



## 2SA1338/2SC3392

### High-Speed Switching Applications

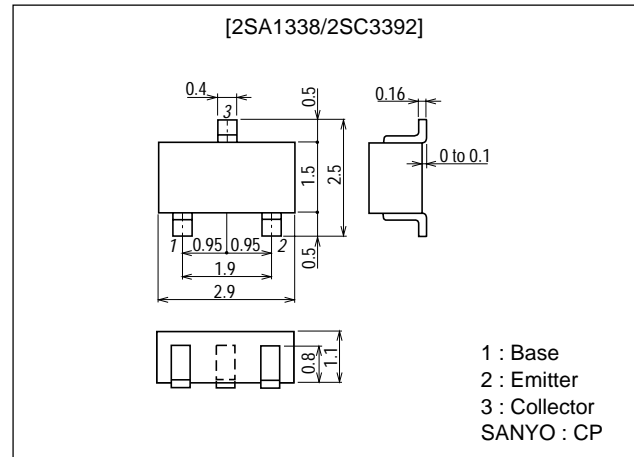
#### Features

- Adoption of FBET process.
- High breakdown voltage :  $V_{CEO}=(-)50V$ .
- Large current capacity and high  $f_T$ .
- Ultrasmall-sized package permitting sets to be small-sized, slim.

#### Package Dimensions

unit:mm

2018B



() : 2SA1338

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)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	$P_C$		200	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	$I_{CBO}$	$V_{CB}=(-)40V, I_E=0$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)5V, I_C=(-)10mA$	100*		560*	

\* : The 2SA1338/2SC3392 are classified by 10mA  $h_{FE}$  as follows :

Continued on next page.

