

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

2SA1870

●Features

- 1) High speed switching, typically $t_f=0.17\ \mu\text{s}$ at $I_c=-6\text{A}$.
- 2) Low saturation voltage, typically $V_{CE(sat)}=-0.2\text{V}$ at $I_c/I_E=-6\text{A}/-0.3\text{A}$.
- 3) Wide SOA (safe operating area)

●Packaging specifications and hFE

Type	2SA1870
Package	PSD3
hFE	EF
Code	TL
Basic ordering unit (pieces)	1000

●Absolute maximum ratings (Ta=25°C)

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	I_c	-12	A
		-20	A (Pulse) *
Collector power dissipation	P_c	1.5	W
		35	W (Tc=25°C)
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	-55~+150	°C

* Single pulse, Pw=100ms

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-100	—	—	V	$I_c=-50\ \mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CEO(SUS)}$	-60	—	—	V	$I_c=-6\text{A}$, $I_E=-0.6\text{A}$, $L=1\text{mH}$
Collector-emitter breakdown voltage	BV_{CEO}	-60	—	—	V	$I_c=-1\text{mA}$
Emitter-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	$V_{EB}=-5\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	-0.2	-0.3	V	$I_c/I_E=-6\text{A}/-0.3\text{A}$
		—	—	-0.5	V	$I_c/I_E=-8\text{A}/-0.4\text{A}$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	-1.2	V	$I_c/I_E=-6\text{A}/-0.3\text{A}$
		—	—	-1.5	V	$I_c/I_E=-8\text{A}/-0.4\text{A}$
DC current transfer ratio	hFE	100	—	320	—	$V_{CE}=-2\text{V}$, $I_c=-2\text{A}$
Transition frequency	fT	—	80	—	MHz	$V_{CB}=-10\text{V}$, $I_E=-1\text{A}$, $f=30\text{MHz}$
Output capacitance	Cob	—	250	—	pF	$V_{CE}=-10\text{V}$, $I_E=0\text{A}$, $f=1\text{MHz}$
Turn-on time	t _{on}	—	—	0.3	μs	$I_c=-6\text{A}$
Storage time	t _{stg}	—	—	1.5	μs	$I_{B1}=-I_{B2}=-0.3\text{A}$
Fall time	t _f	—	0.17	0.3	μs	$V_{CC}\sim-30\text{V}$

(96-113-A325)

