

Features

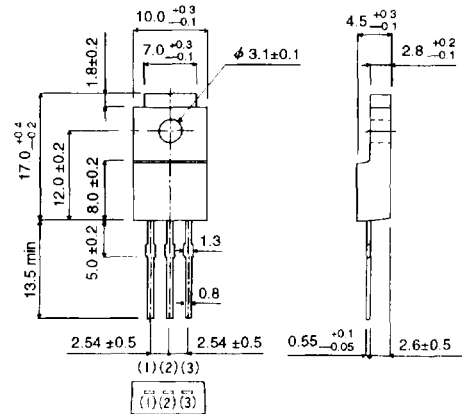
- available in TO-220FP (SC-67) package
- high speed switching, typically $t_f = 0.15 \mu s$ at $I_C = -3 A$
- low collector saturation voltage, typically $V_{CE(sat)} = -0.2 V$ at $I_C/I_B = -3 A/-0.15 A$
- wide safe operating area (SOA)
- easy insulation from heat sink as the fin is molded
- $P_{C(max)}$ is large:
 $P_{C(max)} = 2 W$ at $T_a = 25^\circ C$
 $P_{C(max)} = 25 W$ at $T_C = 25^\circ C$
- complementary pair with 2SC4596

Applications

- high speed switching

Dimensions (Units : mm)

2SA1757 (TO-220FP)



- (1) Base
- (2) Collector
- (3) Emitter

Absolute maximum ratings ($T_a = 25^\circ C$)

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	-100	V	
Collector-to-emitter voltage	V_{CEO}	-60	V	
Emitter-to-base voltage	V_{EBO}	-5	V	
Collector current	I_C	-5	A	Continuous (dc)
		-10	A	Single pulse
Collector dissipation	P_C	2	W	$T_a = 25^\circ C$
		25	W	$T_C = 25^\circ C$
Junction temperature	T_j	150	$^\circ C$	
Storage temperature	T_{stg}	-55 ~ +150	$^\circ C$	

Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	-100			V	$I_C = -50 \mu\text{A}$
Collector-to-emitter voltage	$V_{CE(SUS)}$	-60			V	$I_C/I_B = -3 \text{ A}/-0.3 \text{ A}$, $L = 1 \text{ mH}$
Collector-to-emitter breakdown voltage	BV_{CEO}	-60			V	$I_C = -1 \text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	-5			V	$I_E = -50 \mu\text{A}$
Collector cutoff current	I_{CBO}			-10	μA	$V_{CB} = -100 \text{ V}$
Emitter cutoff current	I_{EBO}			-10	μA	$V_{EB} = -5 \text{ V}$
DC current gain	h_{FE}	60	120	320		$V_{CE} = -2 \text{ V}$, $I_C = -1 \text{ A}$
		40				$V_{CE} = -2 \text{ V}$, $I_C = -3 \text{ A}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			-0.3	V	$I_C/I_B = -3 \text{ A}/-0.15 \text{ A}$
				-0.5	V	$I_C/I_B = -4 \text{ A}/-0.2 \text{ A}$
Base-to-emitter saturation voltage	$V_{BE(sat)}$		-0.2	-1.2	V	$I_C/I_B = -3 \text{ A}/-0.15 \text{ A}$
				-1.5	V	$I_C/I_B = -4 \text{ A}/-0.2 \text{ A}$
Transition frequency	f_T		80		MHz	$V_{CE} = -10 \text{ V}$, $I_E = 0.5 \text{ A}$, $f = 30 \text{ MHz}$
Output capacitance	C_{ob}		130		pF	$V_{CB} = -10 \text{ V}$, $I_E = 0 \text{ A}$, $f = 1 \text{ MHz}$
Turn on time	t_{on}			0.3	μs	$I_C = -3 \text{ A}$, $R_L = 10 \Omega$, $I_{B1} = -I_{B2} = -0.15 \text{ A}$ $V_{CC} \cong -30 \text{ V}$
Storage time	t_{stg}			1.5	μs	
Fall time	t_f	0.15	0.3		μs	

