



SANYO Semiconductors

DATA SHEET

2SA1339 / 2SC3393 — High-Speed Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistors

Features

- Ultrasmall-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.

Specifications () : 2SA1339

Absolute Maximum Ratings at $T_a=25^\circ C$

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	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Electrical Characteristics at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)40V, I_E=0A$			(-)0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0A$			(-)0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=(-)5V, I_C=(-)10mA$	140*		400*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$		(200)300		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(5.6)3.7		pF

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

Continued on next page.

Rank	S	T
h_{FE}	140 to 280	200 to 400

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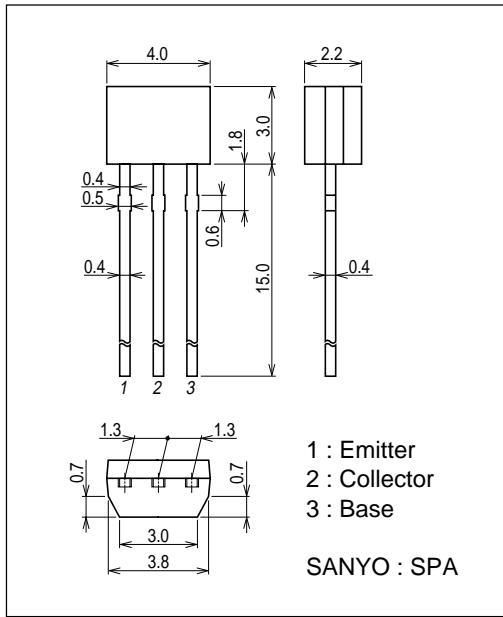
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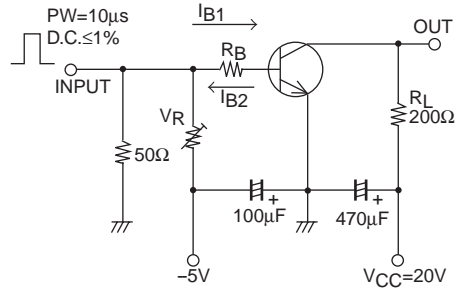
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		(-0.15)0.1	(-0.4)0.3	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		(-0.8)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)100\mu A, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=\infty$	(-)5			V
Turn-On Time	t_{on}	$V_{CC}=20V, I_C=10I_{B1}=-10I_{B2}=100mA$		70		ns
Storage Time	t_{stg}	$V_{CC}=20V, I_C=10I_{B1}=-10I_{B2}=100mA$		400		ns
Fall Time	t_f	$V_{CC}=20V, I_C=10I_{B1}=-10I_{B2}=100mA$		(50)70		ns

