



2SA1973/2SC5310

DC/DC Converter Applications

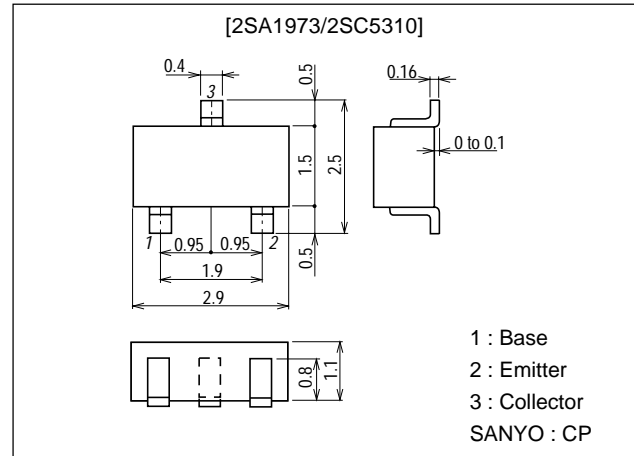
Features

- 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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)3\text{V}, I_C=0$			(-) 0.1	μA
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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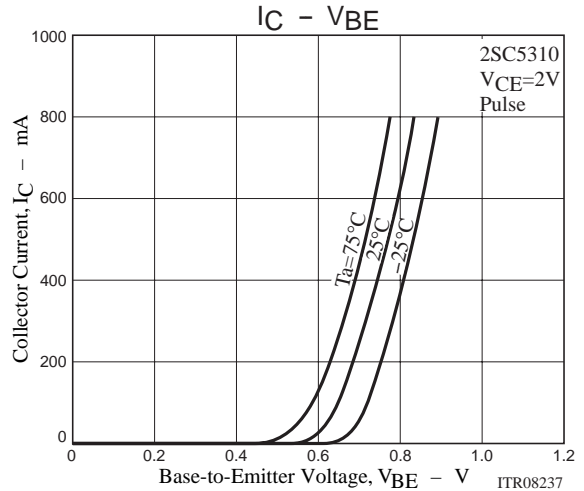
