

Ordering number:EN2511A

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1593/2SC4135



High-Voltage Switching Applications

Applications

- Power supplies, relay drivers, lamp drivers.

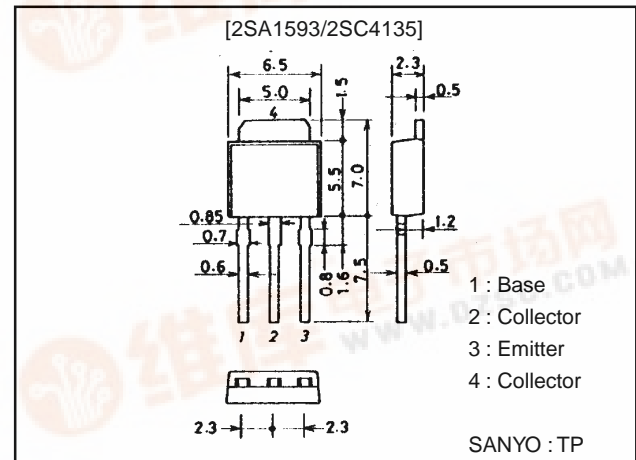
Features

- Adoption of FBET, MBIT processes.
- High breakdown voltage and large current capacity.
- Fast switching speed.
- Small and slim package permitting 2SA1593/2SC4135-applied sets to be made more compact.

Package Dimensions

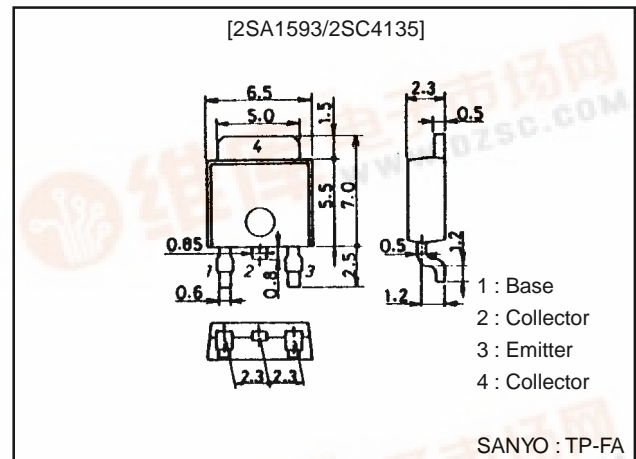
unit:mm

2045B



unit:mm

2044B



() : 2SA1593

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)120	V
Collector-to-Emitter Voltage	V_{CEO}		(-)100	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)2	A
Collector Current (Pulse)	I_{CP}		(-)3	A
Collector Dissipation	P_C		1	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

* : The 2SA1593/2SC4135 are classified by 100mA h_{FE} as follows :

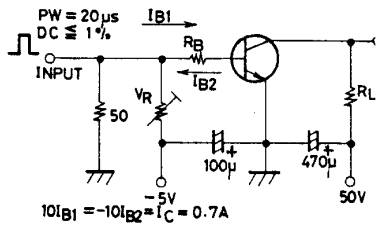
100	R	200	140	S	280	200	T	400
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2SA1593/2SC4135

