

3875081 G E SOLID STATE
Darlington Power Transistors

01E 17342 DT-33-31

TIP125, TIP126, TIP127

File Number 997

8-Ampere P-N-P Darlington Power Transistors

–60, –80, and –100 Volts, 65 Watts
Gain of 1000 at –3 A
Gain of 500 at –0.75 A

Features:

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

Applications:

- Power switching
- Audio amplifiers
- Hammer drivers
- Series and shunt regulators

The RCA-TIP125, TIP126 and TIP127 are monolithic silicon p-n-p Darlington transistors designed for low- and medium-frequency power 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-220AB (VER-SAWATT) package.

The TIP125, TIP126 and TIP127 are p-n-p complements of the TIP120, TIP121 and TIP122 described in RCA data bulletin File 998.

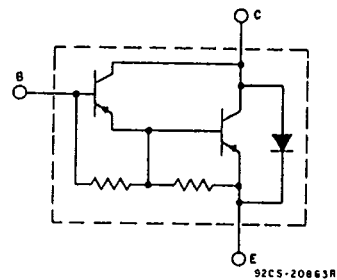
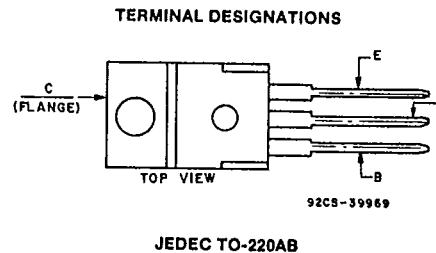


Fig. 1 – Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	TIP125	TIP126	TIP127	
V_{CBO}	–60	–80	–100	V
$V_{CEO(SUS)}$	–60	–80	–100	V
V_{EBO}	–5	–5	–5	V
I_C	–8	–8	–8	A
I_{CM}	–15	–15	–15	A
I_B	–0.25	–0.25	–0.25	A
P_T	65	65	65	W
$T_C \leq 25^\circ\text{C}$	0.52	0.52	0.52	W/°C
$T_C > 25^\circ\text{C}$	–65 to 150	–65 to 150	–65 to 150	°C
T_{stg}	235	235	235	°C
T_L				

At distances $\geq 1/8$ in. (3.17 mm) from case for 10 s max.

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ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C

CHARAC- TERISTIC	TEST CONDITIONS			LIMITS						UNITS
	Voltage V dc	Current A dc		TIP125		TIP126		TIP127		
	V _{CE}	I _C	I _B	Min.	Max.	Min.	Max.	Min.	Max.	
I _{CEO}	-30 -40 -50		0 0 0	- - -	-0.5 - -	- - -	- -0.5 -	- - -	- - -0.5	mA
I _{EBO} V _{BE} =5 V		0		-	-10	-	-10	-	-10	mA
V _{CEO(sus)}		-0.03 ^a	0	-60	-	-80	-	-100	-	V
h _{FE}	-3 -3	-0.75 ^a -3 ^a		500 1000	- -	500 1000	- -	500 1000	- -	
V _{BE}	-3	-3 ^a		-	-2.5	-	-2.5	-	-2.5	V
V _{CE(sat)}		-3 ^a -5 ^a	-0.012 -0.02	- -	-2 -4	- -	-2 -4	- -	-2 -4	V
h _{fe} f=1 kHz	-5	-1		1000	-	1000	-	1000	-	
h _{fe} f=1 MHz	-5	-1		20	-	20	-	20	-	
I _{S/b} t=1-s nonrep. pulse	-20			-3.2	-	-3.2	-	-3.2	-	A
R _{θJC}				-	1.92	-	1.92	-	1.92	°C/W

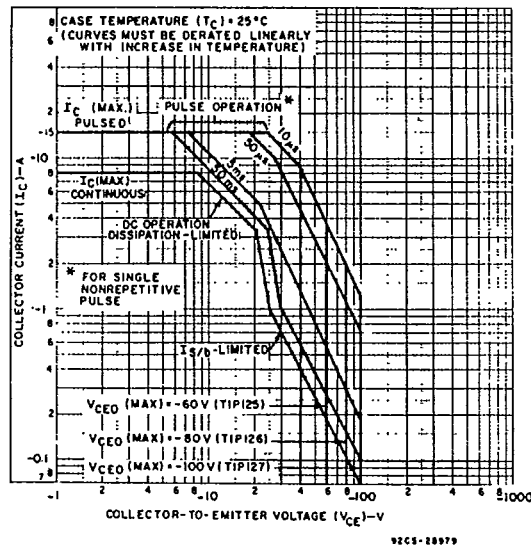
^a Pulsed: Pulse duration = 300 μ s, duty factor $\leq$ 2%.

