Ordering number:ENN5613

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1973/2SC5310

DC/DC Converter Applications

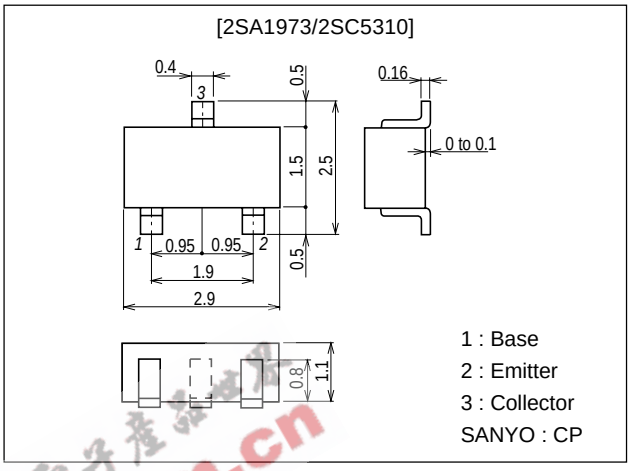
Features

- 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 Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)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	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}=(–)20V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)3V, I_C=0			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)100mA	135*		400*	

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

Continued on next page.

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

Marking : 2SA1973 : NS
2SC5310 : NN

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

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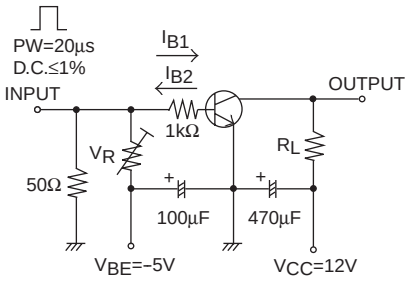
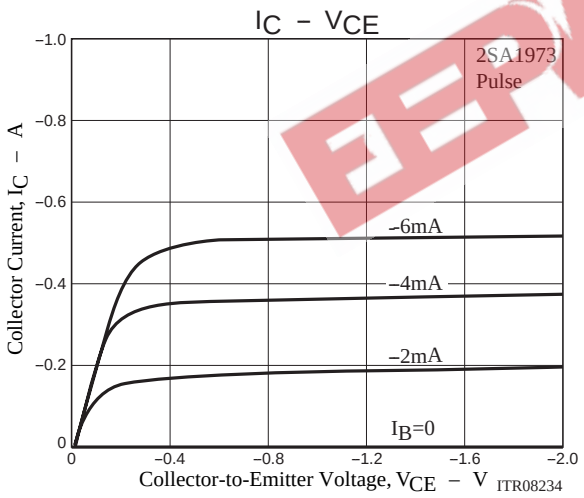
Continued on preceding page.

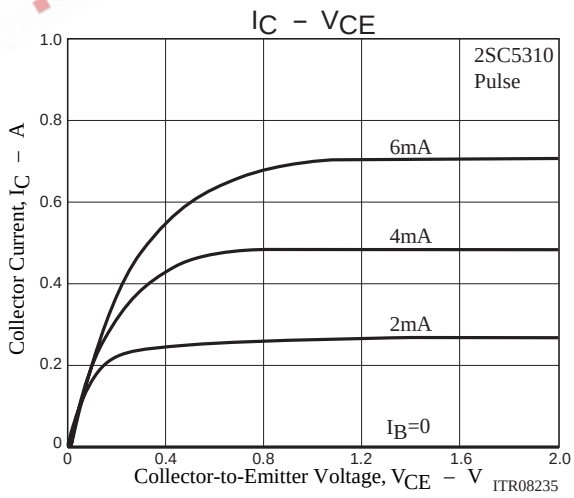
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(32)19		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)500mA, I_B=(–)25mA		(–150)	(–300)	mV
				100	200	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)500mA, I_B=(–)25mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)30			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)25			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, 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
				500		ns
Fall Time	t_f	See specified Test Circuit		(25)25		ns