Electrical Characteristics at $T_a = 25^\circ\text{C}$

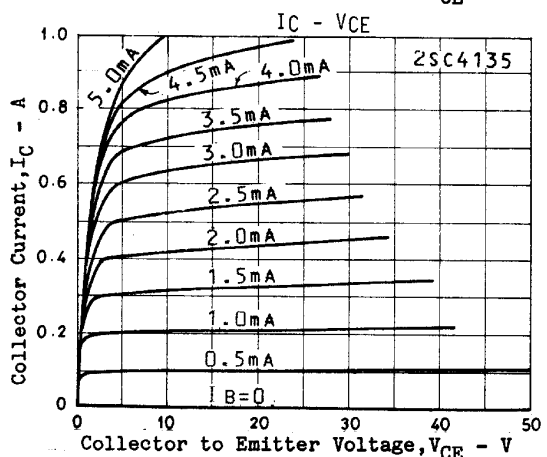
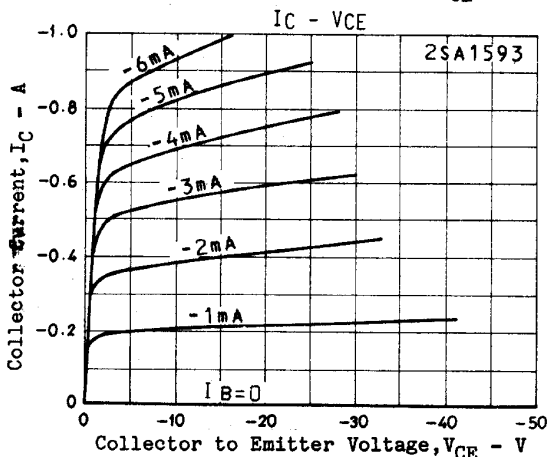
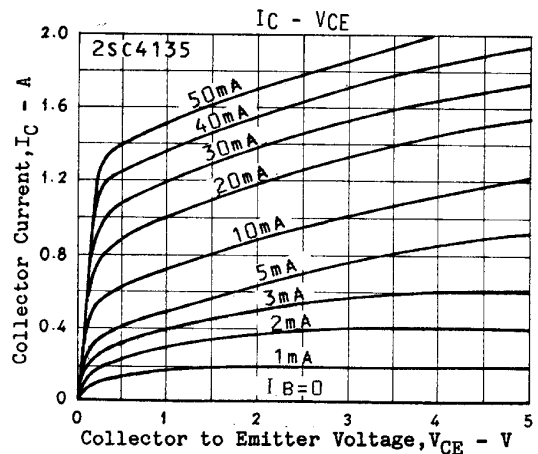
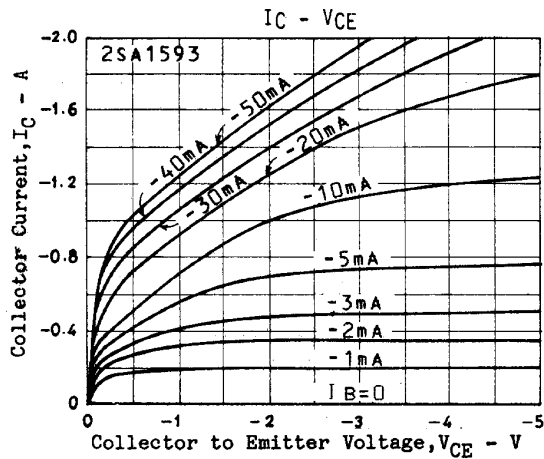
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)100\text{V}, I_E=0$			(-100)	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0$			(-100)	nA
DC Current Gain	h_{FE}	$V_{CE}=(-)5\text{V}, I_C=(-)100\text{mA}$	100*		400*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10\text{V}, I_C=(-)100\text{mA}$		120		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(25)		pF
				16		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1\text{A}, I_B=(-)100\text{mA}$		(-0.22)	(-0.6)	V
				0.13	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1\text{A}, I_B=(-)100\text{mA}$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu\text{A}, I_E=0$	(-120)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1\text{mA}, R_{BE}=\infty$	(-100)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu\text{A}, I_C=0$	(-6)			V
Turn-ON Time	t_{on}	See specified Test Circuit		(80)		ns
				80		ns
Storage Time	t_{stg}	See specified Test Circuit		(750)		ns
				1000		ns
Fall Time	t_f	See specified Test Circuit		(40)		ns
				50		ns

