Ordering number:EN1392A

PNP/NPN Epitaxial Planar Silicon Transistors

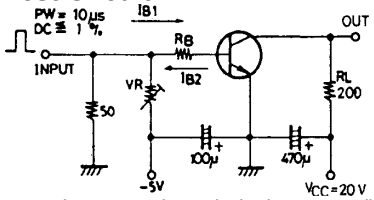
2SA1339/2SC3393

High-Speed Switching Applications

Features

- Very small-sized package permitting sets to be small-sized, slim.
- High breakdown voltage : V_{CEO}=(–)50V.
- Complementary pair transistor having large current capacity and high f_T.
- Adoption of FBET process.

Switching Time Test Circuit



(For PNP, the polarity is reversed)

Unit (resistance : Ω, capacitance : F)

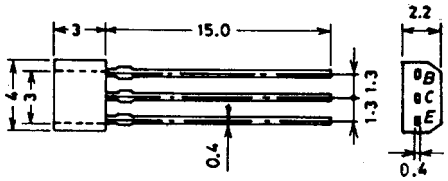
( ) : 2SA1339

Package Dimensions

unit:mm

2033

[2SA1339/2SC3393]



B : Base
C : Collector
E : Emitter

SANYO : SPA

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)60	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)500	mA
Collector Current (Pulse)	I_{CP}		(–)800	mA
Collector Dissipation	P_C		300	mW
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

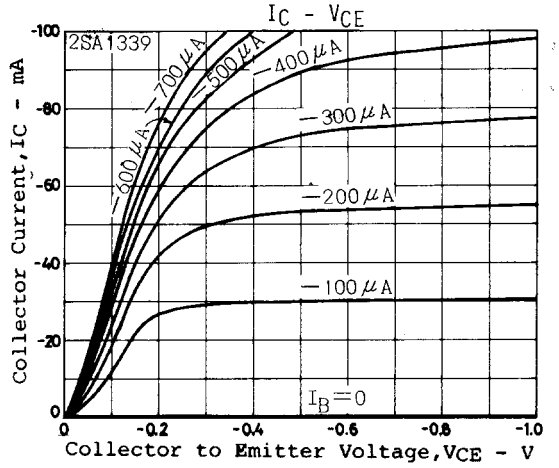
Electrical Characteristics at Ta = 25˚C

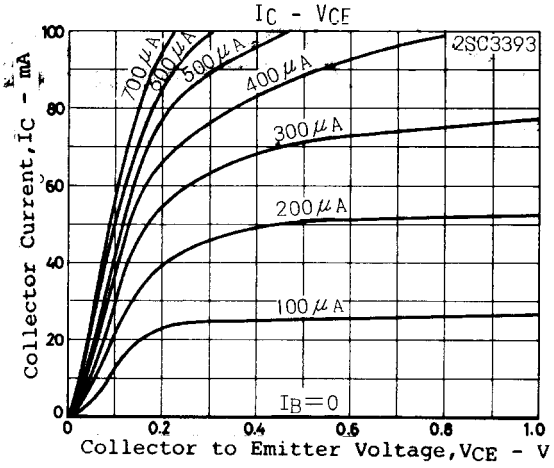
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)40V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)5V, I_C=(–)10mA	100*		560*	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		300 (200)		MHz
Common Base Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		3.7 (5.6)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)100mA, I_B=(–)10mA		0.1 (0.15)	0.3 (0.4)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)100mA, I_B=(–)10mA		0.8	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)100μA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=∞	(–)5			V
Turn-ON Time	t_{on}	V_{CC}=20V I_C=10I_{B1}=–10I_{B2}=100mA		70(70)		ns
Storage Time	t_{stg}			400 (400)		ns
Fall Time	t_f			70(50)		ns

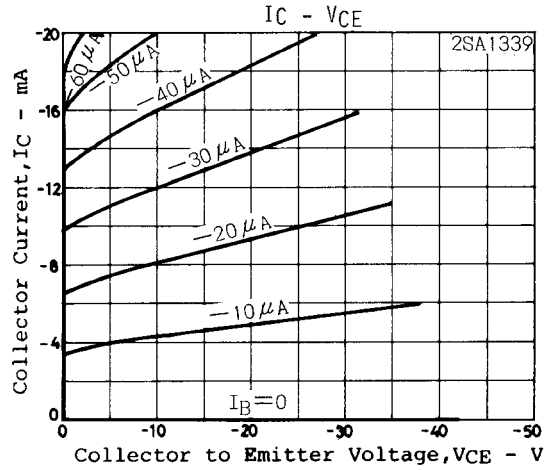
* : The 2SA1339/2SC3393 are classified by 10mA h_{FE} as follows :

