

3875081 G E SOLID STATE
Darlington Power Transistors

01E 17268 D T-33-31

2N6666, 2N6667, 2N6668

File Number 1069

10-Ampere P-N-P Darlington Power Transistors

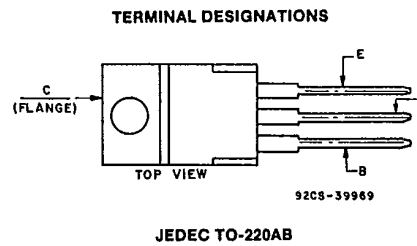
40-60-80 Volts, 65 Watts
Gain of 1000 at 3 A (2N6666)
Gain of 1000 at 5 A (2N6667, 2N6668)

Features:

- Operates from IC without predriver

Applications:

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



The 2N6666, 2N6667 and 2N6668* 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. They are complementary to the 2N6386, 2N6387 and 2N6388[▲]

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

*Formerly RCA Dev. Nos. TA8204, TA8487 and TA8203, respectively.

[▲]Technical data for 2N6386-2N6388 are given in RCA Bulletin File No. 610.

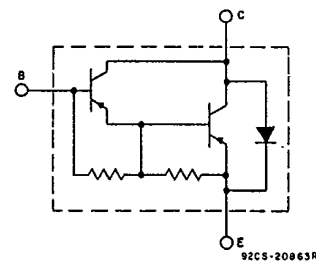


Fig. 1 - Schematic diagram for all types.

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N6666	2N6667	2N6668	
V_{CBO}	-40	-60	-80	V
$V_{CER(sus)}$ $R_{BE} = 100 \Omega$	-40	-60	-80	V
$V_{CEO(sus)}$	-40	-60	-80	V
$V_{CEV(sus)}$ $V_{BE} = -1.5 V$	-40	-60	-80	V
V_{EBO}	-5	-5	-5	V
I_C	-8	-10	-10	A
I_{CM}	-15	-15	-15	A
I_B	-0.25	-0.25	-0.25	A
P_T $T_C \leq 25^\circ C$	65	65	65	W
$T_C > 25^\circ C$	derate linearly			W/°C
T_{stg}, T_J	-65 to +150			°C
T_L At distances $\geq 1/8$ in. (3.17 mm) from case for 10 s max.	235			°C

*In accordance with JEDEC registration data format (JS-6 RDF-4).

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

CHARACTERISTIC SYMBOL	TEST CONDITIONS				LIMITS						UNITS
	VOLTAGE V dc		CURRENT A dc		2N6666		2N6667		2N6668		
	V _{CE}	V _{BE}	I _C	I _B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
I _{CEO}	-80 -60 -40			0 0 0	- - -	- -1 -	- - -	- -1 -	- - -	-1 - -	mA
I _{CEV}	-80 -60 -40	1.5 1.5 1.5			- - -	- -0.3 -	- - -	- -0.3 -	- - -	-0.3 - -	
$T_C = 125^\circ\text{C}$	-80 -60 -40	1.5 1.5 1.5			- - -	- - -3	- - -	- -3 -	- - -	-3 - -	
I _{EBO}		5	0		-	-10	-	-10	-	-10	mA
V _{CEO(sus)}			-0.2 ^a	0	-40	-	-60	-	-80	-	V
V _{CER(sus)} R _{BE} = 100 Ω			-0.2 ^a		-40	-	-60	-	-80	-	
V _{CEV(sus)}		1.5	-0.2 ^a		-40	-	-60	-	-80	-	
h _{FE}	-3 -3 -3 -3		-3 ^a -5 ^a -8 ^a -10 ^a		1000 - 100 -	20,000 - - -	1000 - 100 -	20,000 - - -	1000 - 100 -	20,000 - - -	
V _{BE}	-3 -3 -3 -3		-3 ^a -5 ^a -8 ^a -10 ^a		- - - -	-2.8 - -4.5 -	- - - -	-2.8 - -4.5 -	- - - -	-2.8 - -4.5 -	V
V _{CE(sat)}			-3 ^a -5 ^a -8 ^a -10 ^a	-0.006 ^a -0.01 ^a -0.08 ^a -0.1 ^a	- - -3 -	-2 - - -	- - - -	-2 - -3 -	- - - -	-2 - -3 -	V
V _F			8 ^a 10 ^a		- -	4 -	- -	4 -	- -	4 -	V
h _{fe} f = 1 kHz	-5		-1		1000	-	1000	-	1000	-	
h _{fe} l f = 1 MHz	-5		-1		20	-	20	-	20	-	
I _S /b t = 1 s, nonrep.	-20				-3.2	-	-3.2	-	-3.2	-	A
R _{θJC}					-	1.92	-	1.92	-	1.92	°C/W

^aPulsed: Pulse duration = 300 μs, duty factor = 2%.