Switching Time Test Circuit

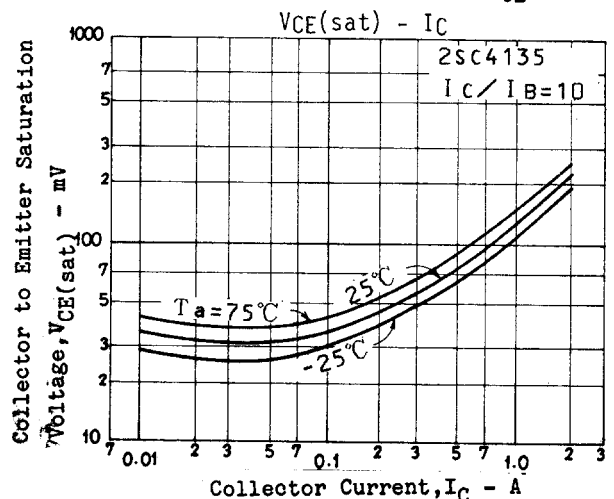
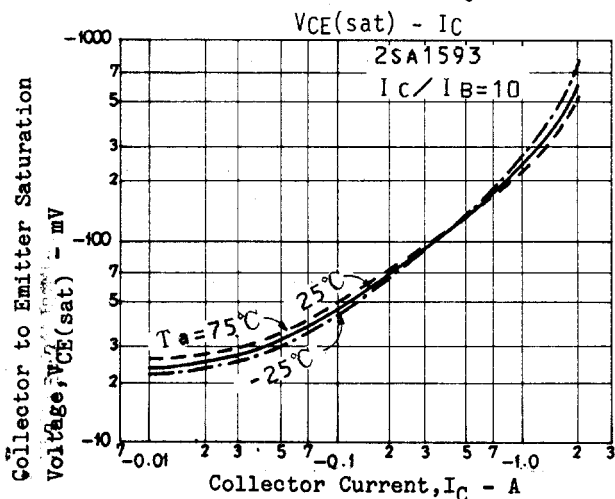
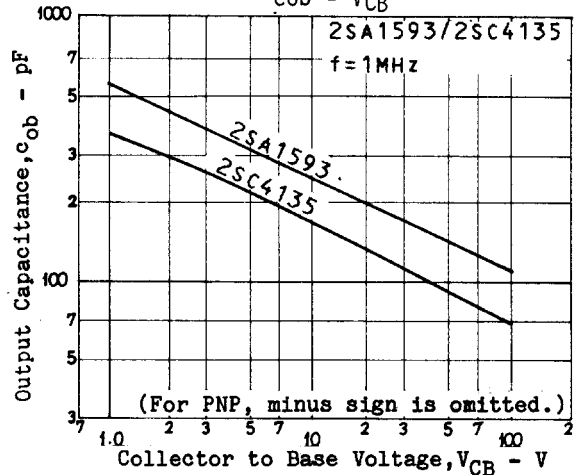
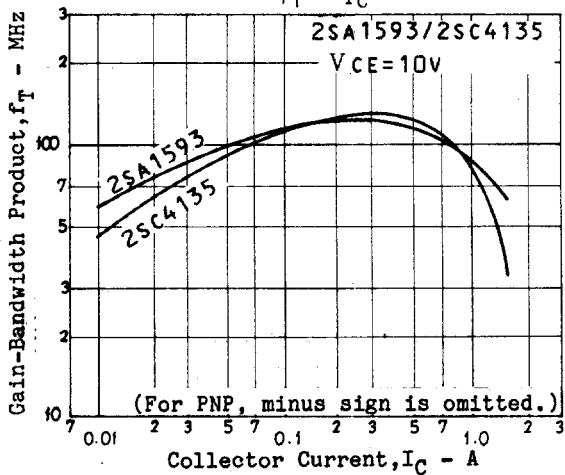
