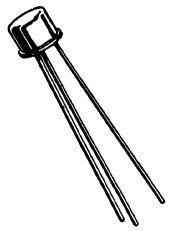
2N2192, A, B thru 2N2195, A, B
(SILICON)



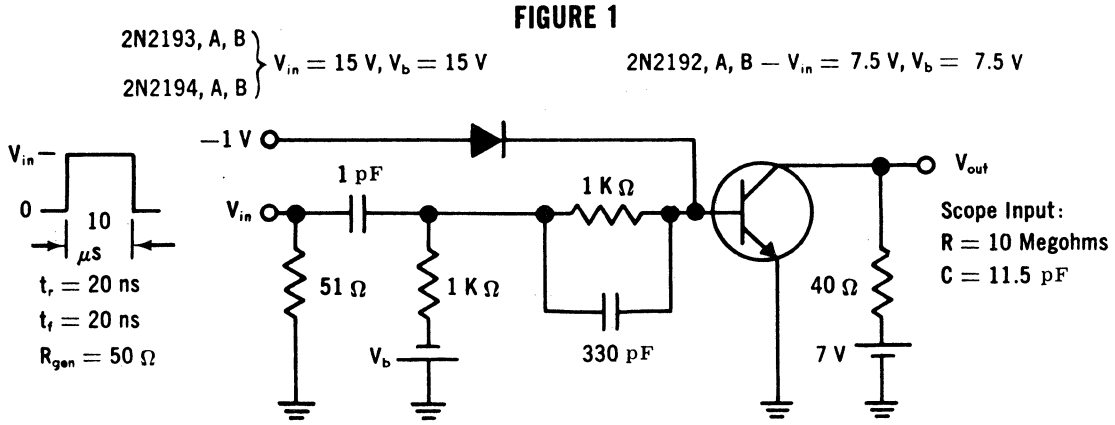
NPN silicon annular transistors for high-current switching and amplifier applications.

CASE 31
(TO-5)
Collector connected to case

MAXIMUM RATINGS

Rating	Symbol	2N2192 2N2192A 2N2192B 2N2194 2N2194A 2N2194B	2N2193 2N2193A 2N2193B	2N2195 2N2195A 2N2195B	Unit
Collector-Base Voltage	V_{CB}	60	80	45	Vdc
Collector-Emitter Voltage	V_{CEO}	40	50	25	Vdc
Emitter-Base Voltage	V_{EB}	5.0	8.0	5.0	Vdc
Collector Current	I_C	1.0	1.0	1.0	Adc
Total Device Dissipation @ 25°C Ambient Temperature Derating Factor Above 25°C	P_D	0.8 4.56	0.8 4.56	0.6 3.43	Watt mW/°C
Total Device Dissipation @ 25°C Case Temperature Derating Factor Above 25°C	P_D	← 2.8 → ← 16 →			Watts mW/°C
Junction Temperature, Operating	T_J	-65 to +200			°C
Storage Temperature Range	T_{stg}	-65 to +200			°C

FIGURE 1



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

Characteristic		Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	2N2192, A, B, 2N2194, A, B 2N2193, A, B 2N2195, A, B	BV_{CBO}	60 80 45	- - 	Vdc
Collector Emitter-Open Base Sustain Voltage [1] (I_C = 25 mA pulsed, I_B = 0)	2N2192, A, B, 2N2194, A, B 2N2193, A, B 2N2195, A, B	$V_{CEO(sus)}$	40 50 25	- - -	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	2N2192, A, B, 2N2194, A, B, 2N2195, A, B 2N2193, A, B	BV_{EBO}	5.0 5.0 8.0	- - -	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)	2N2192, A, B, 2N2194, A, B 2N2195, A, B	I_{CBO}	-	0.010 0.100	μAdc
(V_{CB} = 30 Vdc, I_E = 0, T_A = 150°C)	2N2192, A, B 2N2194, A, B 2N2195, A, B		- - -	15 25 50	
(V_{CB} = 60 Vdc, I_E = 0)	2N2193, A, B		-	0.010	
(V_{CB} = 60 Vdc, I_E = 0, T_A = 150°C)	2N2193, A, B		-	25	
Emitter Cutoff Current (V_{EB} = 3 Vdc, I_C = 0)	2N2192, A, B, 2N2194, A, B 2N2195, A, B	I_{EBO}	- -	0.050 0.100	μAdc
(V_{EB} = 5 Vdc, I_C = 0)	2N2193, A, B		-	0.050	
Collector-Emitter Saturation Voltage (I_C = 150 mAdc, I_B = 15 mAdc)	2N2192 thru 2N2195 2N2192A thru 2N2195A 2N2192B thru 2N2195B	$V_{CE(sat)}$	- - -	0.35 0.25 0.18	Vdc
Base-Emitter Saturation Voltage (I_C = 150 mAdc, I_B = 15 mAdc)		$V_{BE(sat)}$	- -	 1.3	Vdc
DC Current Gain [1] (I_C = 0.1 mAdc, V_{CE} = 10 Vdc)	2N2192, A, B, 2N2193, A, B	h_{FE}	15	-	-
(I_C = 10 mAdc, V_{CE} = 10 Vdc)	2N2192, A, B 2N2193, A, B 2N2194, A, B		75 30 15	- - -	
(I_C = 10 mAdc, V_{CE} = 10 Vdc, T_A = -55°C)	2N2192, A, B 2N2193, A, B		35 20	- -	
(I_C = 150 mAdc, V_{CE} = 10 Vdc)	2N2192, A, B 2N2193, A, B 2N2194, A, B 2N2195, A, B		100 40 20 20	300 120 60 -	
(I_C = 150 mAdc, V_{CE} = 1.0 Vdc)	2N2192, A, B 2N2193, A, B 2N2194, A, B 2N2195, A, B		70 30 15 10	- - - -	
(I_C = 500 mAdc, V_{CE} = 10 Vdc)	2N2192, A, B 2N2193, A, B 2N2194, A, B		35 20 12	- - -	
(I_C = 1.0 Adc, V_{CE} = 10 Vdc)	2N2192, A, B, 2N2193. A, B		15	-	
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{ob}	-	20	pF
Small Signal Current Gain (I_C = 50 mA, V_{CE} = 10 V, f = 20 MHz)		h_{fe}	2.5	-	-
Rise Time	2N2192-94, 2N2192A-94A, 2N2192B-94B	t_r	-	70	ns
Storage Time		t_s	-	150	ns
Fall Time		t_f	-	50	ns

[1] Pulse Test: PW ≤ 300 μs Duty Cycle ≤ 2%