



2SA1593/2SC4135

High-Voltage Switching Applications

Applications

- Power supplies, relay drivers, lamp drivers.

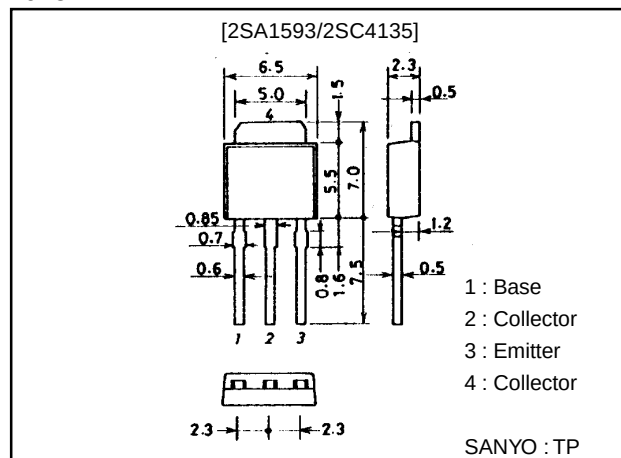
Features

- 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

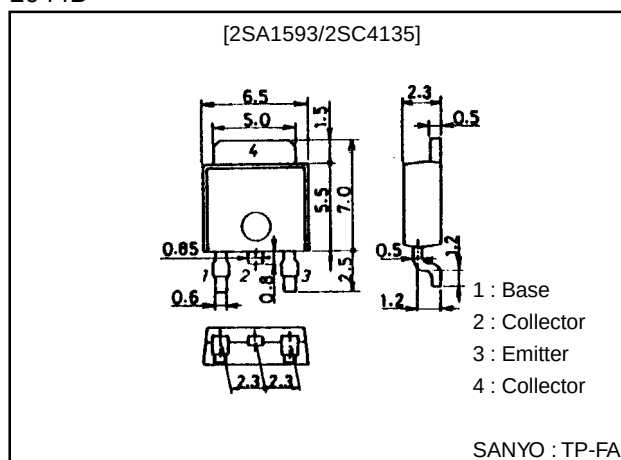
unit:mm

2045B



unit:mm

2044B



() : 2SA1593

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)120	V
Collector-to-Emitter Voltage	V_{CE0}		(-)100	V
Emitter-to-Base Voltage	V_{EB0}		(-)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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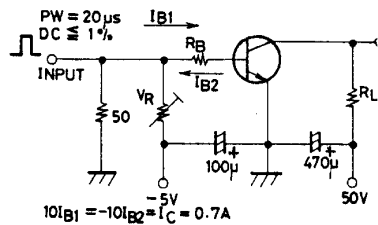
72098HA (KT)/8219MO/4097TA, TS No.2511-1/4

