

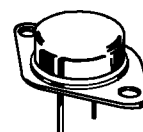
Silicon PNP Power Transistors

... designed for medium-speed switching and amplifier applications. These devices feature:

- Total Switching Time @ 3.0 A $\approx$ 1.0 μ s (typ)
- h_{FE} (min) = 50 @ 1.0 A
- Low $V_{CE(sat)}$ = 0.5 V (typ) @ I_C = 5.0 A, I_B = 0.5 A
- Excellent Safe Area Limits
- Complementary NPN available — 2N3716

2N3791
2N3792

10 AMPERE
POWER TRANSISTORS
PNP SILICON
60–80 VOLTS
150 WATTS



CASE 1-07
TO-204AA
(TO-3)

MAXIMUM RATINGS

Rating	Symbol	2N3791	2N3792	Unit
Collector–Base Voltage	V_{CB}	60	80	Volts
Collector–Emitter Voltage	V_{CEO}	60	80	Volts
Emitter–Base Voltage	V_{EB}	7.0	7.0	Volts
Collector Current (Continuous)	I_C	10	10	Amps
Base Current (Continuous)	I_B	4.0	4.0	Amps
Power Dissipation	P_D	150	150	Watts
Thermal Resistance	θ_{JC}	1.17	1.17	$^{\circ}\text{C}/\text{W}$
Junction Operating and Storage Temperature Range	T_J, T_{stg}	–65 to +200		$^{\circ}\text{C}$

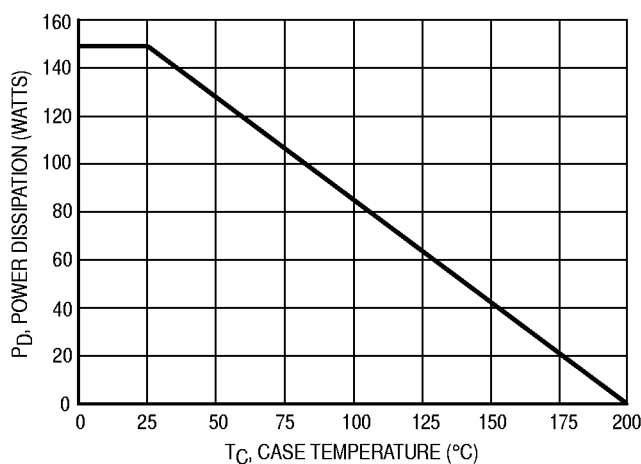


Figure 1. Power–Temperature Derating Curve

Safe Area Limits are indicated by Figures 15, 16. Both limits are applicable and must be observed.

REV 7



ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Collector–Emitter Sustaining Voltage (1) (I _C = 200 mA _{dc} , I _B = 0)	V _{CEO(sus)}	60 80	— —	V _{dc}
Collector–Emitter Cutoff Current (V _{CE} = 60 V _{dc} , V _{BE} = – 1.5 V _{dc}) (V _{CE} = 80 V _{dc} , V _{BE} = – 1.5 V _{dc}) (V _{CE} = 60 V _{dc} , V _{BE} = – 1.5 V _{dc} , T _C = 150°C) (V _{CE} = 80 V _{dc} , V _{BE} = – 1.5 V _{dc} , T _C = 150°C)	I _{CEX}	— — — —	1.0 1.0 5.0 5.0	mA _{dc}
Emitter–Base Cutoff Current (V _{EB} = 7.0 V _{dc})	I _{EBO}	—	5.0	mA _{dc}
DC Current Gain (1) (I _C = 1.0 A _{dc} , V _{CE} = 2.0 V _{dc}) (I _C = 3.0 A _{dc} , V _{CE} = 2.0 V _{dc})	h _{FE}	50 30	180 —	—
Collector–Emitter Saturation Voltage (1) (I _C = 5.0 A _{dc} , I _B = 0.5 A _{dc})	V _{CE(sat)}	—	1.0	V _{dc}
Base–Emitter On Voltage (1) (I _C = 5.0 A, V _{CE} = 2.0 V _{dc}) (I _C = 10 A _{dc} , V _{CE} = 4.0 V _{dc})	V _{BE(on)}	— —	1.8 4.0	V _{dc}
Current–Gain — Bandwidth Product (V _{CE} = 10 V _{dc} , I _C = 0.5 A _{dc} , f = 1.0 MHz)	f _T	4.0	—	MHz