2SA1338

2SC3392

Rank	4	5	6	7
$h_{FE}$	100 to 200	140 to 280	200 to 400	280 to 560

Note : 2SA1338 Marking : AL, 2SC3392 Marking : AY

 $h_{FE}$  rank : 4, 5, 6, 7

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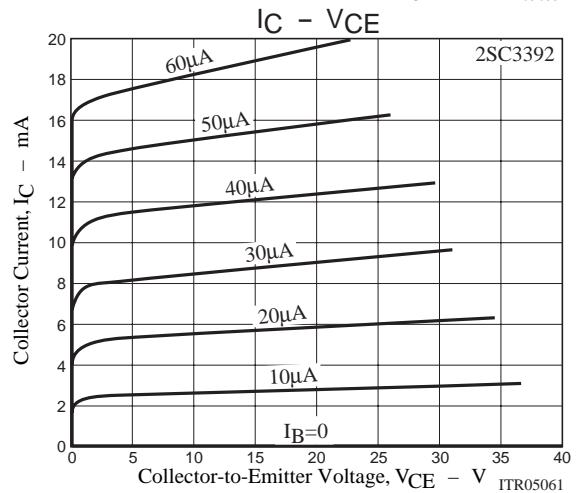
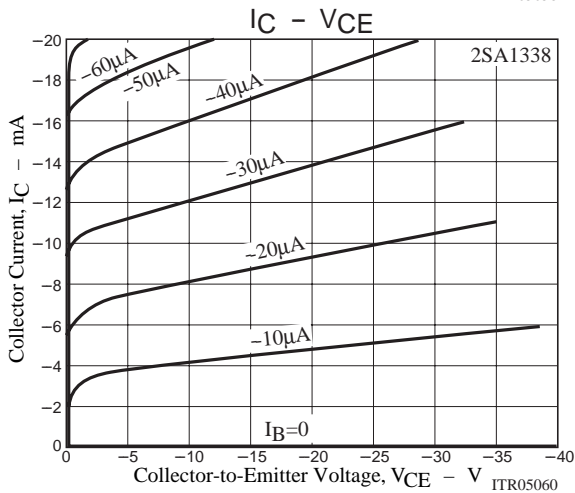
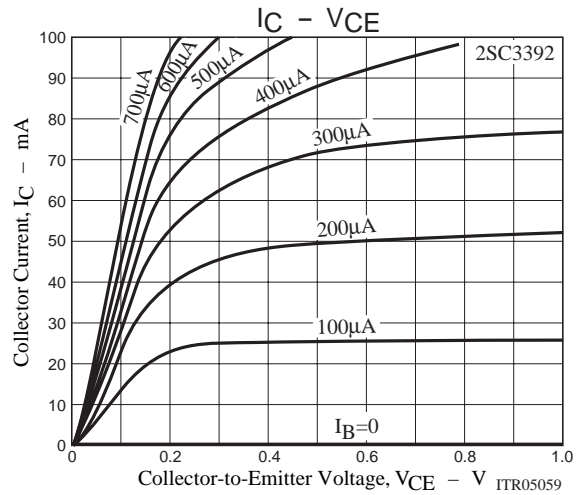
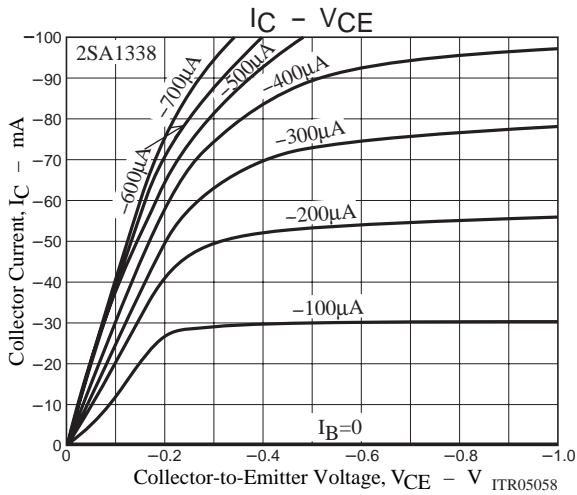
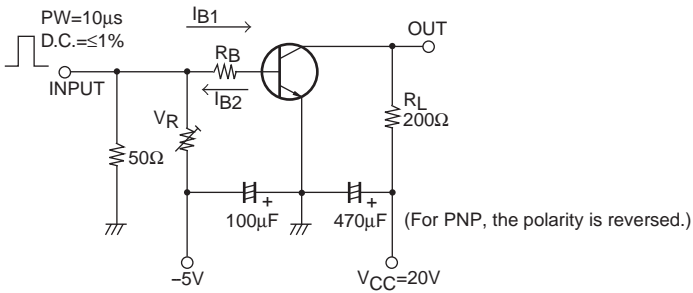
