



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SA1419 / 2SC3649 — PNP / NPN Epitaxial Planar Silicon Transistors

### High-Voltage Switching Applications

#### Features

- Adoption of FBET, MBIT processes.
- High breakdown voltage and large current capacity.
- Ultrasmall size making it easy to provide high-density, small-sized hybrid IC's.

#### Specifications ( ) : 2SA1419

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-)180	V
Collector-to-Emitter Voltage	VCEO		(-)160	V
Emitter-to-Base Voltage	VEBO		(-)6	V
Collector Current	IC		(-)1.5	A
Collector Current (Pulse)	ICP		(-)2.5	A
Collector Dissipation	PC		500	mW
		Mounted on a ceramic board (250mm <sup>2</sup> ×0.8mm)	1.5	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking 2SA1419 : AE

2SC3649 : CE

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# 2SA1419 / 2SC3649

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)120V, I_E=0A$			(-) $1$	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0A$			(-) $1$	$\mu A$
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)5V, I_C=(-)100mA$	100*		400*	
	$h_{FE2}$	$V_{CE}=(-)5V, I_C=(-)10mA$	80			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)50mA$		120		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(22)14		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-200)130	(-500)450	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-) $0.85$	(-) $1.2$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-) $180$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-) $160$			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.		(40)40		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		(0.7)1.2		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		(40)80		ns

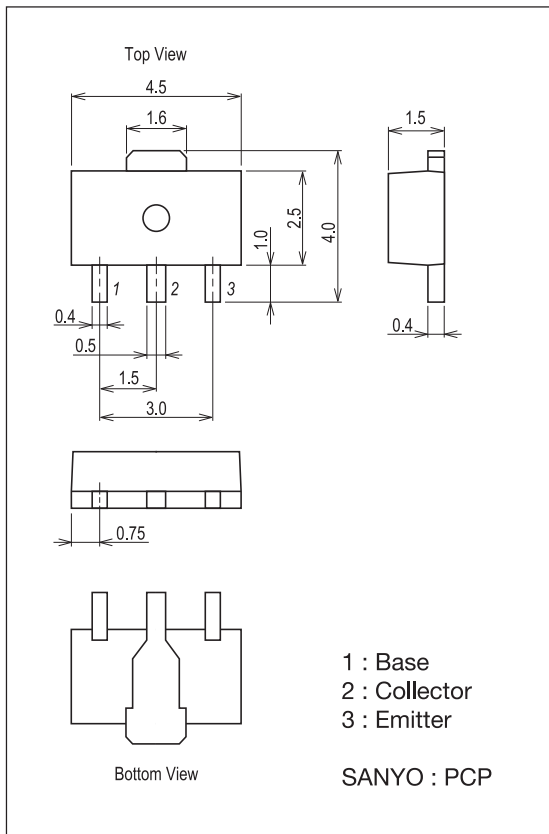
\*: The 2SA1419 / 2SC3649 are classified by 100mA  $h_{FE}$  as follows:

Rank	R	S	T
$h_{FE}$	100 to 200	140 to 280	200 to 400

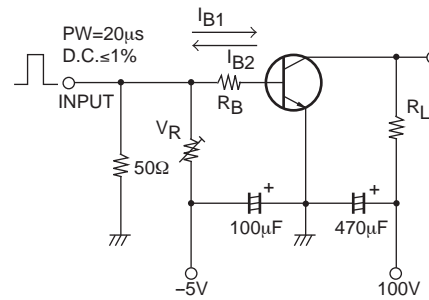
## Package Dimensions

unit : mm (typ)

