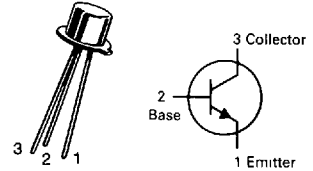


2N4014

CASE 22-03, STYLE 1
TO-18 (TO-206AA)



SWITCHING TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	2N4014	Unit
Collector-Emitter Voltage	V_{CE0}	40	Vdc
Collector-Base Voltage	V_{CBO}	80	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current — Continuous — Peak	I_C	1.0 2.0	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.5 2.86	Watts mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.4 8.0	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	350	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	°C/W

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (1) ($I_C = 10 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$	40	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 10 \mu\text{Adc}, V_{BE} = 0$)	$V_{(BR)CES}$	80	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	80	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	6.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 60 \text{ Vdc}, I_E = 0$) ($V_{CB} = 60 \text{ Vdc}, I_E = 0, T_A = 100^\circ\text{C}$)	I_{CBO}	— —	0.12	1.7 120	μAdc
Collector Cutoff Current ($V_{CE} = 80 \text{ Vdc}, V_{EB} = 0$)	I_{CES}	—	0.15	10	μAdc

ON CHARACTERISTICS(1)

DC Current Gain ($I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 100 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 100 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}, T_A = -55^\circ\text{C}$) ($I_C = 300 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}, T_A = -55^\circ\text{C}$) ($I_C = 800 \text{ mAdc}, V_{CE} = 2.0 \text{ Vdc}$) ($I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	30	60	30	40	35	20	20	25	—	150	—	—	—	—	—	—

(continued)

6367254 0103863 147

TYPICAL DC CHARACTERISTICS

FIGURE 2 – DC CURRENT GAIN

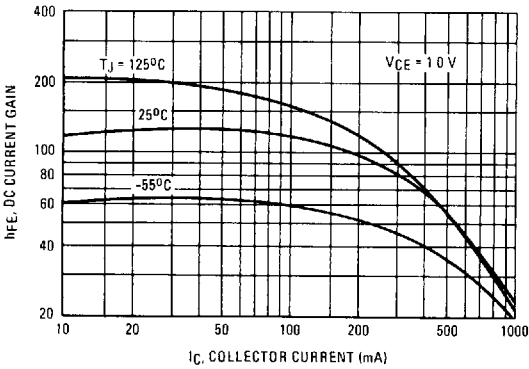


FIGURE 3 – "ON" VOLTAGES

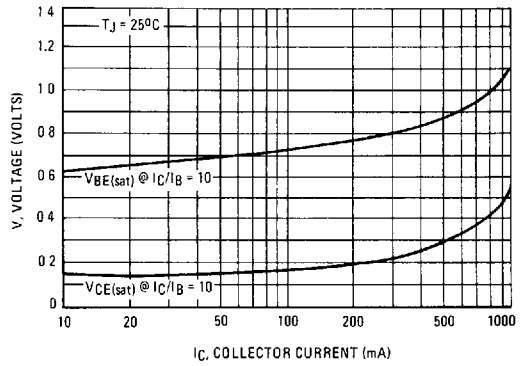


FIGURE 4 – COLLECTOR SATURATION REGION

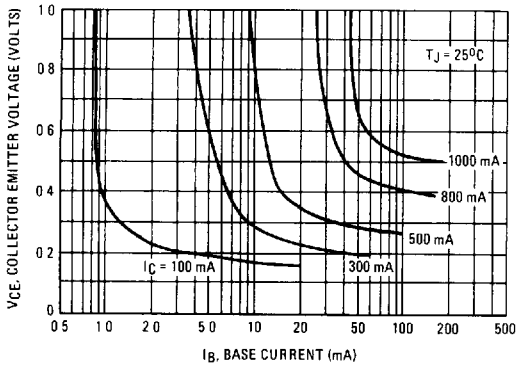
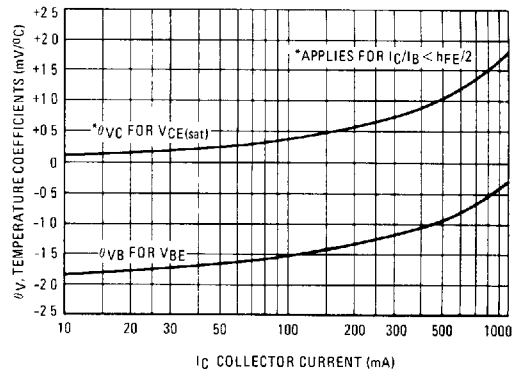