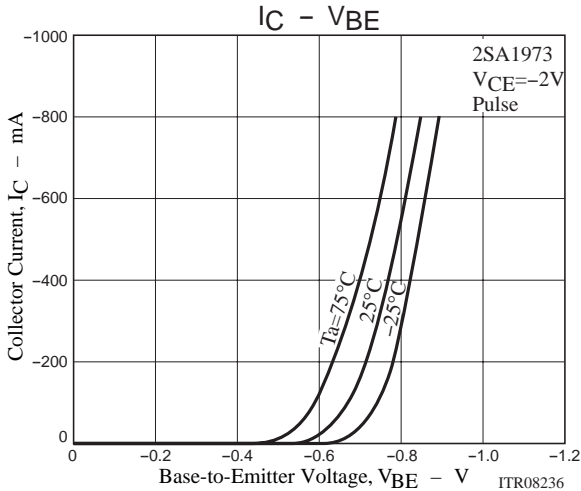
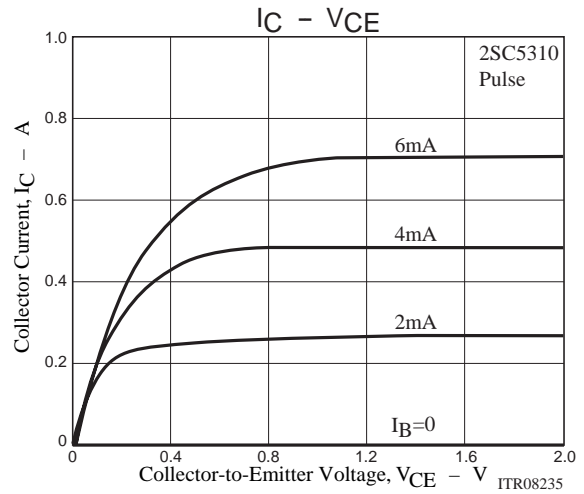
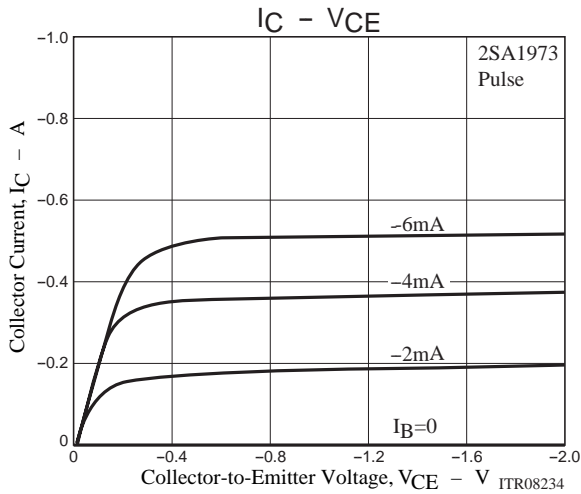
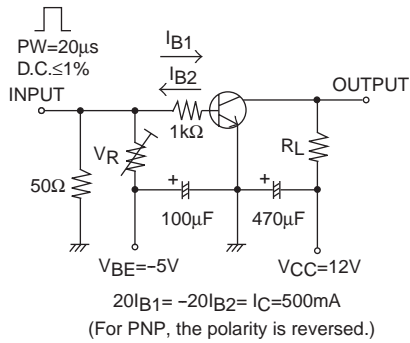
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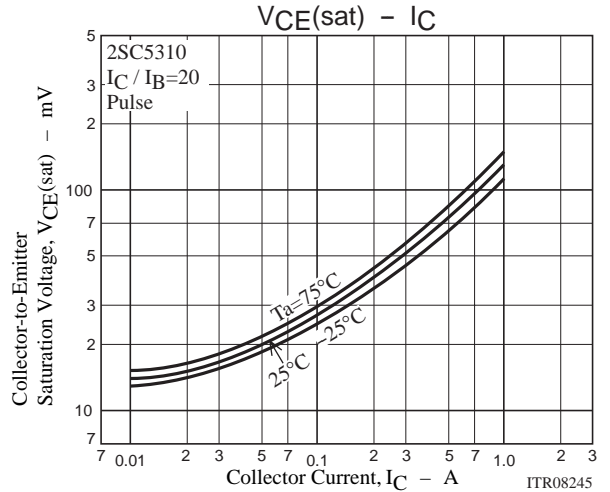
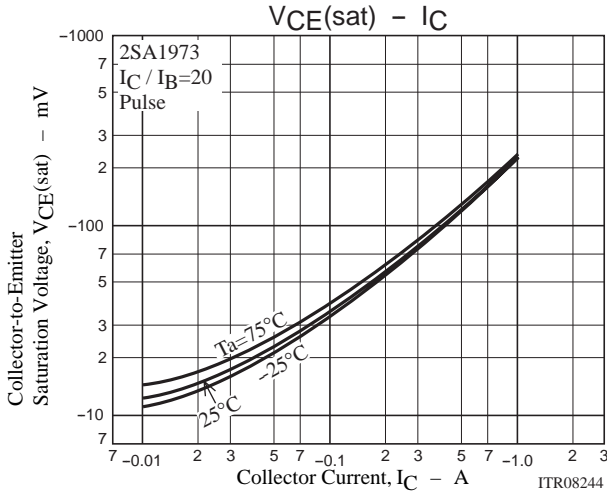
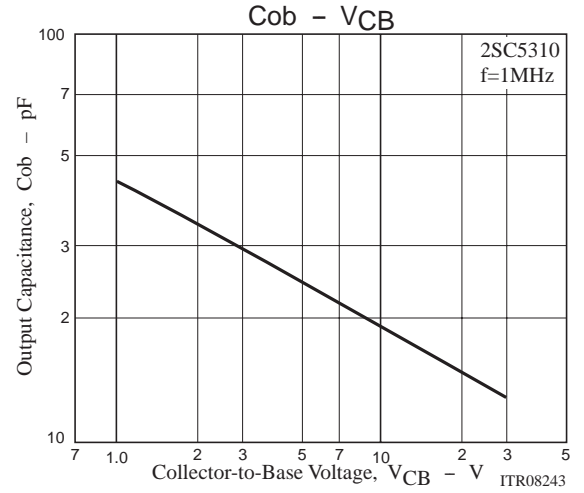