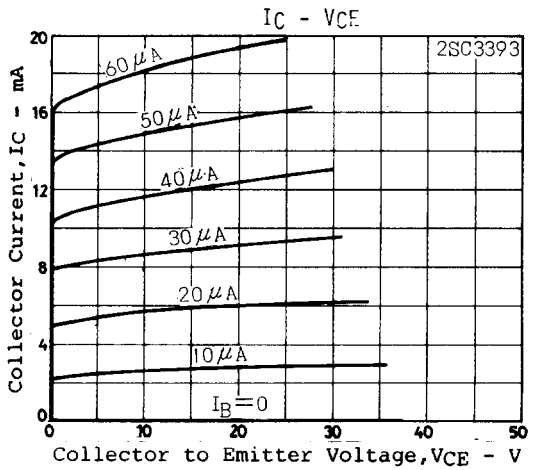
100	R	200	140	T	280	200	S	400	280	U	560

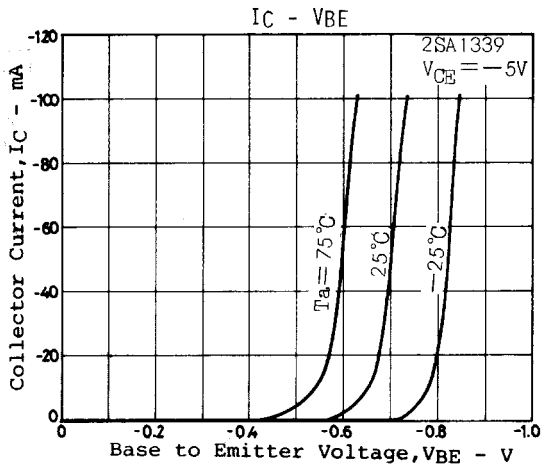
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

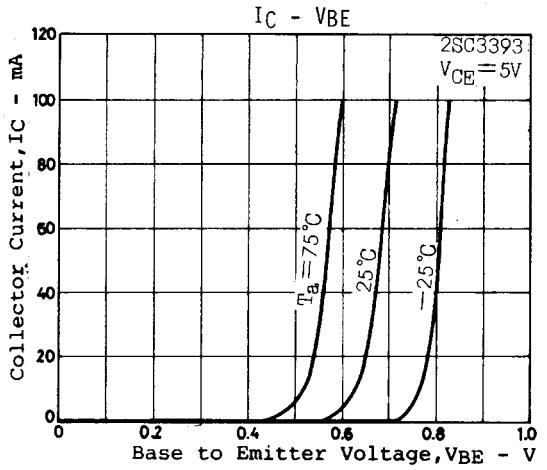

IC - VCE
2SA1339
−700μA
−600μA
−500μA
−400μA
−300μA
−200μA
−100μA
IB=0
Collector Current,IC - mA
Collector to Emitter Voltage,VCE - V

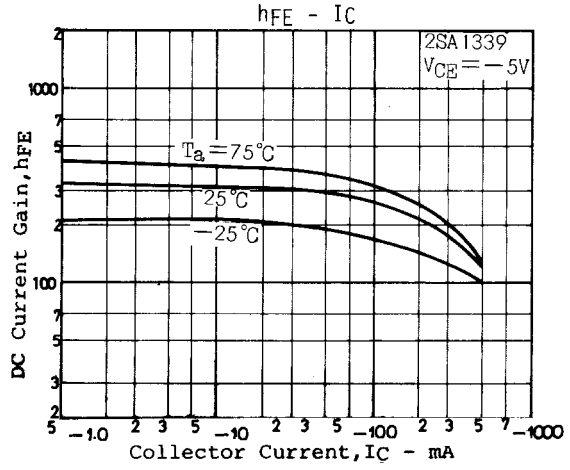

IC - VCE
2SC3393
700μA
600μA
500μA
400μA
300μA
200μA
100μA
IB=0
Collector Current,IC - mA
Collector to Emitter Voltage,VCE - V

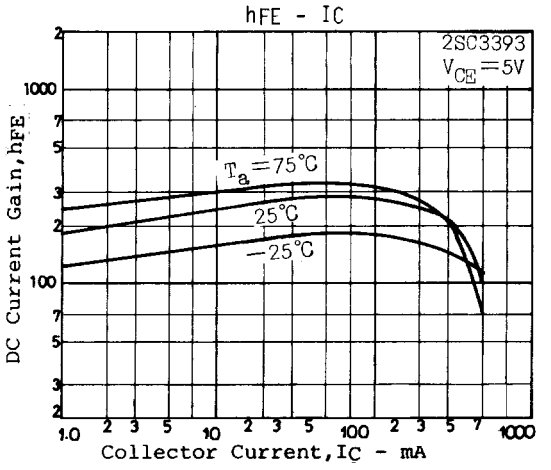

IC - VCE
2SA1339
−60μA
−50μA
−40μA
−30μA
−20μA
−10μA
IB=0
Collector Current,IC - mA
Collector to Emitter Voltage,VCE - V

