RCA8766 Series

File Number **973**

T-33-29

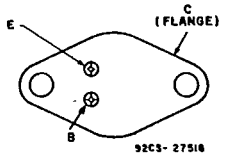
10-Ampere N-P-N Monolithic Darlington Power Transistors

350, 400, 450 Volts, 150 Watts
Gain of 100 at 4, 6A

Features:
- Operates from IC without predriver
- Low leakage at high temperature

Applications:
- Power switching
- Solenoid drivers
- Automotive Ignition
- Series and shunt regulators

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The 8766 Series• are monolithic n-p-n silicon Darlington transistors designed for automotive electronic 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.

The devices in the series differ primarily in voltage ratings and in the current at which the dc gain is specified.

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

•Formerly RCA Dev. Nos. TA8766 Series

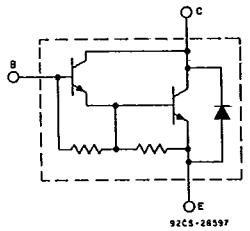


Fig. 1 – Schematic diagram for all types.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	RCA8766 RCA8766A	RCA8766B RCA8766C	RCA8766D RCA8766E	
V_{CBO}	350	400	450	V
$V_{CER(sus)}$ R_{BE} = 50 Ω	350	400	450	V
$V_{CEO(sus)}$	350	400	450	V
V_{EBO}	5	5	5	V
I_C	10	10	10	A
I_{CM}	15	15	15	A
I_B	1	1	1	A
P_T $T_C \leq 25°C$	150	150	150	W
$T_C > 25°C$	See Fig. 2			
T_{stg}, T_J	−65 to +175			°C
T_L At distances ≥ 1/8 in. (3.17 mm) from case for 10 s max.	235			°C

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RCA8766 Series

ELECTRICAL CHARACTERISTICS, *at Case Temperature (T_C) 25°C unless otherwise specified*

CHARACTERISTIC	TEST CONDITIONS			LIMITS						UNITS
	VOLTAGE V dc	CURRENT A dc		RCA8766 RCA8766A		RCA8766B RCA8766C		RCA8766D RCA8766E		
	V_{CE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.	
I_{CER} R_{BE} = 50 Ω	350			–	1	–	–	–	–	mA
	400			–	–	–	1	–	–	
	450			–	–	–	–	–	1	
T_C = 150°C	350			–	10	–	–	–	–	
	400			–	–	–	10	–	–	
	450			–	–	–	–	–	10	
I_{EBO} V_{BE} = −5 V		0		–	60	–	60	–	60	mA
$V_{CEO(sus)}$		0.2[a]	0	350	–	400	–	450	–	V
h_{FE}										
RCA8766	3	6[a]		100	–	–	–	–	–	
RCA8766A	3	4[a]		100	–	–	–	–	–	
RCA8766B	3	6[a]		–	–	100	–	–	–	
RCA8766C	3	4[a]		–	–	100	–	–	–	
RCA8766D	3	6[a]		–	–	–	–	100	–	
RCA8766E	3	4[a]		–	–	–	–	100	–	
V_{BE}										
RCA8766	3	6[a]		–	2.5	–	–	–	–	V
RCA8766A	3	4[a]		–	2.5	–	–	–	–	
RCA8766B	3	6[a]		–	–	–	2.5	–	–	
RCA8766C	3	4[a]		–	–	–	2.5	–	–	
RCA8766D	3	6[a]		–	–	–	–	–	2.5	
RCA8766E	3	4[a]		–	–	–	–	–	2.5	
$V_{CE(sat)}$										
RCA8766		6[a]	0.2[a]	–	1.5	–	–	–		V
RCA8766A		4[a]	0.133[a]	–	1.5	–	–	–		
RCA8766B		6[a]	0.2[a]	–	–	–	1.5	–		
RCA8766C		4[a]	0.133[a]	–	–	–	1.5	–	–	
RCA8766D		6[a]	0.2[a]	–	–	–	–	–	1.5	
RCA8766E		4[a]	0.133[a]	–	–	–	–	–	1.5	
All Types		8[a]	0.5[a]	–	2.5	–	2.5	–	2.5	
V_F		7[a]		–	2	–	2	–	2	V
$\|h_{fe}\|$ f = 1 MHz	5	1		10	–	10	–	10	–	
$I_{S/b}$ t = 1 s, nonrep.	30			5	–	5	–	5	–	A
$R_{\theta JC}$				–	1	–	1	–	1	°C/W

[a] Pulsed Pulse duration = 300 μs, duty factor = 1.8%.

