

**Silicon NPN transistor epitaxial type  
C5909**
**[ Applications ]**

Battery powered circuit  
Strobe

**[ Feature ]**

High DC gain  $hFE = 500$  (Min.) at  $VCE = 2V$ ,  $IC = 0.1A$   
 Low collector saturation voltage  $VCE(sat) = 0.4V$  (Max.) at  $IC = 4A$ ,  $IB = 50mA$

**[ Absolute maximum ratings (Ta=25C) ]**

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	12	V
Collector-emitter voltage	VCEO	12	V
Emitter-base voltage	VEBO	5	V
Collector current (DC)	IC	4	A
Collector current (Pulse)	ICP	10	A
Junction temperature	Tj	150	C
Storage temperature	Tstg	-55 to 150	C

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVCBO	12	-	-	V	IC= 100uA, IE= 0A
Collector-emitter breakdown voltage	BVCEO	12	-	-	V	IC= 10mA, IB= 0A
Emitter-base breakdown voltage	BVEBO	5	-	-	V	IE= 100uA, IC= 0A
Collector cut-off current	ICBO	-	-	100	nA	VCB= 10V, IE= 0A
Emitter cut-off current	IEBO	-	-	100	nA	VEB= 4V, IC= 0A
DC current gain 1	hFE 1	500	-	-	-	VCE= 2V, IC= 0.1A
DC current gain 2	hFE 2	400	-	-	-	VCE= 2V, IC= 3A
DC current gain 3	hFE 3	100	-	-	-	VCE= 2V, IC= 10A
Collector-emitter saturation voltage 1	VCE(sat) 1	-	-	0.04	V	IC= 0.1A, IB= 1mA
Collector-emitter saturation voltage 2	VCE(sat) 2	-	-	0.06	V	IC= 0.1A, IB= 0.5mA
Collector-emitter saturation voltage 3	VCE(sat) 3	-	-	0.18	V	IC= 1A, IB= 50mA
Collector-emitter saturation voltage 4	VCE(sat) 4	-	-	0.35	V	IC= 3A, IB= 20mA
Collector-emitter saturation voltage 5	VCE(sat) 5	-	-	0.4	V	IC= 4A, IB= 50mA
Base-emitter saturation voltage	VBE(sat)	-	-	1.1	V	IC= 3A, IB= 20mA
Base-emitter on voltage	VBE(on)	-	-	1.0	V	VCE= 2V, IC= 3A
Transition frequency	fT	150	-	-	MHz	VCE= 5V, IE= -50mA
Collector output capacitance	Cob	-	40	-	pF	VCB= 10V, f = 1MHz, IE= 0A
Collector input capacitance	Cib	-	240	-	pF	VEB= 0.5V, f = 1MHz, IC= 0A
Turn on time	ton	-	40	-	ns	VCC= 10V, IC= 500mA
Turn off time	toff	-	500	-	ns	IB1= -IB2= 50mA

