



# 2SA2169 / 2SC6017 — PNP / NPN Epitaxial Planar Silicon Transistors

## High-Current Switching Applications

### Applications

- Relay drivers, lamp drivers, motor drivers.

### Features

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

### Specifications ( ) : 2SA2169

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-50)100	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)10	A
Collector Current (Pulse)	I <sub>CP</sub>	PW≤100μs	(-)13	A
Base Current	I <sub>B</sub>		(-)2	A
Collector Dissipation	P <sub>C</sub>		0.95	W
		T <sub>C</sub> =25°C	20	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0			(-)10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-)10	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)1A	200		(560)700	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)1A		(130)200		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(90)60		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)5A, I <sub>B</sub> =(-)250mA		(-290)180	(-580)360	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)5A, I <sub>B</sub> =(-)250mA		(-)0.93	(-)1.4	V

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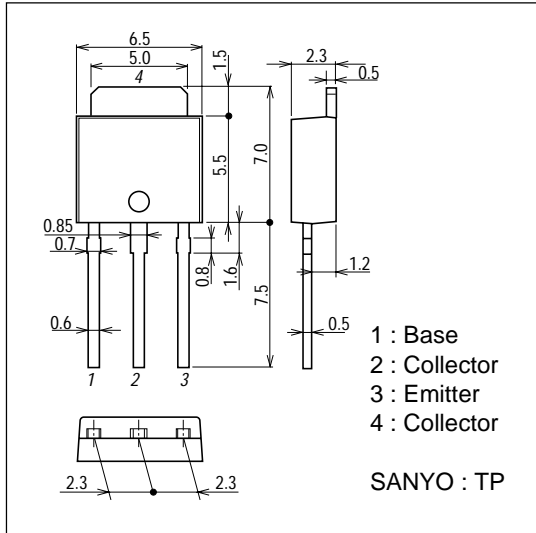
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)100\mu A, I_E = 0$	(-50)100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)100\mu A, I_C = 0$	(-)6			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		(70)40		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		(650)1000		ns
Fall Time	$t_f$	See specified Test Circuit.		(60)80		ns

