



2SA1685/2SC4443

High-Speed Switching Applications

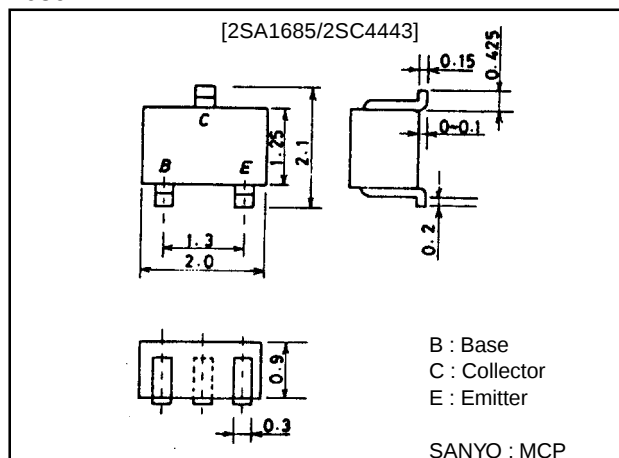
Features

- Fast switching speed.
- High gain-bandwidth product.
- Low saturation voltage.

Package Dimensions

unit:mm

2059



() : 2SA1685

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)40	V
Collector-to-Emitter Voltage	V_{CEO}		(-)20	V
Emitter-to-Base Voltage	V_{EBO}		(-)5	V
Collector Current	I_C		(-)150	mA
Collector Current (Pulse)	I_{CP}		(-)300	mA
Base Current	I_B		(-)30	mA
Collector Dissipation	P_C		150	mW
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}	$V_{CB}=(-)30V, I_E=0$			(-)0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			(-)0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=(-)1V, I_C=(-)10mA$	60*		270*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)10mA$		700		MHz
				(400)		MHz

Continued on next page.

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82098HA (KT)/7219YT, TS No.3200-1/5

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Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(2.9)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		2.6		pF
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		0.08	(-)0.2	V
				(-0.07)		V
				0.72	(-)1.0	V
				(-0.75)		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Delay Time	t_d	See specified Test Circuit		(14)11	20	ns
Rise Time	t_r	See specified Test Circuit		(11)10	20	ns
Storage Time	t_{stg}	See specified Test Circuit		(80)70	180	ns
Fall Time	t_f	See specified Test Circuit		(16)15	25	ns

* : 2SA1685/2SC4443 are classified by 10mA h_{FE} as follows :

2SA1685	60	3	120	90	4	180	
2SC4443	60	3	120	90	4	180	135 5 270

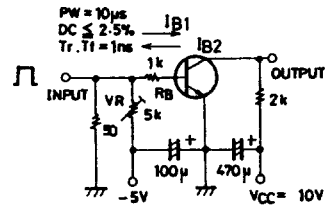
Marking 2SA1685 : YL

2SC4443 : GT

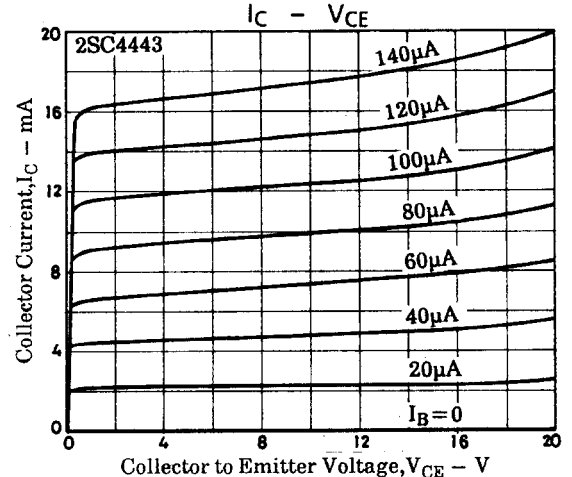
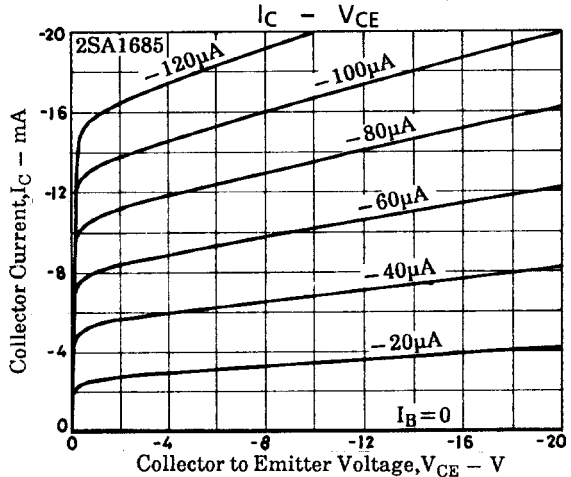
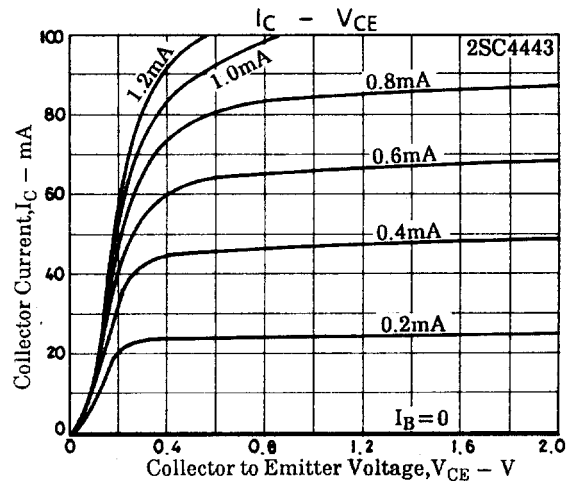
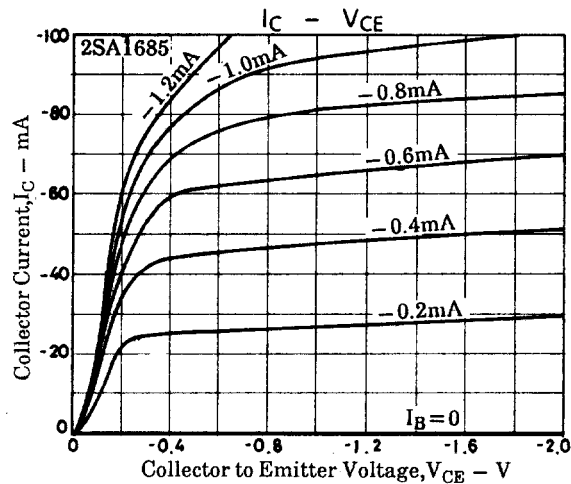
h_{FE} rank 2SA1685 : 3, 4