Package Dimensions

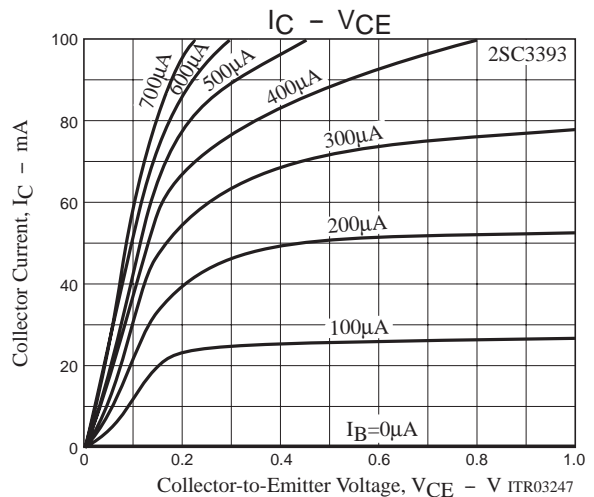
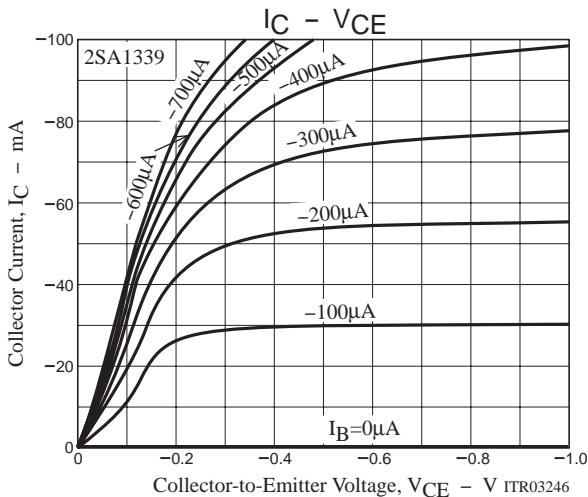
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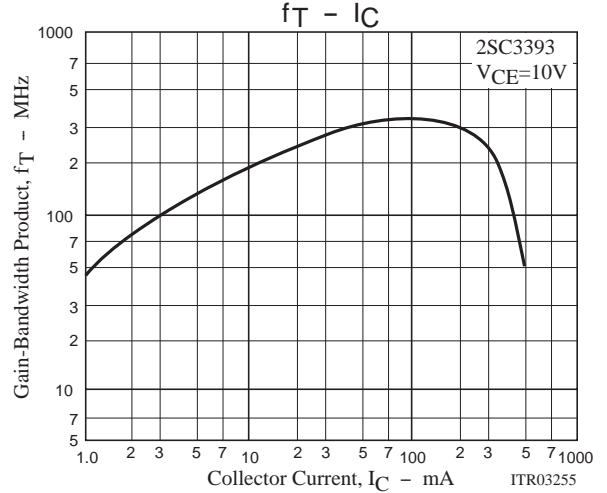
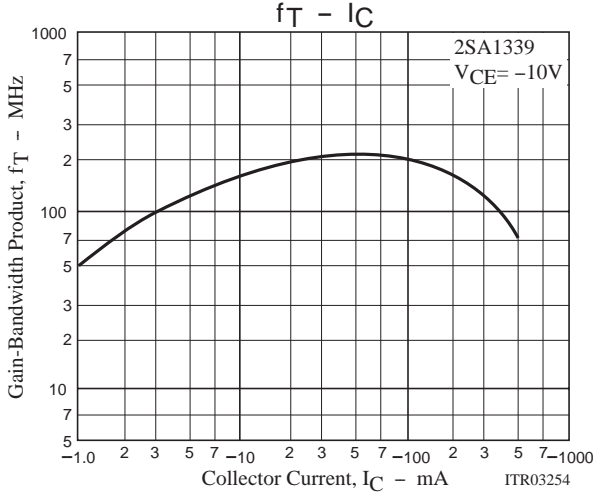