2SA1593/2SC4135

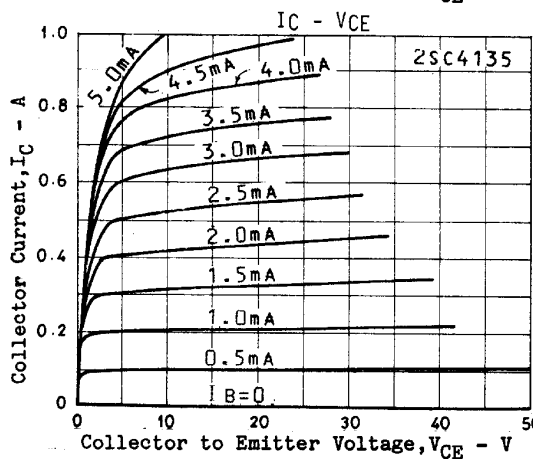
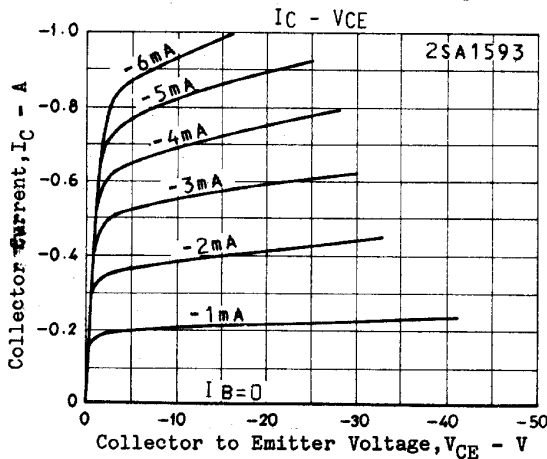
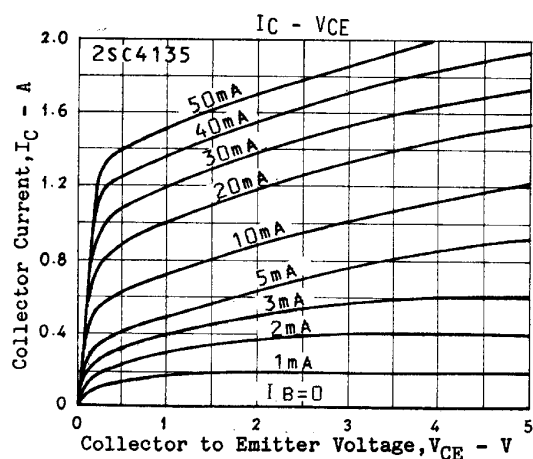
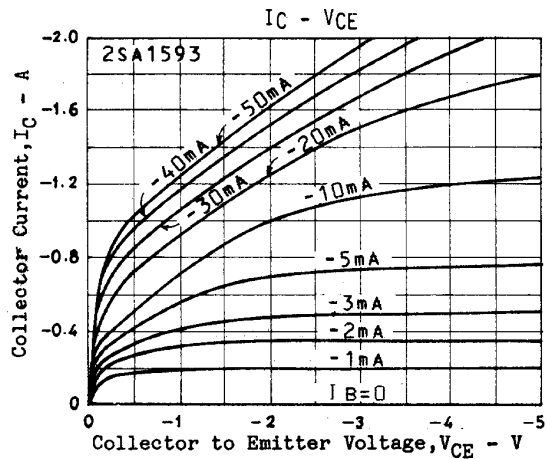
Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)100V, I_E=0$			$(-)100$	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			$(-)100$	nA
DC Current Gain	h_{FE}	$V_{CE}=(-)5V, I_C=(-)100mA$	100*		400*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)100mA$		120		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(25)		pF
				16		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)100mA$		(-0.22)	(-0.6)	V
				0.13	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1A, I_B=(-)100mA$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-120)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-100)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-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