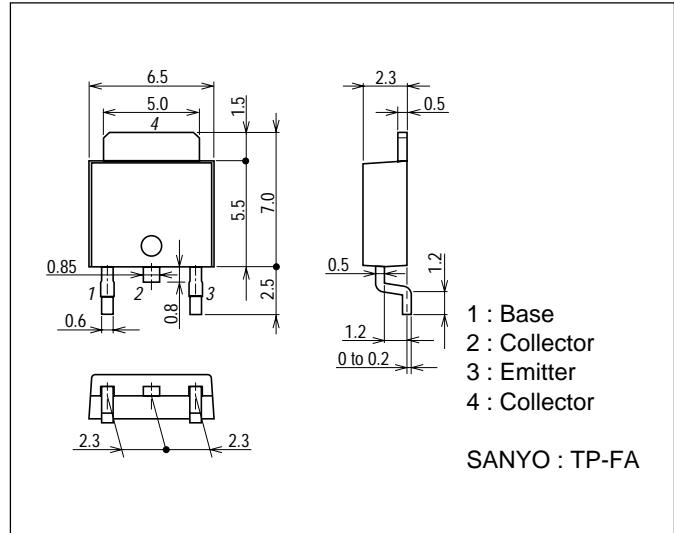
## Package Dimensions

unit : mm  
2045B

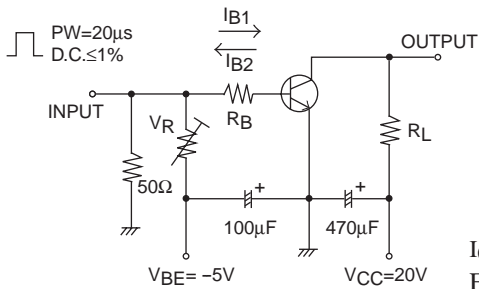


## Package Dimensions

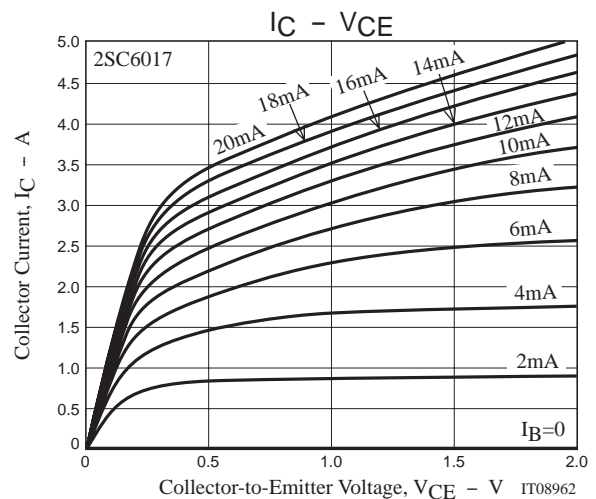
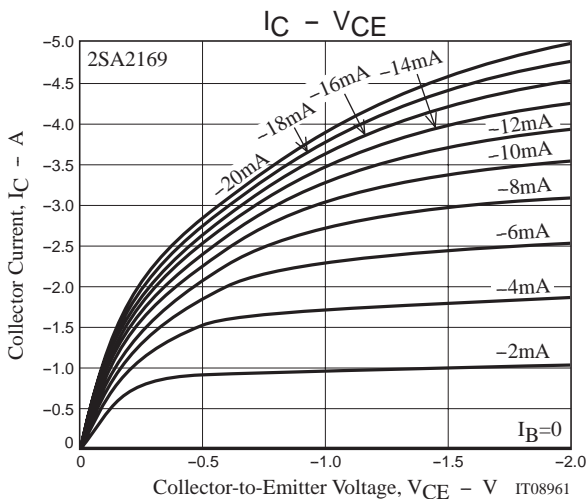
unit : mm  
2044B



