



# 2SA1973/2SC5310

## DC/DC Converter Applications

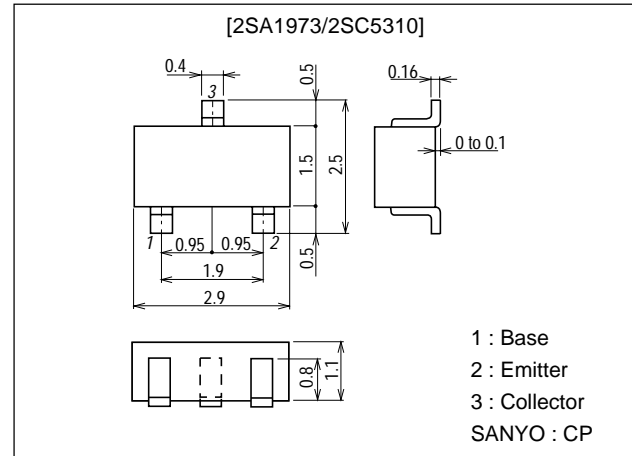
### Features

- Adoption of FBET, MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products.

### Package Dimensions

unit:mm

2018B



### Specifications

() : 2SA1973

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)30	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)25	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)1	A
Collector Current (Pulse)	$I_{CP}$		(-)3	A
Base Current	$I_B$		(-)200	mA
Collector Dissipation	$P_C$	Mounted on a glass-epoxy board (20×30×1.6mm)	250	mW
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)20\text{V}, I_E=0$			(-)0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)3\text{V}, I_C=0$			(-)0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2\text{V}, I_C=(-)100\text{mA}$	135*		400*	

\* : The 2SA1973/2SC5310 are classified by 100mA  $h_{FE}$  as follows :

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Rank	5	6
$h_{FE}$	135 to 270	200 to 400

Marking : 2SA1973 : NS  
2SC5310 : NN

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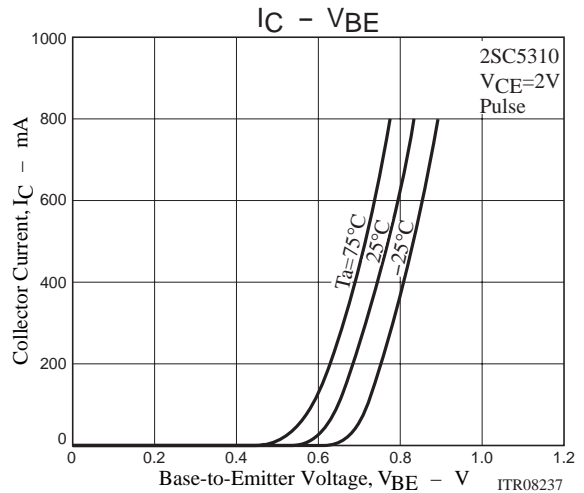
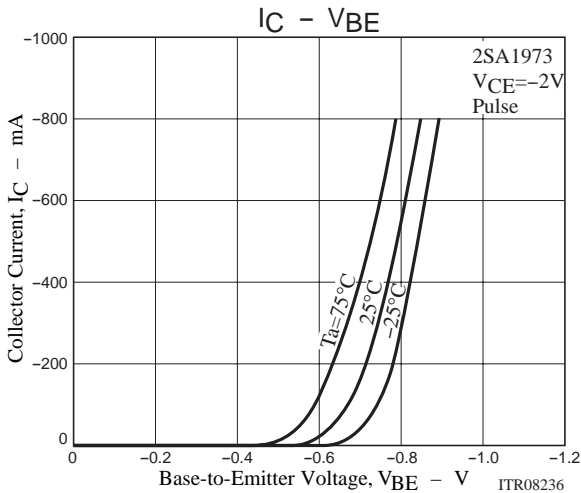
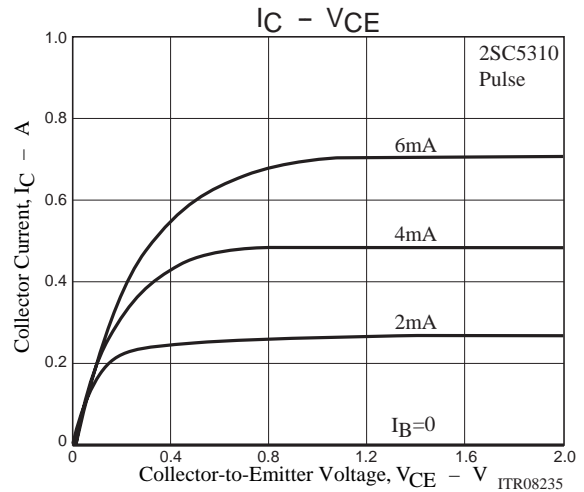
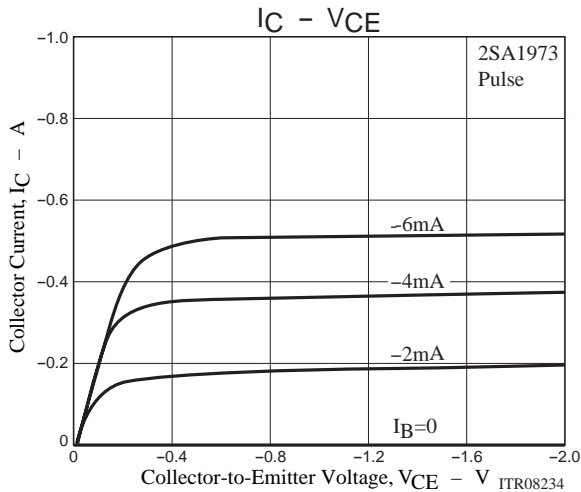
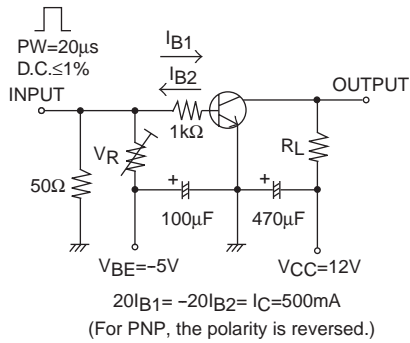
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# 2SA1973/2SC5310