*In accordance with JEDEC registration data format (JS-6 RDF-4).

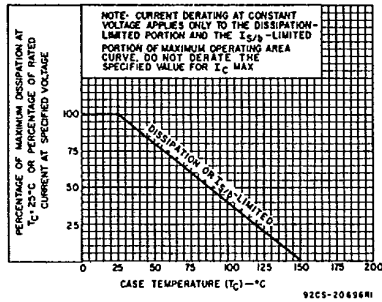


Fig. 2 - Derating curve for all types.

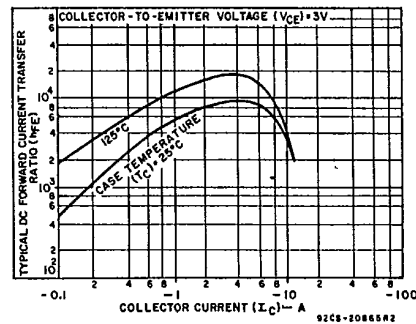


Fig. 3 - Typical dc beta characteristics for all types.

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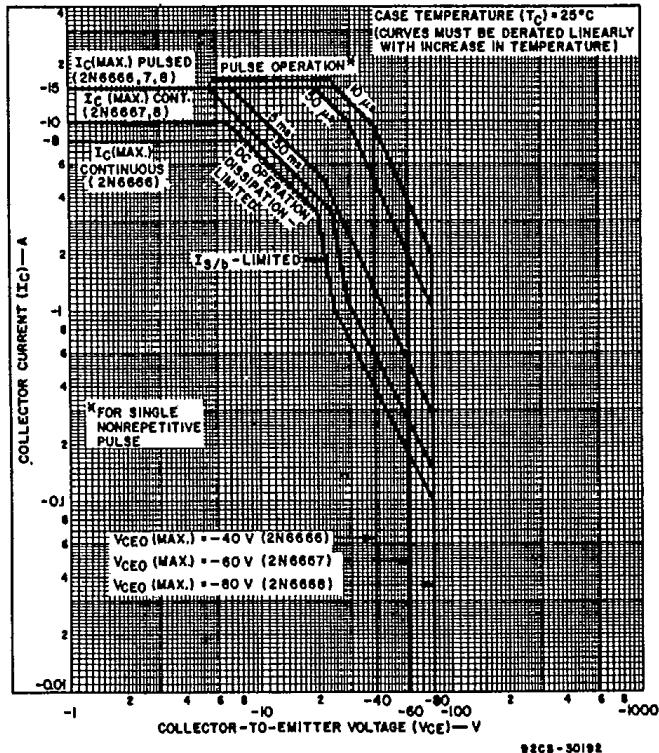


Fig. 4 — Maximum operating areas for all types at $T_C = 25^\circ\text{C}$.

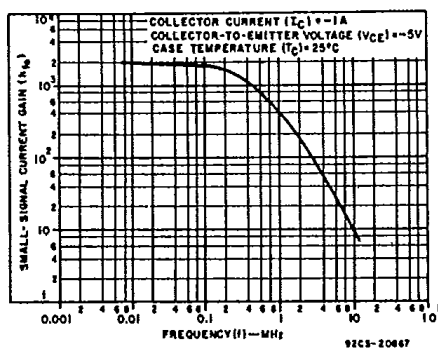


Fig. 5 — Typical small-signal gain for all types.

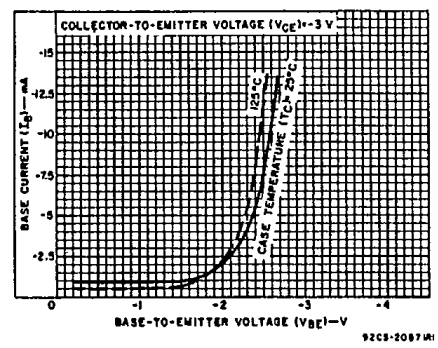


Fig. 6 — Typical input characteristics for all types.