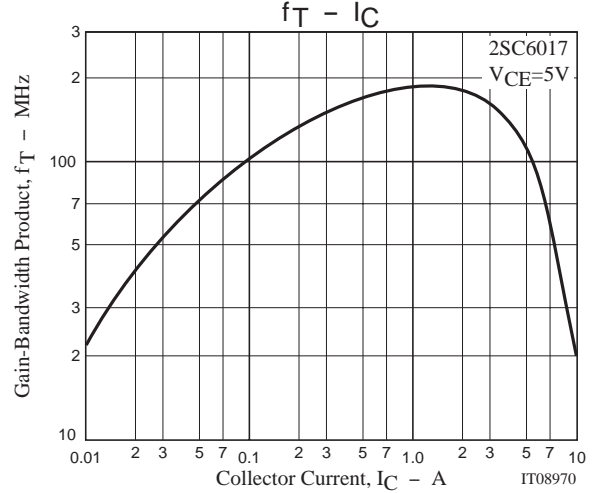
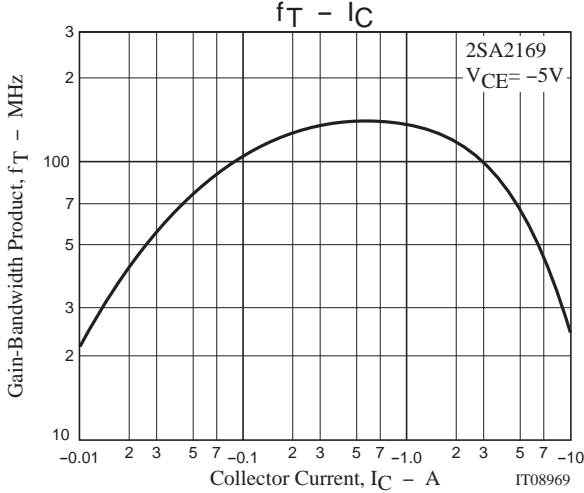
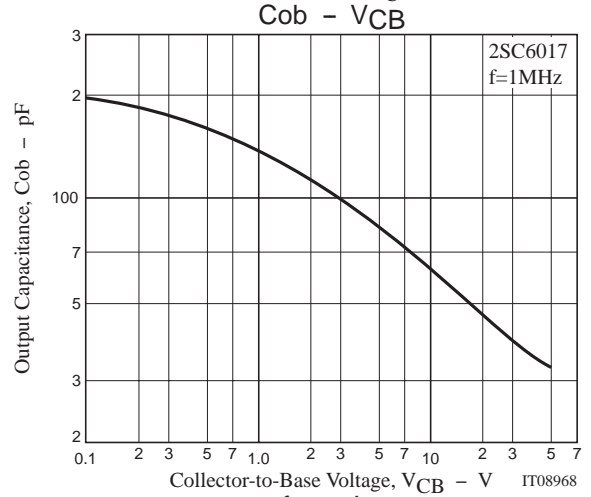
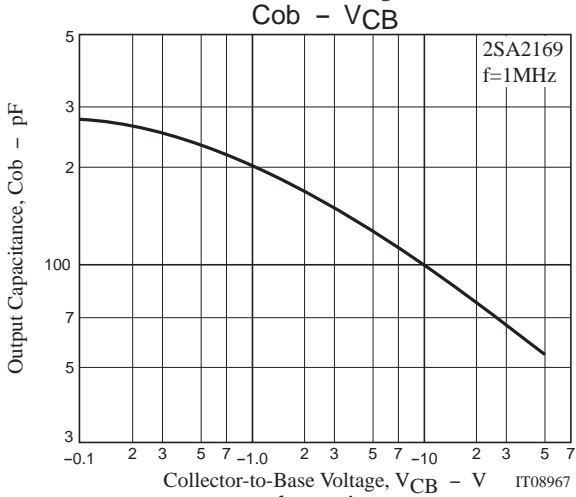
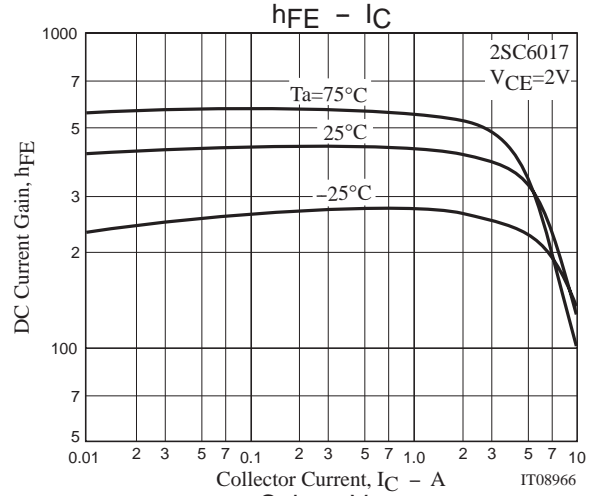
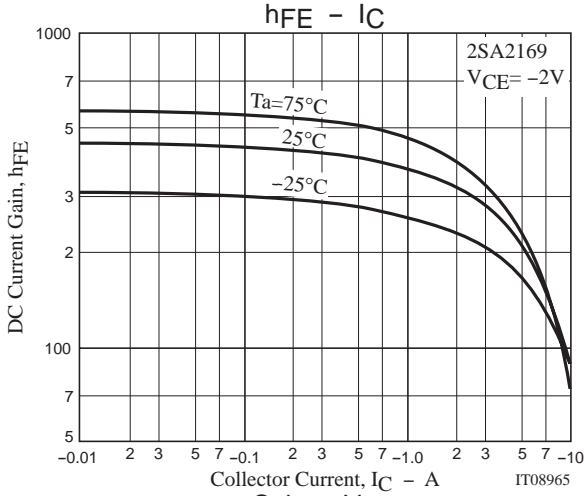
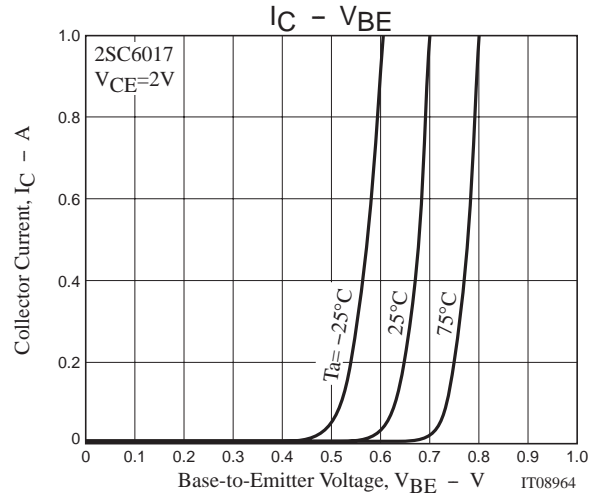
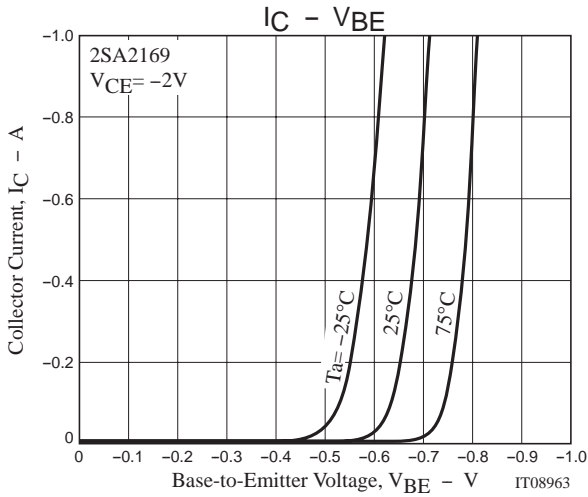
## Switching Time Test Circuit