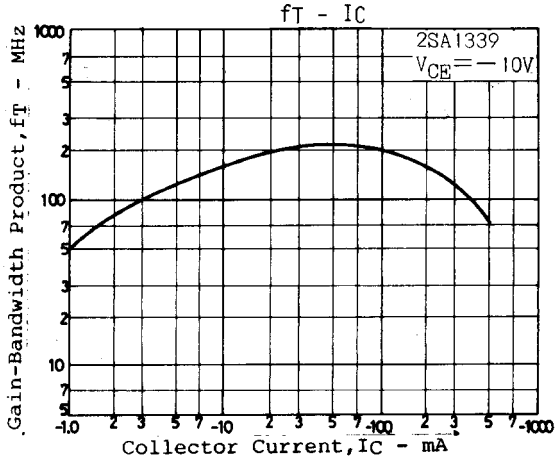

IC - VCE
2SC3393
60μA
50μA
40μA
30μA
20μA
10μA
IB=0
Collector Current,IC - mA
Collector to Emitter Voltage,VCE - V

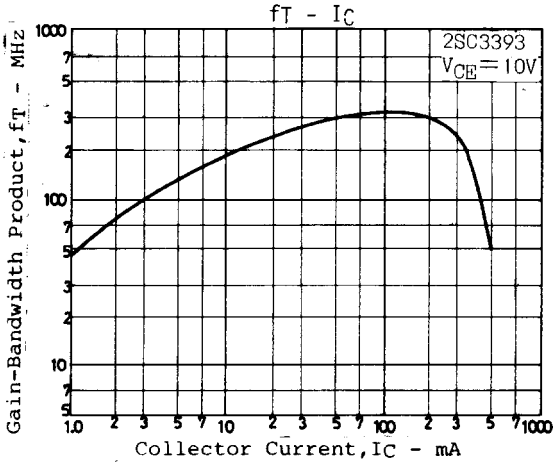

IC - VBE
2SA1339
VCE=−5V
Ta=75°C
25°C
−25°C
Collector Current,IC - mA
Base to Emitter Voltage,VBE - V

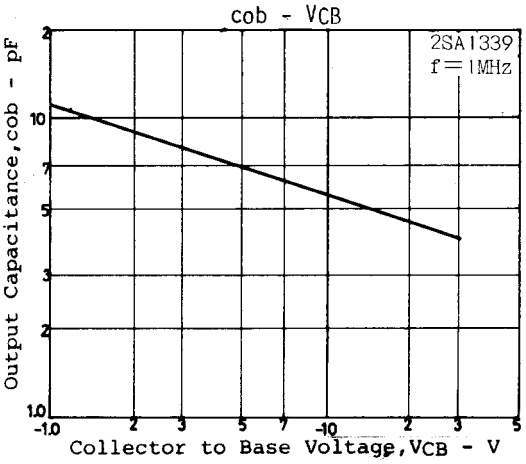

IC - VBE
2SC3393
VCE=5V
Ta=75°C
25°C
−25°C
Collector Current,IC - mA
Base to Emitter Voltage,VBE - V

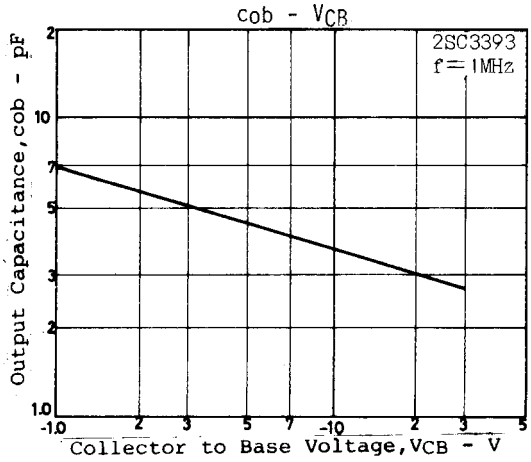

hFE - IC
2SA1339
VCE=−5V
Ta=75°C
25°C
−25°C
DC Current Gain,hFE
Collector Current,IC - mA