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

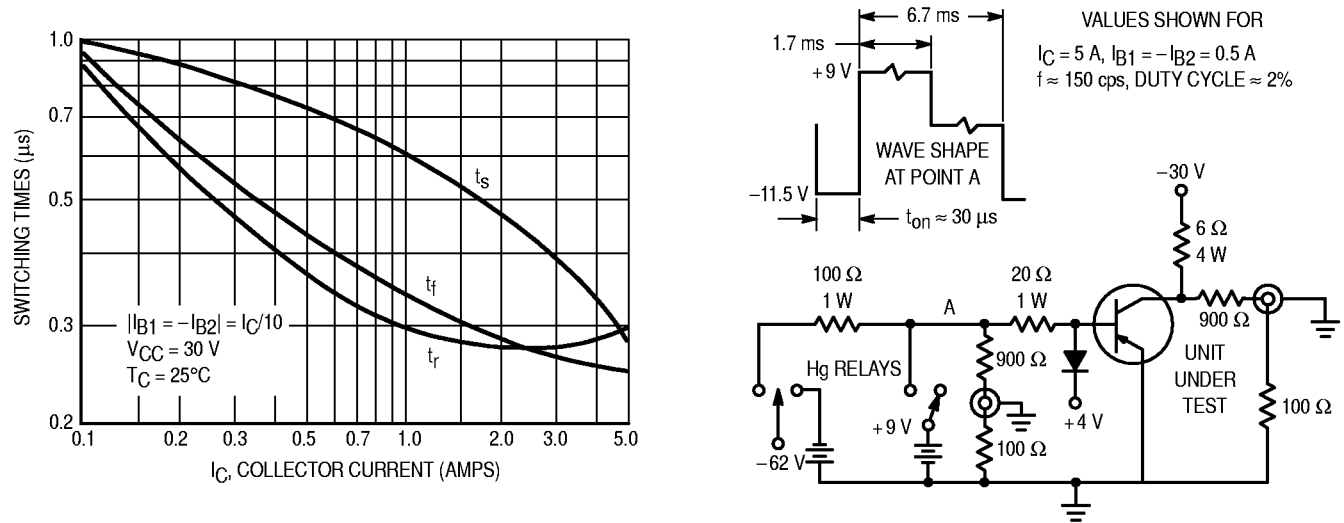


Figure 2. Typical Switching Times and Test Circuit

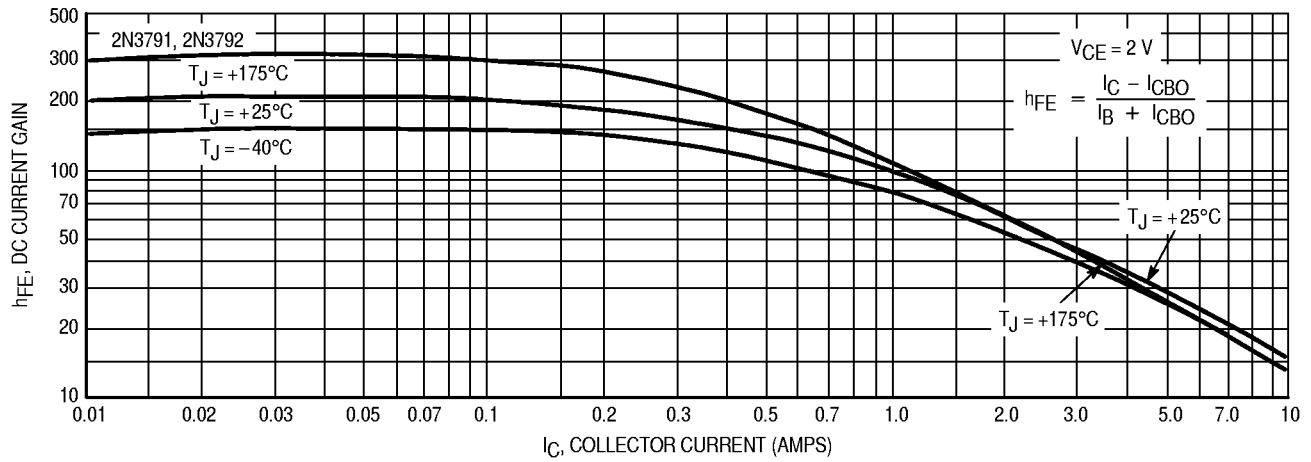


Figure 3. Current Gain Variations

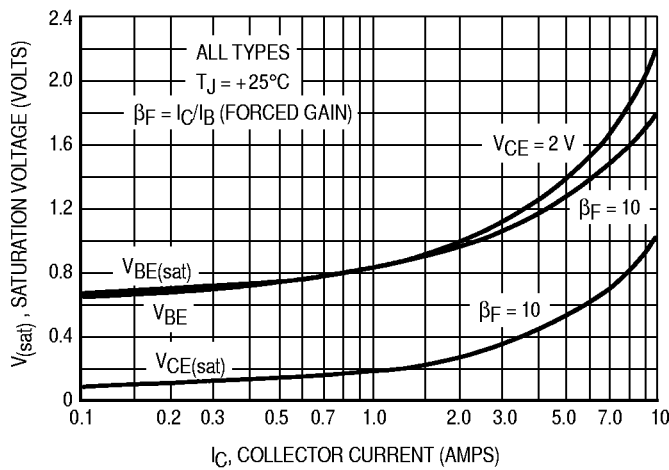


Figure 4. Saturation Voltages

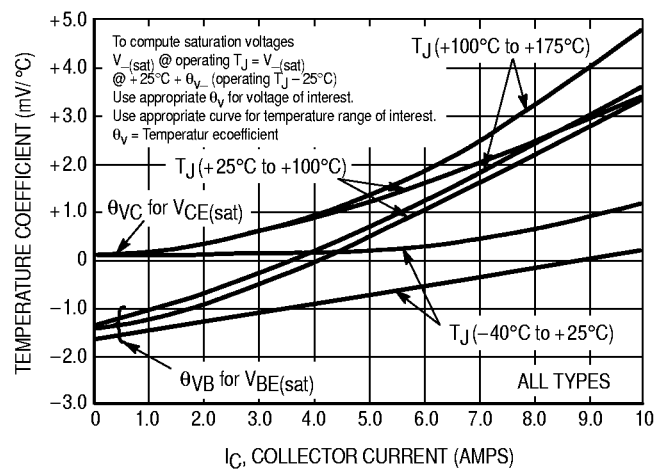


Figure 5. Temperature Coefficients

SAFE OPERATING AREAS

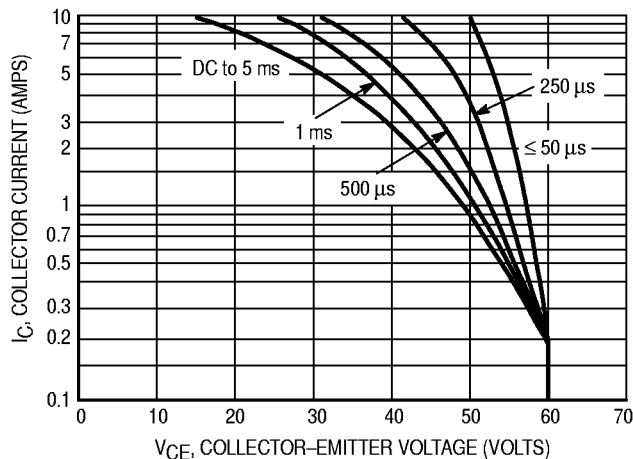


