

# CV9543

(CECC 50004-067)  
CASE 22-03, STYLE 1  
TO-18 (TO-206AA)

## SWITCHING TRANSISTOR

PNP SILICON

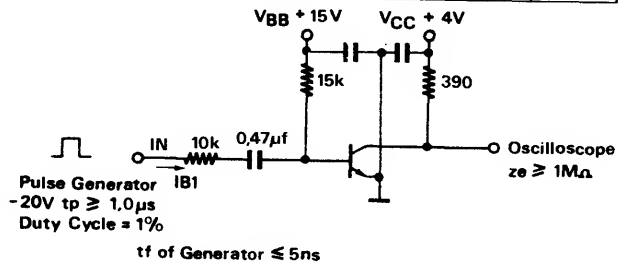
Refer to 2N3251 for graphs.

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Sustaining Voltage(1) ( $I_C = 10\text{ mA}$ , $I_B = 0$ )	$V_{CE(sus)}$	20			V
Collector Cutoff Current ( $V_{CB} = 20\text{ V}$ , $I_B = 0$ ) ( $V_{CB} = 25\text{ V}$ , $I_B = 0$ )	$I_{CBO}$			50 10	nA $\mu\text{A}$
Collector Cutoff Current ( $V_{CE} = 13\text{ V}$ , $I_B = 0$ , $T_A = 100^\circ\text{C}$ )	$I_{CEO}$			45	$\mu\text{A}$
Emitter Cutoff Current ( $V_{CB} = 1.5\text{ V}$ , $I_C = 0$ ) ( $V_{CB} = 5\text{ V}$ , $I_C = 0$ ) ( $V_{CB} = 1.5\text{ V}$ , $I_C = 0$ , $T_A = 100^\circ\text{C}$ )	$I_{EBO}$			25 10 15	nA $\mu\text{A}$ $\mu\text{A}$
<b>ON CHARACTERISTICS</b>					
Collector-Emitter Saturation Voltage(1) ( $I_C = 30\text{ mA}$ , $I_B = 1.5\text{ mA}$ )	$V_{CE(sat)}$			0.4	V
Base-Emitter Saturation Voltage(1) ( $I_C = 10\text{ mA}$ , $I_B = 1.0\text{ mA}$ ) ( $I_C = 50\text{ mA}$ , $I_B = 2.5\text{ mA}$ )	$V_{BE(sat)}$			0.9 1.6	V
DC Current Gain ( $I_C = 1\text{ mA}$ , $V_{CE} = 0.4\text{ V}$ ) ( $I_C = 10\text{ mA}$ , $V_{CE} = 0.4\text{ V}$ ) ( $I_C = 30\text{ mA}$ , $V_{CE} = 0.4\text{ V}$ ) ( $I_C = 50\text{ mA}$ , $V_{CE} = 0.75\text{ V}$ )	$h_{FE}$	30 35 20 20			
<b>DYNAMIC CHARACTERISTICS</b>					
Current Gain Bandwidth Product ( $I_C = 10\text{ mA}$ , $V_{CE} = 12\text{ V}$ , $f = 20\text{ MHz}$ )	$f_T$	100			MHz
Output Capacitance ( $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$ )	$C_{ob}$			10	pF
Storage Time (See Figure 1) ( $I_C = 10\text{ mA}$ , $I_{B1} = I_{B2} = 1\text{ mA}$ )	$t_s$			200	ns

(1) Pulsed - Pulse Duration = 300  $\mu\text{s}$ , Duty Cycle = 1%.

FIGURE 1 - SWITCHING TIME TEST CIRCUIT



### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	20	Vdc
Collector-Base Voltage	$V_{CBO}$	25	Vdc
Emitter-Base Voltage	$V_{EBO}$	5	Vdc
Collector Current - Continuous	$I_C$	100	mAmp
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	0.3 2.0	Watt $\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +175	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	$^\circ\text{C}/\text{W}$