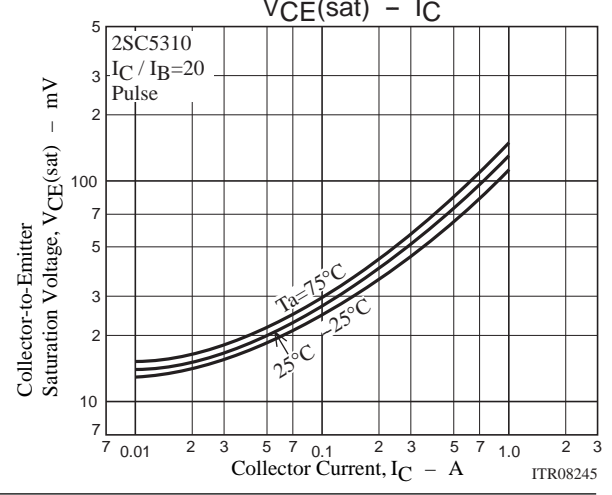
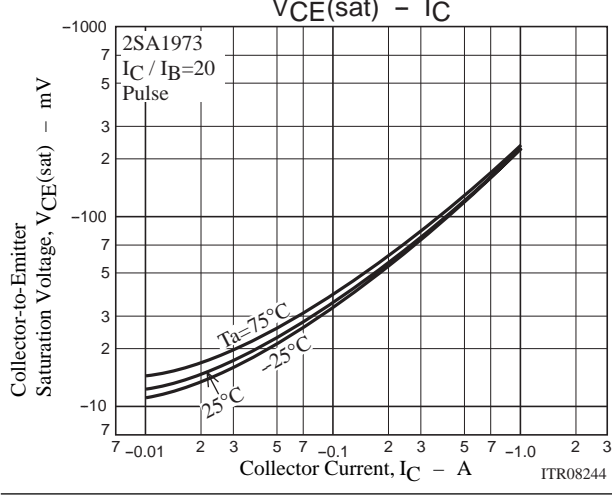
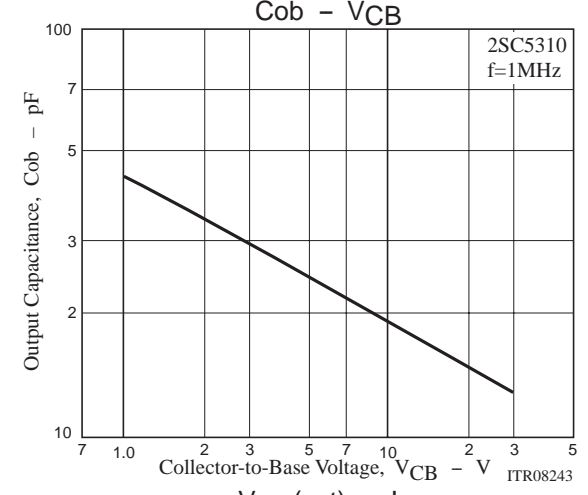
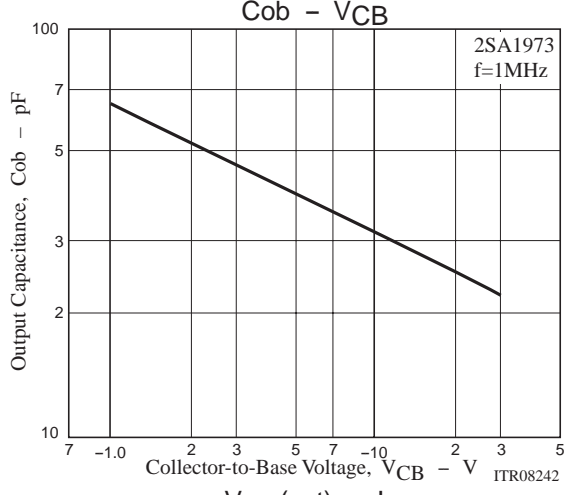
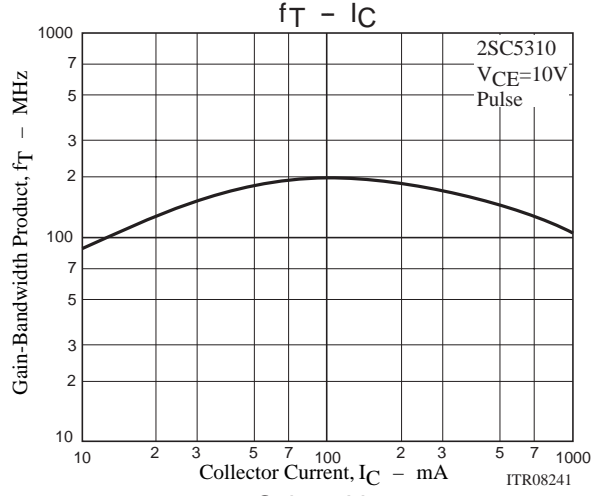
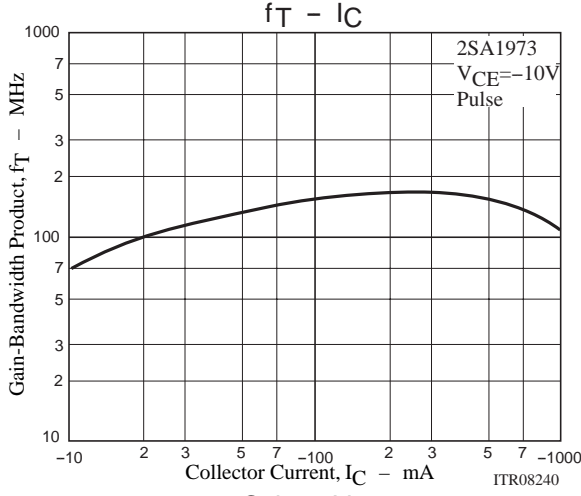
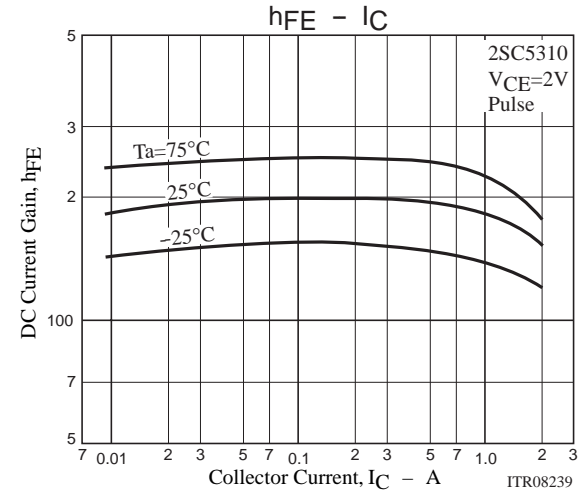
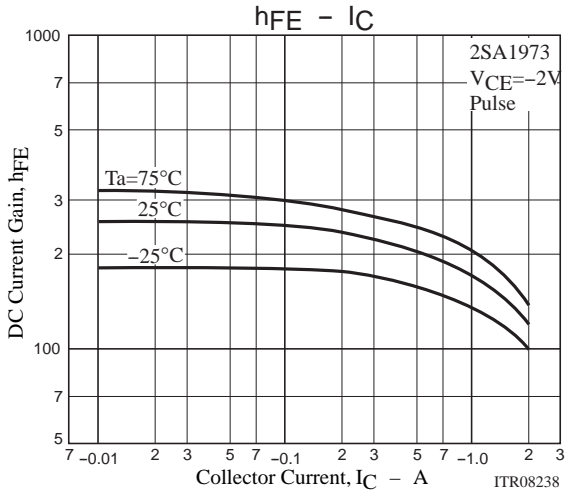
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)50mA$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(32)19		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)500mA, I_B=(-)25mA$		(-150)	(-300)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)25mA$		100	200	mV
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-30)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-25)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		(60)60		ns
Storage Time	$t_{stg}$	See specified Test Circuit		(350)		ns
Fall Time	$t_f$	See specified Test Circuit		500		ns
				(25)25		ns