7007B-004

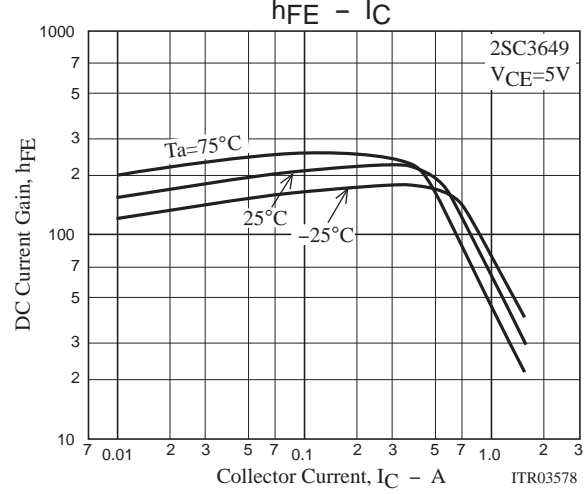
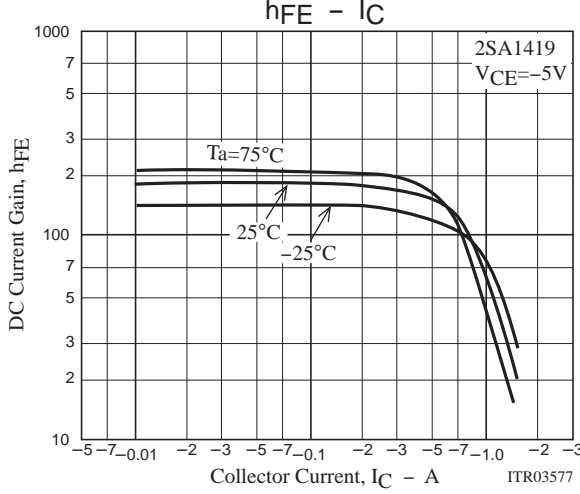
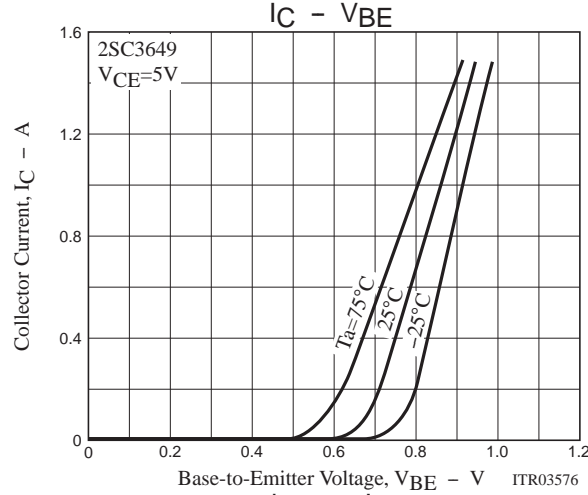
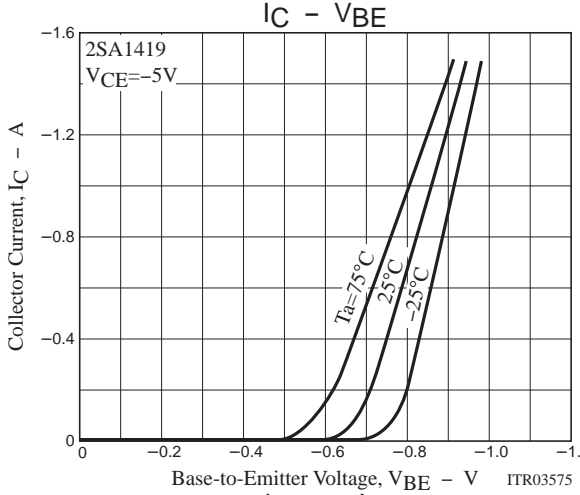
