

## Silicon NPN transistor epitaxial type D5939

### [ Applications ]

Inverter, Strobo Flash, DC-DC converter  
with high current and small collector-emitter saturation voltage.  
High power switching with high collector current.

### [ Feature ]

Small collector-emitter saturation voltage  $V_{CE(sat)} = 0.28V(\text{Typ.})$  at  $I_C = 3A, I_B = 100mA$   
High collector current  $I_C = 5A$   
High emitter-base breakdown voltage  $BVEBO = 9V$

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

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	50	V
Collector-emitter voltage	VCEO	20	V
Emitter-base voltage	VEBO	9	V
Collector current	IC	5	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	50	-	-	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	9	-	-	V	$I_E = 10\mu A, I_C = 0A$
Collector cut-off current	ICBO	-	-	100	nA	$V_{CB} = 40V, I_E = 0A$
Collector cut-off current	ICEO	-	-	1	uA	$V_{CE} = 10V, I_B = 0A$
Emitter cut-off current	IEBO	-	-	100	nA	$V_{EB} = 7V, I_E = 0A$
DC current gain 1	hFE 1	230	-	600	-	$V_{CE} = 2V, I_C = 500mA$
DC current gain 2	hFE 2	150	-	-	-	$V_{CE} = 2V, I_C = 2A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	0.28	0.8	V	$I_C = 3A, I_B = 100mA$
Transition frequency	f T	-	150	-	MHz	$V_{CE} = 6V, I_E = -50mA$
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.

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

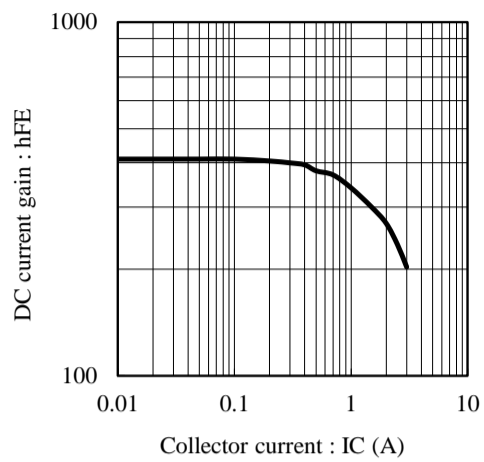


Fig.2 VCE(sat) - IC  
at IC/IB= 30, Ta= 25C

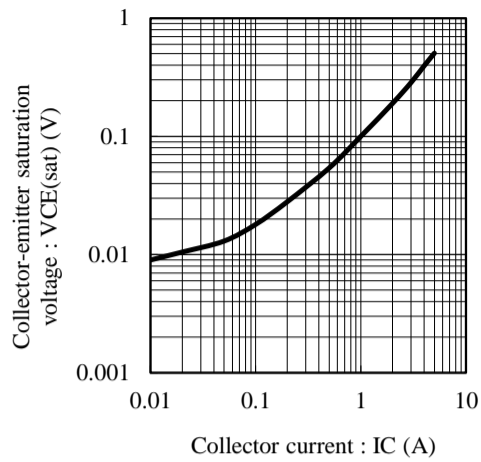


Fig.3 VBE(sat) - IC  
at IC/IB=30, Ta= 25C

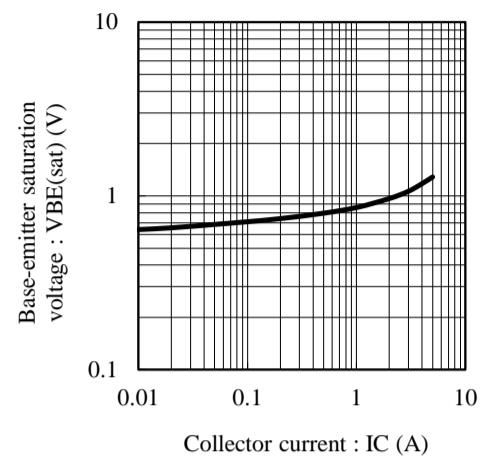


Fig.4 fT - IE  
at VCE= 6V, Ta= 25C

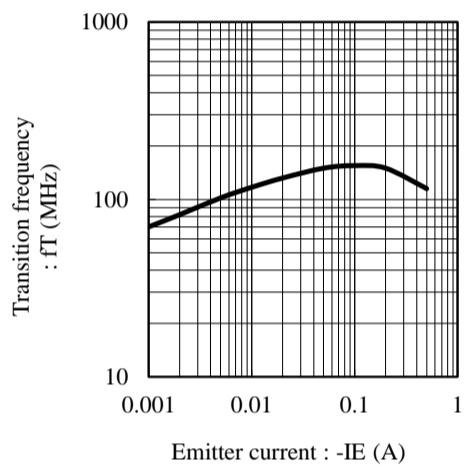


Fig.5 Cob - VCB  
at f= 1MHz, Ta= 25C

