Silicon NPN transistor epitaxial type
CP963

[Applications]

General purpose amplifier and switch
Suitable for small surface mount package built-in with shrinked die size

[Feature]

Equivalent performance with MMBT3904
High collector-emitter breakdown voltage BVCEO= 40V
High collector current IC= 200mA

[Absolute maximum ratings (Ta=25C)]

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	40	V
Collector-emitter voltage	VCEO	40	V
Emitter-base voltage	VEBO	6	V
Collector current	IC	200	mA
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	40	-	-	V	IC= 10uA, IE= 0A
Collector-emitter breakdown voltage	BVCEO	40	-	-	V	IC= 1mA, IB= 0A
Emitter-base breakdown voltage	BVEBO	6	-	-	V	IE= 10uA, IC= 0A
Collector cut-off current	ICEX	-	-	50	nA	VCE= 30V, VEB= 3V
Emitter cut-off current	IEBO	-	-	50	nA	VEB= 5V, IC= 0A
DC current gain 1	hFE 1	40	-	-	-	VCE= 1V, IC= 0.1mA
DC current gain 2	hFE 2	70	-	-	-	VCE= 1V, IC= 1mA
DC current gain 3	hFE 3	100	-	300	-	VCE= 1V, IC= 10mA
DC current gain 4	hFE 4	60	-	-	-	VCE= 1V, IC= 50mA
DC current gain 5	hFE 5	30	-	-	-	VCE= 1V, IC= 100mA
Collector-emitter saturation voltage 1	VCE(sat) 1	-	-	0.2	V	IC= 10mA, IB= 1mA
Collector-emitter saturation voltage 2	VCE(sat) 2	-	-	0.3	V	IC= 50mA, IB= 5mA
Base-emitter saturation voltage 1	VBE(sat) 1	0.65	-	0.85	V	IC= 10mA, IB= 1mA
Base-emitter saturation voltage 2	VBE(sat) 2	-	-	0.95	V	IC= 50mA, IB= 5mA
Transition frequency	f T	300	-	-	MHz	VCE= 20V, IE= -10mA
Output capacitance	Cob	-	-	4	pF	VCB= 5V, f = 1MHz, IE= 0A
Input capacitance	Cib	-	-	8	pF	VEB= 0.5V, f = 1MHz, IE= 0A
Delay Time	td	-	-	35	ns	VCC= 3V, VBE= -0.5V
Rise Time	tr	-	-	35	ns	IC= 10mA, IB1= 1mA
Storage Time	tstg	-	-	200	ns	VCC= 3V, IC= 10mA
Fall Time	tf	-	-	50	ns	IB1= -IB2= 1mA

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= 1V, Ta= 25C

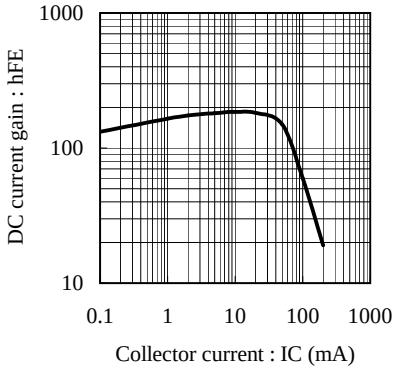

Fig.2 VCE(sat) - IC
at IC/IB= 10, Ta= 25C

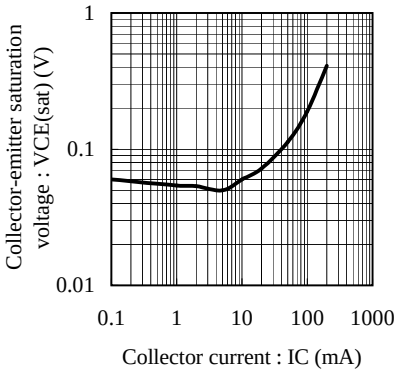

Fig.3 VBE(sat) - IC
at IC/IB= 10, Ta= 25C

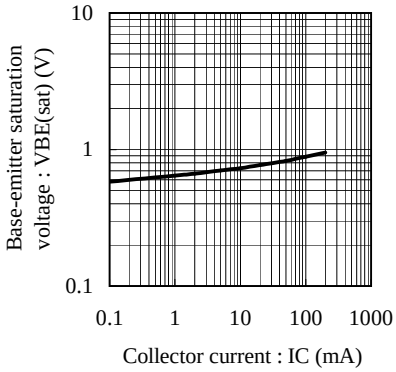

Fig.4 fT - IE
at VCE= 20V, Ta= 25C

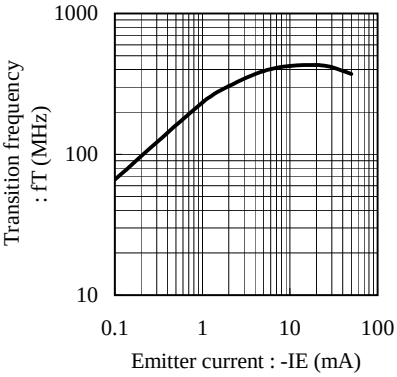

Fig.5 Cob - VCB
at f= 1MHz, Ta= 25C

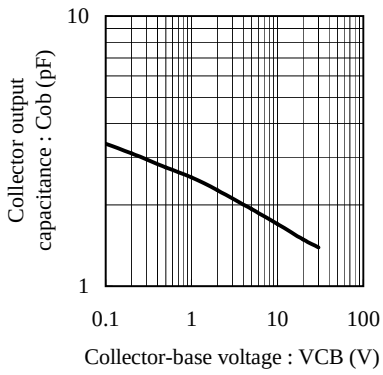

Fig.6 Cib - VEB
at f= 1MHz, Ta= 25C