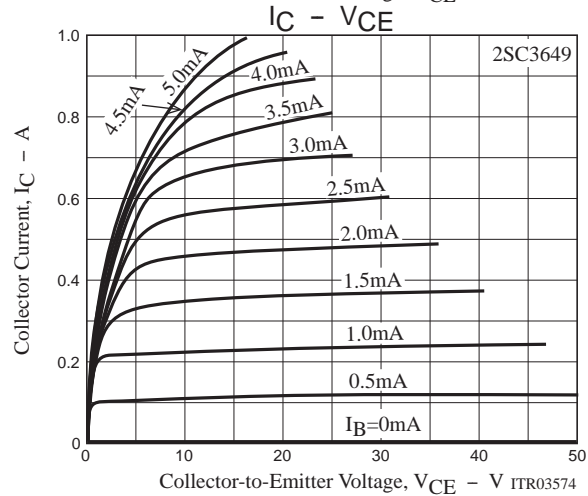
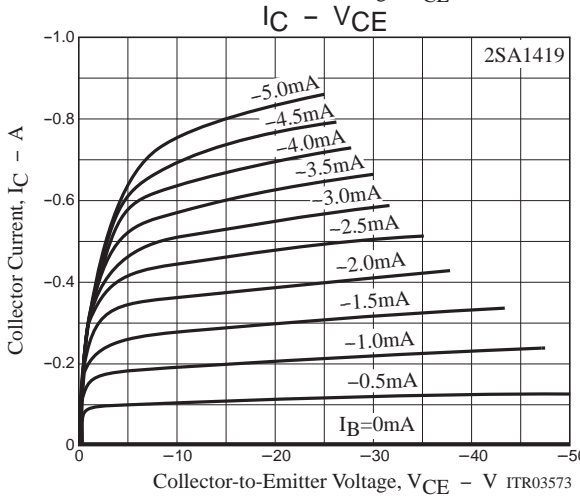
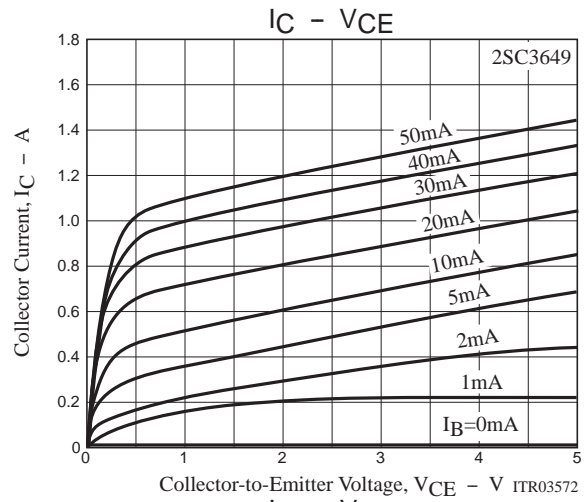
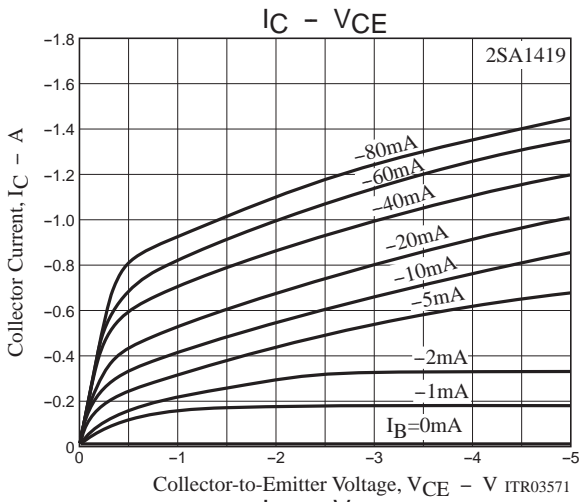