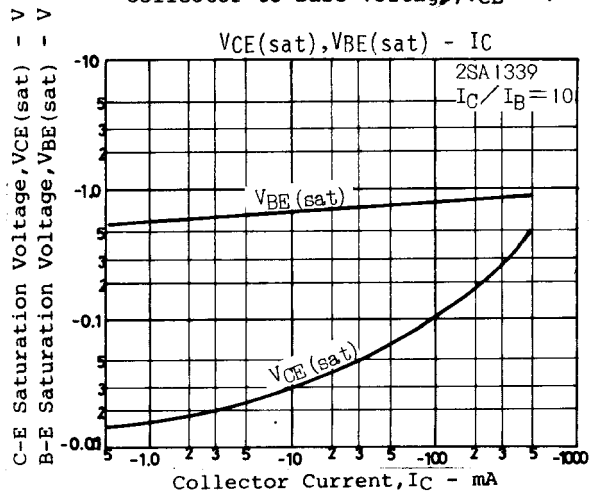

hFE - IC
2SC3393
VCE=5V
Ta=75°C
25°C
−25°C
DC Current Gain,hFE
Collector Current,IC - mA

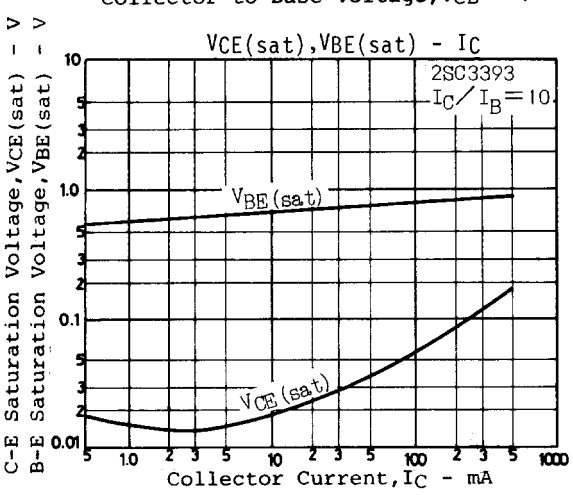

fT - IC
2SA1339
VCE=−10V
Gain-Bandwidth Product,fT - MHz
Collector Current,IC - mA

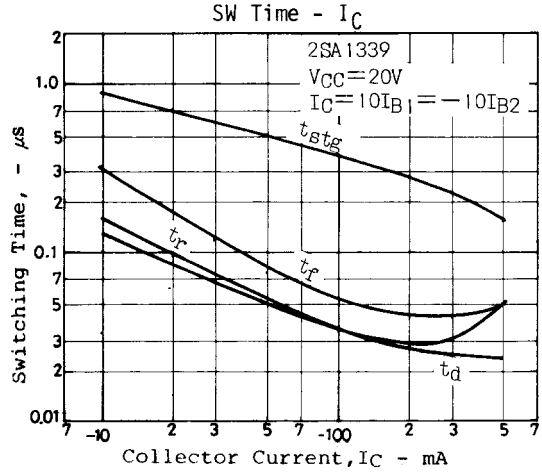

fT - IC
2SC3393
VCE=10V
Gain-Bandwidth Product,fT - MHz
Collector Current,IC - mA

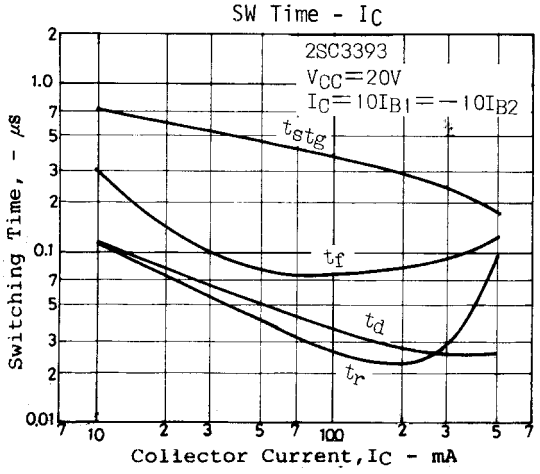

cob - VCB
2SA1339
f=1MHz
Output Capacitance,cob - pF
Collector to Base Voltage,VCB - V


cob - VCB
2SC3393
f=1MHz
Output Capacitance,cob - pF
Collector to Base Voltage,VCB - V


VCE(sat),VBE(sat) - IC
2SA1339
IC/IB=10
VBE(sat)
VCE(sat)
C-E Saturation Voltage,VCE(sat) - V
B-E Saturation Voltage,VBE(sat) - V
Collector Current,IC - mA


VCE(sat),VBE(sat) - IC
2SC3393
IC/IB=10
VBE(sat)
VCE(sat)
C-E Saturation Voltage,VCE(sat) - V
B-E Saturation Voltage,VBE(sat) - V
Collector Current,IC - mA


SW Time - IC
2SA1339
VCC=20V
IC=10IB1=−10IB2
tstg
tr
tf
td
Switching Time, - μs
Collector Current,IC - mA


SW Time - IC
2SC3393
VCC=20V
IC=10IB1=−10IB2
tstg
tf
td
tr
Switching Time, - μs
Collector Current,IC - mA