2N834 (SILICON)
2N835

CASE 22
(TO-18)

Collector connected to case

NPN silicon epitaxial transistors for high-speed switching applications.

MAXIMUM RATINGS

Rating	Symbol	2N834	2N835	Unit
Collector-Emitter Voltage	V_{CES}	30	20	Vdc
Collector-Base Voltage	V_{CB}	40	25	Vdc
Emitter-Base Voltage	V_{EB}	5.0	3.0	Vdc
Collector Current-Continuous Peak	I_C	200		mAdc
Total Device Dissipation @ $T_A = 25^oC$ Derate above 25^oC	P_D	0.3 2.0		Watt $mW/^oC$
Total Device Dissipation @ $T_C = 25^oC$ Derate above 25^oC	P_D	1.0 6.67		Watt $mW/^oC$
Total Device Dissipation @ $T_C = 100^oC$ Derate above 100^oC	P_D	0.5 6.67		Watt $mW/^oC$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +175		^oC

FIGURE 1 — TURN-ON AND TURN-OFF TIME MEASUREMENT CIRCUIT

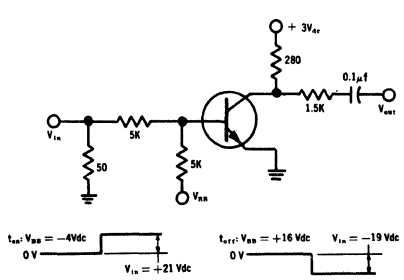
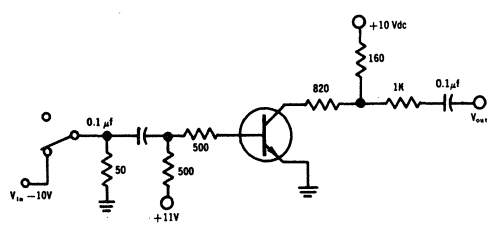


FIGURE 2 — CHARGE STORAGE TIME CONSTANT MEASUREMENT CIRCUIT



NOTE: ALL SWITCHING TIMES MEASURED WITH LUMATRON MODEL 420 SWITCHING TIME TEST SET OR EQUIVALENT.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)	2N834	BV_{CBO}	40	-	Vdc
	2N835		25	-	
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	2N834	BV_{EBO}	5.0	-	Vdc
	2N835		3.0	-	
Collector Cutoff Current (V_{CE} = 30 Vdc, V_{BE} = 0)	2N834	I_{CES}	-	10	μAdc
(V_{CE} = 20 Vdc, V_{BE} = 0)	2N835		-	10	
Collector Cutoff Current (V_{CB} = 20 Vdc, I_E = 0)		I_{CBO}	-	0.5	μAdc
(V_{CB} = 20 Vdc, I_E = 0, T_A = 150°C)			-	30	
ON CHARACTERISTICS					
DC Current Gain[1] (I_C = 10 mAdc, V_{CE} = 1 Vdc)	2N834	h_{FE}	25	-	-
	2N835		20	-	
Collector-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1 mAdc)	2N834	$(V_{CE(sat)}$	-	0.25	Vdc
	2N835		-	0.30	
(I_C = 50 mAdc, I_B = 5 mAdc)[1]	2N834		-	0.4	
	2N835		-	-	
Base-Emitter Saturation Voltage[1] (I_C = 10 mAdc, I_B = 1 mAdc)		$V_{BE(sat)}$	-	0.9	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	2N834	f_T	350	-	MHz
(I_C = 10 mAdc, V_{CE} = 15 Vdc, f = 100 MHz)	2N835		300	-	
High-Frequency Current Gain (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	2N834	$\lvert h_{fe} \rvert$	3.5	-	-
(I_C = 10 mAdc, V_{CE} = 15 Vdc, f = 100 MHz)	2N835		3.0	-	
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{ob}	-	4.0	pF
Charge-Storage Time Constant (Figure 2) (I_C = 10 mAdc, I_{B1} = I_{B2} = 10 mAdc)	2N834	t_s	-	25	ns
	2N835		-	35	
Turn-On Time (Figure 1) (I_C = 10 mAdc, I_{B1} = 3 mAdc, I_{B2} = 1 mAdc)	2N834	t_{on}	-	33	ns
	2N835		-	20	
Turn-Off Time (Figure 1) (I_C = 10 mAdc, I_{B1} = 3 mAdc, I_{B2} = 1 mAdc)	2N834	t_{off}	-	75	ns
	2N835		-	35	

[1] Pulse Test: Pulse Width ≤ 12 ms, Duty Cycle ≤ 2%