h_{FE} rankings

Item	D	E	F
h_{FE}	60 ~ 120	100 ~ 200	160 ~ 320

Test circuits

Figure 1 Switching time test circuit

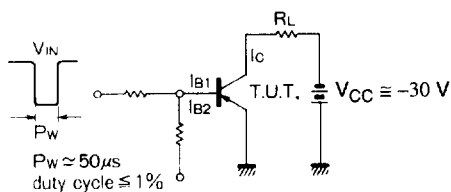
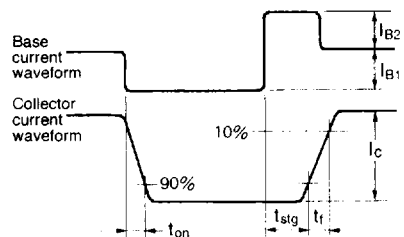


Figure 2 Switching time waveforms



Electrical characteristic curves

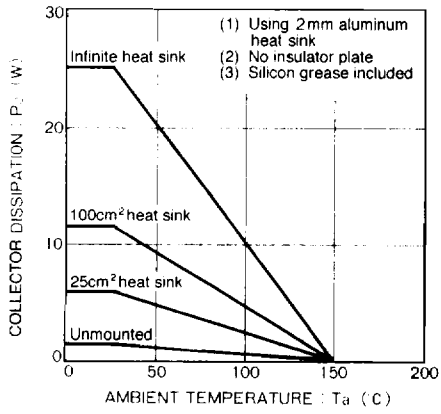


Figure 3

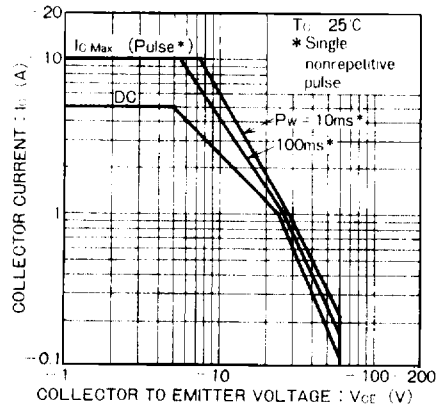


Figure 4

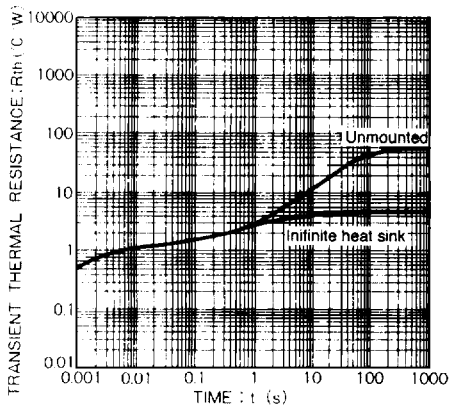


Figure 5

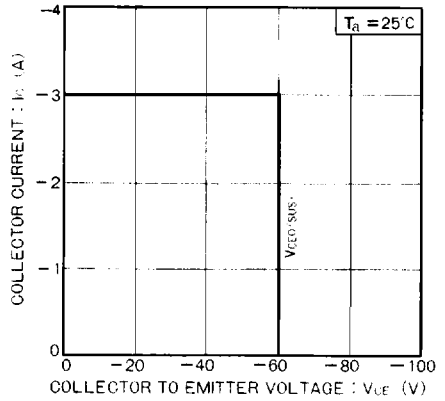


Figure 6

