

Features

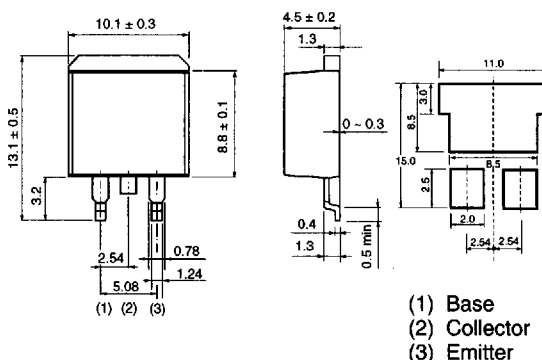
- available in PSD package
- low collector saturation voltage, typically $V_{CE(sat)} = -0.2 \text{ V}$ at $I_C/I_B = -6 \text{ A}/-0.3 \text{ A}$
- high switching speed, typically $t_f = 0.17 \mu\text{s}$ for $I_C = -6 \text{ A}$
- wide safe operating area (SOA)

Applications

- high speed switching

Dimensions (Units : mm)

2SA1870 (PSD)



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

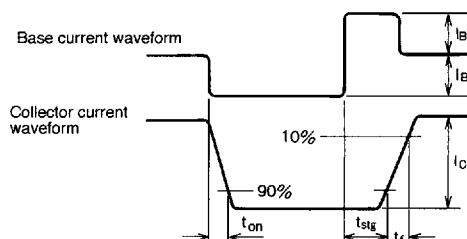
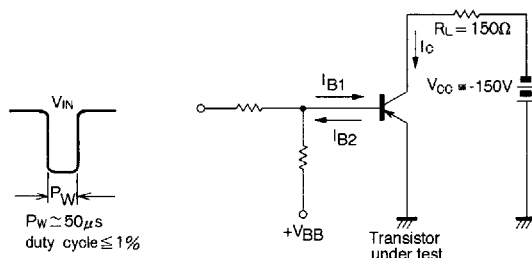
Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	-100	V	
Collector-to-emitter voltage	V_{CEO}	-60	V	
Emitter-to-base voltage	V_{EBO}	-5	V	
Collector current	I_C	-12	A	DC
		-20		Single pulse, $P_W = 100 \text{ ms}$
Collector dissipation	P_C	35	W	$T_C = 25^\circ\text{C}$
Junction 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**

Features

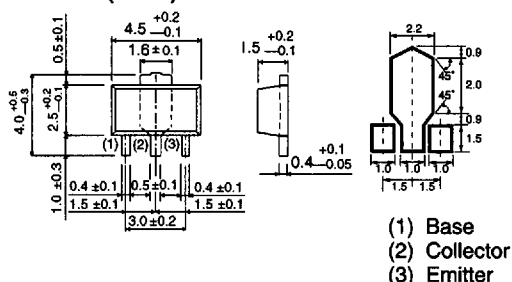
- available in MPT3 (MPT, SC-62) package
- package marking: 2SA1900; AL★, where ★ is h_{FE} code
- $P_C = 2\text{ W}$ (when mounted on a $40 \times 40 \times 0.7\text{ mm}$ ceramic substrate)
- low collector saturation voltage, typically $V_{CE(sat)} = -0.15\text{ V}$ for $I_C/I_B = -500\text{ mA}/-50\text{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

Applications

- medium power amplifier

Dimensions (Units : mm)

2SA1900 (MPT3)