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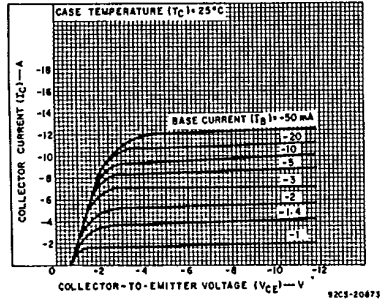


Fig. 7 — Typical output characteristics for all types.

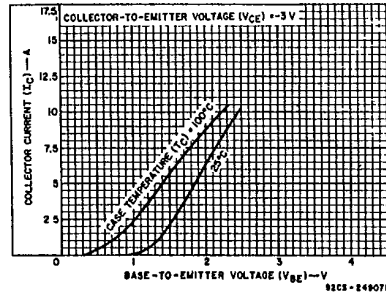


Fig. 8 — Typical transfer characteristics for all types.

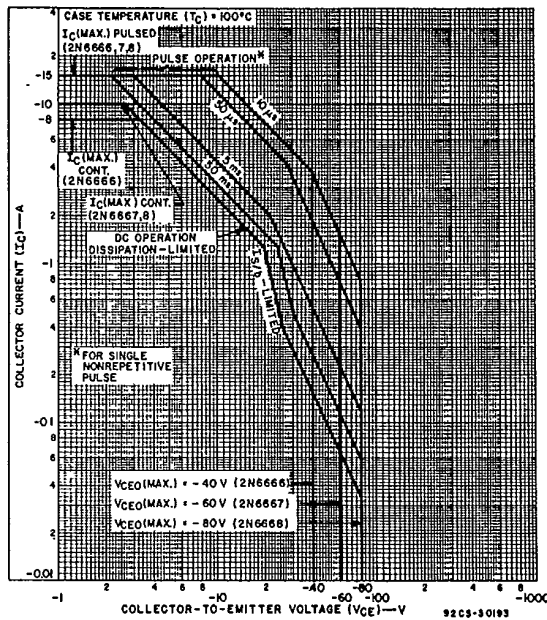


Fig. 9 — Maximum operating areas for all types $T_c = 100^\circ C$.

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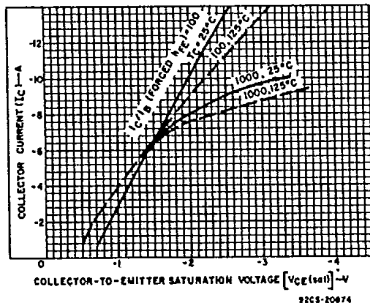


Fig. 10 — Typical saturation characteristics for all types.

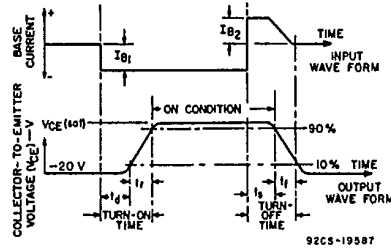


Fig. 11 — Phase relationship between input current and output current showing reference points for specification of switching times.

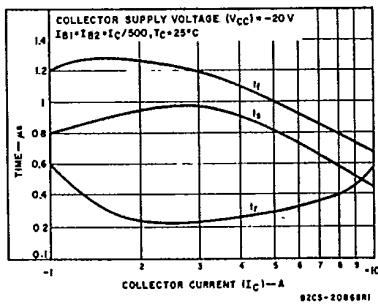


Fig. 12 — Typical saturated switching-time characteristics for all types.

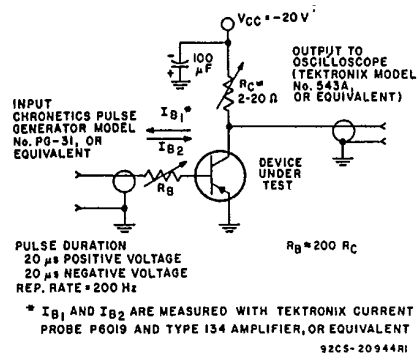


Fig. 13 — Circuit used to measure saturated switching times.