



SANYO Semiconductors

DATA SHEET

2SA2196 / 2SC6101

PNP / NPN Epitaxial Planar Silicon Transistors
DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of MBIT process.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

Specifications () : 2SA2196

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-30)40	V
Collector-to-Emitter Voltage	V _{CEO}		(-30)	V
Emitter-to-Base Voltage	V _{EBO}		(-6)	V
Collector Current	I _C		(-5)	A
Collector Current (Pulse)	I _{CP}		(-7)	A
Base Current	I _B		(-600)	mA
Collector Dissipation	P _C		1	W
		T _c =25°C	8	W
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-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} =(-)30V, 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} =(-)2V, I _C =(-)500mA	200		560	
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)500mA		(380)450		MHz
Output Capacitance	C _{ob}	V _{CB} =(-)10V, f=1MHz		(25)20		pF

Continued on next page.

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SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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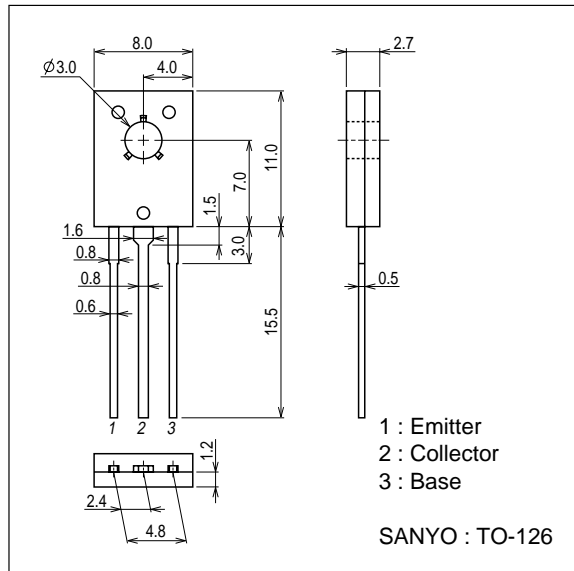
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1.5A, I_B=(-)30mA$		(-170)135	(-255)200	mV
	$V_{CE(sat)2}$	$I_C=(-)1.5A, I_B=(-)75mA$		(-120)	(-180)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$V_{CE}=(-)1.5V, I_B=(-)30mA$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-30)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-6)			V
Turn-On Time	t_{on}	See specified Test Circuit.		(50)30		ns
Storage Time	t_{stg}	See specified Test Circuit.		(270)300		ns
Fall Time	t_f	See specified Test Circuit.		(25)15		ns

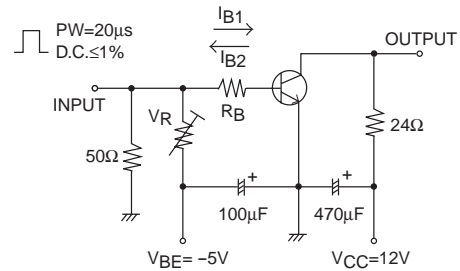
Package Dimensions

unit : mm (typ)

7515-002

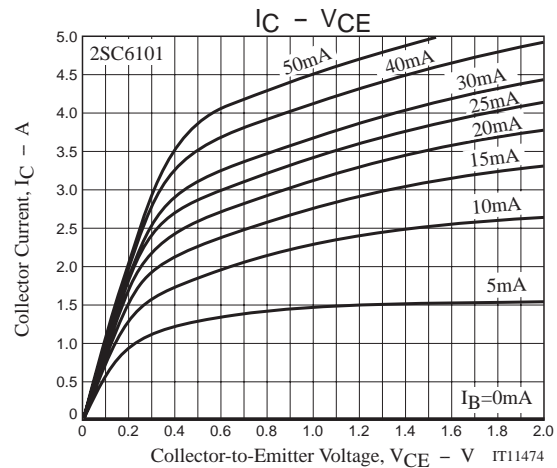
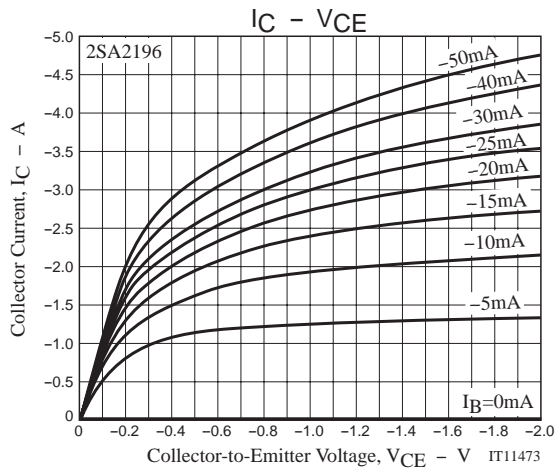