FIGURE 5 – TEMPERATURE COEFFICIENTS



TYPICAL DYNAMIC CHARACTERISTICS

FIGURE 6 – CURRENT-GAIN – BANDWIDTH PRODUCT

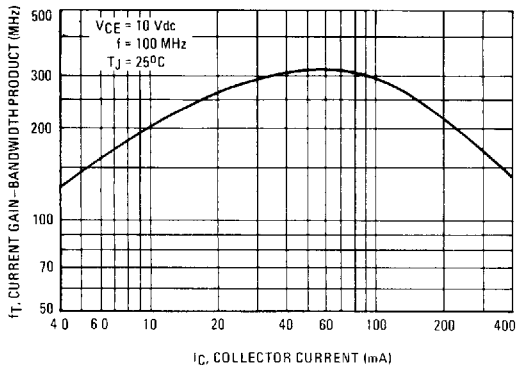


FIGURE 7 – CAPACITANCE

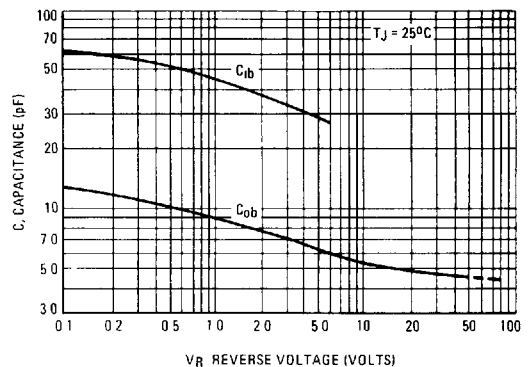


FIGURE 8 – TURN-ON TIME

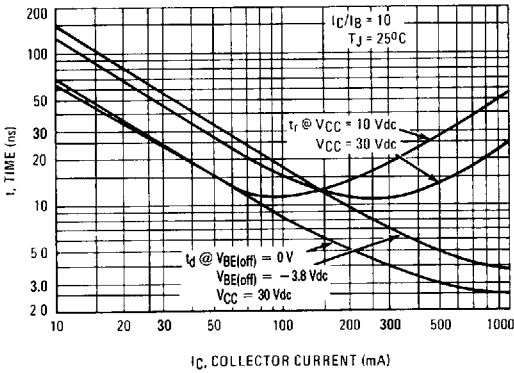


FIGURE 9 – TURN OFF TIME

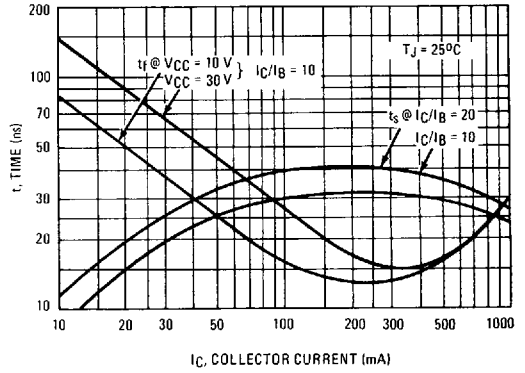


FIGURE 10 – SWITCHING TIME TEST CIRCUIT

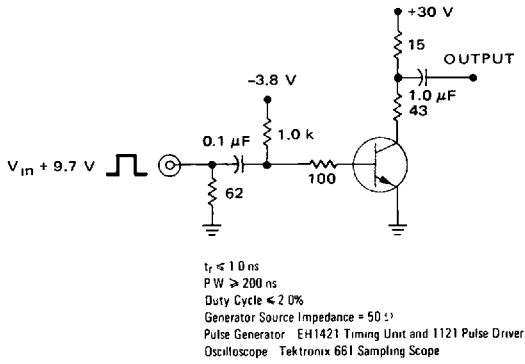


FIGURE 11 – COLLECTOR CUTOFF CURRENT