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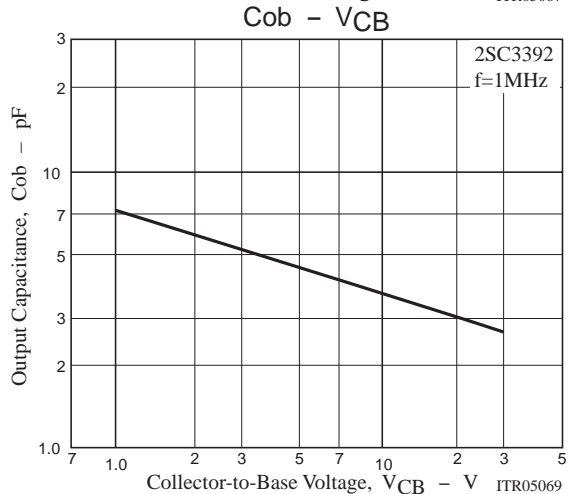
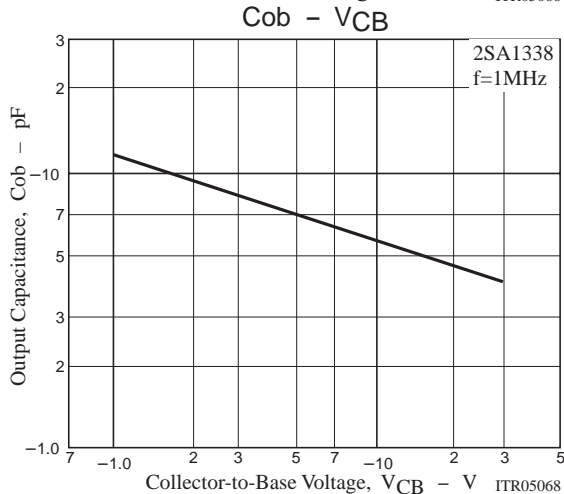
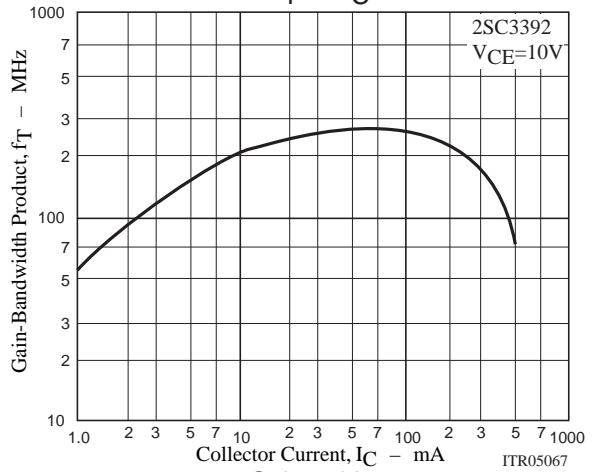
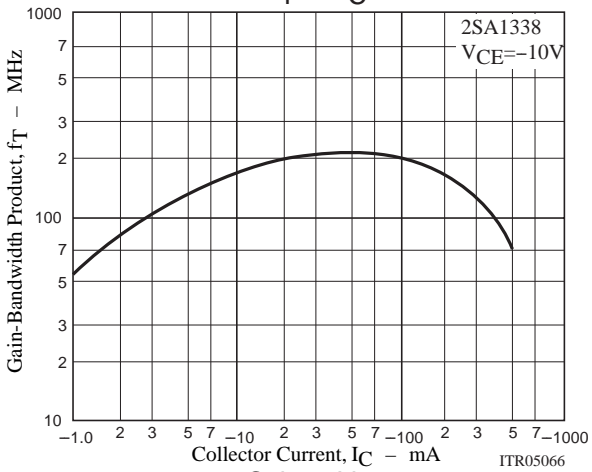
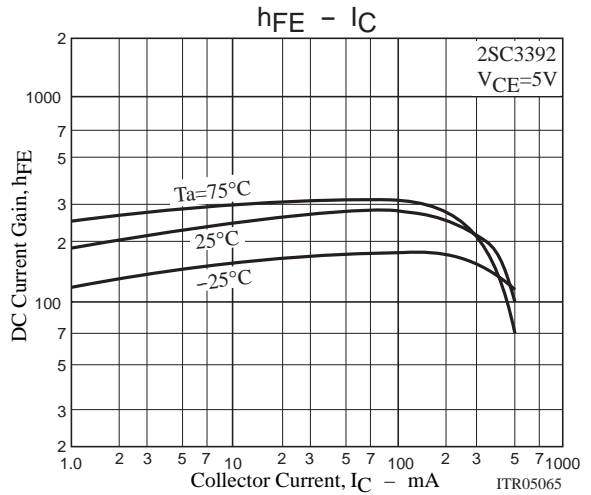
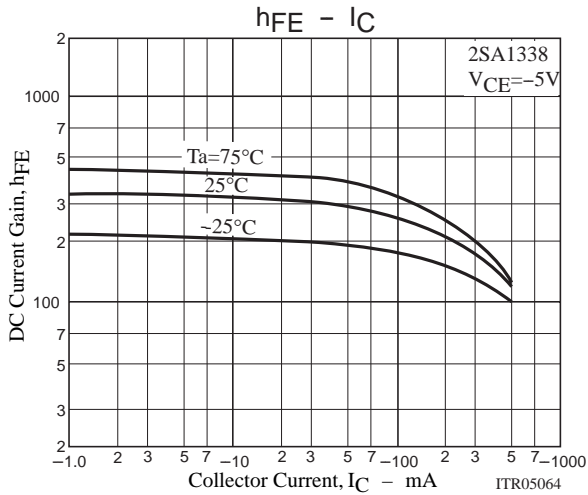
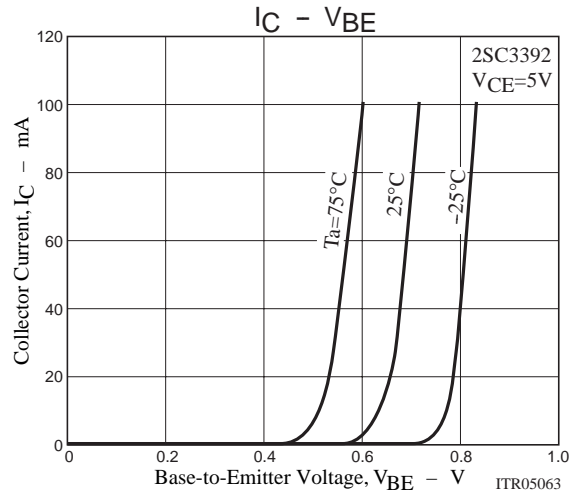
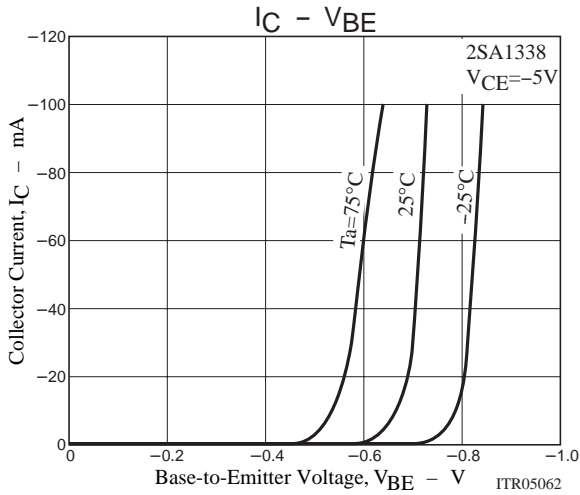
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)50mA$		300 (200)		MHz
Common Base Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		3.7 (5.6)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		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	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)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	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Turn-ON Time	$t_{on}$			70(70)		ns
Storage Time	$t_{stg}$	$V_{CC}=20V$ $I_C=10I_{B1}=-10I_{B2}=100mA$		400 (400)		ns
Fall Time	$t_f$			70(50)		ns