Switching Time Test Circuit

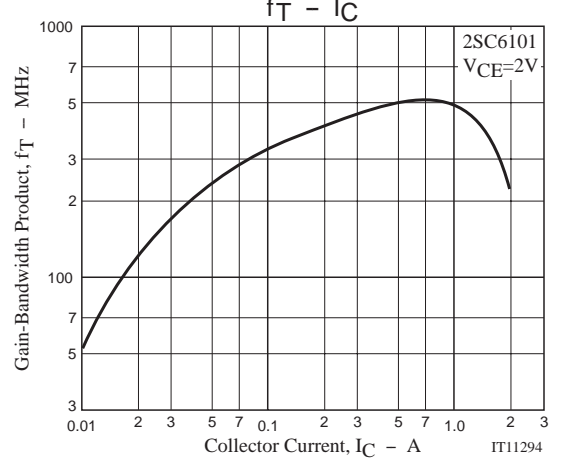
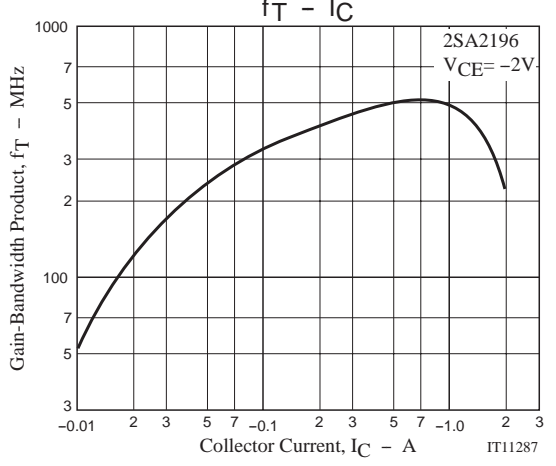
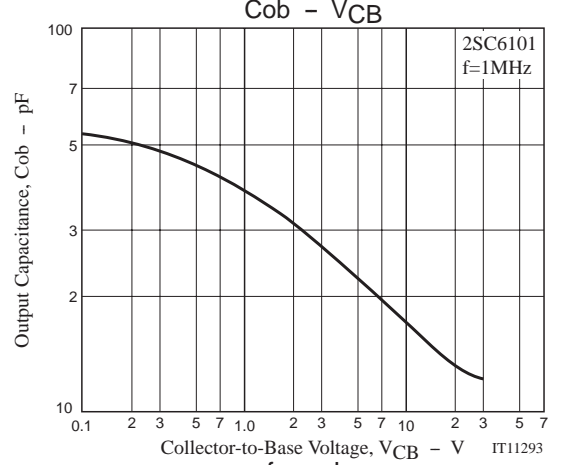
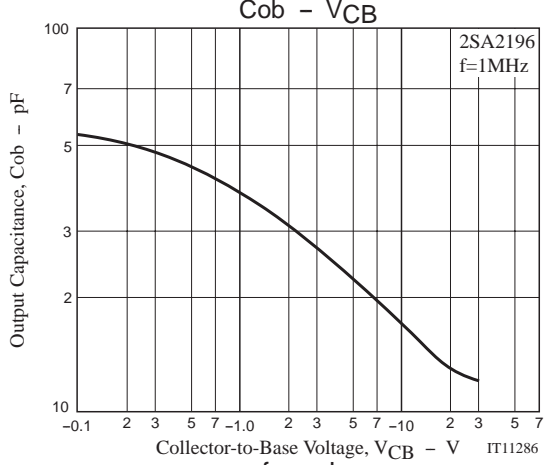