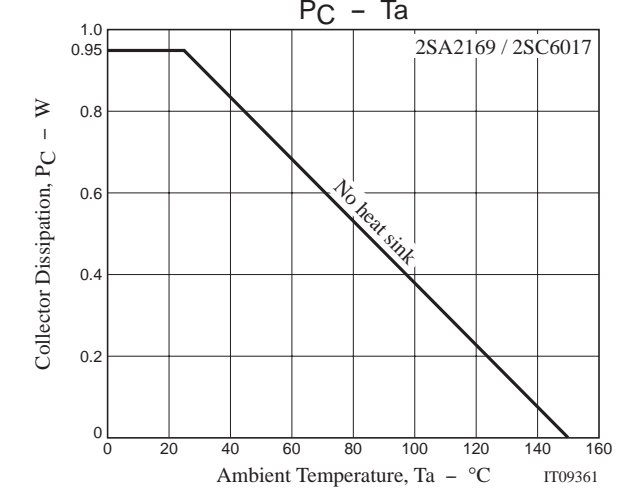
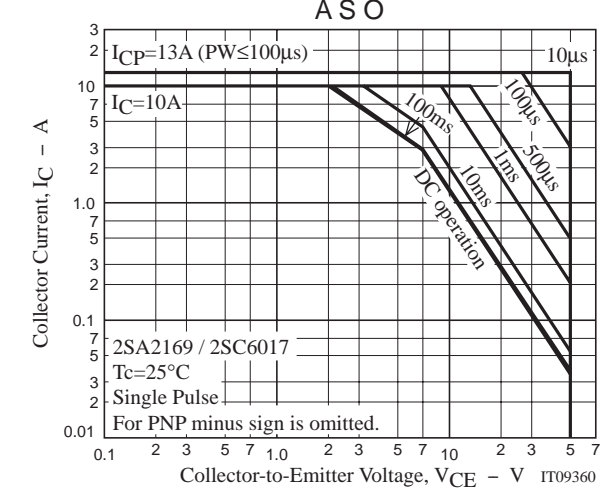
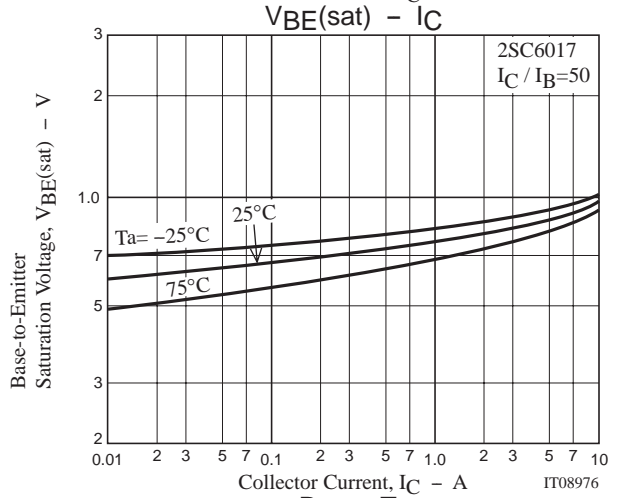
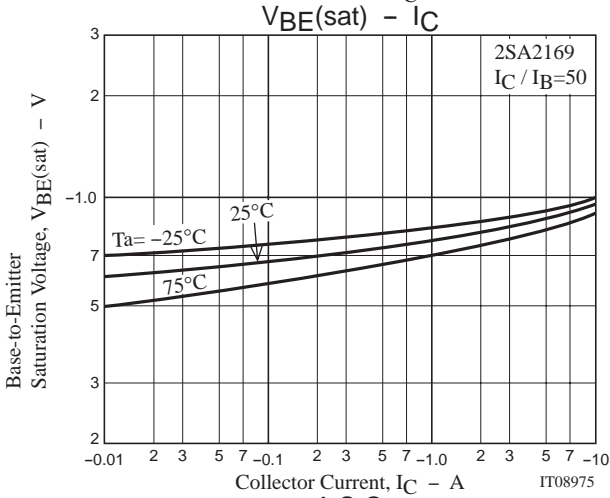
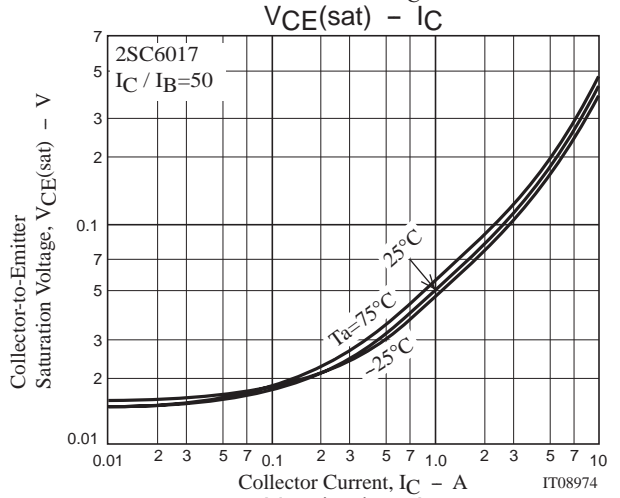
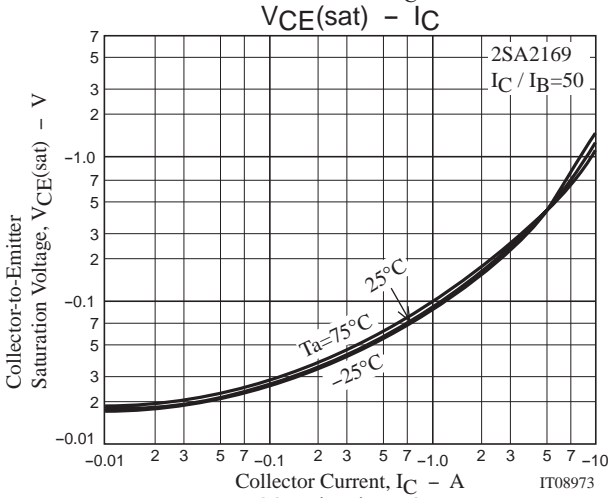