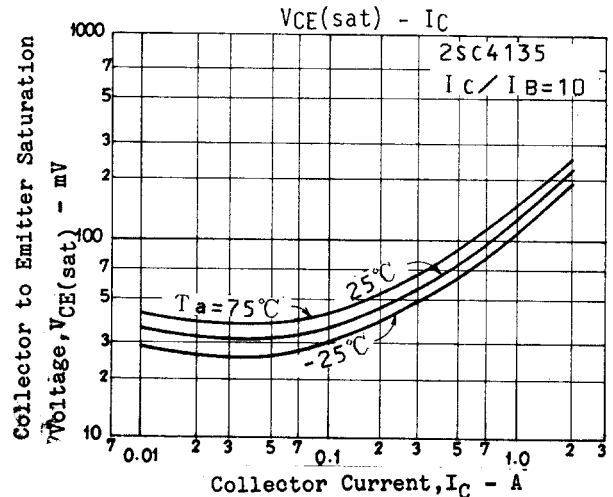
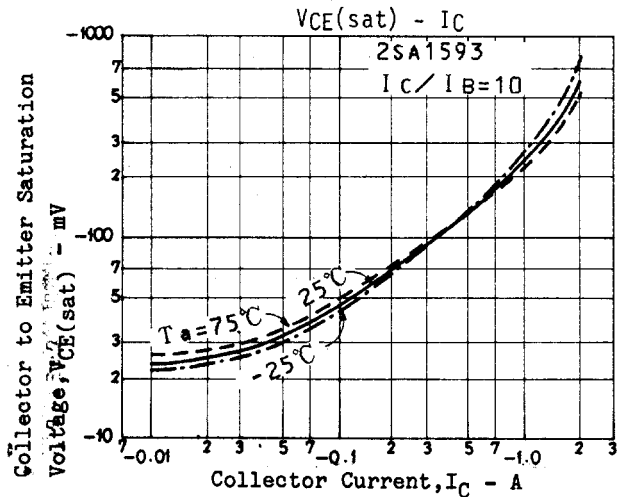
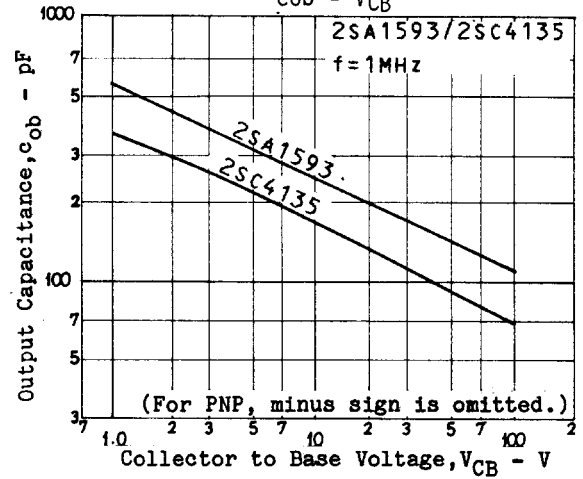
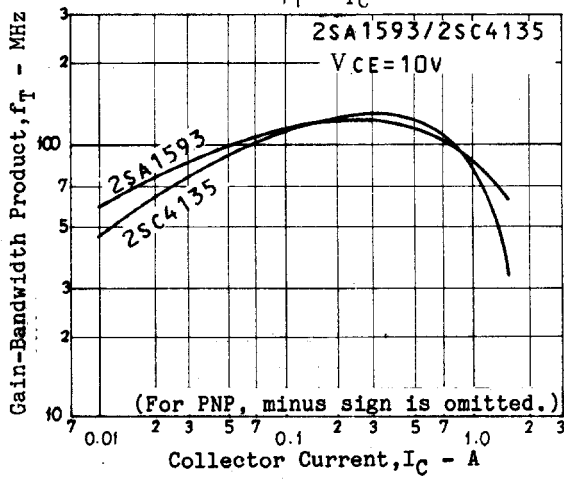
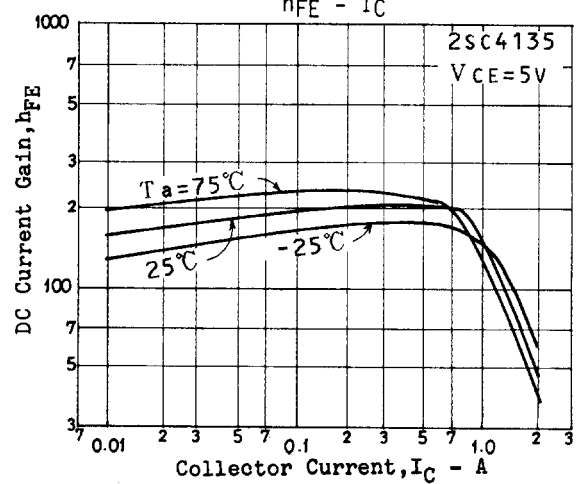
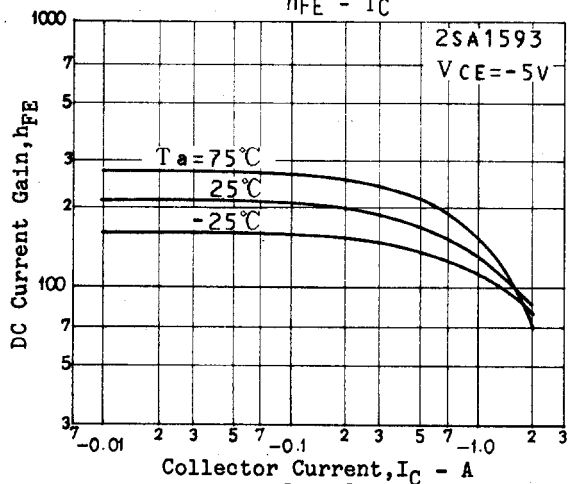
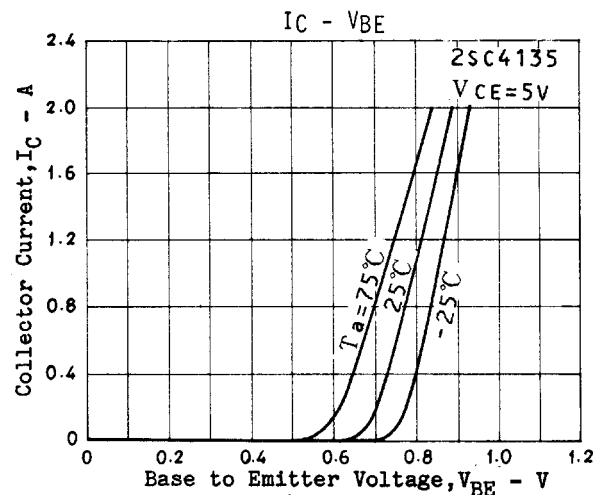
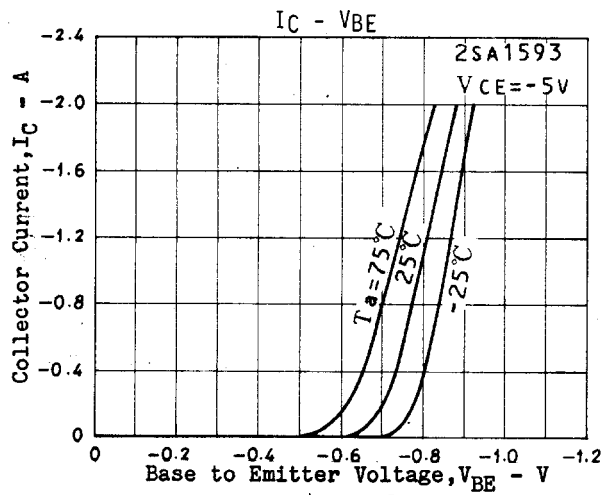
Switching Time Test Circuit