Figure 6. 2N3789, 2N3791

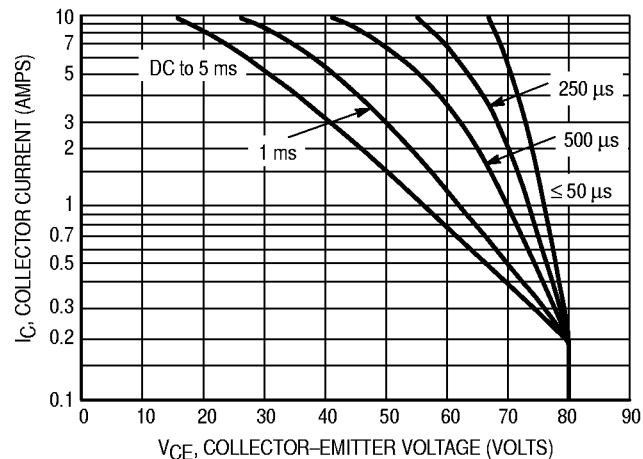


Figure 7. 2N3790, 2N3792

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not go into secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a collector-emitter

short. (Duty cycle of the excursions make no significant change in these safe areas.) To insure operation below the maximum T_J , the power-temperature derating curve must be observed for both steady state and pulse power conditions.