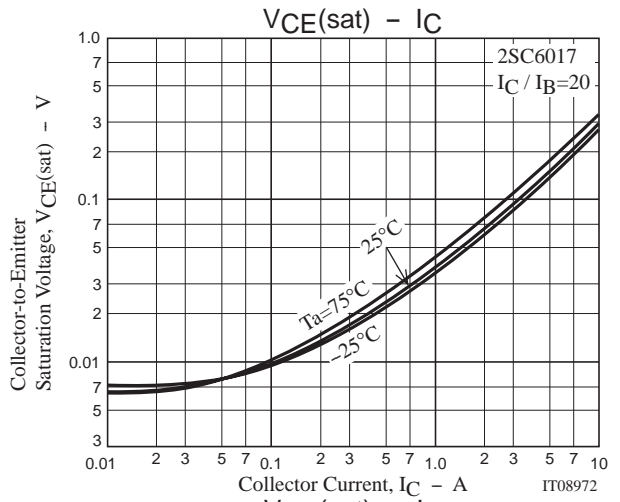
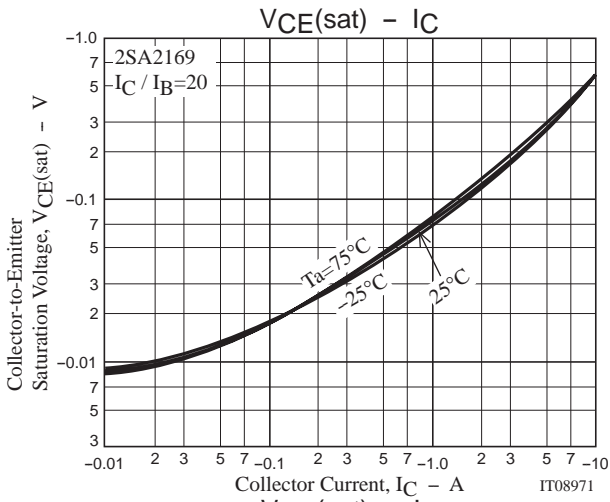
$I_C = 20I_{B1} = -20I_{B2} = 3A$   
For PNP, the polarity is reversed.

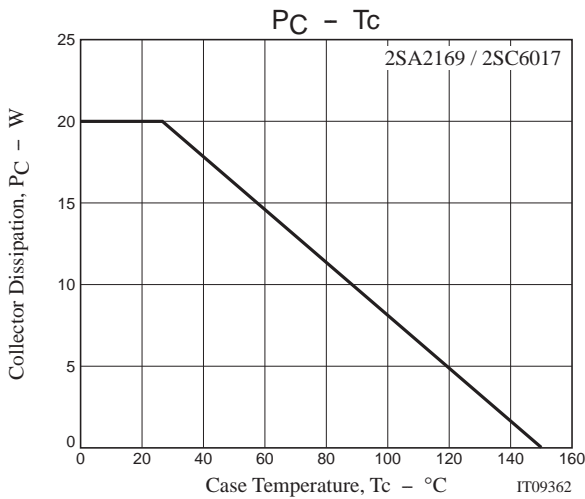


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