2SA1870

Transistor, PNP

Features

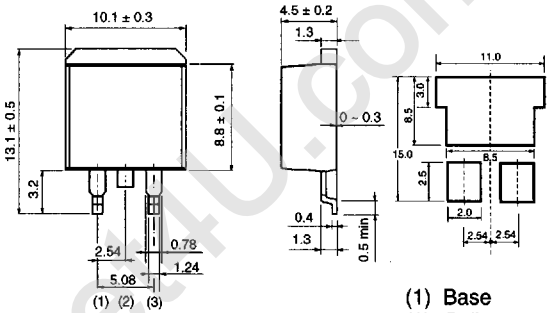
- available in PSD package
- low collector saturation voltage, typically $V_{CE(sat)} = -0.2$ V at $I_C/I_B = -6$ A/-0.3 A
- high switching speed, typically $t_f = 0.17$ µs for $I_C = -6$ A
- wide safe operating area (SOA)

Applications

- high speed switching

Dimensions (Units : mm)

2SA1870 (PSD)



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

Absolute maximum ratings (T_a = 25°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°C
Junction temperature	T_j	150	°C	
Storage temperature	T_{stg}	−55 ~ +150	°C	

Electrical characteristics (unless otherwise noted, T_a = 25°C)

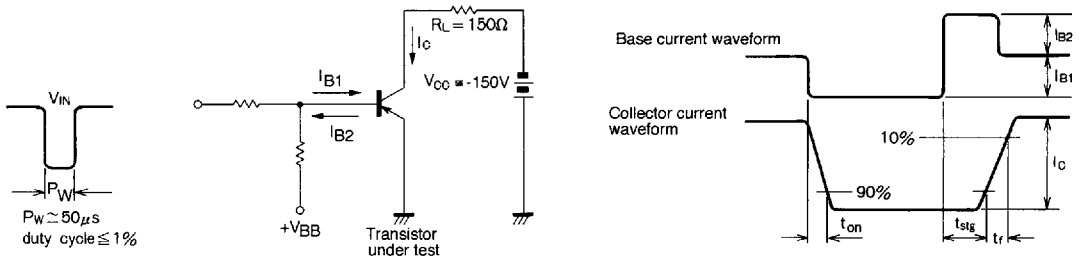
Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	−100			V	I_C = −50 µA
Collector-to-emitter voltage	$V_{CEO(SUS)}$	−60				I_C/I_B = −6 A/−0.6 A, L = 1 mH
Collector-to-emitter breakdown voltage	BV_{CEO}	−60			V	I_C = −1 mA
Emitter-to-base breakdown voltage	BV_{EBO}	−5			V	I_E = −50 µA
Collector cutoff current	I_{CBO}			−10	µA	V_{CB} = −100 V
Emitter cutoff current	I_{EBO}			−10	µA	V_{EB} = −5 V
DC current gain	h_{FE}	60	120	320		V_{CE} = −2 V, I_C = −2 A
		40				V_{CE} = −2 V, I_C = −6 A
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			−0.3	V	I_C/I_B = −6 A/−0.3 A
				−0.5	V	I_C/I_B = −8 A/−0.4 A
Base-to-emitter saturation voltage	$V_{BE(sat)}$			−1.2	V	I_C/I_B = −6 A/−0.3 A
				−1.5	V	I_C/I_B = −8 A/−0.4 A
Transition frequency	f_T		80		MHz	V_{CE} = −10 V, I_E = 1 A, f = 30 MHz
Output capacitance	C_{ob}		250		pF	V_{CB} = −10 V, I_E = 0 A, f = 1 MHz
Turn on time	t_{on}			0.3	µs	I_C = −6 A, I_{B1} = − I_{B2} = −0.3 A, V_{CC} ≅ 30 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



2SA1900

Transistor, PNP

Features

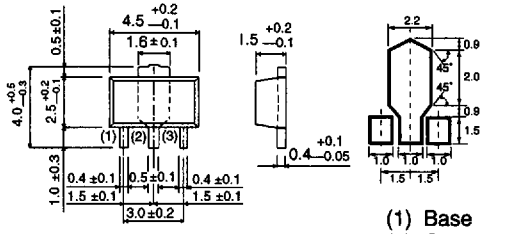
- available in MPT3 (MPT, SC-62) package
- package marking: 2SA1900; AL★, where ★ is h_{FE} code
- $P_C = 2$ W (when mounted on a $40 \times 40 \times 0.7$ mm ceramic substrate)
- low collector saturation voltage, typically $V_{CE(sat)} = -0.15$ V for $I_C/I_B = -500$ mA/-50 mA
- complementary pair with 2SC5053

Applications

- medium power amplifier

Dimensions (Units : mm)

2SA1900 (MPT3)



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

Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	−60	V	
Collector-to-emitter voltage	V_{CEO}	−50	V	
Emitter-to-base voltage	V_{EBO}	−5	V	
Collector current	I_C	−1	A	DC
		−2		P_W = 20 ms, duty = 50%
Collector dissipation	P_C	0.5	W	
		2		Mounted on 40 × 40 × 0.7 mm ceramic PCB
Junction temperature	T_j	150	°C	
Storage temperature	T_{stg}	−55 ~ +150	°C	

