

## Silicon PNP transistor epitaxial type B5890

### [ Applications ]

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

### [ Feature ]

Low collector-emitter saturation voltage  $V_{CE(sat)} = -0.21V(\text{Max.})$  at  $I_C = -2A$ ,  $I_B = -0.2A$   
High collector current  $I_{CP} = -5A$   
High DC current gain  $h_{FE} = 100(\text{Min.})$  at  $V_{CE} = -2V$ ,  $I_C = -3A$   
Complement NPN type P/N D5890 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	IC	-2	A
Collector current *1	ICRP	-3	A
Collector current *2	ICP	-5	A
Base current	IB	-0.5	A
Junction temperature	Tj	150	C
Storage temperature	Tstg	-55 to 150	C

\*1 Pulse width  $\leq 100\text{ms}$ , duty  $\leq 25\%$

\*2 Single pulse peak

### [ Electrical characteristics (Ta=25C) ]

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVCBO	-20	-	-	V	$I_C = -10\mu A$ , $I_E = 0A$
Collector-emitter breakdown voltage	BVCEO	-20	-	-	V	$I_C = -1mA$ , $I_B = 0A$
Emitter-base breakdown voltage	BVEBO	-5	-	-	V	$I_E = -10\mu A$ , $I_C = 0A$
Collector cut-off current	ICBO	-	-	-100	nA	$V_{CB} = -20V$ , $I_E = 0A$
Emitter cut-off current	IEBO	-	-	-100	nA	$V_{EB} = -5V$ , $I_E = 0A$
DC current gain 1	hFE 1	220	-	-	-	$V_{CE} = -2V$ , $I_C = -0.1A$
DC current gain 2	hFE 2	220	-	-	-	$V_{CE} = -2V$ , $I_C = -0.5A$
DC current gain 3	hFE 3	200	-	-	-	$V_{CE} = -2V$ , $I_C = -1A$
DC current gain 4	hFE 4	150	-	-	-	$V_{CE} = -2V$ , $I_C = -2A$
DC current gain 5	hFE 5	100	-	-	-	$V_{CE} = -2V$ , $I_C = -3A$
Collector-emitter saturation voltage 1	$V_{CE(sat)} 1$	-	-	-70	mV	$I_C = -0.5A$ , $I_B = -50mA$
Collector-emitter saturation voltage 2	$V_{CE(sat)} 2$	-	-	-130	mV	$I_C = -1A$ , $I_B = -50mA$
Collector-emitter saturation voltage 3	$V_{CE(sat)} 3$	-	-	-230	mV	$I_C = -2A$ , $I_B = -0.1A$
Collector-emitter saturation voltage 4	$V_{CE(sat)} 4$	-	-	-210	mV	$I_C = -2A$ , $I_B = -0.2A$
Collector-emitter saturation voltage 5	$V_{CE(sat)} 5$	-	-	-300	mV	$I_C = -3A$ , $I_B = -0.3A$
Collector-emitter on resistance	$R_{CE(sat)}$	-	75	105	m $\cdot$ ohm	$I_C = -2A$ , $I_B = -0.2A$
Base-emitter saturation voltage 1	$V_{BE(sat)} 1$	-	-	-1.1	V	$I_C = -2A$ , $I_B = -0.1A$
Base-emitter saturation voltage 2	$V_{BE(sat)} 2$	-	-	-1.2	V	$I_C = -3A$ , $I_B = -0.3A$
Base-emitter on voltage	$V_{BE(on)}$	-	-	-1.2	V	$V_{CE} = -2V$ , $I_C = -1A$
Transition frequency	fT	100	-	-	MHz	$V_{CE} = -5V$ , $I_E = 0.1A$
Collector output capacitance	Cob	-	-	50	pF	$V_{CB} = -10V$ , $f = 1MHz$ , $I_E = 0A$

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.

