

3875081 G E SOLID STATE

01E 17327 D 17-33-29

Darlington Power Transistors

File Number 1153

TIP100, TIP101, TIP102

8-Ampere N-P-N Darlington Power Transistors

60, 80, and 100 Volts, 80 Watts

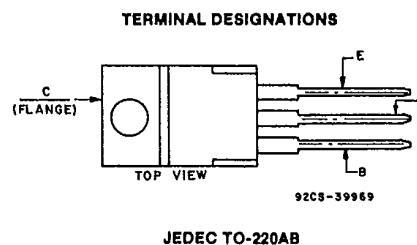
Gain of 1000 at 3 A

Features:

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

Applications:

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



The RCA-TIP100, TIP101 and TIP102 are monolithic n-p-n silicon Darlington transistors designed for low- and medium-frequency 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.

These devices are supplied in the JEDEC TO-220AB (VER-SAWATT) plastic package.

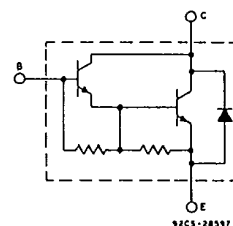


Fig. 1 — Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	TIP100	TIP101	TIP102	
V_{CBO}	60	80	100	V
$V_{CEO}^{(sus)}$	60	80	100	V
V_{EBO}		5		V
I_C		8		A
I_{CM}		15		A
I_B		1		A
P_T				
T_C up to 25°C		80		W
T_C above 25°C		0.64		W/°C
T_{stg}, T_J		-65 to 150		°C
T_L				
At distance $\geq 1/8$ in. (3.17 mm) from case for 10 s max.				°C

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DT-33-29

Darlington Power Transistors

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

CHARACTERISTIC	TEST CONDITIONS				LIMITS						UNITS
	Voltage V dc		Current A dc		TIP100		TIP101		TIP102		
	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	Min.	Max.	
I _{CBO} I _E = 0	60 80 100				— — —	50 — —	— — —	— 50 —	— — —	— — 50	μA
I _{CEO}	30 40 50			0 0 0	— — —	50 — —	— — —	— 50 —	— — —	— — 50	
I _{EBO}		—5	0		—	8	—	8	—	8	
V _{CEO(sus)}			0.03 ^b	0	60	—	80	—	100	—	V
h _{FE}	4 4		3 ^b 8 ^b		1000 200	20,000 —	1000 200	20,000 —	1000 200	20,000 —	
V _{BE}	4		8 ^b		—	2.8	—	2.8	—	2.8	V
V _{CE(sat)}			3 ^b 8 ^b	0.006 0.08	— —	2 2.5	— —	2 2.5	— —	2 2.5	
V _F			—10		—	2.8	—	2.8	—	2.8	
t _d ^c t _r ^c t _s ^c t _f ^c			8 8 8 8	0.08 0.08 0.08 ^d 0.08 ^d	0.035 typ. 0.35 typ. 1.8 typ. 2.45 typ.	0.035 typ. 0.35 typ. 1.8 typ. 2.45 typ.	0.035 typ. 0.35 typ. 1.8 typ. 2.45 typ.	0.035 typ. 0.35 typ. 1.8 typ. 2.45 typ.			μs
I _{S/b} t=0.15 s non- rep. pulse	40				2	—	2	—	2	—	A
R _{θJC}					—	1.56	—	1.56	—	1.56	°C/W

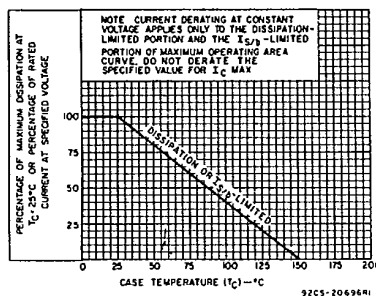
^a V_{CB} value.^b Pulsed; Pulse duration = 300 μs , duty factor $\leq 2\%$.^c $V_{CC} = 40$ V $d I_{B1} = -I_{B2}$.

Fig. 2 — Derating curve for all types.

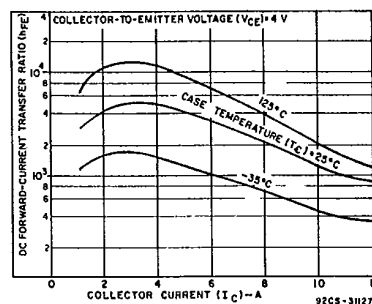
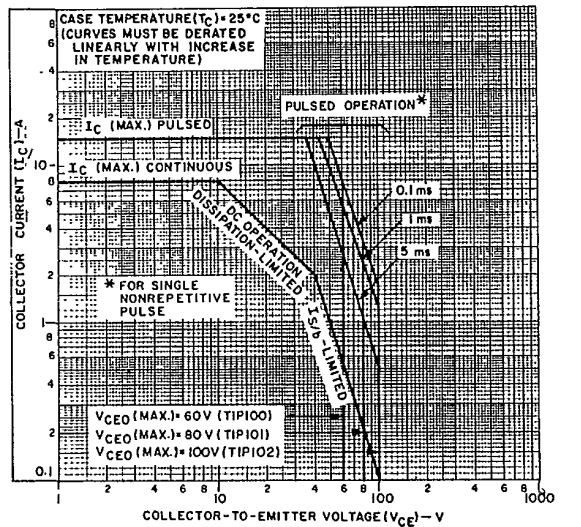
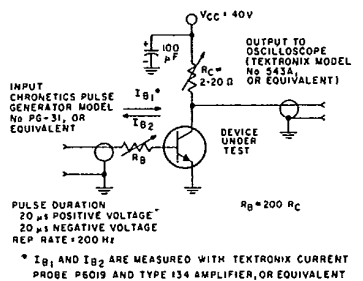


Fig. 3 — Typical dc-beta characteristics for all types.

TIP100, TIP101, TIP102

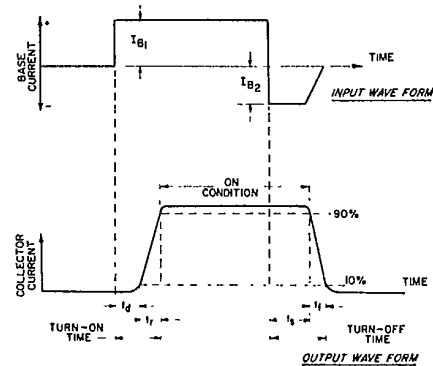


92CM-31125RI

Fig. 4 - Maximum operating areas for all types ($T_C = 25^\circ\text{C}$).

92CS-31126

Fig. 5 - Circuit used to measure saturated switching times.



92CS-31126RI

Fig. 6 - Phase relationship between input current and output current showing reference points for specification of switching times.