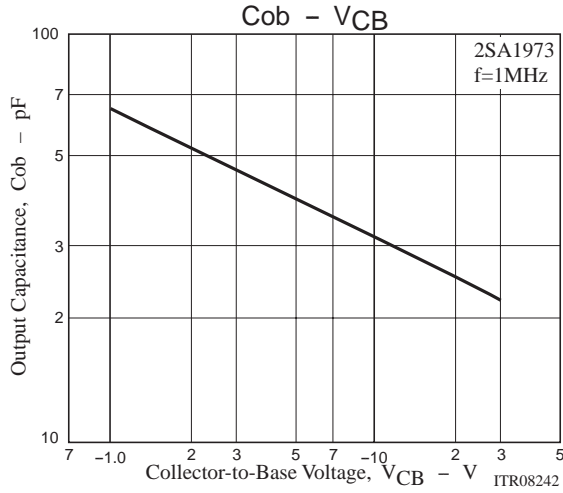
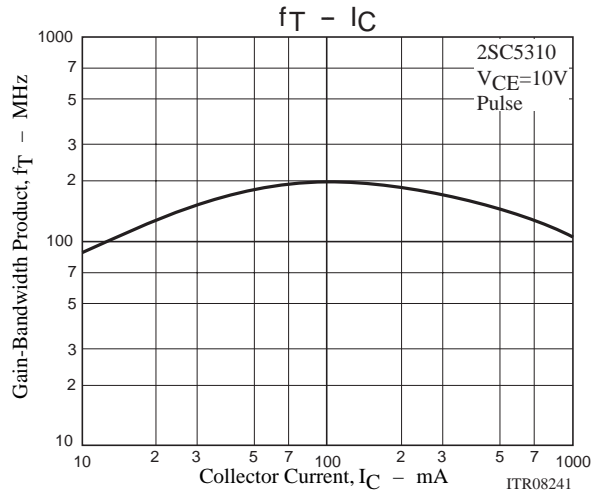
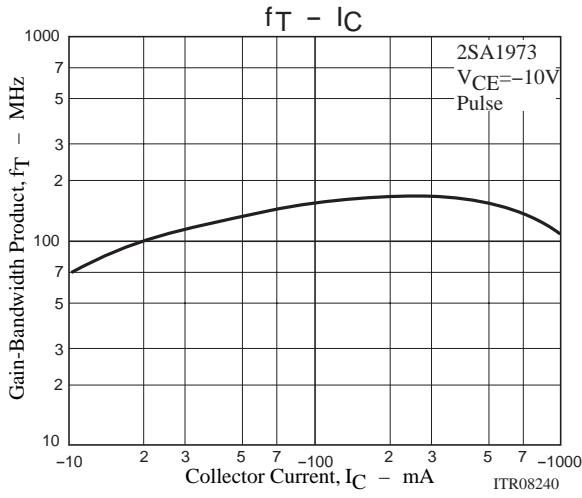
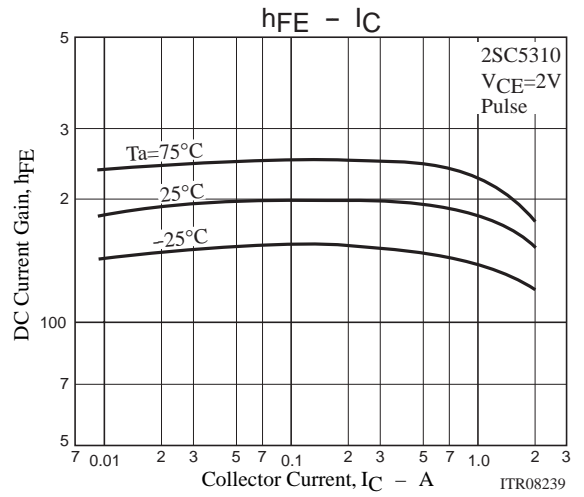
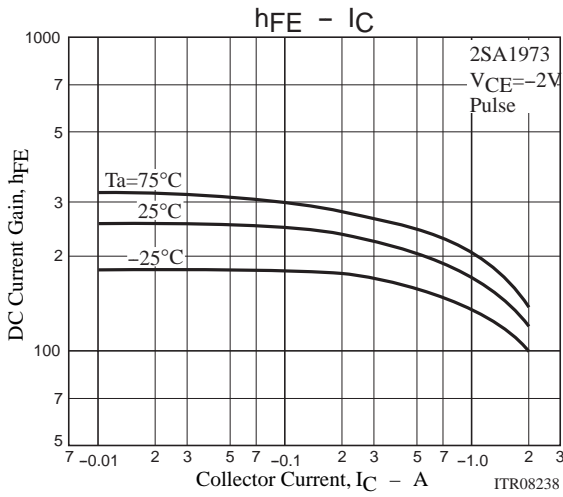
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$		150		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(32)19		