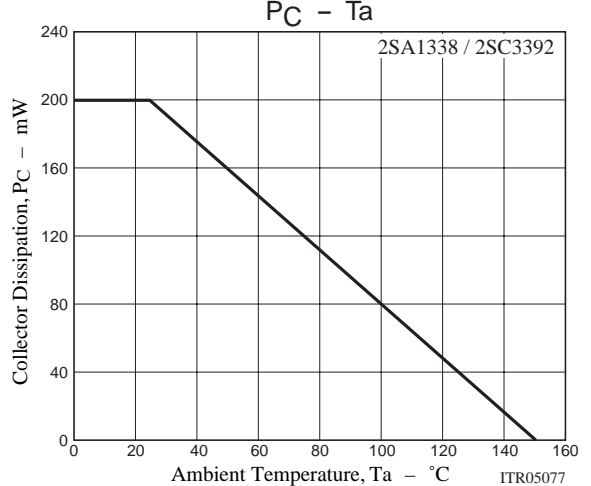
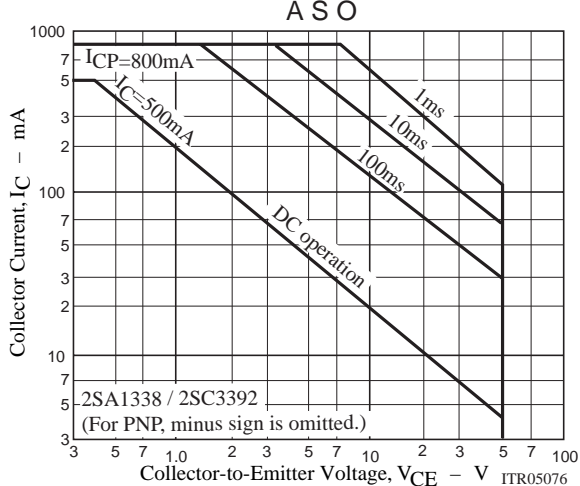
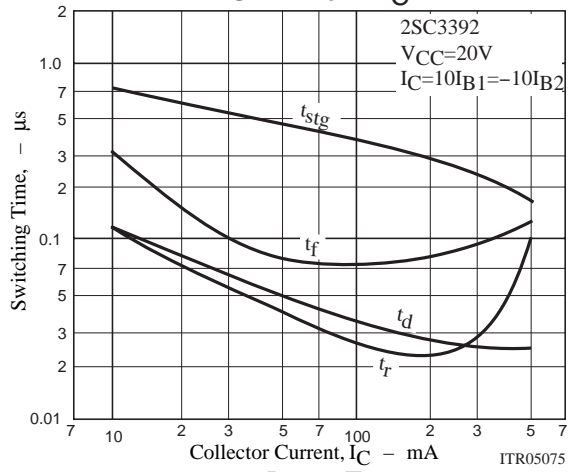
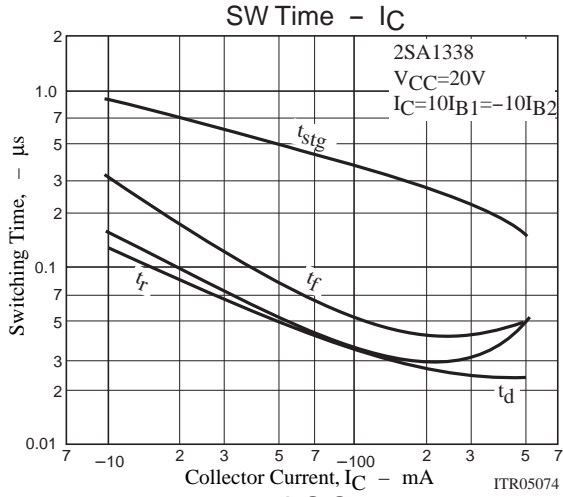
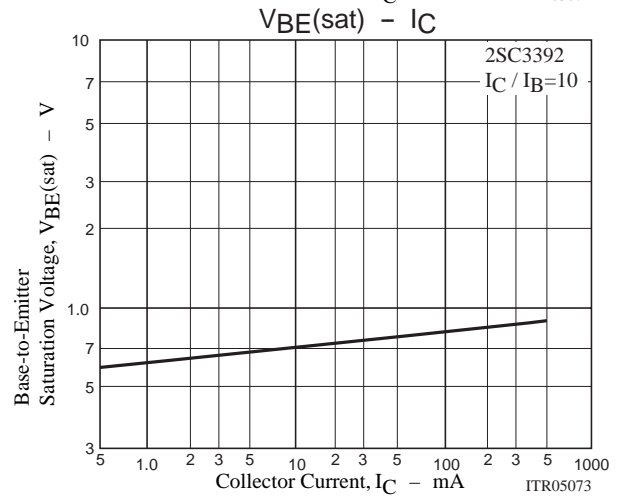
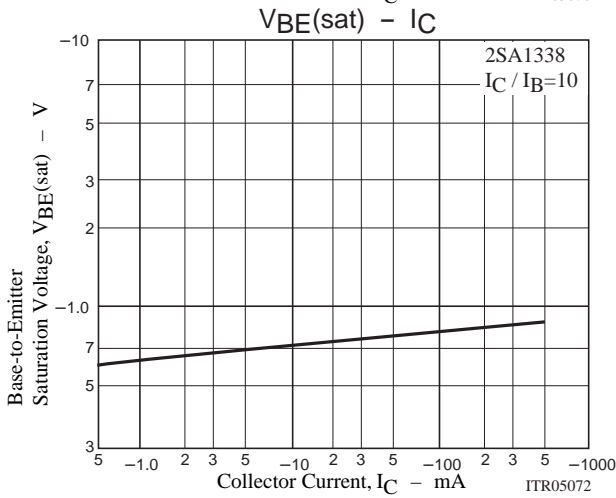
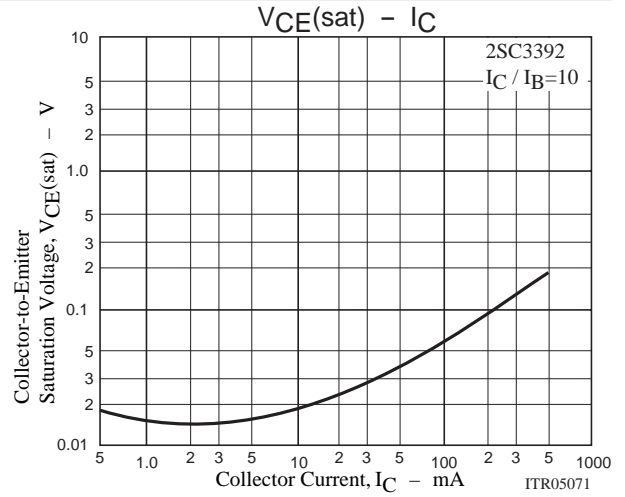
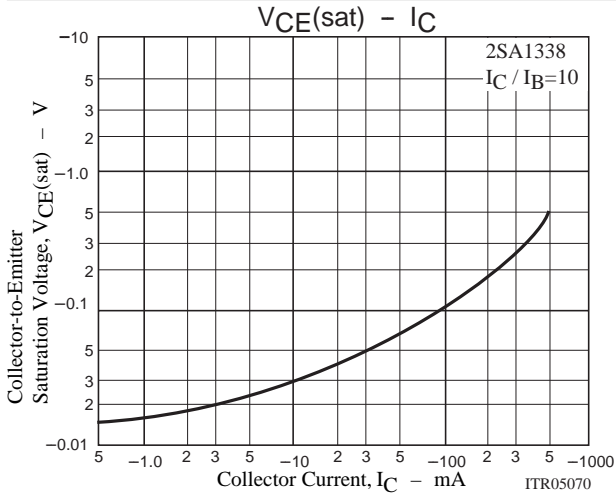
## Switching Time Test Circuit



# 2SA1338/2SC3392



# 2SA1338/2SC3392



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