

High-voltage switching Transistor (Camera strobes and Telephone, Power supply)

2SA1920

●Features

- 1) High breakdown voltage. ($V_{CE0} \approx 400V$)
- 2) Low $V_{CE(sat)}$. (Typ. $-0.2V$ at $I_C/I_B = -20/-2mA$)
- 3) Fast switching. (t_f : Typ. $1 \mu s$ at $I_C = -100mA$)
- 4) Wide SOA (safe operating area).

●Packaging specifications and hFE

Type	2SA1920
Package	ATV
hFE	P
Marking	—
Code	TV2
Basic ordering unit (pieces)	2500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-600	—	—	V	$I_C = -50 \mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-600	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EBO}	-7	—	—	V	$I_E = -50 \mu A$
Collector cutoff current	I_{CBO}	—	-10	—	μA	$V_{CB} = -400V$
Emitter cutoff current	I_{EBO}	—	-10	—	μA	$V_{EB} = -6V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	-0.2	-0.5	V	$I_C/I_E = -20mA/-2mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	-1.2	—	V	$I_C/I_B = -20mA/-2mA$
DC current transfer ratio	hFE	82	—	180	—	$V_{CE} = -10V, I_C = -10mA$
Transition frequency	f _T	—	12	—	MHz	$V_{CE} = -10V, I_E = 10mA, f = 5MHz$
Output capacitance	C _{ob}	—	13	—	pF	$V_{CE} = -10V, I_E = 0A, f = 1MHz$
Turn-on time	t _{on}	—	0.7	—	μs	$I_C = -100mA, R_L = 1.5k\Omega$
Storage time	t _{stg}	—	1.8	—	μs	$I_{B1} = -I_{B2} = -10mA$
Fall time	t _f	—	1	—	μs	$V_{CC} = -150V$

(SPEC-A324)

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

2SA1870

●Features

- 1) High speed switching (t_f : Typ. $0.17 \mu s$ at $I_C = -6A$)
- 2) Low $V_{CE(sat)}$. (Typ. $-0.2V$ at $I_C/I_B = -6/-0.3A$)
- 3) Wide SOA (safe operating area)

●Packaging specifications and hFE

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

●Electrical characteristics (Ta=25°C)

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

(96-113-A325)

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	-600	V
Collector-emitter voltage	V_{CEO}	-600	V
Emitter-base voltage	V_{EBO}	-7	V
Collector current	I_C	-0.1	A (DC)
		-0.2	A (Pulse) *1
Collector power dissipation	P _C	1	W *2
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55~150	°C

*1 Single pulse P_w=100ms

*2 On 40 x 40 x 0.7 mm ceramic board.

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