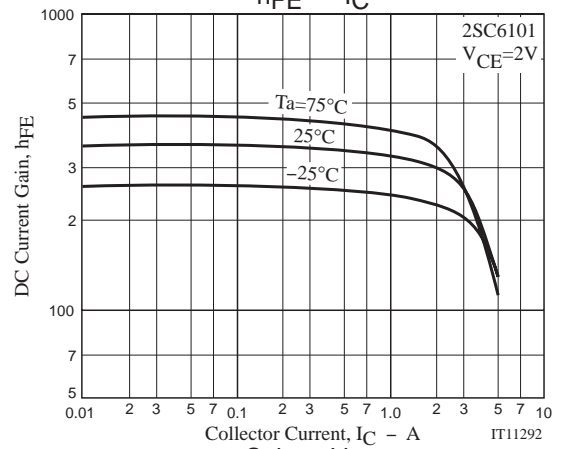
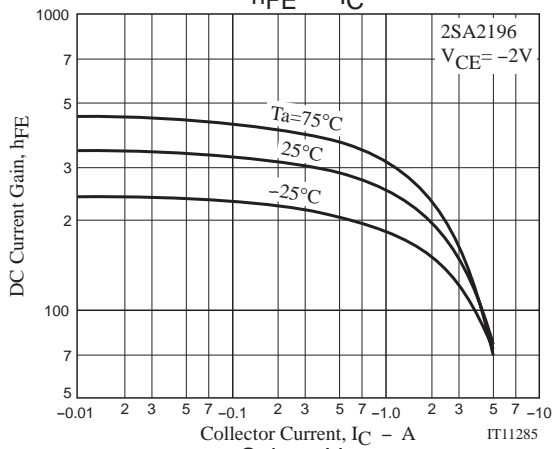
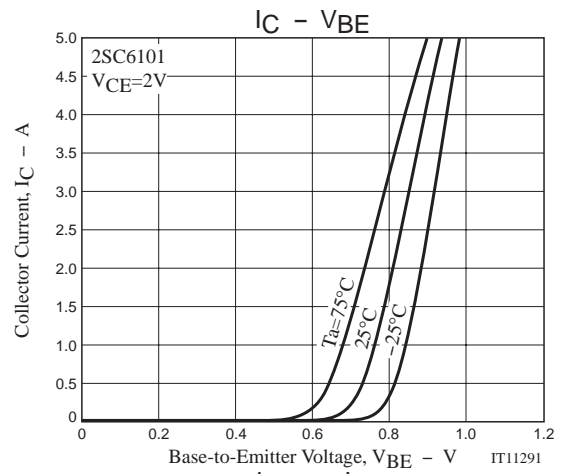
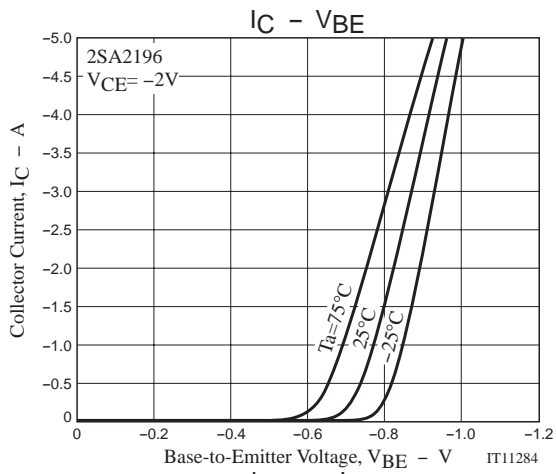


