

**Silicon NPN transistor epitaxial type  
CP981**

**[ Applications ]**

General purpose amplifier, switching

**[ Feature ]**

High speed switching similar to MMBT3904

Complement P/N A9981

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

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	60	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	60	-	-	V	IC= 10uA
Collector-emitter breakdown voltage	BVCEO	40	-	-	V	IC= 1mA
Emitter-base breakdown voltage	BVEBO	6	-	-	V	IE= 10uA
Collector cut-off current	ICEX	-	-	50	nA	VCE= 30V, VEB= 3V
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	90	-	333	-	VCE= 1V, IC= 10mA
DC current gain 4	hFE 4	60	-	-	-	VCE= 1V, IC= 50mA
DC current gain 5	hFE 5	30	-	50	-	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	VBE(sat)	-	-	0.95	V	IC= 50mA, IB= 5mA
Transition frequency	f T	250	-	-	MHz	VCE= 20V, IE= -10mA
Output capacitance	Cob	-	-	4	pF	VCB= 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

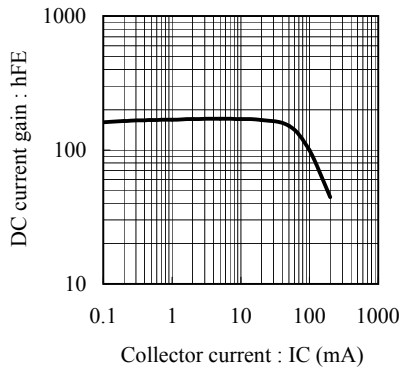


Fig.2 VCE(sat) - IC  
at IC/IB= 10, Ta= 25C

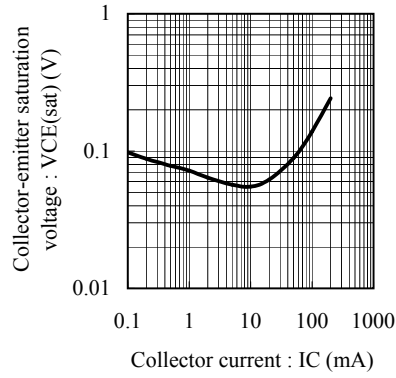


Fig.3 VBE(sat) - IC  
at IC/IB= 10, Ta= 25C

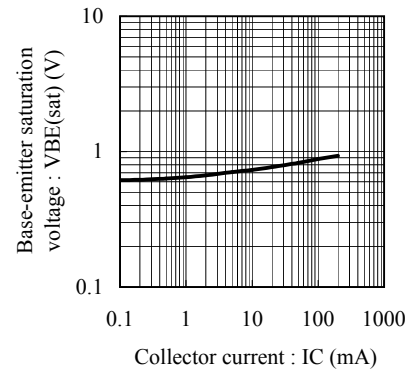


Fig.4 fT - IE  
at VCE= 20V, f= 100MHz,  
Ta= 25C

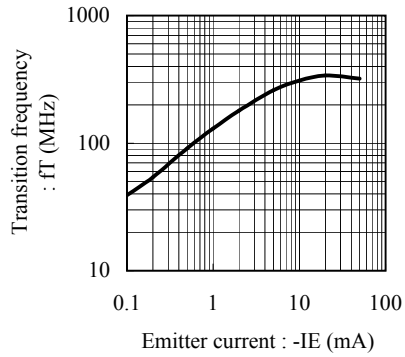


Fig.5 Cob - VCB  
at f= 1MHz, Ta= 25C

