

CV8616

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

SWITCHING TRANSISTOR

NPN SILICON

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Base Voltage	V_{CBO}	20	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°C	P_D	0.3 2.0	Watt 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	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage ($I_C = 10\text{ mA}, I_B = 0$)	$V_{CEO(sus)}$	20		V
Collector Cutoff Current ($V_{CE} = 20\text{ V}, I_E = 0$) ($V_{CE} = 20\text{ V}, I_E = 0, T_A = 100^\circ\text{C}$)	I_{CBO}		50 20	nA μA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}, I_C = 0$) ($V_{EB} = 1.5\text{ V}, I_C = 0$) ($V_{EB} = 1.5\text{ V}, I_C = 0, T_A = 100^\circ\text{C}$)	I_{EBO}		10 25 20	μA nA μA
ON CHARACTERISTICS				
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) ($I_C = 10\text{ mA}, I_B = 1\text{ mA}$) ($I_C = 50\text{ mA}, I_B = 2.5\text{ mA}$)	$V_{BE(sat)}$		0.9 1.6	V
DC Current Gain(1) ($I_C = 1\text{ mA}, V_{CE} = 0.4\text{ V}$) ($I_C = 10\text{ mA}, V_{CE} = 0.4\text{ V}$) ($I_C = 30\text{ mA}, V_{CE} = 0.4\text{ V}$) ($I_C = 50\text{ mA}, V_{CE} = 0.75\text{ V}$)	h_{FE}	30 35 20 20		
SMALL SIGNAL CHARACTERISTICS				
Current Gain Bandwidth Product ($I_C = 10\text{ mA}, V_{CE} = 12\text{ V}, f = 20\text{ MHz}$)	f_T	50		MHz
Output Capacitance ($V_{CB} = 10\text{ V}, f = 1\text{ MHz}$)	C_{obo}		10	pF
Input Capacitance ($V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$)	C_{ibo}	6	25	pF
Storage Time (See Figure 1) ($V_{CC} = 10\text{ V}, I_C = 10\text{ mA}$) ($I_{B1} = I_{B2} = 10\text{ mA}$)	t_s		50	ns

(1) Pulsed: Pulse Duration = 300 μs , Duty Cycle = 1%.

FIGURE 1 — SWITCHING TIME TEST CIRCUIT

