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

RCA8766D

Features:

- **Operates from IC without predriver**
- **Low leakage at high temperature**
- **High reverse second-breakdown capability**

Applications:

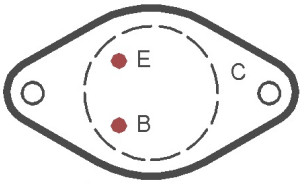
- **Power Switching**
- **Solenoid Drivers**
- **Automotive Ignition**
- **Series and shunt regulators**

The RCA 8766 Series are monolithic n-p-n silicon darlington transistors designed for automotive electronic power applications. The pi-nu construction of these device provides good forward and reverse second-breakdown capability; their high gain makes it possible for them to be driven directly from integrated circuits.

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

The RCA-8766 Series are supplied in the JEDEC TO-3 hermetic steel package.
Formerly Types are the TA8766 Series.

Terminal Designations



bottom view

JEDEC TO-3

MAXIMUM RATINGS *Absolute-Maximum Values:*		
V_{CBO}	**450**	V
$U_{CER}^{(SUS)}$ R_{BE} = 50Ω	**450**	V
$V_{CEO}^{(SUS)}$	**450**	V
V_{EBO}	**5**	V
I_C	**10**	A
I_{CM}	**15**	A
I_B	**1**	A
P_T $T_C \leq 25°C$	**150**	W
P_T $T_C > 25°C$	**derate linearly 1**	°C/W
T_{stg} T_J	**-65 to +175**	°C
T_L At distances ≥ 1/8 in. (3.17mm) from case for 10s max.	**235**	°C

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

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

Note a: Pulse duration = 300μs, duty factor = 1.8%

I_C - continous collector current
I_{CM} - peak collector current
I_{CER} - collector-cutoff current with specified resistance between base and emitter
I_B - continous base current
I_{EBO} - emitter-cutoff current, collector open
$I_{S/b}$ - forward-bias, second break-down collector current
V_{CBO} - collector-to-base voltage, emitter open
V_{CEO} - collector-to-emitter voltage, base open
$V_{CEO}^{(sus)}$ - collector-to-emitter sustaining voltage, base open
$V_{CER}^{(sus)}$ - collector-to-emitter sustaining voltage with specified resistance between base and emitter
V_{EBO} - emitter-to-base voltage, collector open
V_{BE} - base-to-emitter voltage
V_{CE}^{sat} - collector-to-emitter saturation voltage
V_F - diode forward voltage drop
h_{FE} - dc forward-current transfer ratio
$|h_{fe}|$ - magnitude of common-emitter, small-signal, short-circuit, forward-current transfer ratio
R_{BE} - external base-to-emitter resistance
$R_{\theta JC}$ - thermal resistance, junction-to-case
P_T - transistor dissipation at specified temperature
T_C - case temperature
T_{stg} - storage temperature
T_J - operating (junction) temperature
T_L - lead temperature during soldering
θ - conduction angle