High-speed Switching Transistor (−60V, −12A)

2SA1870

●Features

1) High speed switching, typically tf=0.17 μs at Ic=−6A.
2) Low saturation voltage, typically $V_{CE(sat)}$ =−0.2V at Ic / Ib=−6A / −0.3A.
3) Wide SOA (safe operating area)

●Packaging specifications and h_{FE}

Type	2SA1870
Package	PSD3
h_{FE}	EF
Code	TL
Basic ordering unit (pieces)	1000

●Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−100	V
Collector-emitter voltage	V_{CEO}	−60	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	Ic	−12	A
		−20	A (Pulse) ✻
Collector power dissipation	Pc	1.5	W
		35	W (Tc=25℃)
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55～+150	℃

✻ Single pulse, Pw=100ms

●Electrical characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−100	—	—	V	Ic=−50 μA
Collector-emitter breakdown voltage	$BV_{CEO(SUS)}$	−60	—	—	V	Ic=−6A , Ib=−0.6A , L=1mH
Collector-emitter breakdown voltage	BV_{CEO}	−60	—	—	V	Ic=−1mA
Emitter-base breakdown voltage	BV_{EBO}	−5	—	—	V	Ie=−50 μA
Collector cutoff current	I_{CBO}	—	—	−10	μA	V_{CB}=−100V
Emitter cutoff current	I_{EBO}	—	—	−10	μA	V_{EB}=−5V
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.2	−0.3	V	Ic/Ib=−6A/−0.3A
		—	—	−0.5	V	Ic/Ib=−8A/−0.4A
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.2	V	Ic/Ib=−6A/−0.3A
		—	—	−1.5	V	Ic/Ib=−8A/−0.4A
DC current transfer ratio	h_{FE}	100	—	320	—	V_{CE}=−2V , Ic=−2A
Transition frequency	fT	—	80	—	MHz	V_{CB}=−10V , Ie=−1A , f=30MHz
Output capacitance	Cob	—	250	—	pF	V_{CE}=−10V , Ie=0A , f=1MHz
Turn-on time	t_{on}	—	—	0.3	μs	Ic=−6A
Storage time	t_{stg}	—	—	1.5	μs	I_{B1}=−I_{B2}=−0.3A
Fall time	tf	—	0.17	0.3	μs	Vcc≒−30V

(96-113-A325)