

File Number 1448

RCA9228A, RCA9228B, RCA9228C, RCA9228D
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50-A Complementary High Current, Medium Voltage N-P-N and P-N-P Silicon Darlington Power Transistors

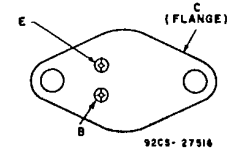
Features:

- 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 _{CSO}	60	80	100	120	V
V _{CES(SUS)}	60	80	100	120	V
V _{ESD}	5				V
I _C	50				A
I _E	1				A
P _T					
T _c ≤ 25°C	300				W
T _c > 25°C	Derate linearly				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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Darlington Power Transistors

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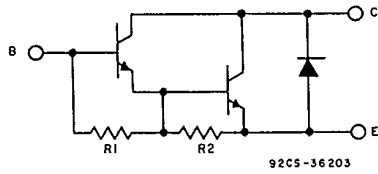


Fig. 1 - Schematic diagram for RCA9228 Series.

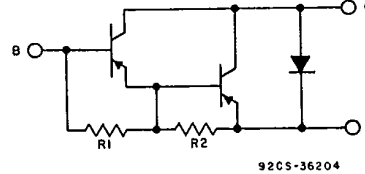


Fig. 2 - Schematic diagram for RCA9229 Series.

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

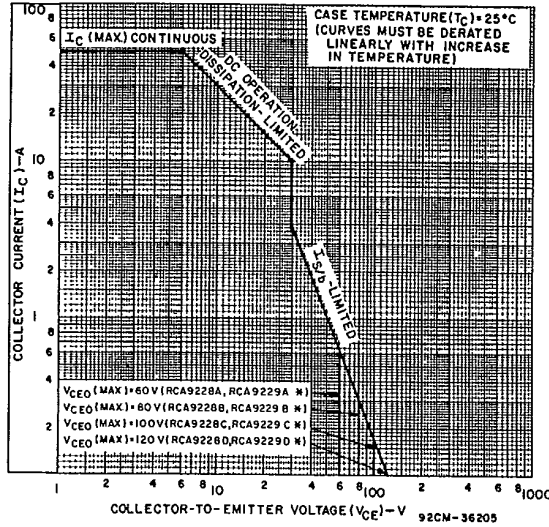
CHARACTERISTIC	TEST CONDITIONS				LIMITS								UNITS
	VOLTAGE V dc		CURRENT A dc		RCA9228A RCA9229A*		RCA9228B RCA9229B*		RCA9228C RCA9229C*		RCA9228D RCA9229D*		
	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
I_{CEO}	50 70 90 110				—	0.5	—	—	—	—	—	—	mA
I_{EBO}		-5			—	5	—	5	—	5	—	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
$I_{s,b}$ $t = 0.5 \text{ sec.}$	30				10	—	10	—	10	—	10	—	A
$R_{\theta jc}$					—	0.416	—	0.416	—	0.416	—	0.416	°C/W
Typical Values C_{ob} $V_{CB} = 10 \text{ V}$ RCA9228 Series RCA9229 Series $h_{ie} 1 \text{ MHz}$					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.

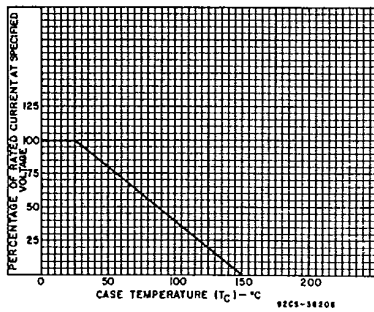


Fig. 4 - Current derating curve for all types.

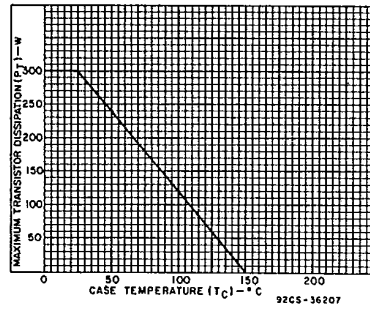


Fig. 5 - Power derating curve for all types.

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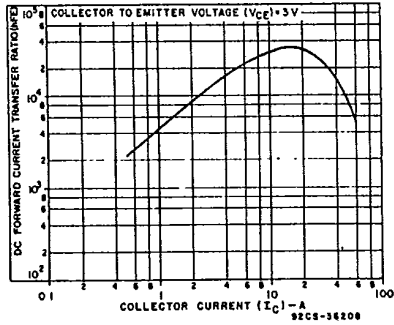


Fig. 6 - Typical dc beta characteristics for RCA9228 Series.

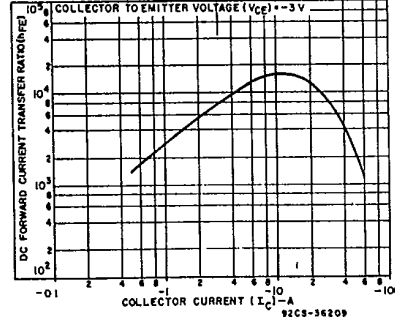


Fig. 7 - Typical dc beta characteristics for RCA9229 Series.

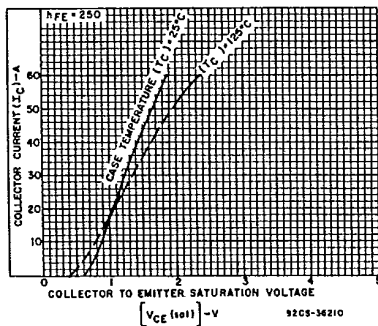


Fig. 8 - Typical saturation characteristics for RCA9228 Series.

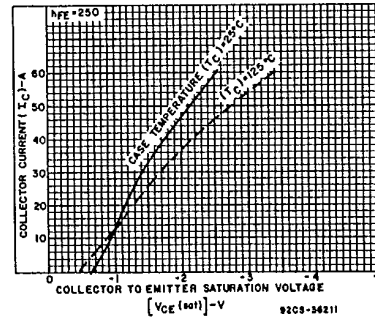


Fig. 9 - Typical saturation characteristics for RCA9229 Series.

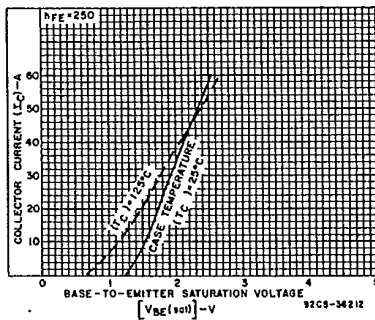


Fig. 10 - Typical saturation characteristics for RCA9228 Series.

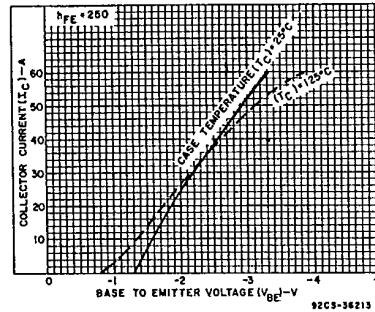


Fig. 11 - Typical saturation characteristics for RCA9229 Series.