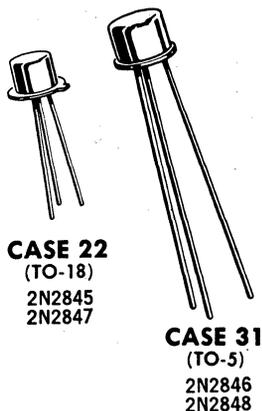


# 2N2845 thru 2N2848 (SILICON)



NPN silicon annular transistors designed for high-speed, medium-power saturated switching applications.

## MAXIMUM RATINGS

Rating	Symbol	2N2845	2N2846	2N2847	2N2848	Unit
Collector-Emitter Voltage*	$V_{CEO}^*$	30	30	20	20	Vdc
Collector-Base Voltage	$V_{CB}$	60	60	60	60	Vdc
Emitter-Base Voltage	$V_{EB}$	5.0	5.0	5.0	5.0	Vdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	360 2.1	800 4.6	360 2.1	800 4.6	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.2 6.9	3.0 17.2	1.2 6.9	3.0 17.2	Watts mW/ $^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-65 to 200				$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to + 200				$^\circ\text{C}$

\*Applicable from 1 mA to 30 mA (Pulsed)

# 2N2845 thru 2N2848 (continued)

## ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C unless otherwise noted)

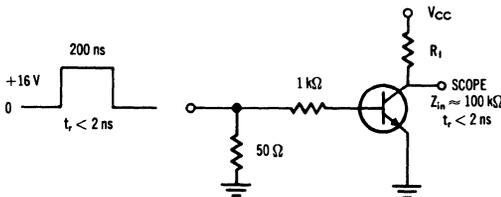
Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Sustaining Voltage (1) (I <sub>C</sub> = 30 mA, I <sub>B</sub> = 0) (I <sub>C</sub> = 30 mA, I <sub>B</sub> = 0)	2N2845, 2N2846 2N2847, 2N2848	BV <sub>CEO(sus)</sub>	30 20	— —	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = 0.1 mA, I <sub>E</sub> = 0)		BV <sub>CBO</sub>	60	—	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 0.1 mA, I <sub>C</sub> = 0)		BV <sub>EBO</sub>	5.0	—	Vdc
Collector-Cutoff Current (V <sub>CE</sub> = 30 Vdc, V <sub>BE</sub> = 0)		I <sub>CES</sub>	—	0.2	μA
Collector Cutoff Current (V <sub>CB</sub> = 30 Vdc, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C)		I <sub>CBO</sub>	—	200	μA
Base Leakage Current (V <sub>CE</sub> = 30 Vdc, V <sub>BE</sub> = 0)		I <sub>BL</sub>	—	0.2	μA

<b>ON CHARACTERISTICS (1)</b>					
DC Current Gain (I <sub>C</sub> = 150 mA, V <sub>CE</sub> = 10 Vdc) (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 10 Vdc) (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1 Vdc)	2N2845, 2N2846 2N2847, 2N2848 2N2845, 2N2846 2N2847, 2N2848 All Types	h <sub>FE</sub>	30 40 20 30 10	120 140 — — —	—
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA) (I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA)	All Types 2N2845, 2N2846 2N2847, 2N2848	V <sub>CE(sat)</sub>	— — —	0.4 1.0 0.75	Vdc
Base-Emitter Saturation Voltage (I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA) (I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA)		V <sub>BE(sat)</sub>	— —	1.2 1.6	Vdc

<b>DYNAMIC CHARACTERISTICS</b>					
Current-Gain-Bandwidth Product (I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 10 Vdc, f = 100 MHz)		f <sub>T</sub>	250	—	MHz
Output Capacitance (V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 140 kHz)		C <sub>ob</sub>	—	8.0	pF
Turn-On Time (Figure 1) (V <sub>CC</sub> = 10 Vdc, I <sub>C</sub> ≈ 150 mA, I <sub>B1</sub> ≈ 15 mA) (V <sub>CC</sub> = 6 Vdc, I <sub>C</sub> ≈ 150 mA, I <sub>B1</sub> ≈ 15 mA)	2N2845, 2N2846 2N2847, 2N2848	t <sub>on</sub>	— —	40 25	ns
Turn-Off Time (Figure 2) (V <sub>CC</sub> = 10 Vdc, I <sub>C</sub> ≈ 150 mA, I <sub>B1</sub> ≈ I <sub>B2</sub> ≈ 15 mA) (V <sub>CC</sub> = 6 Vdc, I <sub>C</sub> ≈ 150 mA, I <sub>B1</sub> ≈ I <sub>B2</sub> ≈ 15 mA)	2N2845, 2N2846 2N2847, 2N2848	t <sub>off</sub>	— —	40 40	ns

(1) Pulse Test: Pulse Width = 300 μs; Duty Cycle = ≤ 2%

FIGURE 1 — TURN-ON TIME TEST CIRCUIT



	2N2845, 2N2846	2N2847, 2N2848
V <sub>CC</sub>	10 V	6 V
R <sub>1</sub>	62 Ω	39 Ω

FIGURE 2 — TURN-OFF TIME TEST CIRCUIT

