

2SA1870

Transistor, PNP

Features

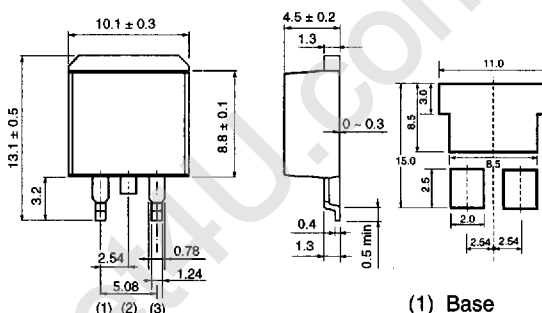
- available in PSD package
- low collector saturation voltage, typically $V_{CE(sat)} = -0.2$ V at $I_C/I_B = -6$ A/ -0.3 A
- high switching speed, typically $t_f = 0.17$ μ s for $I_C = -6$ A
- wide safe operating area (SOA)

Applications

- high speed switching

Dimensions (Units : mm)

2SA1870 (PSD)



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

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

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	-12	A	DC
		-20		Single pulse, $P_W = 100$ ms
Collector dissipation	P_C	35	W	$T_C = 25^\circ\text{C}$
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$	

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	$V_{CEO(SUS)}$	-60				$I_C/I_B = -6 \text{ A}/-0.6 \text{ A}$, $L = 1 \text{ mH}$
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		$V_{CE} = -2 \text{ V}$, $I_C = -2 \text{ A}$
		40				$V_{CE} = -2 \text{ V}$, $I_C = -6 \text{ A}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			-0.3	V	$I_C/I_B = -6 \text{ A}/-0.3 \text{ A}$
				-0.5	V	$I_C/I_B = -8 \text{ A}/-0.4 \text{ A}$
Base-to-emitter saturation voltage	$V_{BE(sat)}$			-1.2	V	$I_C/I_B = -6 \text{ A}/-0.3 \text{ A}$
				-1.5	V	$I_C/I_B = -8 \text{ A}/-0.4 \text{ A}$
Transition frequency	f_T		80		MHz	$V_{CE} = -10 \text{ V}$, $I_E = 1 \text{ A}$, $f = 30 \text{ MHz}$
Output capacitance	C_{ob}		250		pF	$V_{CB} = -10 \text{ V}$, $I_E = 0 \text{ A}$, $f = 1 \text{ MHz}$
Turn on time	t_{on}			0.3	μs	$I_C = -6 \text{ A}$, $I_{B1} = -I_{B2} = -0.3 \text{ A}$, $V_{CC} \approx 30 \text{ V}$
Storage time	t_{stg}			1.5	μs	
Fall time	t_f			0.3	μs	

h_{FE} rankings

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

Test circuit

Figure 1 Switching time test circuit