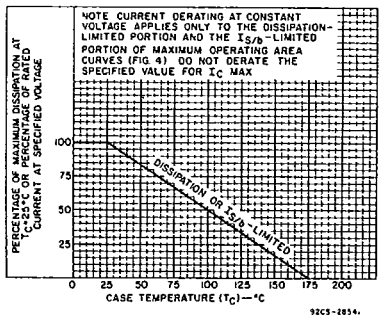

Fig 2 — Derating curves for all types

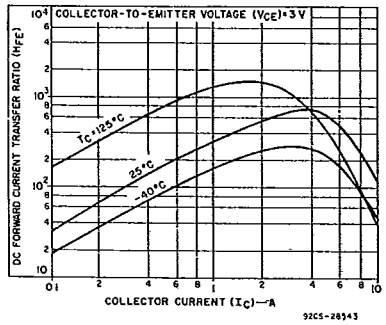

Fig. 3 — Typical DC beta characteristics for all types.

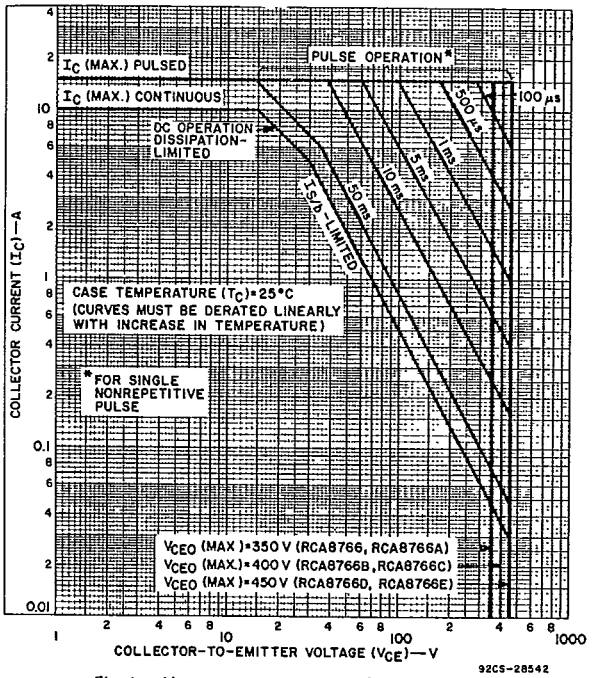

Fig. 4 — Maximum operating areas for all types.

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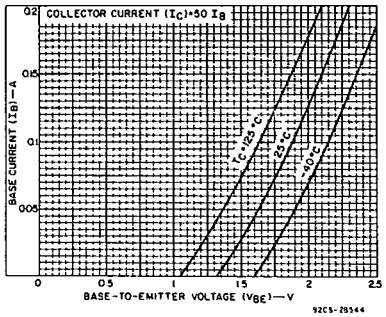

Fig 5 — Typical input characteristics for all types.

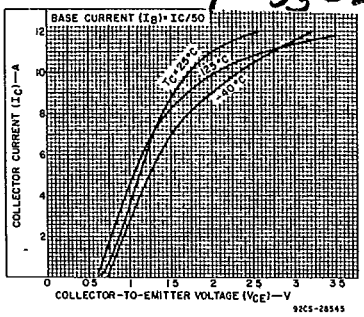

Fig. 6 — Typical output characteristics for all types.

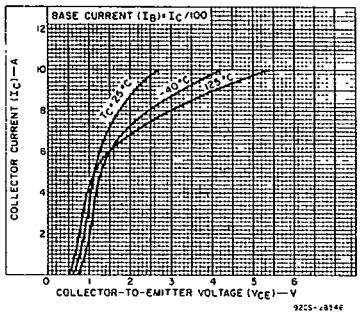

Fig 7 — Typical output characteristics for all types.

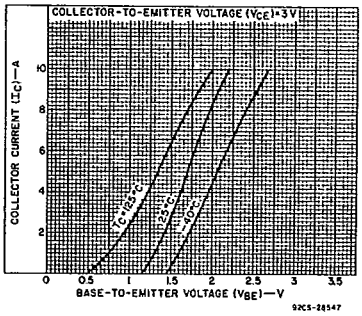

Fig. 8 — Typical transfer characteristics all types.