

## Silicon NPN transistor epitaxial type C5946

### [ Applications ]

DC-DC converter, Strobo flash, Relay drive, Inverter drive  
with small  $V_{CE(sat)}$  and high current

### [ Feature ]

High collector current

Low collector-emitter saturation voltage  $V_{CE(sat)}= 135\text{mV (Max.)}$  at  $I_C= 1\text{A}$ ,  $I_B= 50\text{mA}$

### [ Absolute maximum ratings ( $T_a=25\text{C}$ ) ]

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	80	V
Collector-emitter voltage	VCES	80	V
Collector-emitter voltage	VCEO	50	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 ( $T_a=25\text{C}$ ) ]

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVCBO	80	-	-	V	$I_C= 10\mu\text{A}$ , $I_E= 0\text{A}$
Collector-emitter breakdown voltage	BVCES	80	-	-	V	$I_C= 100\mu\text{A}$ , $I_B= 0\text{A}$
Collector-emitter breakdown voltage	BVCEO	50	-	-	V	$I_C= 1\text{mA}$ , $I_B= 0\text{A}$
Emitter-base breakdown voltage	BVEBO	6	-	-	V	$I_E= 10\mu\text{A}$ , $I_C= 0\text{A}$
Collector cut-off current	$I_{CBO}$	-	-	1	$\mu\text{A}$	$V_{CB}= 40\text{V}$ , $I_E= 0\text{A}$
Emitter cut-off current	$I_{EBO}$	-	-	1	$\mu\text{A}$	$V_{EB}= 4\text{V}$ , $I_E= 0\text{A}$
DC current gain	$h_{FE}$	200	-	560	-	$V_{CE}= 2\text{V}$ , $I_C= 500\text{mA}$
Collector-emitter saturation voltage 1	$V_{CE(sat)1}$	-	90	135	mV	$I_C= 1\text{A}$ , $I_B= 50\text{mA}$
Collector-emitter saturation voltage 2	$V_{CE(sat)2}$	-	160	240	mV	$I_C= 2\text{A}$ , $I_B= 100\text{mA}$
Base-emitter saturation voltage	$V_{BE(sat)}$	-	0.87	1.2	V	$I_C= 2\text{A}$ , $I_B= 100\text{mA}$
Transition frequency	$f_T$	-	400	-	MHz	$V_{CE}= 10\text{V}$ , $I_E= -500\text{mA}$
Collector output capacitance	$C_{ob}$	-	15	-	pF	$V_{CB}= 10\text{V}$ , $f = 1\text{MHz}$ , $I_E= 0\text{A}$

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. C5946-20050428

Fig.1 hFE - IC  
at VCE= 2V, Ta= 25C

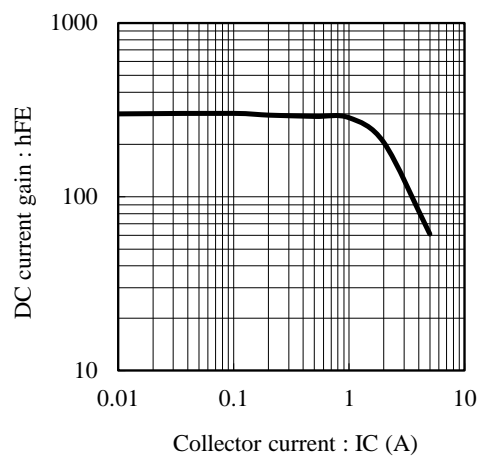


Fig.2 VCE(sat) - IC  
at IC/IB= 20, Ta= 25C

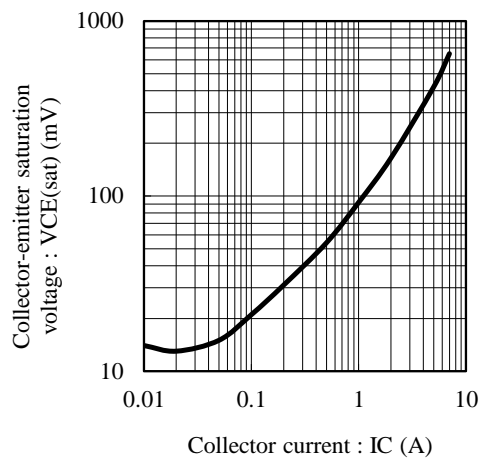


Fig.3 VBE(sat) - IC  
at IC/IB= 20, Ta= 25C

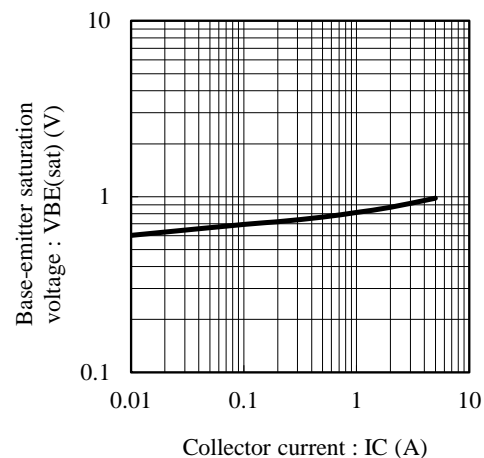


Fig.4 fT - IE  
at VCE= 10V, Ta= 25C

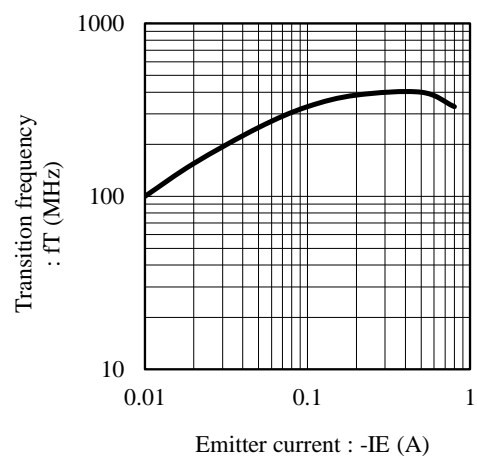


Fig.5 Cob - VCB  
at f= 1MHz, Ta= 25C