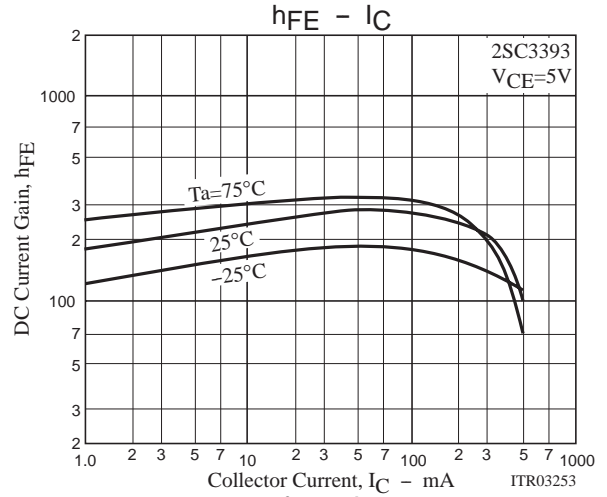
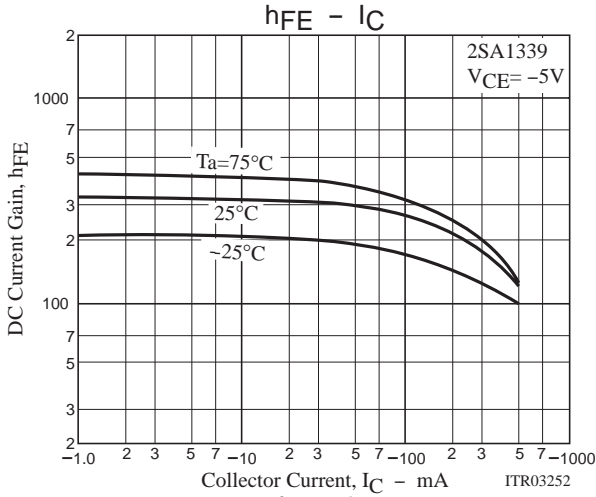
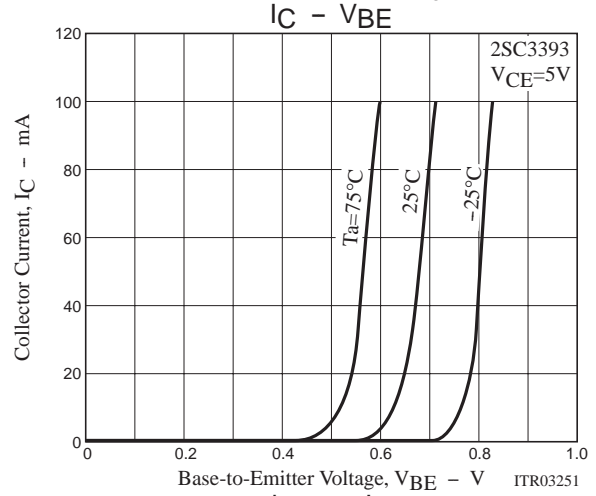
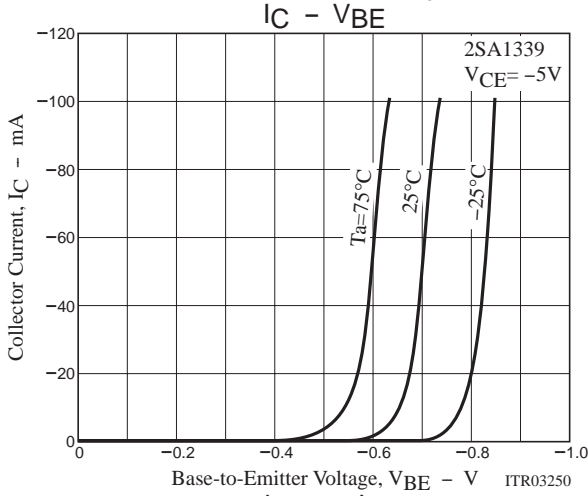
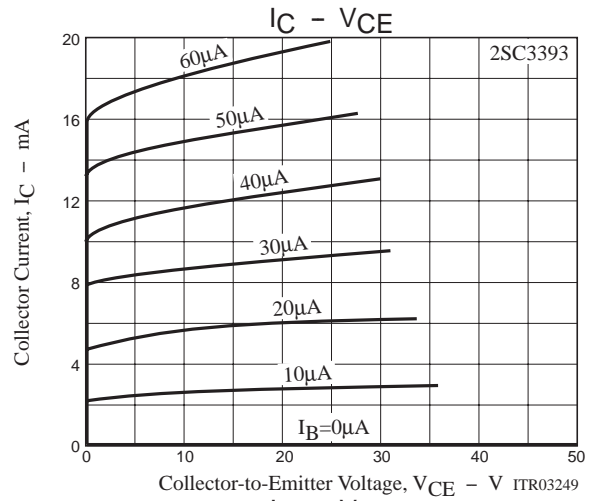
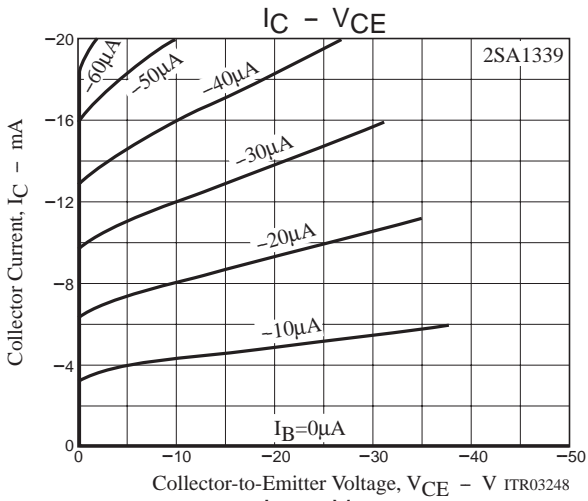
Switching Time Test Circuit