Fig. 2 — Maximum operating areas for all types.

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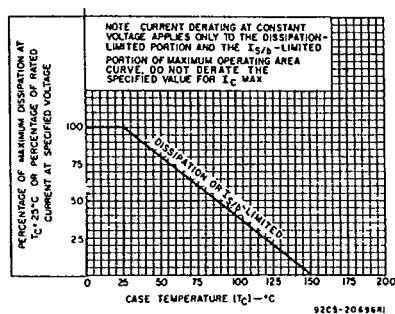


Fig. 3 — Dissipation derating curve for all types.

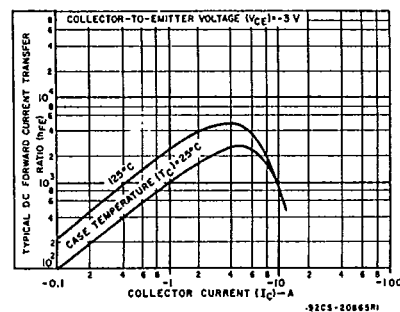


Fig. 4 — Typical dc beta characteristics for all types.

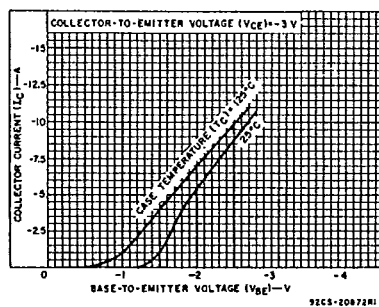


Fig. 5 — Typical transfer characteristics for all types.

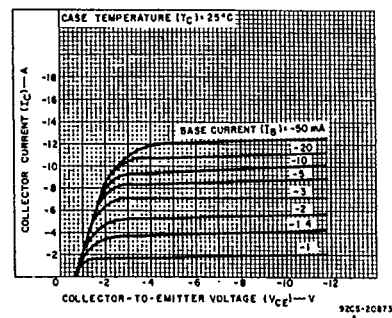


Fig. 6 — Typical output characteristics for all types.

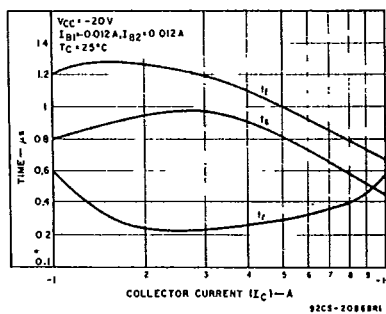


Fig. 7 — Typical saturated switching-time characteristics for all types.

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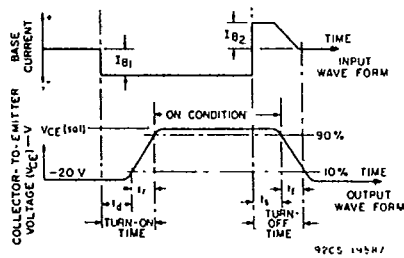
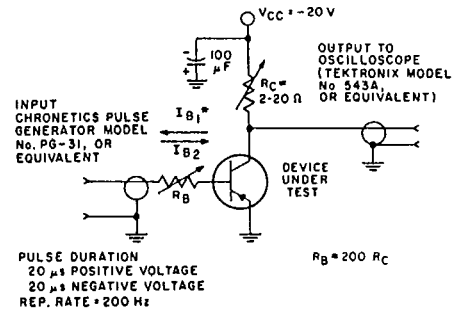


Fig. 8 — Phase relationship between input current and output voltage showing reference points for specification of switching-times.



* I_{B1} AND I_{B2} ARE MEASURED WITH TEKTRONIX CURRENT PROBE P6019 AND TYPE 134 AMPLIFIER, OR EQUIVALENT

Fig. 9 — Circuit used to measure saturated switching-times.