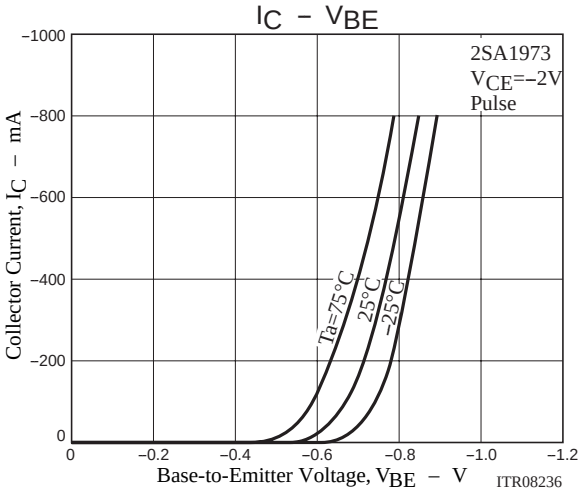
Switching Time Test Circuit

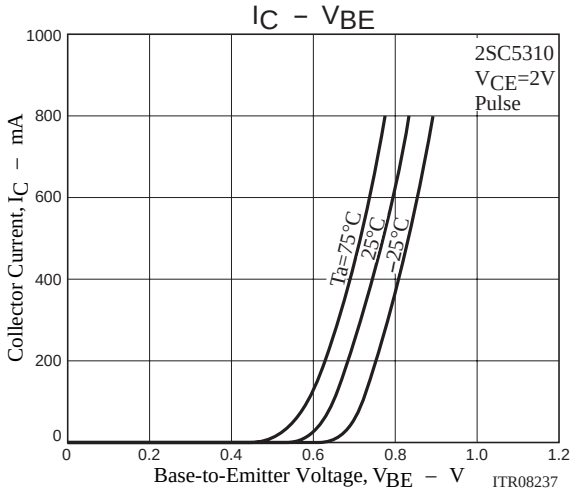


$20I_{B1}$= $-20I_{B2}$= I_C=500mA
(For PNP, the polarity is reversed.)