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

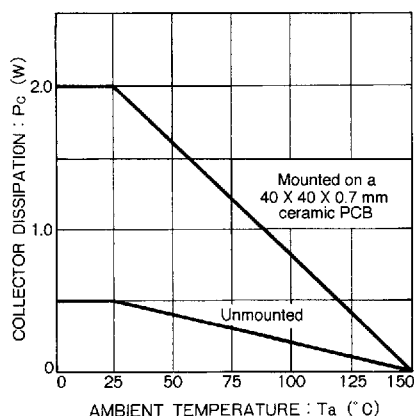
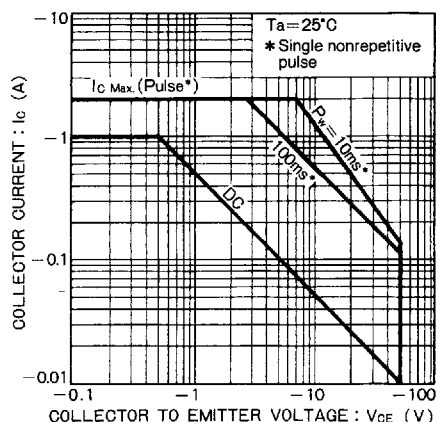
Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	-60	V	
Collector-to-emitter voltage	V_{CEO}	-50	V	
Emitter-to-base voltage	V_{EBO}	-5	V	
Collector current	I_C	-1	A	DC
		-2		$P_W = 20\text{ ms, duty} = 50\%$
Collector dissipation	P_C	0.5	W	Mounted on $40 \times 40 \times 0.7\text{ mm}$ ceramic PCB
		2		
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}	-60			V	$I_C = -50\ \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	-50			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}			-0.1	μA	$V_{CB} = -40\ \text{V}$
Emitter cutoff current	I_{EBO}			-0.5	μA	$V_{EB} = -4\ \text{V}$
DC current gain	h_{FE}	82		390		$V_{CE} = -3\ \text{V}$, $I_C = -500\ \text{mA}$, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		-0.15	-0.4	V	$I_C/I_B = -500\ \text{mA}/-50\ \text{mA}$
Transition frequency	f_T		150		MHz	$V_{CE} = -5\ \text{V}$, $I_E = 50\ \text{mA}$, $f = 100\ \text{MHz}$
Output capacitance	C_{ob}		20		pF	$V_{CB} = -10\ \text{V}$, $I_E = 0\ \text{A}$, $f = 1\ \text{MHz}$

 h_{FE} rankings

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

Electrical characteristics**Figure 1****Figure 2**

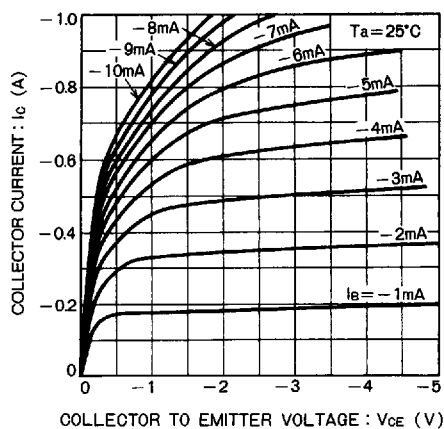


Figure 3

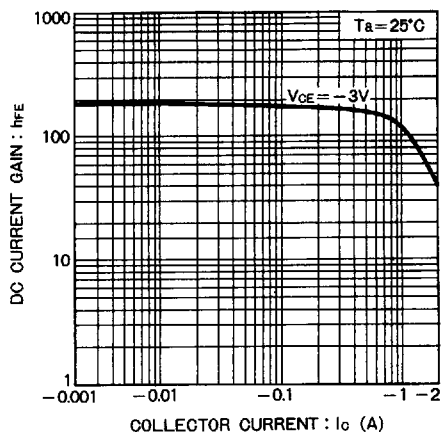


Figure 4

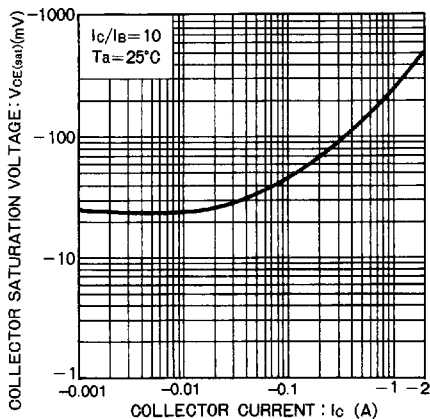


Figure 5

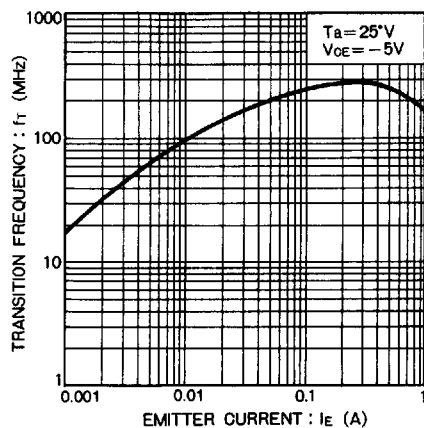


Figure 6

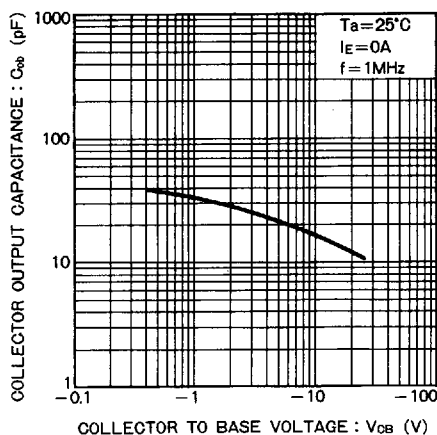


Figure 7

Ordering information

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