## Switching Time Test Circuit

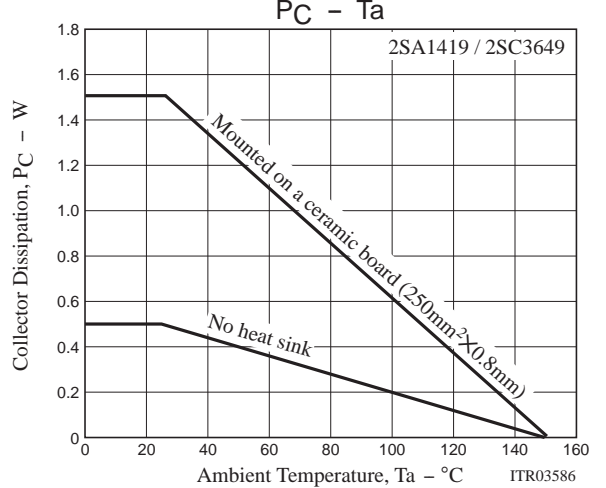
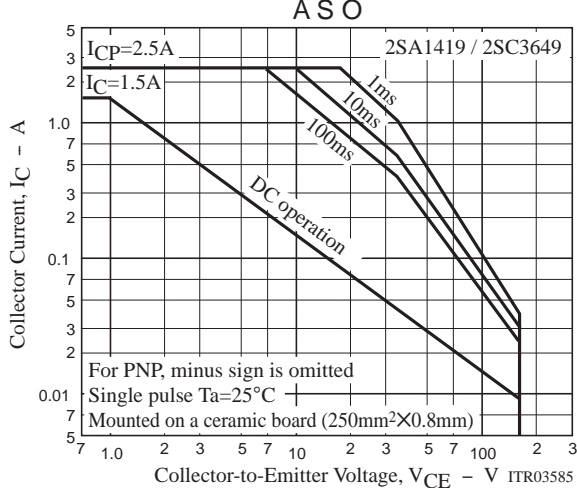
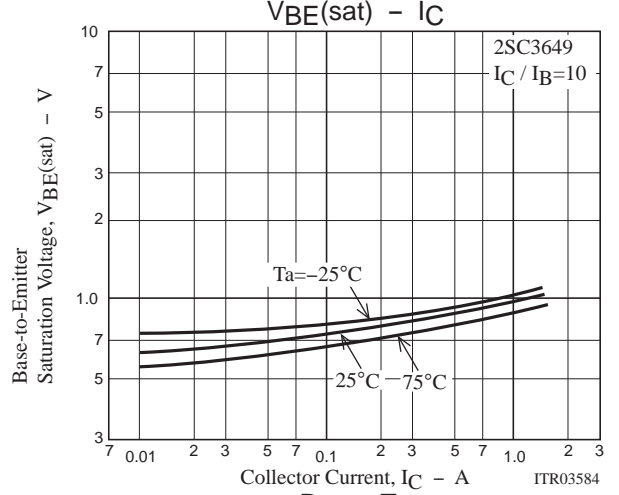
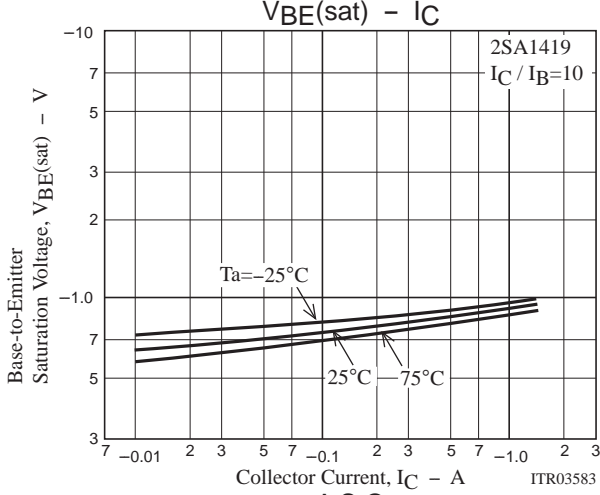
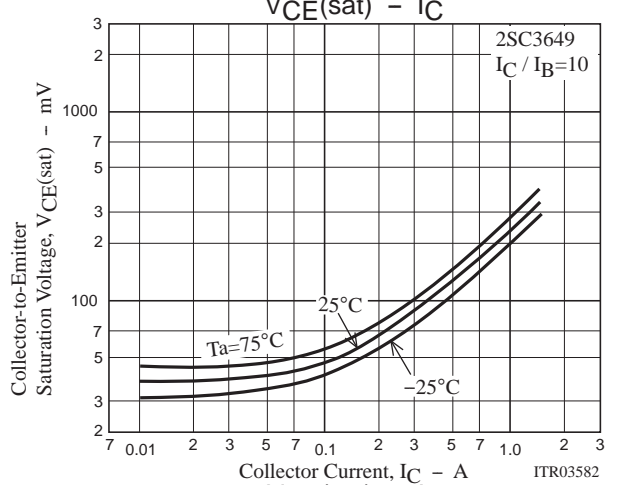
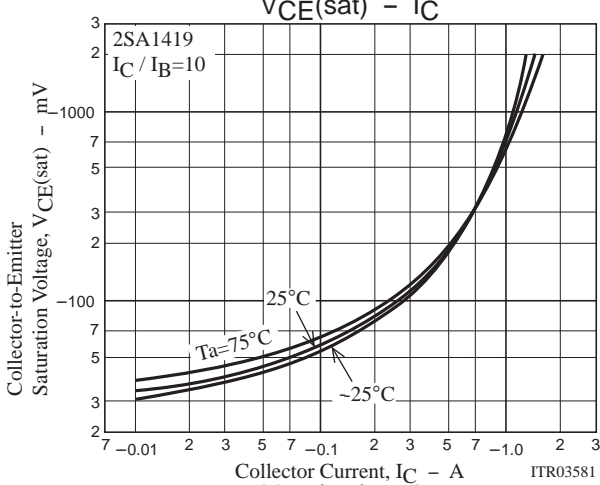
