

## Silicon NPN transistor epitaxial type CP899

### [ Applications ]

Industrial and consumer high speed switch required products  
Medium power amplifier

### [ Feature ]

Equivalent performance with MMBT2222A  
and still more can be used for MMBT2222

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

Characteristic	Symbol	Maximum ratings	Unit
Collector-base voltage	VCBO	75	V
Collector-emitter voltage	VCEO	40	V
Emitter-base voltage	VEBO	6	V
Collector current	IC	600	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	75	-	-	V	IC= 10uA, IE= 0A
Collector-emitter breakdown voltage	BVCEO	40	-	-	V	IC= 10mA, IB= 0A
Emitter-base breakdown voltage	BVEBO	6	-	-	V	IE= 10uA, IC= 0A
Collector cut-off current	ICEX	-	-	10	nA	VCE= 60V, VEB= 3V
Collector cut-off current	ICBO	-	-	10	nA	VCB= 60V
Emitter cut-off current	IEBO	-	-	100	nA	VEB= 3V
DC current gain 1	hFE 1	35	-	-	-	VCE= 10V, IC= 0.1mA
DC current gain 2	hFE 2	50	-	-	-	VCE= 10V, IC= 1mA
DC current gain 3	hFE 3	75	-	-	-	VCE= 10V, IC= 10mA
DC current gain 4	hFE 4	100	-	300	-	VCE= 10V, IC= 150mA
DC current gain 5	hFE 5	40	-	-	-	VCE= 10V, IC= 500mA
DC current gain 6	hFE 6	50	-	-	-	VCE= 1V, IC= 150mA
Collector-emitter saturation voltage 1	VCE(sat) 1	-	-	0.3	V	IC= 150mA, IB= 15mA
Collector-emitter saturation voltage 2	VCE(sat) 2	-	-	1	V	IC= 500mA, IB= 50mA
Base-emitter saturation voltage 1	VBE(sat) 1	0.6	-	1.2	V	IC= 150mA, IB= 15mA
Base-emitter saturation voltage 2	VBE(sat) 2	-	-	2	V	IC= 500mA, IB= 50mA
Transition frequency	f T	300	-	-	MHz	VCE= 20V, IE= -20mA
Collector output capacitance	Cob	-	-	8	pF	VCB= 10V, f = 1MHz, IE= 0A
Collector input capacitance	Cib	-	-	25	pF	VEB= 0.5V, f = 1MHz, IC= 0A
Delay time	td	-	-	10	ns	VCC= 30V, VEB= -0.5V
Rise time	tr	-	-	25	ns	IC= 150mA, IB= 15mA
Storage time	ts	-	-	225	ns	VCC= 30V, IC= 150mA
Fall time	tf	-	-	60	ns	IB1= -IB2= 15mA

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= 10V/ 1V, Ta= 25C

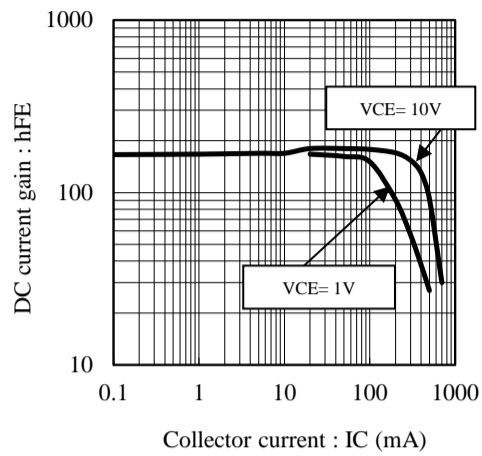


Fig.2 VCE(sat) - IC  
at IC/IB= 10, Ta= 25C

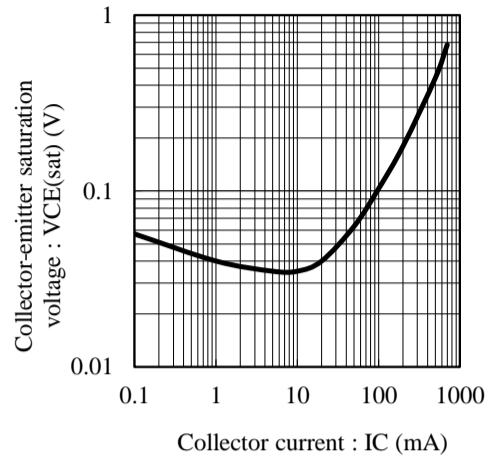


Fig.3 VBE(sat) - IC  
at IC/IB= 10, Ta= 25C

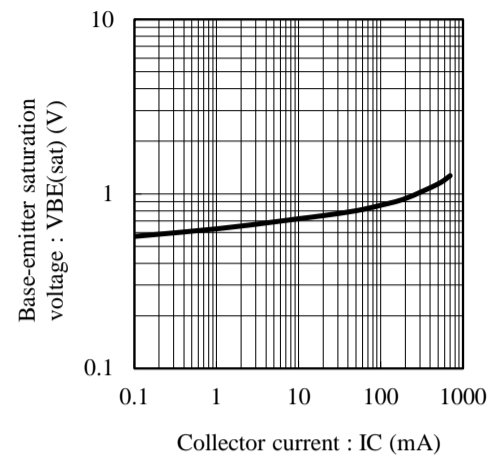


Fig.4 fT - IE  
at VCE= 20V, Ta= 25C

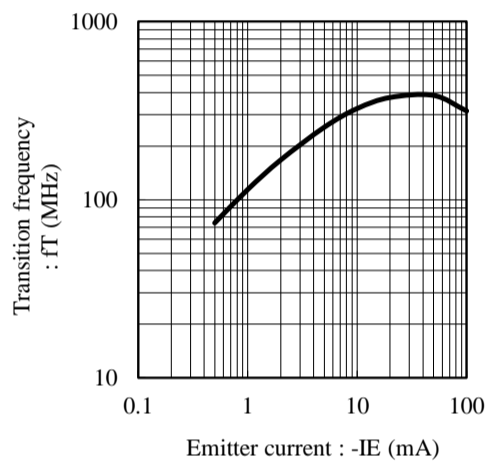


Fig.5 Cob - VCB  
at f= 1MHz, Ta= 25C

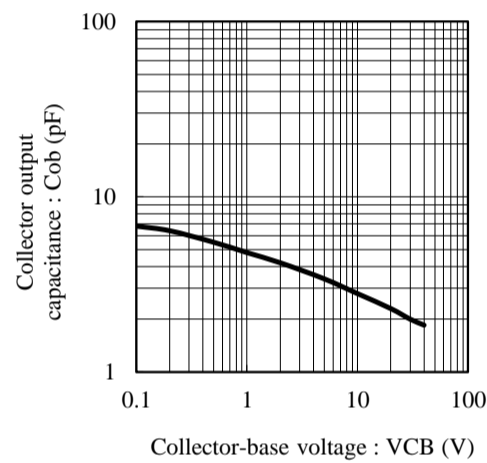


Fig.6 Cib - VEB  
at f= 1MHz, Ta= 25C

