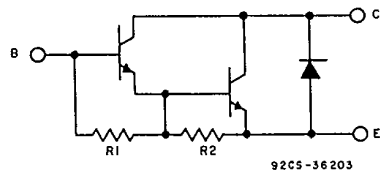


Fig. 1 - Schematic diagram for RCA9228 Series.

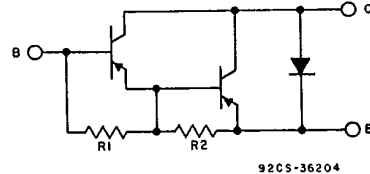


Fig. 2 - Schematic diagram for RCA9229 Series.

ELECTRICAL CHARACTERISTICS, Case Temperature (T_c) = 25°C Unless Otherwise Specified

CHARAC- TERISTIC	TEST CONDITIONS				LIMITS								UNITS
	VOLTAGE V dc		CURRENT A dc		RCA9228A RCA9229A*		RCA9228B RCA9229B*		RCA9228C RCA9229C*		RCA9228D RCA9229D*		
	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
I _{CEO}	50 70 90 110				— — — —	0.5 — — —	— — — —	— 0.5 — —	— — — —	— — 0.5 —	— — — —	— — — 0.5	mA
I _{EBO}		-5			—	5	—	5	—	5	—	5	mA
V _{CEO}	(a)		0.1(b)		60	—	80	—	100	—	120	—	V
h _{FE}	3 3		25 50		2000 400	— —	2000 400	— —	2000 400	— —	2000 400	— —	
V _{BE(sat)}			25 50	0.1 0.2	— —	2.5 3.5	— —	2.5 3.5	— —	2.5 3.5	— —	2.5 3.5	V
V _{CE(sat)}			25 50	0.1 0.2	— —	2 3	— —	2 3	— —	2 3	— —	2 3	V
I _{S,B} t = 0.5 sec.	30				10	—	10	—	10	—	10	—	A
R _{θJC}					—	0.416	—	0.416	—	0.416	—	0.416	°C/W
Typical Values C _{ob} V _{CB} = 10 V RCA9228 Series RCA9229 Series h _{ie} 1 MHz	3		10		Typ. Typ. Typ.	300 600 5	Typ. Typ. Typ.	300 600 5	Typ. Typ. Typ.	300 600 5	Typ. Typ. Typ.	300 600 5	pF

(a) CAUTION: Sustaining voltage $V_{ceo(sus)}$ MUST NOT be measured on a curve tracer.(b) Pulsed: Pulse duration = 300 μs , duty factor < 2%.

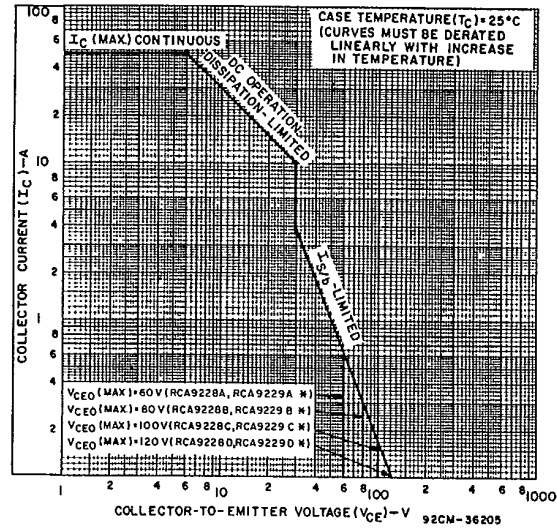
* For p-n-p devices, voltage and current values are negative.

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*FOR p-n-p DEVICES, VOLTAGE AND CURRENT VALUES ARE NEGATIVE

Fig. 3 - Maximum operating areas for all types.