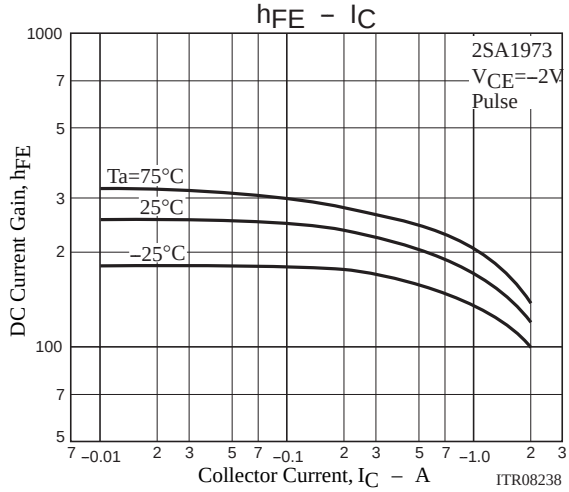




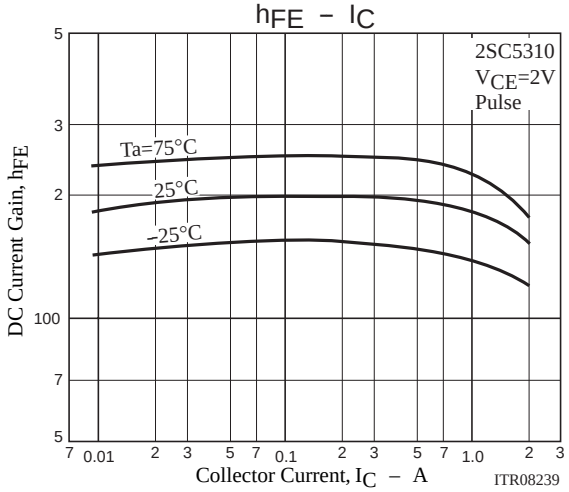




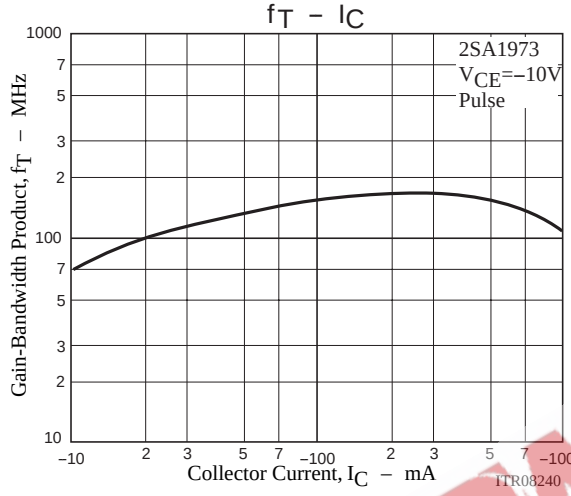
h_{FE} – I_C



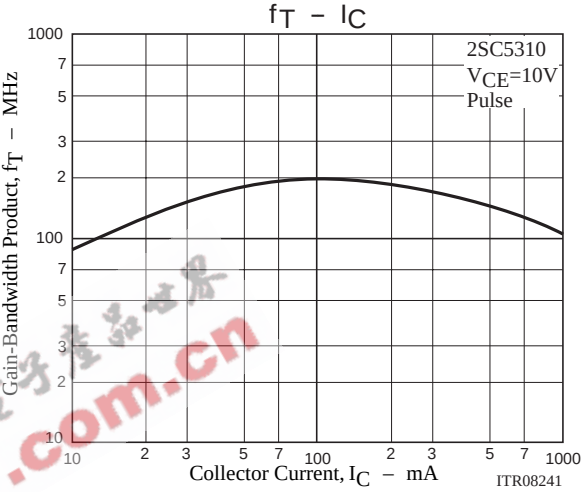
h_{FE} – I_C



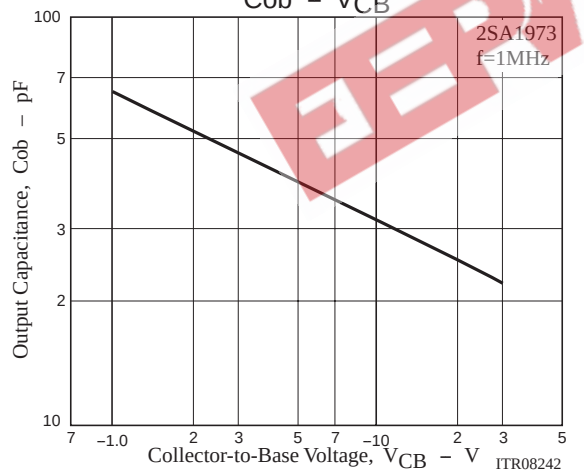
f_T – I_C



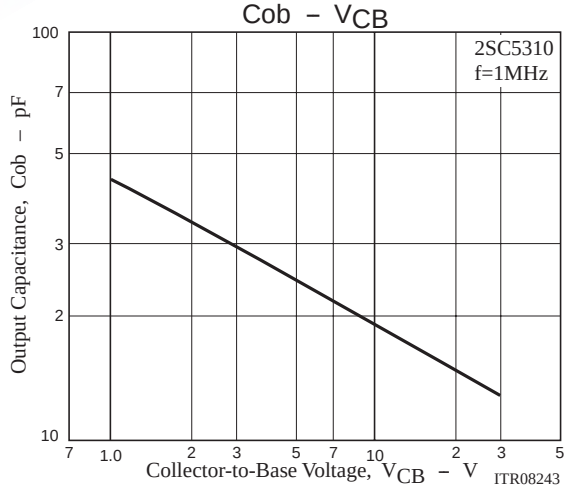
f_T – I_C



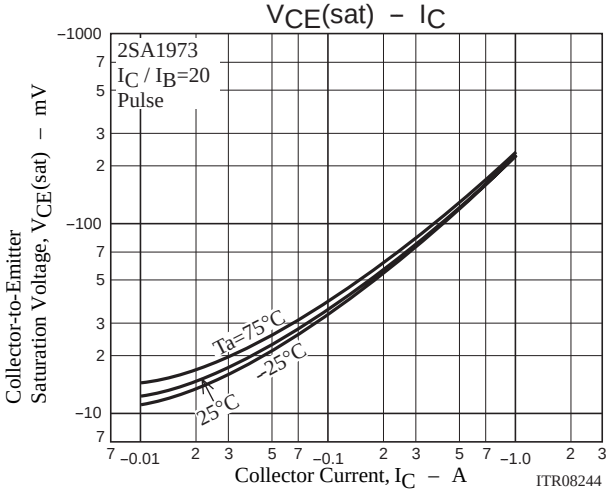
