

**Silicon NPN transistor epitaxial type  
C5906**

**[ Applications ]**

High voltage, High current

**[ Feature ]**

High voltage  $V_{CEO} = 170V$

High current gain characteristic

Low collector-emitter saturation voltage  $V_{CE(sat)} = 0.45V(\text{Max.})$  at  $I_C/I_B = 2A/200mA$

Fast-switching speed

**[ Absolute maximum ratings ( $T_a=25C$ ) ]**

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	200	V
Collector-emitter voltage	VCEO	170	V
Emitter-base voltage	VEBO	6	V
Collector current	$I_C$	5	A
Junction temperature	$T_j$	150	C
Storage temperature	$T_{stg}$	-55 to 150	C

**[ Electrical characteristics ( $T_a=25C$ ) ]**

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVCBO	200	-	-	V	$I_C = 1mA$
Collector-emitter breakdown voltage	BVCEO	170	-	-	V	$I_C = 20mA$
Emitter-base breakdown voltage	BVEBO	6	-	-	V	$I_E = 1mA$
Collector cut-off current	ICBO	-	-	10	$\mu A$	$V_{CB} = 100V$
DC current gain 1	$h_{FE1}$	40	-	-	-	$V_{CE} = 5V, I_C = 500mA$
DC current gain 2	$h_{FE2}$	40	-	-	-	$V_{CE} = 5V, I_C = 2A$
DC current gain 3	$h_{FE3}$	15	-	-	-	$V_{CE} = 5V, I_C = 5A$
Collector-emitter saturation voltage 1	$V_{CE(sat)1}$	-	-	0.45	V	$I_C = 2A, I_B = 200mA$
Collector-emitter saturation voltage 2	$V_{CE(sat)2}$	-	-	1	V	$I_C = 5A, I_B = 500mA$
Base-emitter saturation voltage 1	$V_{BE(sat)1}$	-	-	1.1	V	$I_C = 2A, I_B = 200mA$
Base-emitter saturation voltage 2	$V_{BE(sat)2}$	-	-	1.5	V	$I_C = 5A, I_B = 500mA$
Transition frequency	$f_T$	-	90	-	MHz	$V_{CE} = 10V, I_E = -100mA$
Collector output capacitance	$C_{ob}$	-	-	80	pF	$V_{CB} = 50V, f = 1MHz, I_E = 0A$
Turn on time	$t_{on}$	-	-	1	$\mu s$	$V_{CC} = 40V, I_C = 5A$
Turn off time	$t_{off}$	-	-	2	$\mu s$	$I_{B1} = -I_{B2} = 500mA$

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= 5V, Ta= 25C

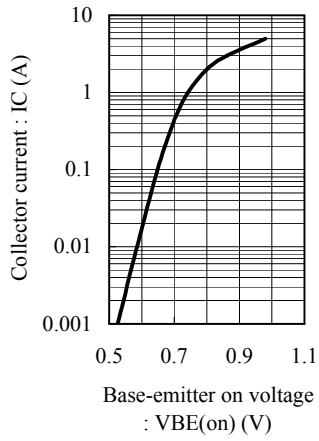


Fig.2 hFE - IC  
at VCE= 5V, Ta= 25C

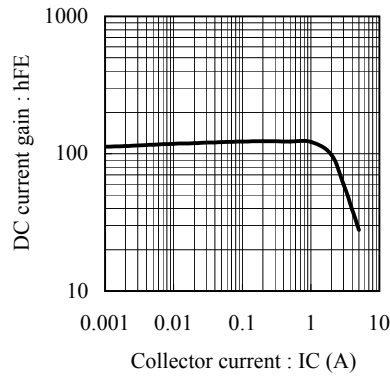


Fig.3 VCE(sat) - IC  
at IC/IB= 10, Ta= 25C

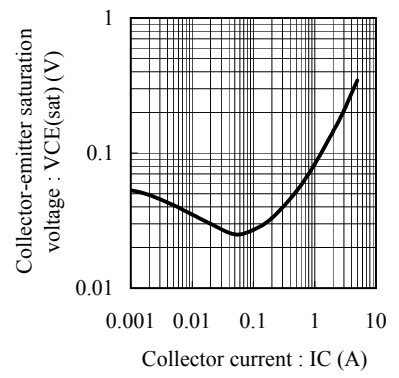


Fig.4 VBE(sat) - IC  
at IC/IB= 10, Ta= 25C

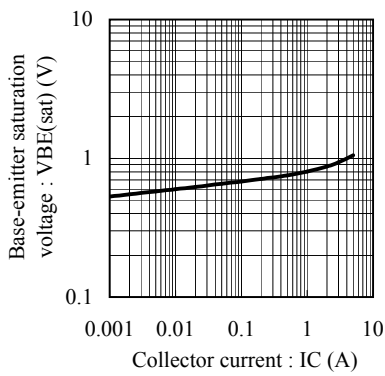


Fig.5 fT - IE  
at VCE= 10V, Ta= 25C

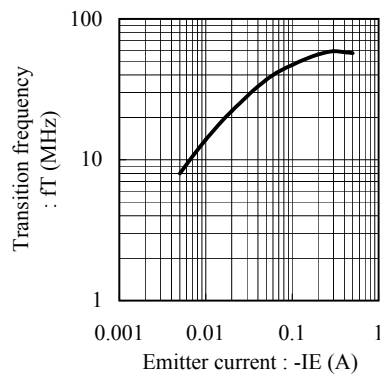


Fig.6 Cob - VCB  
at f= 1MHz, Ta= 25C

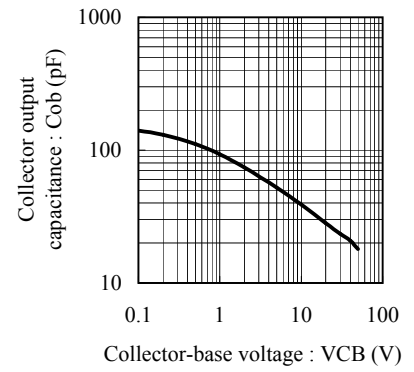


Fig.7 Cib - VEB  
at f= 1MHz, Ta= 25C