$$20I_{B1} = -20I_{B2} = I_C = 500mA$$

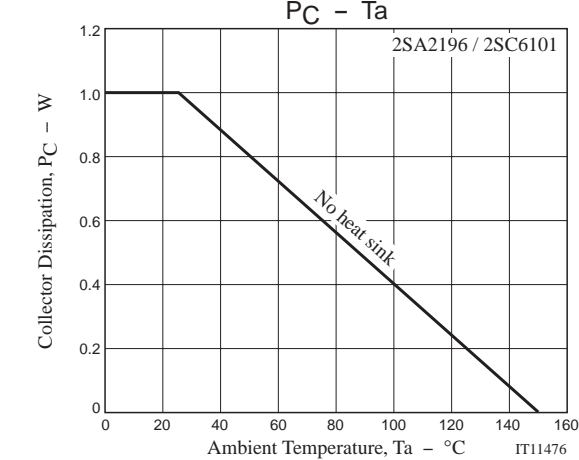
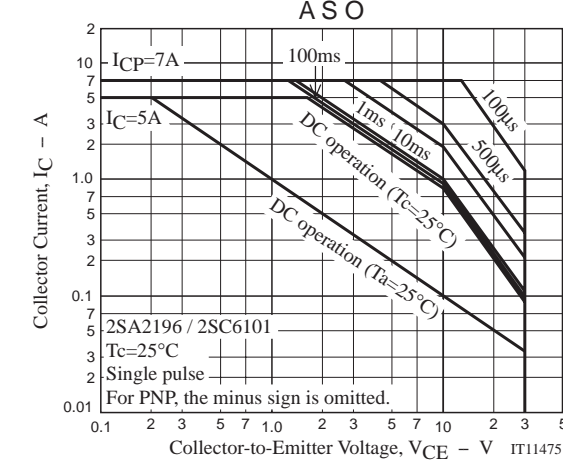
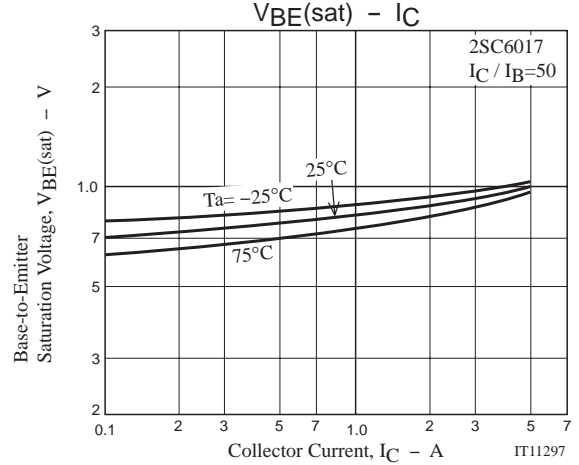
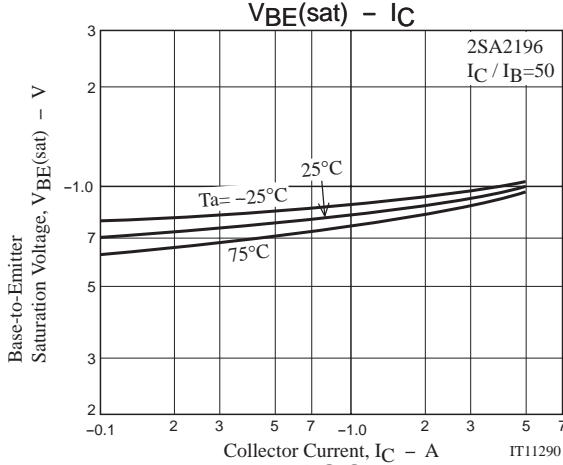
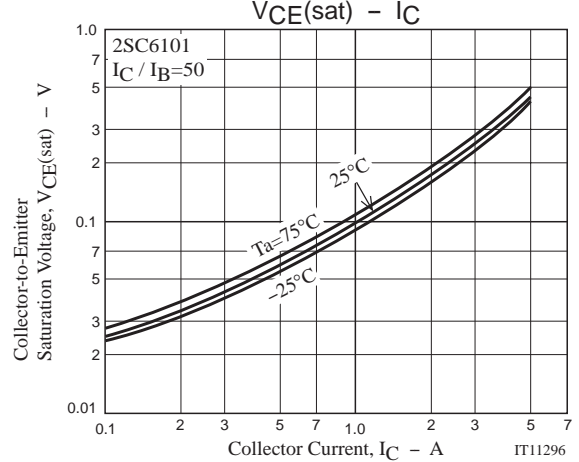
