Silicon NPN transistor epitaxial type
D5890

[Applications]

Switching regulators/ DC-DC convertors
Low voltage drop out(LDO) linear reguiator out-put
Battery chargers
Power management switches

[Feature]

Low collector-emitter saturation voltage VCE(sat)= 210mV(Max.) at IC=2A, IB=0.2A
High collector current ICP= 5A
High DC current gain hFE= 150(Min.) at VCE= 2V, IC= 3A
Complement PNP type P/N B5890 available

[Absolute maximum ratings (Ta=25C)]

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	20	V
Collector-emitter voltage	VCEO	20	V
Emitter-base voltage	VEBO	5	V
Collector current(DC)	IC	2	A
Repetitive peak collector current *1	ICRP	3	A
Collector current(Pulse) *2	ICP	5	A
Base current	IB	0.5	A
Junction temperature	Tj	150	C
Storage temperature	Tstg	-65 to 150	C

*1) Pulse width≦100ms, duty≦25%

*2) Single pulse peak

[Electrical characteristics (Ta=25C)]

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVCBO	20	-	-	V	IC= 10uA, IE= 0A
Collector-emitter breakdown voltage	BVCEO	20	-	-	V	IC= 1mA, IB= 0A
Emitter-base breakdown voltage	BVEBO	5	-	-	V	IE= 10uA, IC= 0A
Collector cut-off current	ICBO	-	-	100	nA	VCB= 20V, IE= 0A
Emitter cut-off current	IEBO	-	-	100	nA	VEB= 5V, IE= 0A
DC current gain 1	hFE 1	220	-	-	-	VCE= 2V, IC= 0.1A
DC current gain 2	hFE 2	220	-	-	-	VCE= 2V, IC= 0.5A
DC current gain 3 *3	hFE 3	220	-	-	-	VCE= 2V, IC= 1A
DC current gain 4 *3	hFE 4	200	-	-	-	VCE= 2V, IC= 2A
DC current gain 5 *3	hFE 5	120	-	-	-	VCE= 2V, IC= 3A
Collector-emitter saturation voltage 1	VCE(sat) 1	-	-	70	mV	IC= 0.5A, IB= 50mA
Collector-emitter saturation voltage 2	VCE(sat) 2	-	-	120	mV	IC= 1A, IB= 50mA
Collector-emitter saturation voltage 3 *3	VCE(sat) 3	-	-	230	mV	IC= 2A, IB= 40mA
Collector-emitter saturation voltage 4 *3	VCE(sat) 4	-	-	210	mV	IC= 2A, IB= 0.2A
Collector-emitter saturation voltage 5 *3	VCE(sat) 5	-	-	310	mV	IC= 3A, IB= 0.3A
Collector-emitter on resistance *3	RCE(sat)	-	80	105	m･ohm	IC= 2A, IB= 0.2A
Base-emitter saturation voltage 1 *3	VBE(sat) 1	-	-	1.1	V	IC= 2A, IB= 40mA
Base-emitter saturation voltage 2 *3	VBE(sat) 2	-	-	1.2	V	IC= 3A, IB= 0.3A
Base-emitter on voltage *3	VBE(on)	-	-	1.2	V	VCE= 2V, IC= 1A
Transition frequency	f T	100	-	-	MHz	VCE= 5V, IE= -0.1A
Collector output capacitance	Cob	-	-	35	pF	VCB= 10V, f = 1MHz, IE= 0A

*3) Pulse width≦300us, duty≦2%

Notice 1) These are measured data of transistors assembled by PHENITEC SEMICONDUCTOR Corp. and are for reference only.
Notice 2) The contents described herein are subject to change without notice.

Fig.1 VBE(on) - IC
at VCE= 2V, Ta= 25C

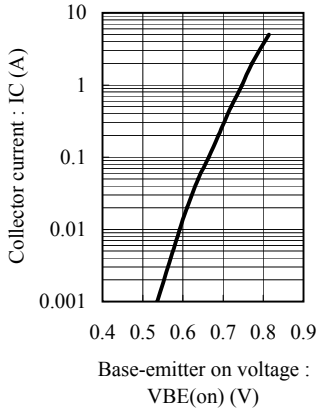

Fig.2 hFE - IC
at VCE= 2V, Ta= 25C

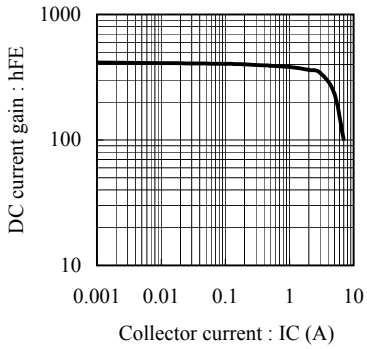

Fig.3 VCE(sat) - IC
at IC/IB= 10, Ta= 25C

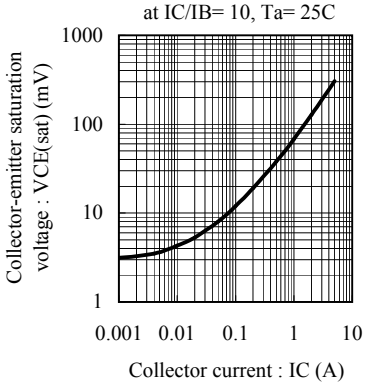

Fig.4 VCE(sat) - IC
at IC/IB= 20, Ta= 25C

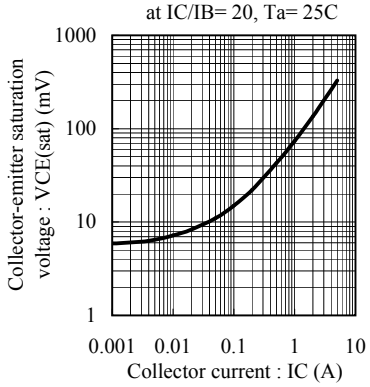

Fig.5 VCE(sat) - IC
at IC/IB=50, Ta= 25C

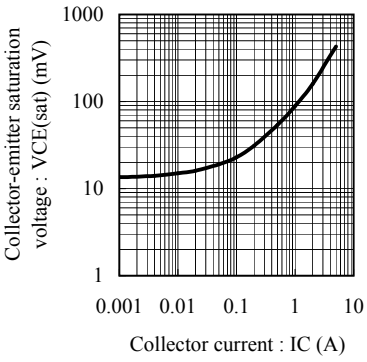

Fig.6 VBE(sat) - IC
at IC/IB= 10, Ta= 25C

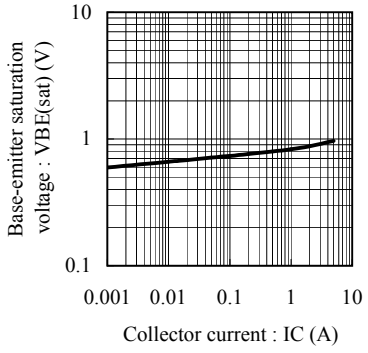

Fig.7 fT - IE
at VCE= 5V, Ta= 25C

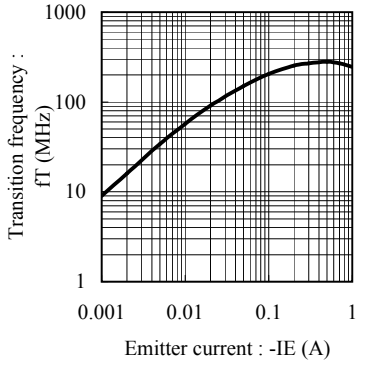

Fig.8 Cob - VCB
at f= 1MHz, Ta= 25C