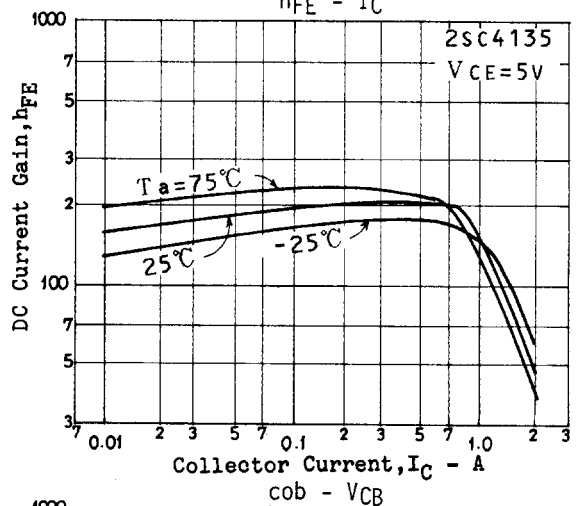
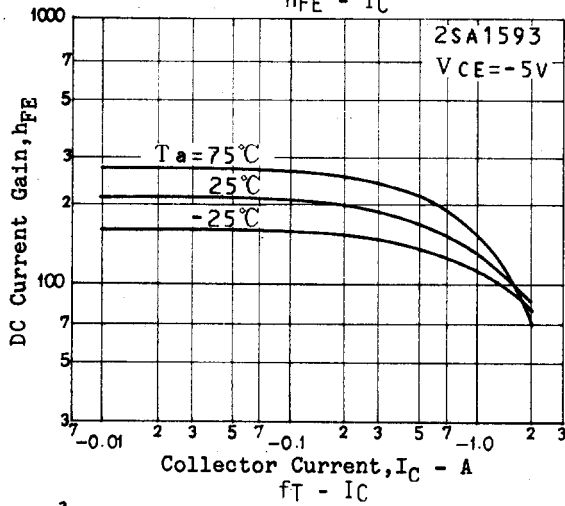
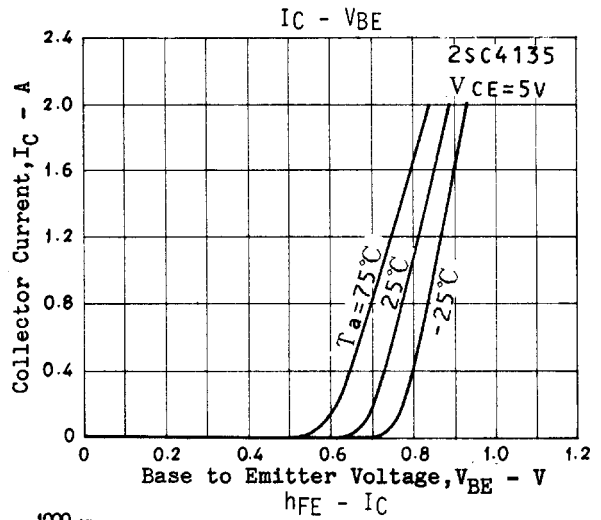
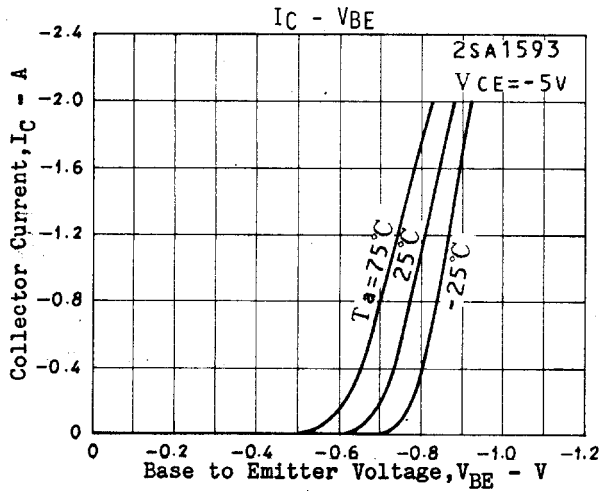