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)500mA, I_B=(-)25mA$		(-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

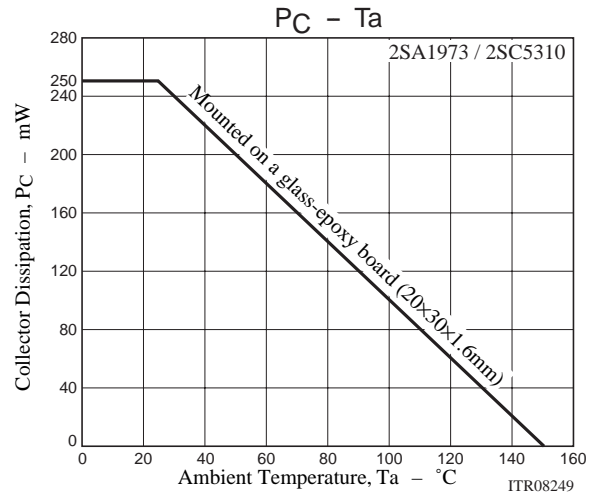
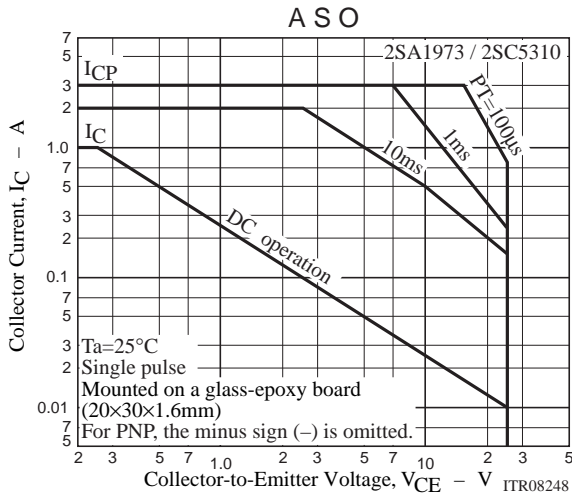
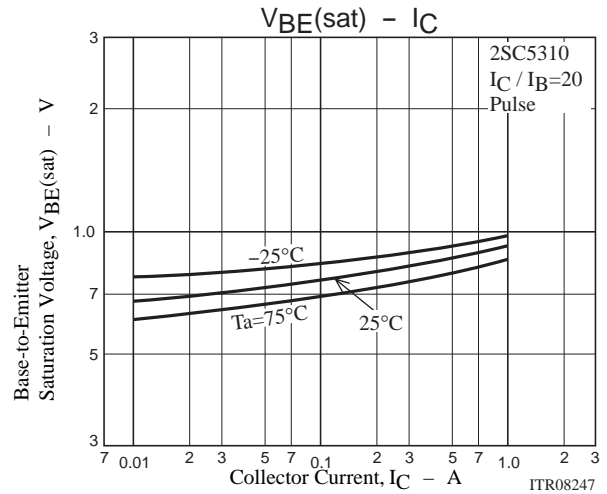
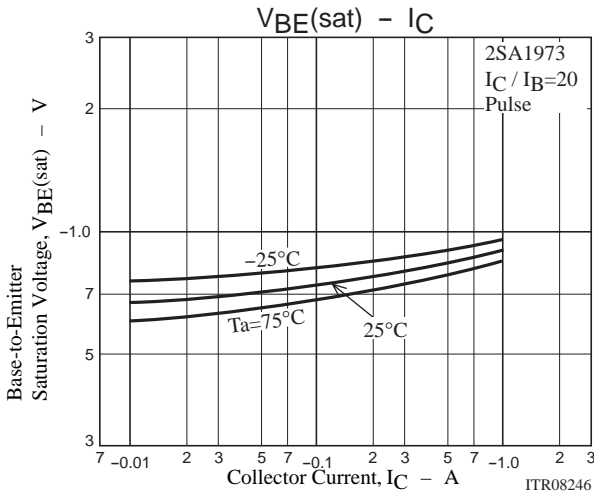
Switching Time Test Circuit



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