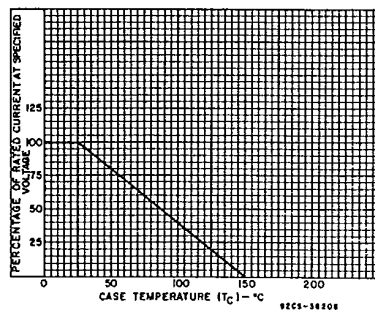


Fig. 4 - Current derating curve for all types.

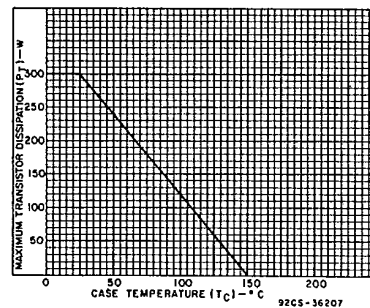


Fig. 5 - Power derating curve for all types.

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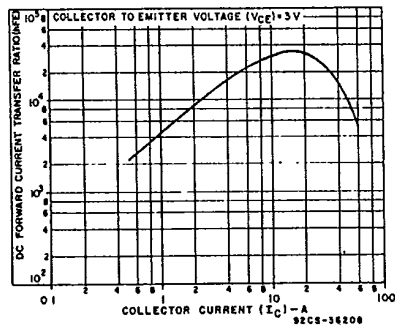


Fig. 6 - Typical dc beta characteristics for RCA9228 Series.

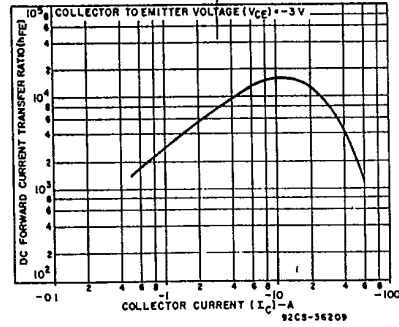


Fig. 7 - Typical dc beta characteristics for RCA9229 Series.

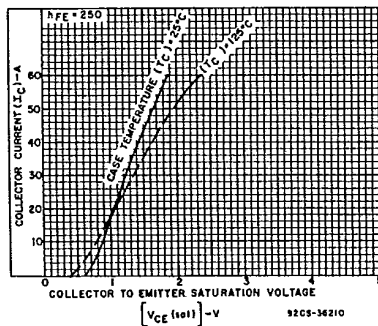


Fig. 8 - Typical saturation characteristics for RCA9228 Series.

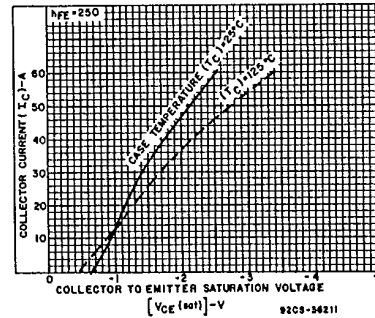


Fig. 9 - Typical saturation characteristics for RCA9229 Series.

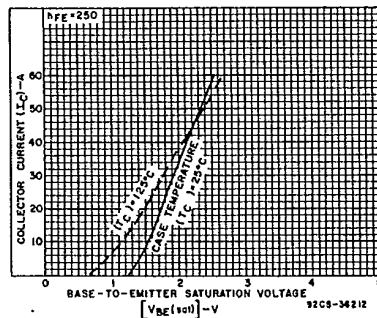


Fig. 10 - Typical saturation characteristics for RCA9228 Series.

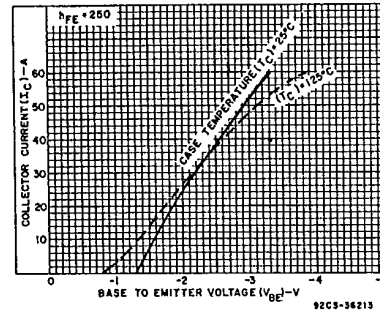


Fig. 11 - Typical saturation characteristics for RCA9229 Series.