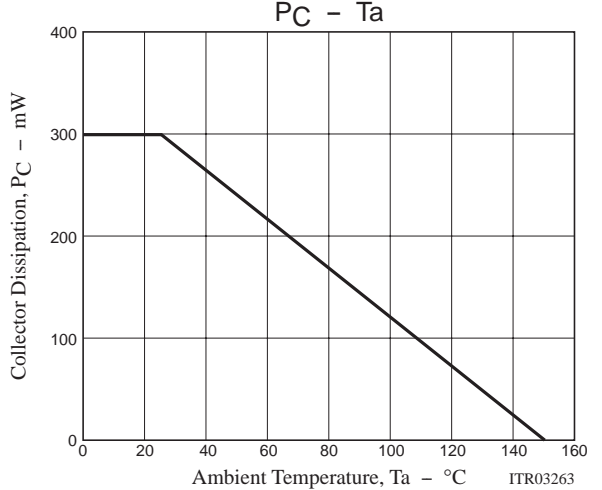
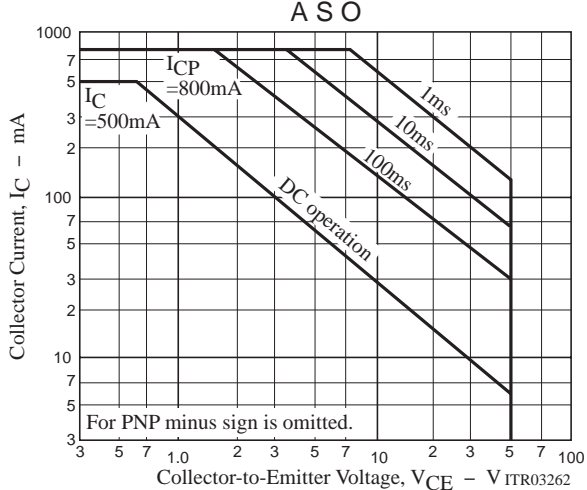
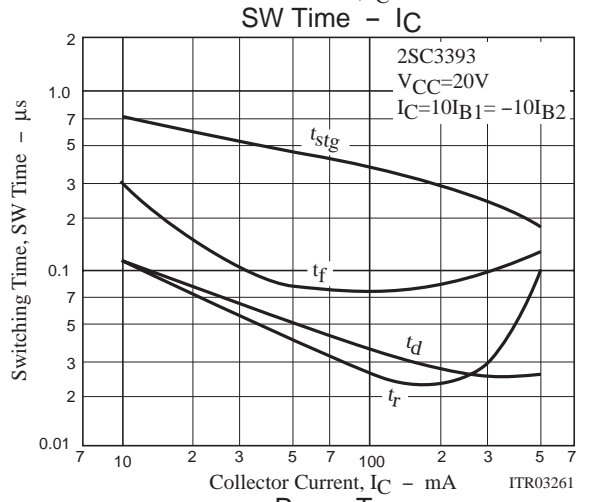
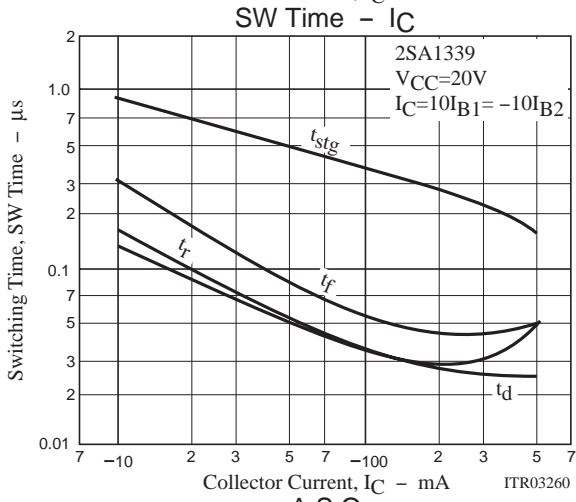
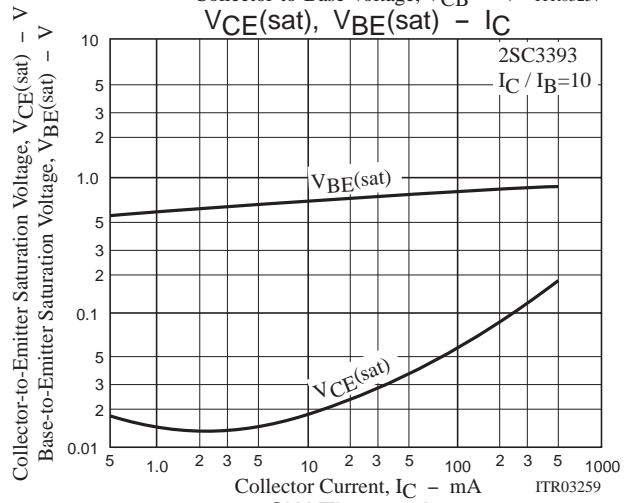