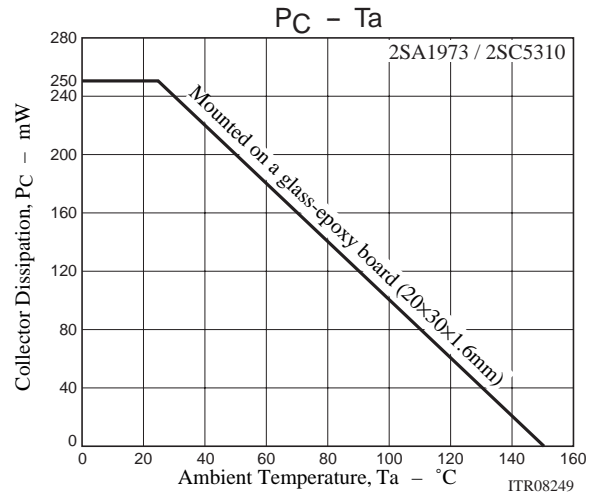
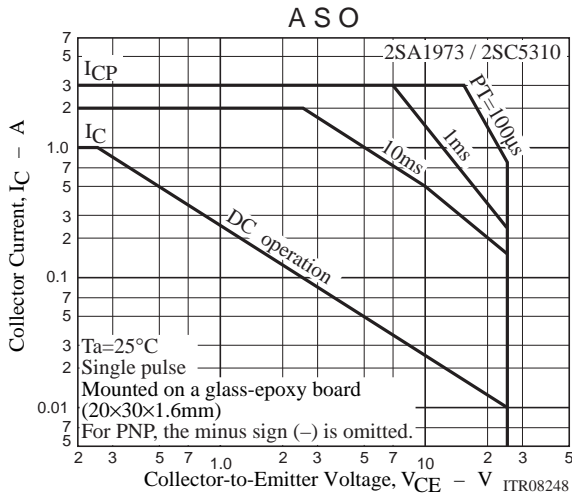
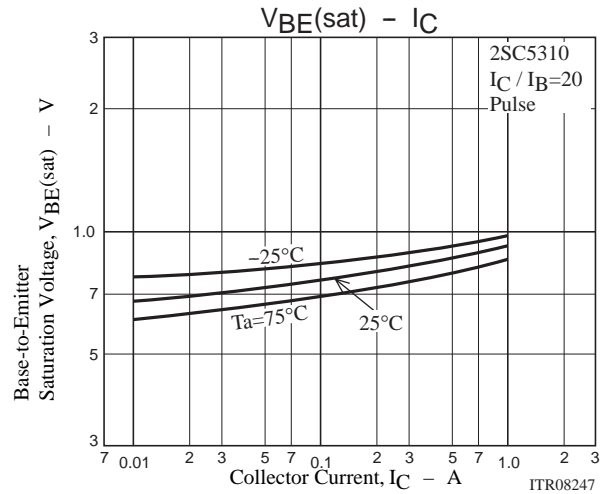
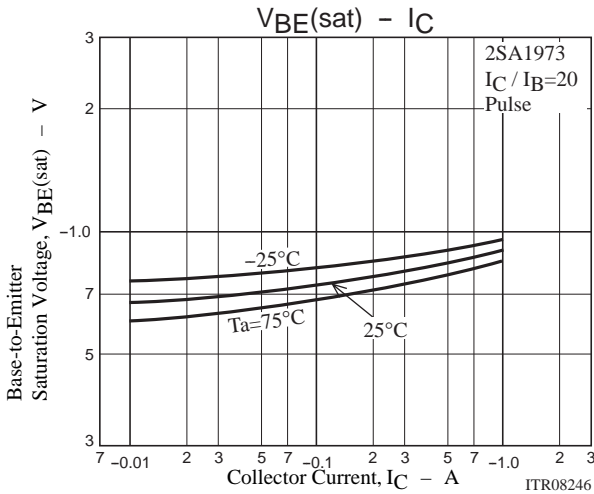
## Switching Time Test Circuit



# 2SA1973/2SC5310



## 2SA1973/2SC5310



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