

**Silicon NPN transistor epitaxial type (darlington)  
D5905**

**[ Applications ]**

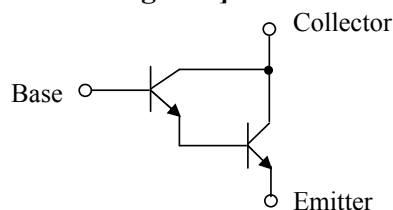
Motor driver

**[ Feature ]**

Darlington connection for a high hFE hFE= 2k (min.) at VCE= 5V, IC= 1A

High input impedance

**[ Circuit diagram ]**



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

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	140	V
Collector-emitter voltage	VCEO	120	V
Emitter-base voltage	VEBO	10	V
Collector current (DC)	IC	1.5	A
Collector current (Pulse)	ICP	4	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	140	-	-	V	IC= 100uA
Collector-emitter breakdown voltage	BVCEO	120	-	-	V	IC= 10mA
Emitter-base breakdown voltage	BVEBO	10	-	-	V	IE= 100uA
Collector cut-off current	ICBO	-	-	10	nA	VCB= 120V
Emitter cut-off current	IEBO	-	-	100	nA	VEB= 8V
Collector-emitter cut-off current	ICES	-	-	10	uA	VCES= 120V
DC current gain 1	hFE 1	2k	-	-	-	VCE= 5V, IC= 50mA
DC current gain 2	hFE 2	5k	-	-	-	VCE= 5V, IC= 500mA
DC current gain 3	hFE 3	2k	-	100k	-	VCE= 5V, IC= 1A
DC current gain 4	hFE 4	0.5k	-	-	-	VCE= 5V, IC= 2A
Collector-emitter saturation voltage 1	VCE(sat) 1	-	-	1	V	IC= 250mA, IB= 0.25mA
Collector-emitter saturation voltage 2	VCE(sat) 2	-	-	1.5	V	IC= 1A, IB= 1mA
Base-emitter saturation voltage	VBE(sat)	-	-	1.8	V	IC= 1A, IB= 1mA
Base-emitter on voltage	VBE(on)	-	-	1.7	V	VCE= 5V, IC= 1A
Transition frequency	fT	150	-	-	MHz	VCE= 10V, IE= -100mA
Collector output capacitance	Cob	-	15	-	pF	VCB= 10V, f= 1MHz, IE= 0A
Collector input capacitance	Cib	-	90	-	pF	VEB= 0.5V, f= 1MHz, IC= 0A
Turn on time	ton	-	500	-	ns	VCE= 10V, IC= 500mA
Turn off time	toff	-	1600	-	ns	IB1= -IB2= 0.5mA

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 VBE(on) - IC  
at VCE= 5V, Ta= 25C

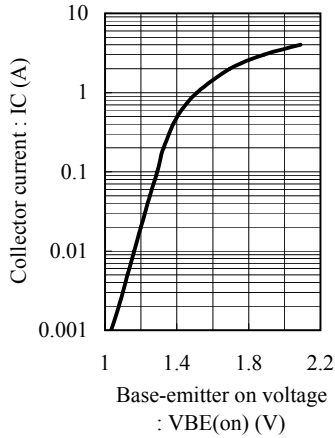


Fig.2 hFE - IC  
at VCE= 5V, Ta= 25C

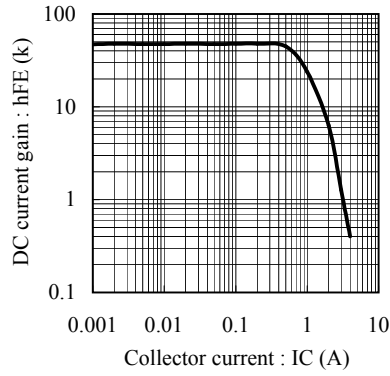


Fig.3 VCE(sat) - IC  
at IC/IB= 1000, Ta= 25C

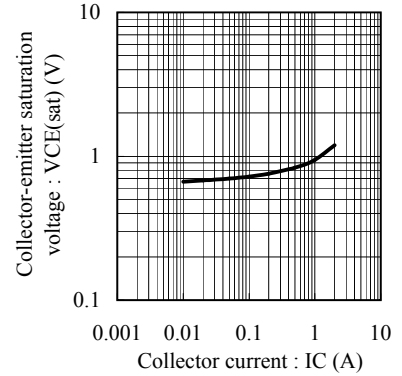


Fig.4 VBE(sat) - IC  
at IC/IB= 1000, Ta= 25C

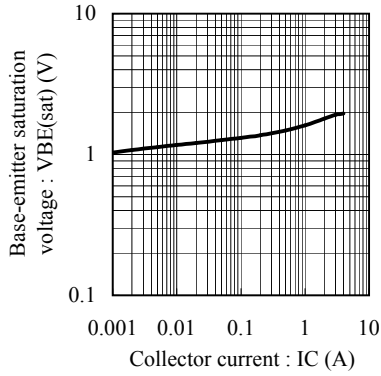


Fig.5 fT - IE  
at VCE= 10V, Ta= 25C

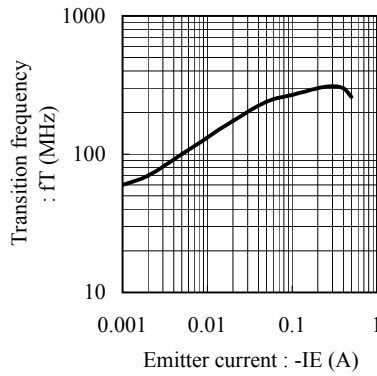


Fig.6 Cob - VCB  
at f= 1MHz, Ta= 25C

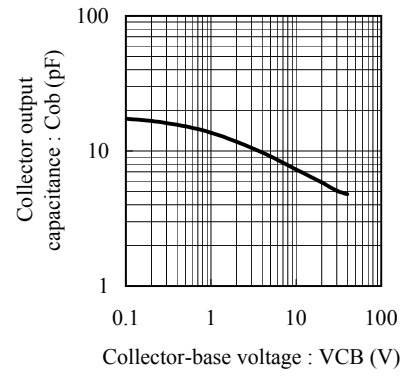


Fig.7 Cib - VEB  
at f= 1MHz, Ta= 25C