Unit (resistance : Ω , capacitance : F)

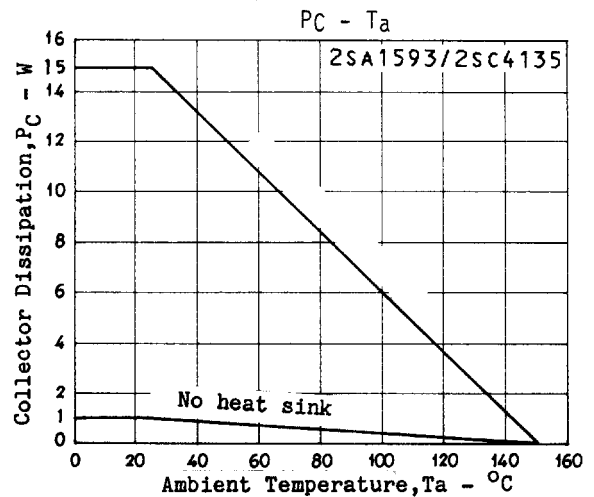
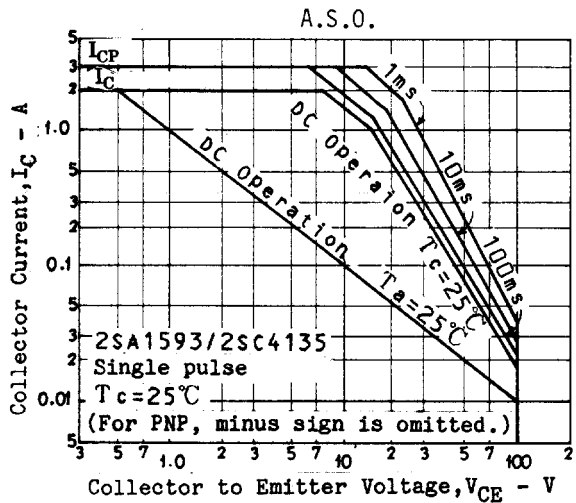
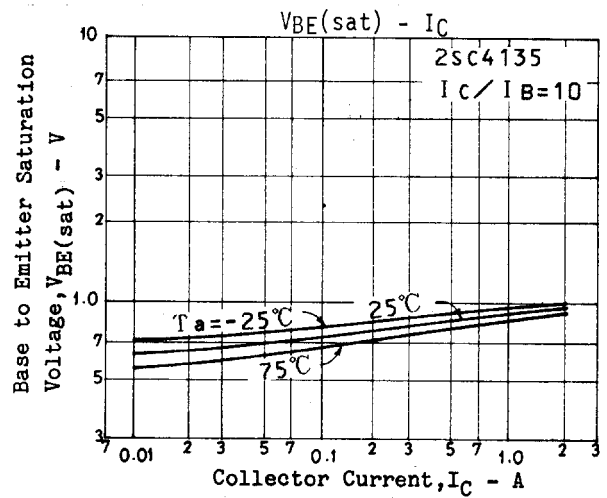
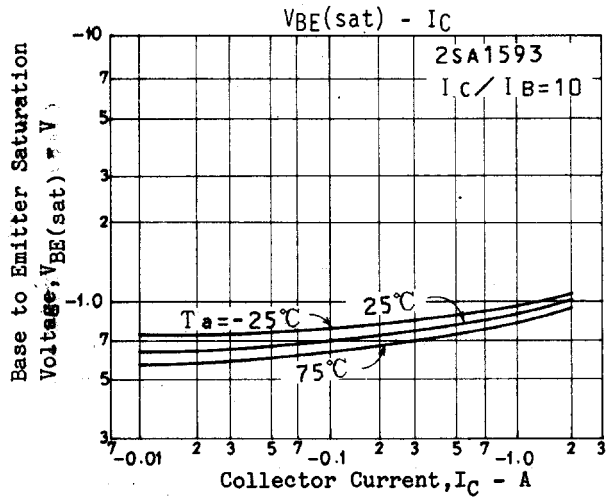
(For PNP, the polarity is reversed.)



2SA1593/2SC4135



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