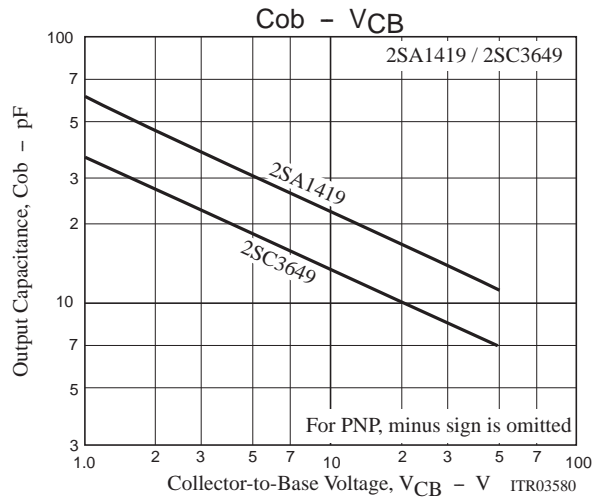
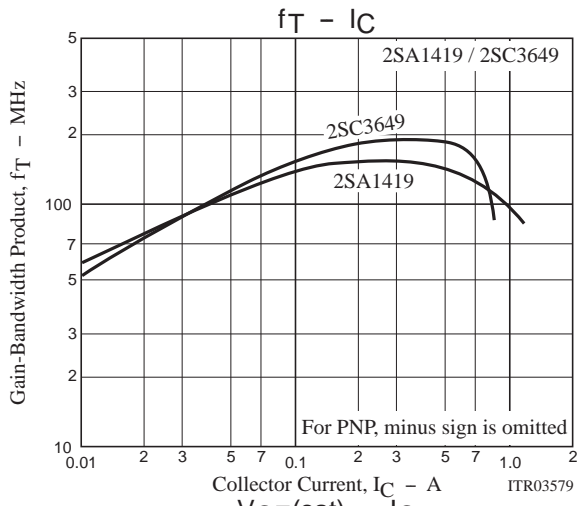


$I_C=10I_{B1}=-10I_{B2}=0.7A$   
(For PNP, the polarity is reversed)

2SA1419 / 2SC3649



# 2SA1419 / 2SC3649



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