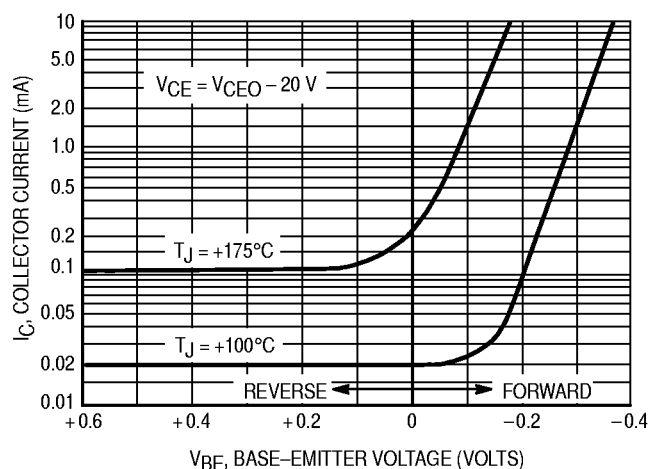


Figure 8. Cut-Off Region Transconductance

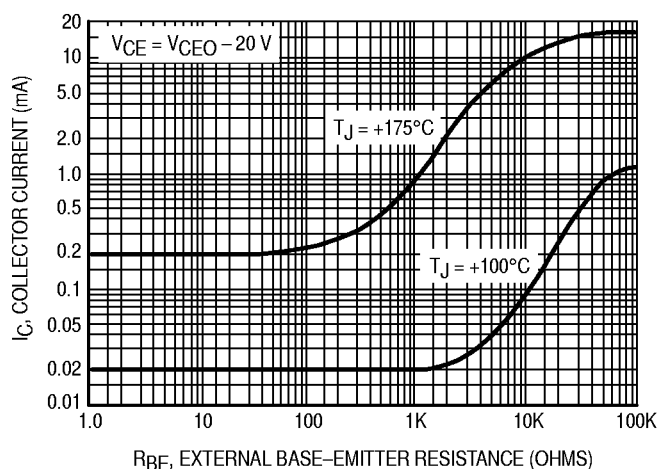
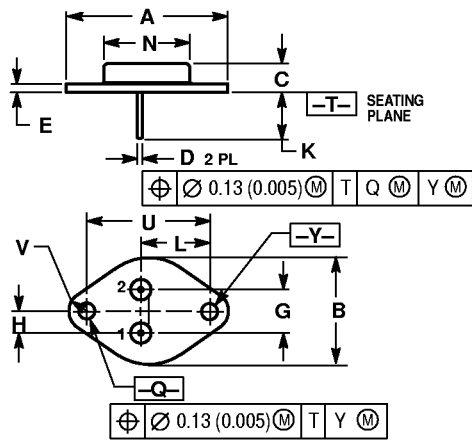


Figure 9. Collector Cut-Off Current versus Base-Emitter Resistance

PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	—	1.050	—	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	—	0.830	—	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

CASE 1-07
TO-204AA (TO-3)
ISSUE Z