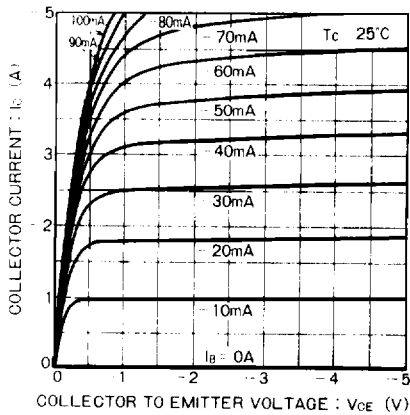


Figure 7

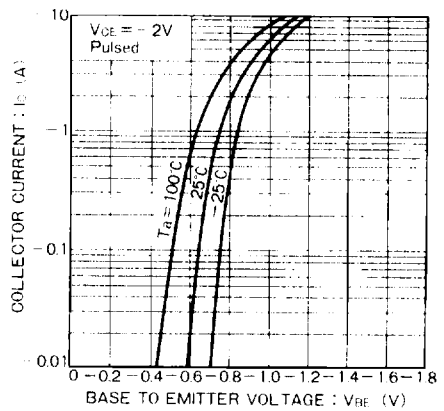


Figure 8

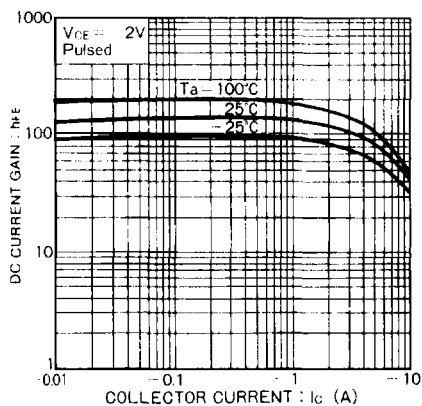


Figure 9

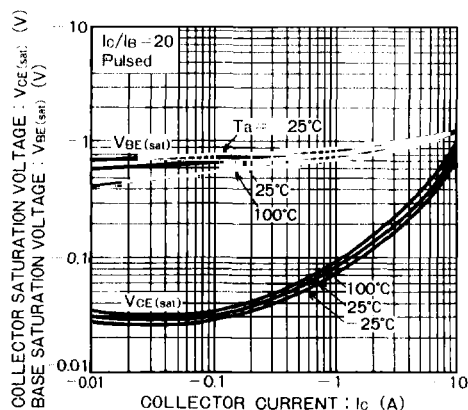


Figure 10

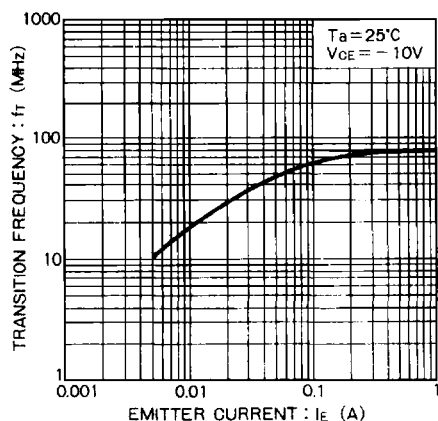


Figure 11

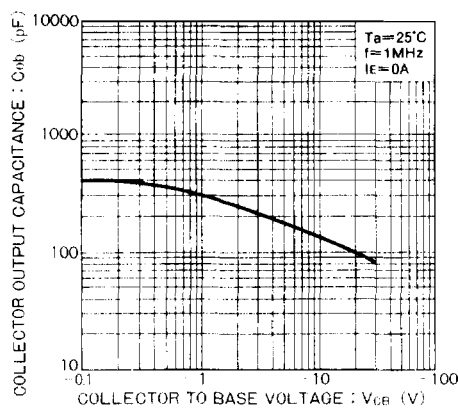


Figure 12

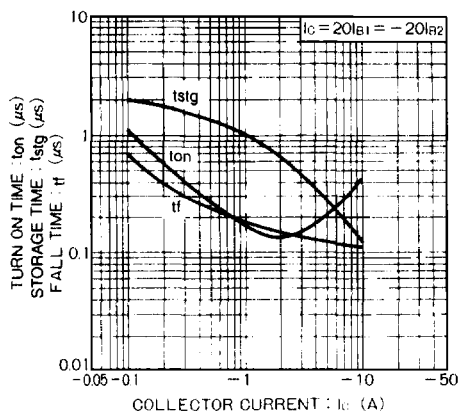


Figure 13

Ordering information

Package	Bulk
Code	
Basic order quantity	500
2SA1757	★
★ = Standard, ☆ = Semi-standard, * = Special order	