No. B5890-20080404

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

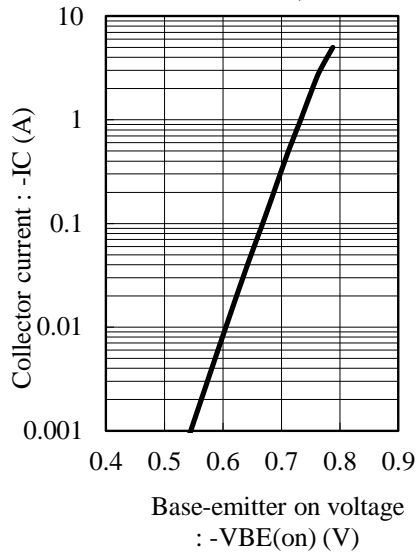


Fig.2 hFE - IC  
at VCE= -2V, Ta= 25C

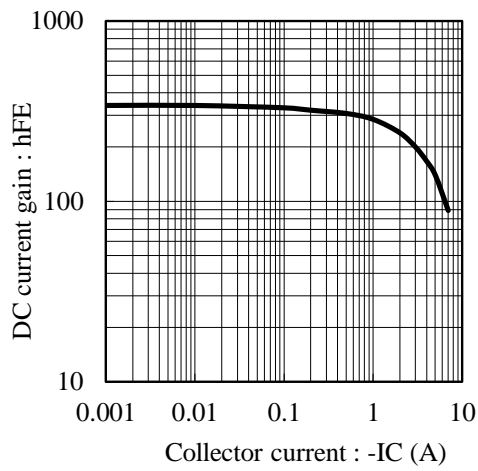


Fig.3 VCE(sat) - IC  
at IC/IB= 10, Ta= 25C

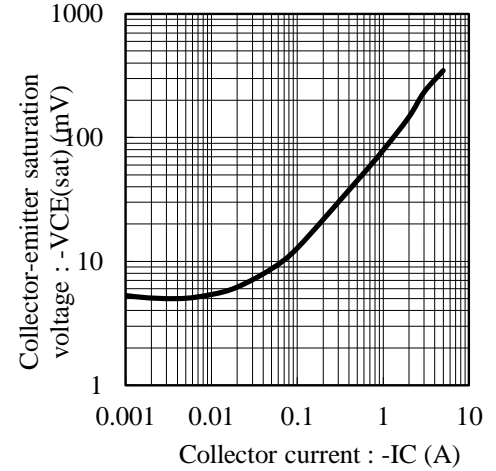


Fig.4 VCE(sat) - IC  
at IC/IB= 20, Ta= 25C

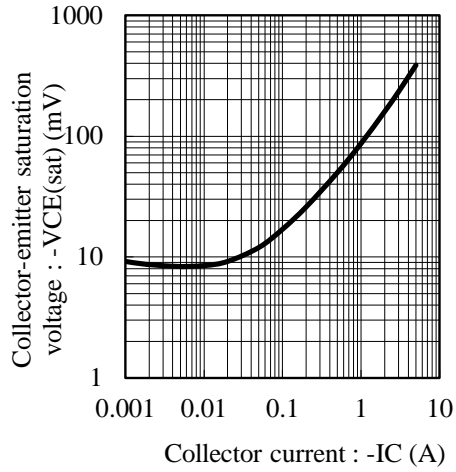


Fig.5 VBE(sat) - IC  
at IC/IB= 10, Ta= 25C

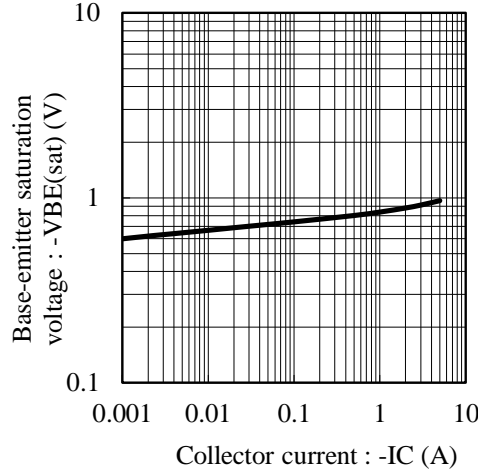


Fig.6 VBE(sat) - IC  
at IC/IB= 20, Ta= 25C

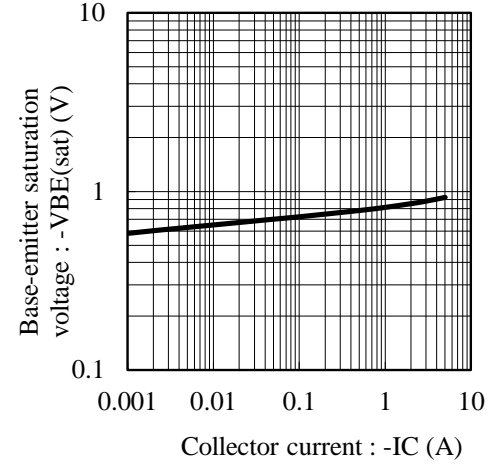


Fig.7 fT - IE  
at VCE= -5V, Ta= 25C

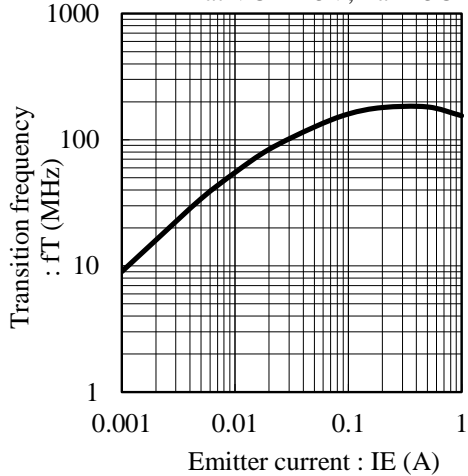


Fig.8 Cob - VCB  
at f= 1MHz, Ta= 25C