Cob – V_{CB}



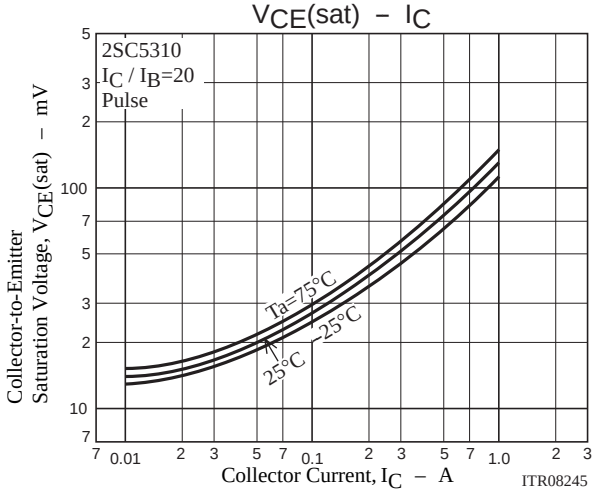
Cob – V_{CB}

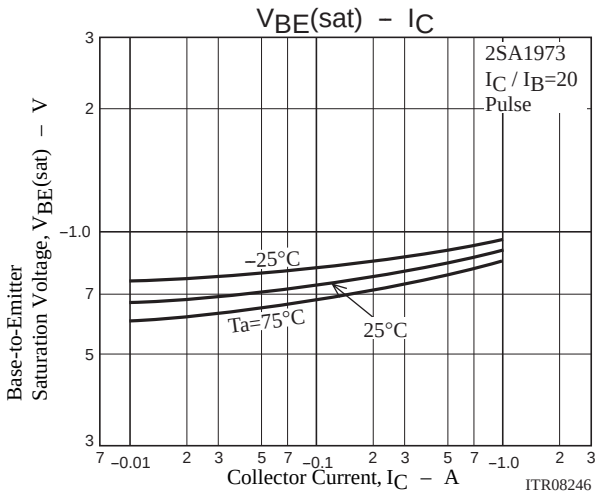


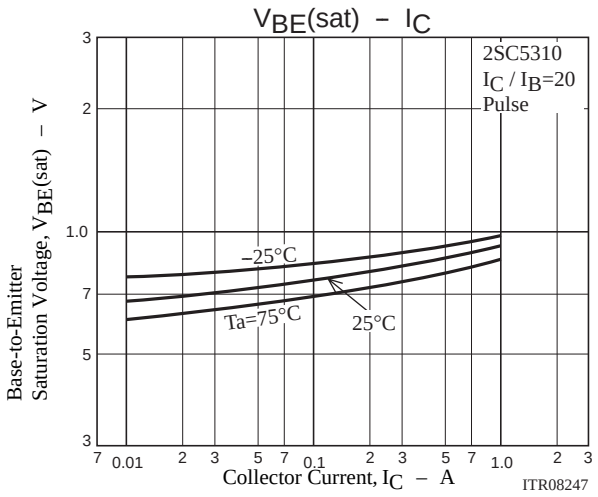
V_{CE}(sat) – I_C

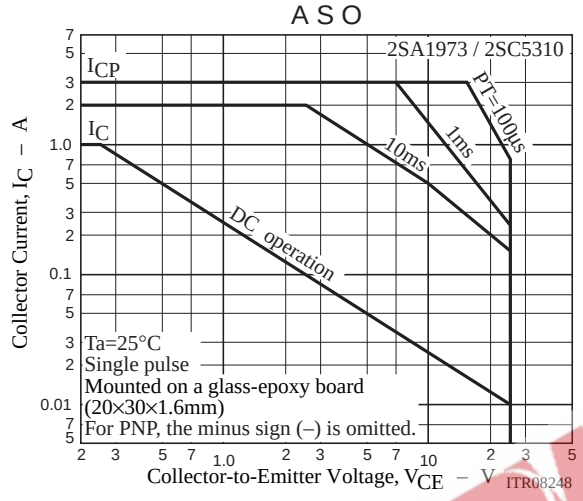


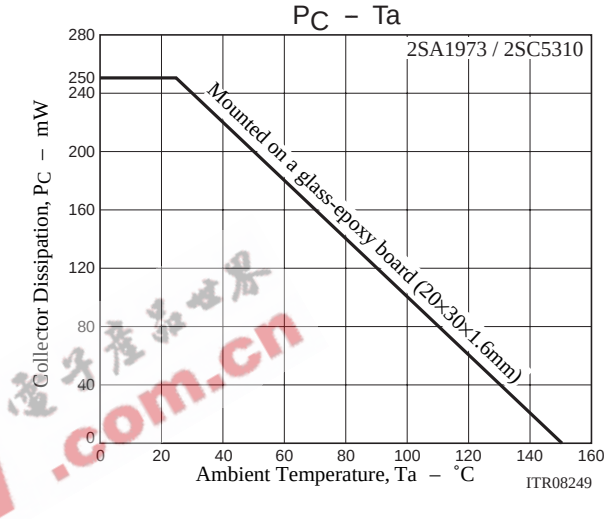
V_{CE}(sat) – I_C











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