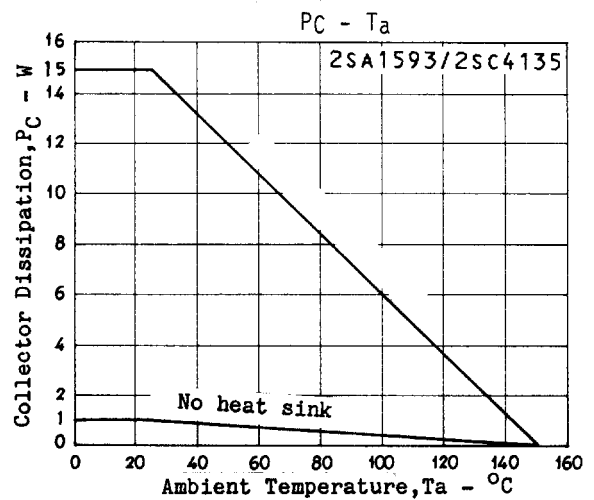
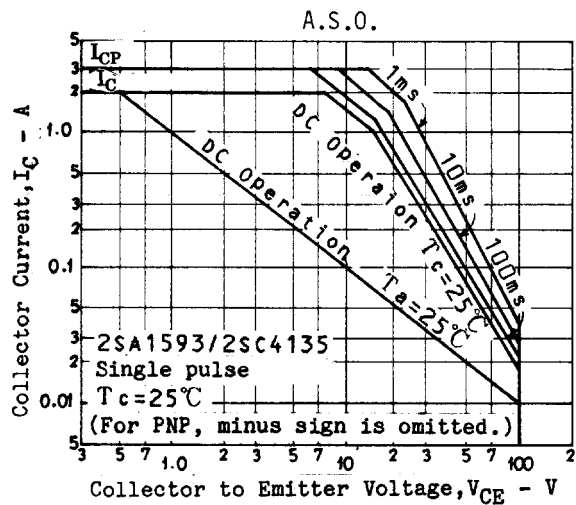
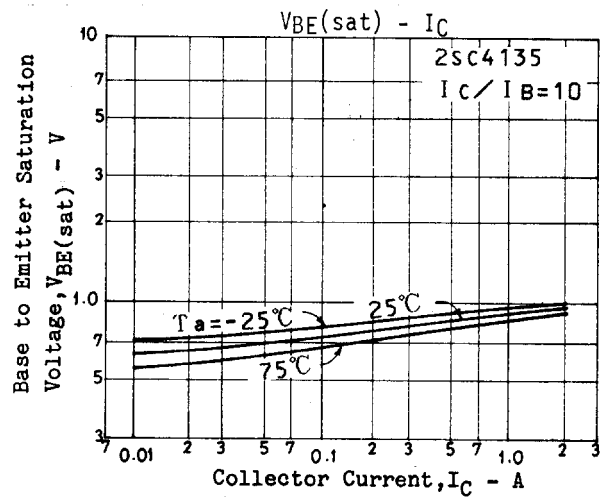
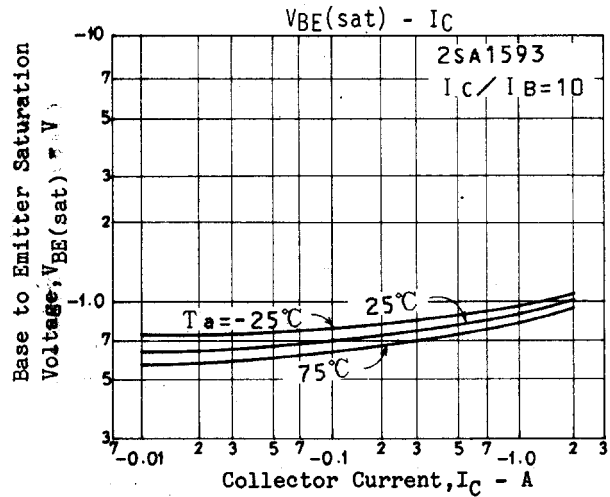
Unit (resistance :Ω, capacitance : F)
(For PNP, the polarity is reversed.)



2SA1593/2SC4135



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