Electrical characteristics (unless otherwise noted, T_a = 25°C)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	−60			V	I_C = −50 µA
Collector-to-emitter breakdown voltage	BV_{CEO}	−50			V	I_C = −1 mA
Emitter-to-base breakdown voltage	BV_{EBO}	−5			V	I_E = −50 µA
Collector cutoff current	I_{CBO}			−0.1	µA	V_{CB} = −40 V
Emitter cutoff current	I_{EBO}			−0.5	µA	V_{EB} = −4 V
DC current gain	h_{FE}	82		390		V_{CE} = −3 V, I_C = −500 mA, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		−0.15	−0.4	V	I_C/I_B = −500 mA/−50 mA
Transition frequency	f_T		150		MHz	V_{CE} = −5 V, I_E = 50 mA, f = 100 MHz
Output capacitance	C_{ob}		20		pF	V_{CB} = −10 V, I_E = 0 A, f = 1 MHz

h_{FE} rankings

Item	P	Q	R
h_{FE}	82 ~ 180	120 ~ 270	180 ~ 390

Electrical characteristics

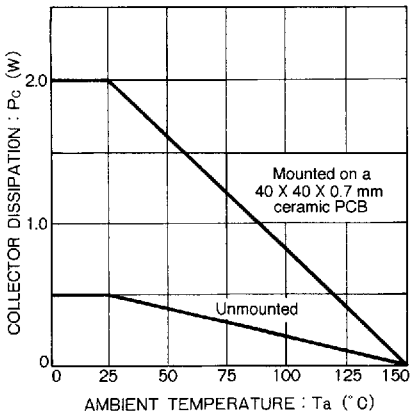


Figure 1

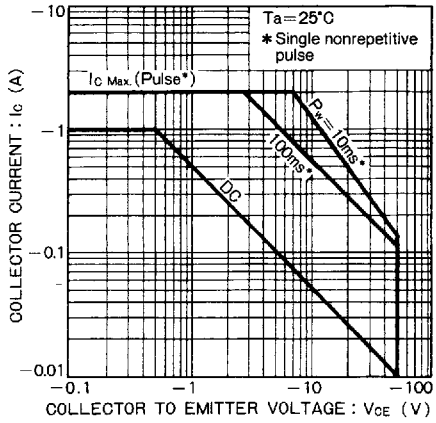


Figure 2

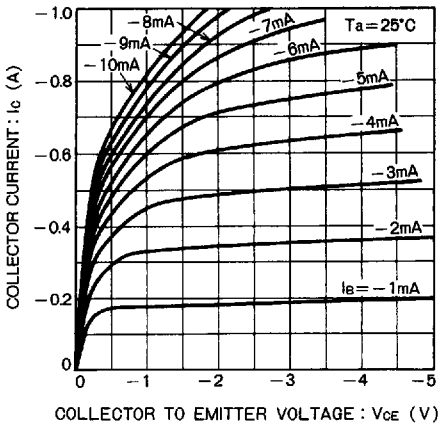


Figure 3

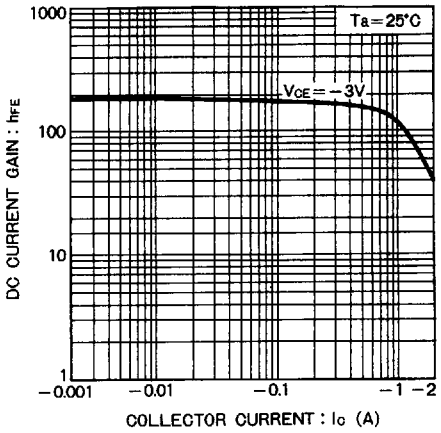


Figure 4

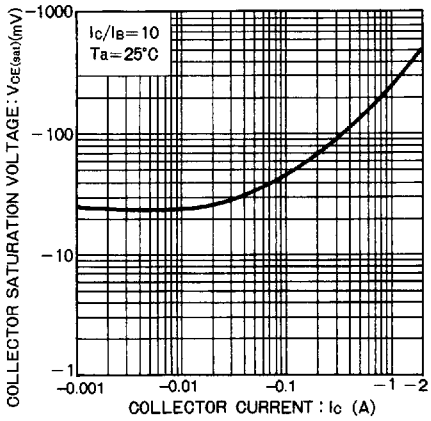


Figure 5

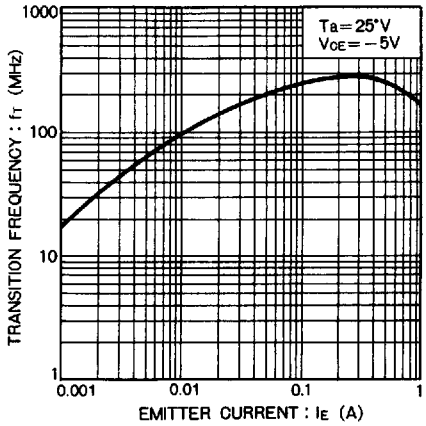


Figure 6

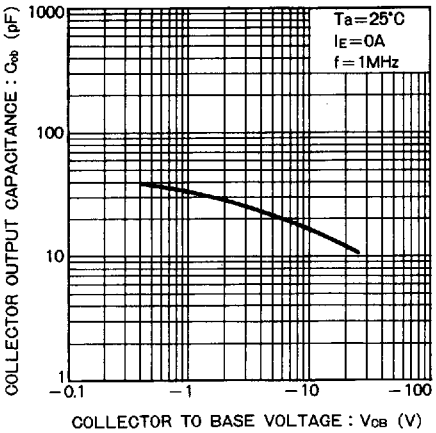


Figure 7

Ordering information

Package	Tape
Code	T100
Basic order quantity	1000
2SA1900	★
★= Standard, ☆ = Semi-standard, ✳ = Special order	