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

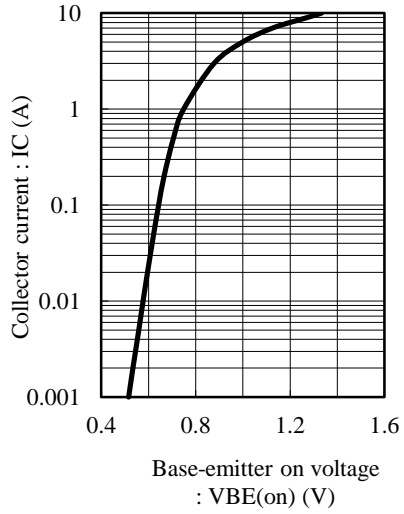


Fig.2 hFE - IC  
at VCE= 2V, Ta= 25C

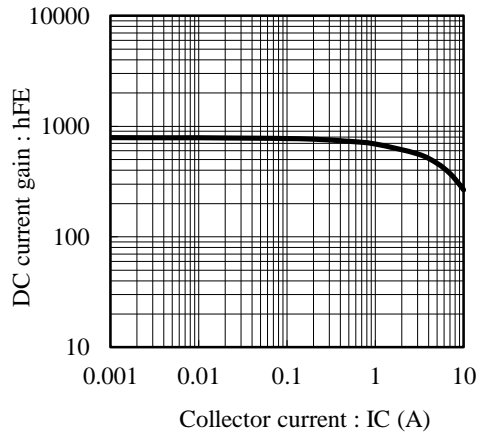


Fig.3 VCE(sat) - IC  
at IC/IB= 20, Ta= 25C

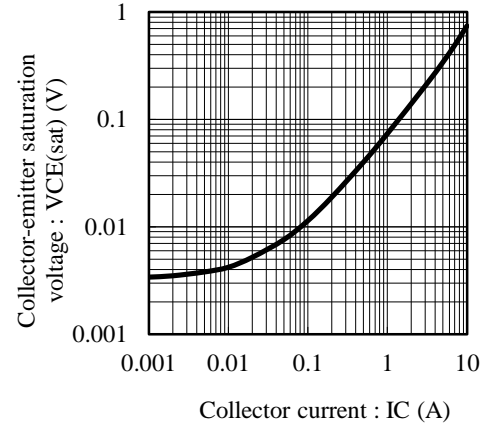


Fig.4 VCE(sat) - IC  
at IC/IB= 80, Ta= 25C

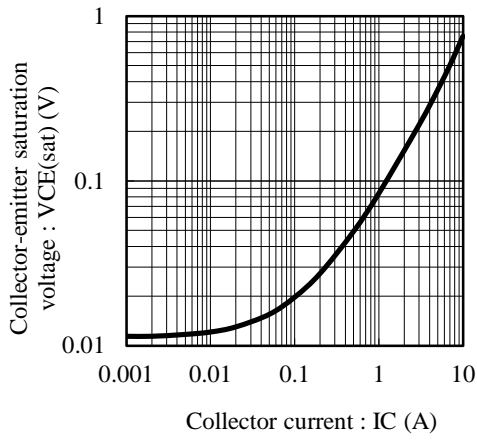


Fig.5 VCE(sat) - IC  
at IC/IB= 100, Ta= 25C

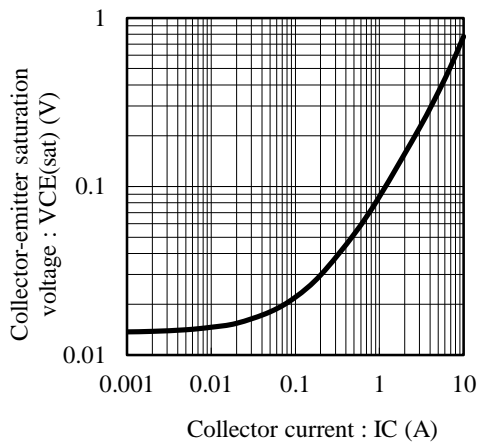


Fig.6 VCE(sat) - IC  
at IC/IB= 150, Ta= 25C

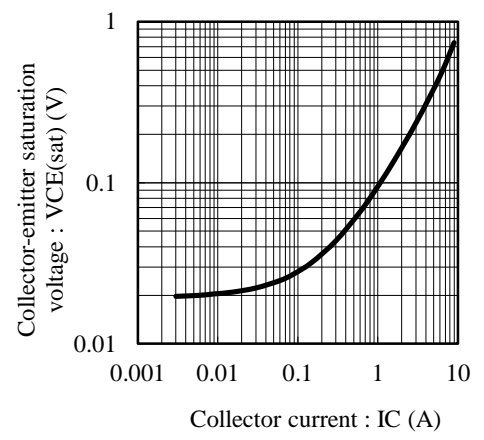


Fig.7 VCE(sat) - IC  
at IC/IB= 200, Ta= 25C

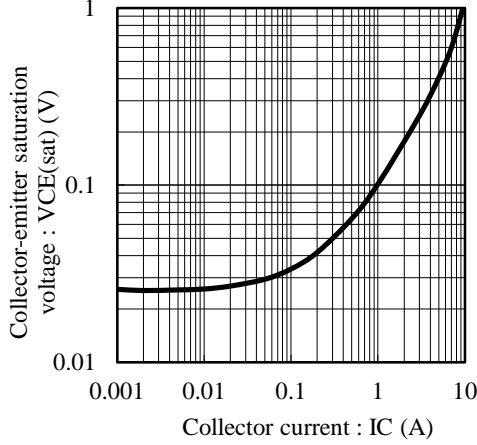


Fig.8 VBE(sat) - IC  
at IC/IB= 150, Ta= 25C

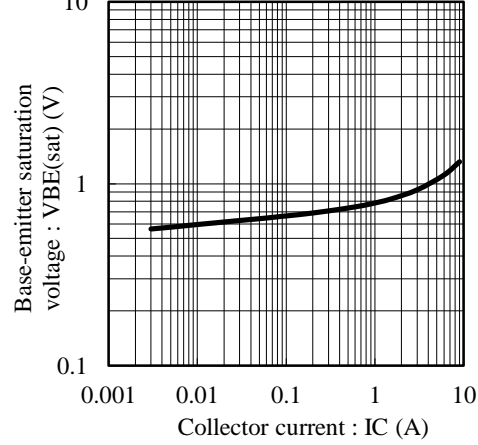


Fig.9 fT - IE  
at VCE= -5V, Ta= 25C

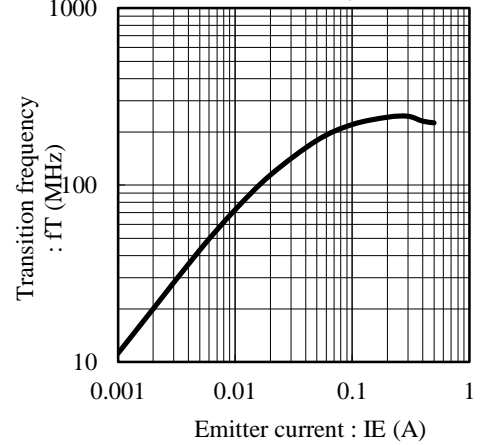


Fig.10 Cob - VCB  
at f= 1MHz, Ta= 25C

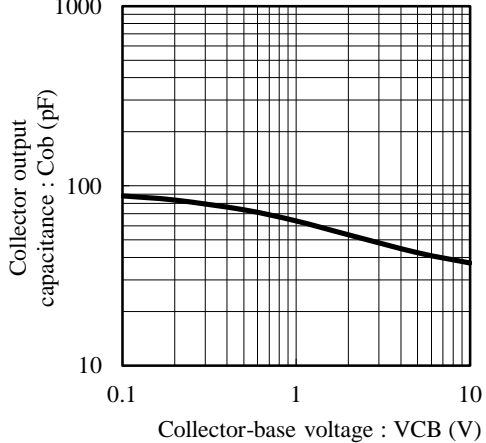


Fig.11 Cib - VEB  
at f= 1MHz, Ta= 25C