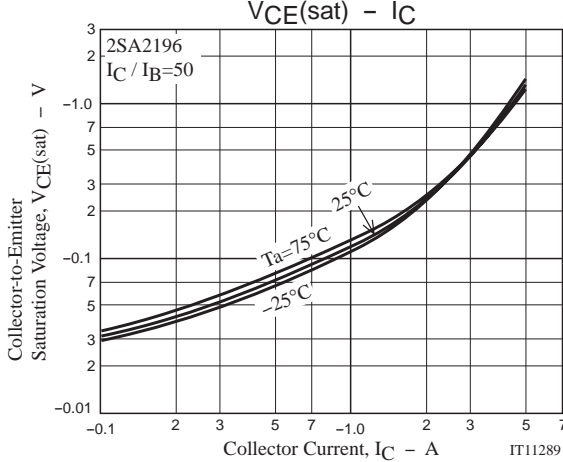
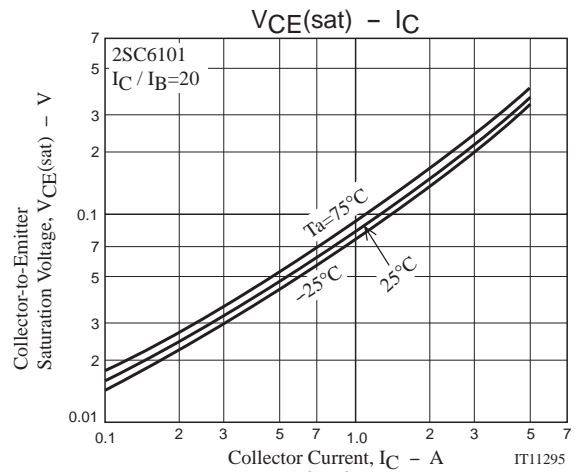
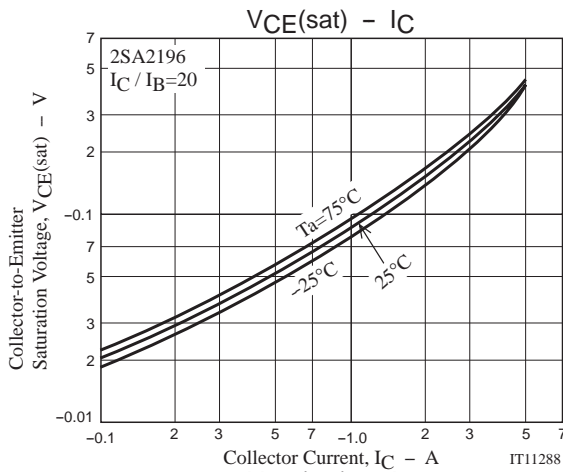
For PNP, the polarity is reversed.

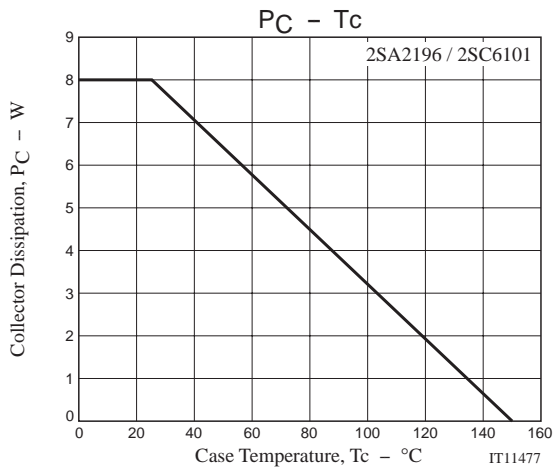


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