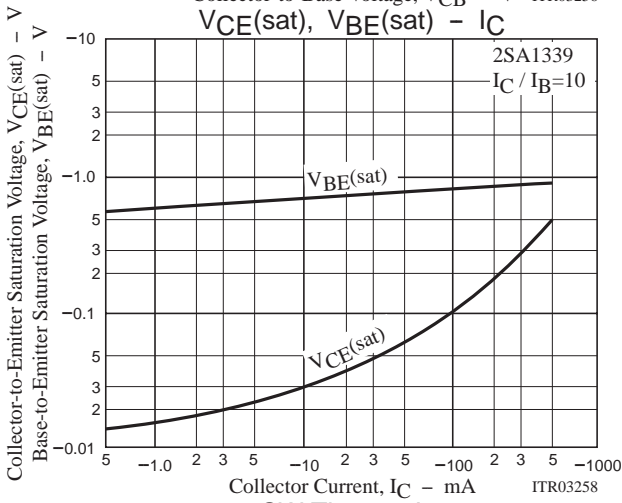
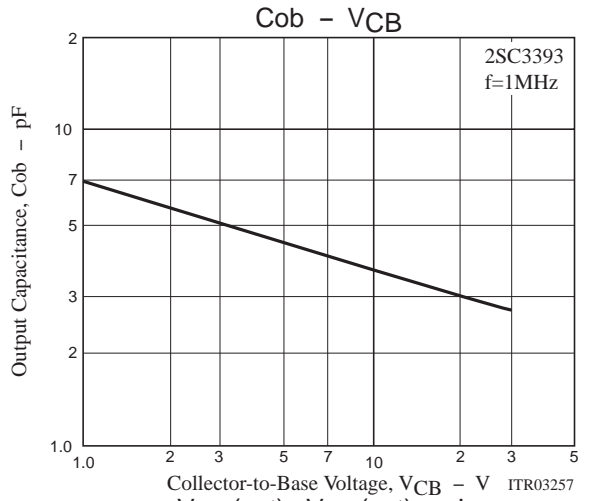
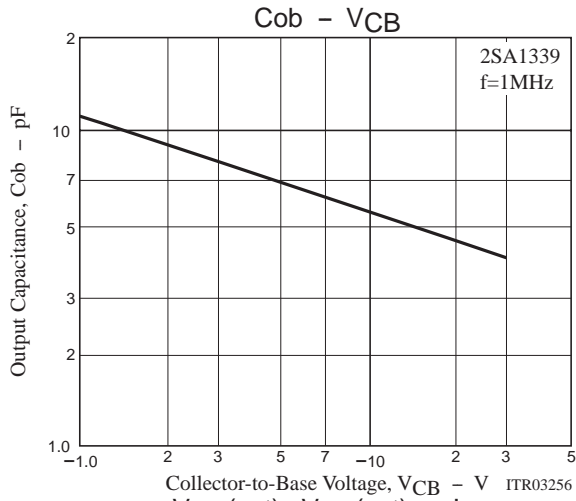
For PNP, the polarity is reversed.



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