2SC4443 : 3, 4, 5

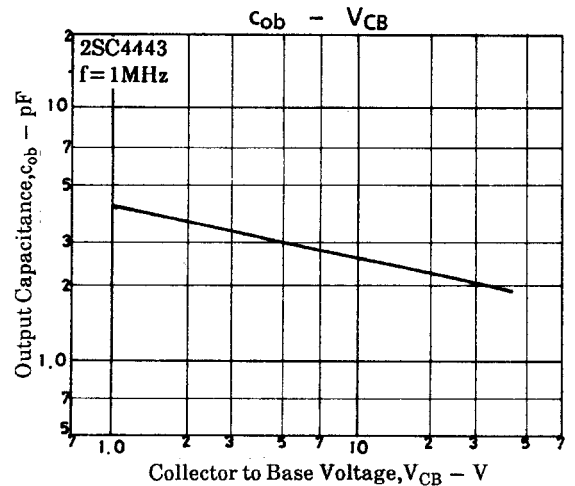
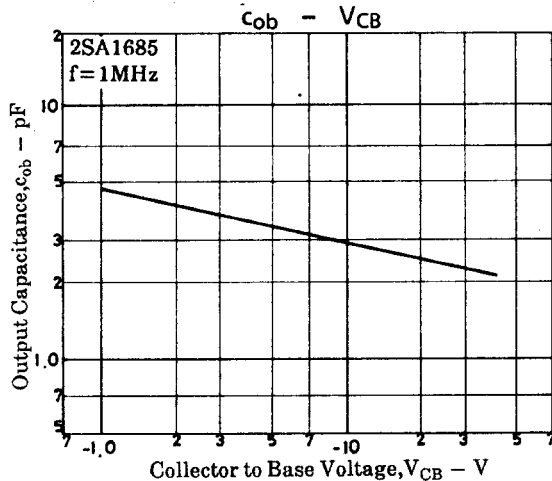
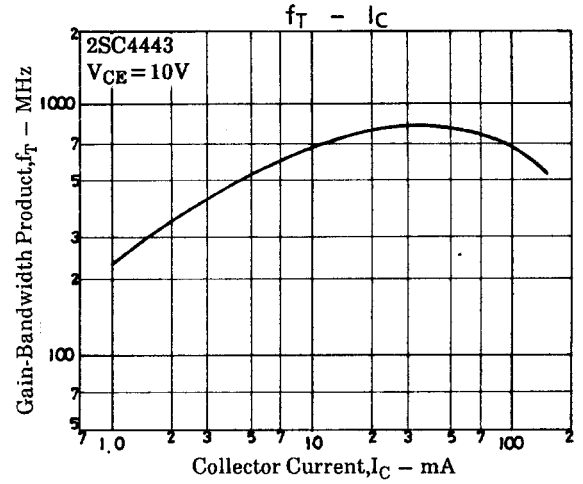
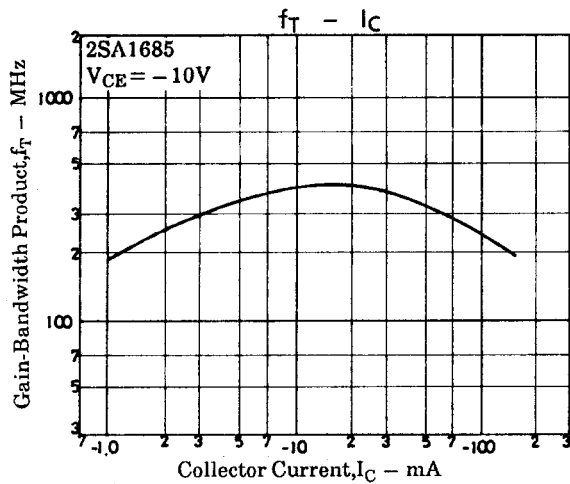
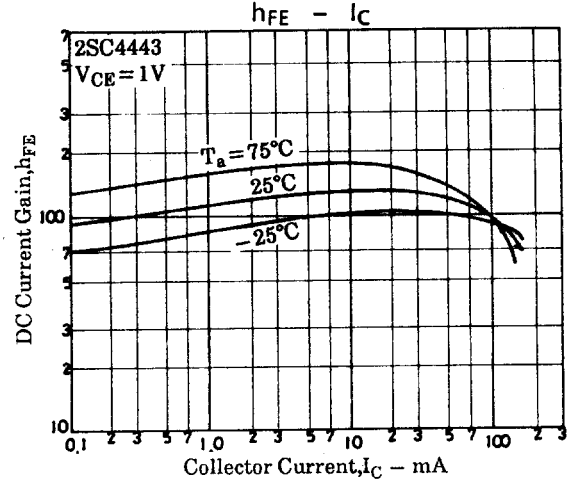
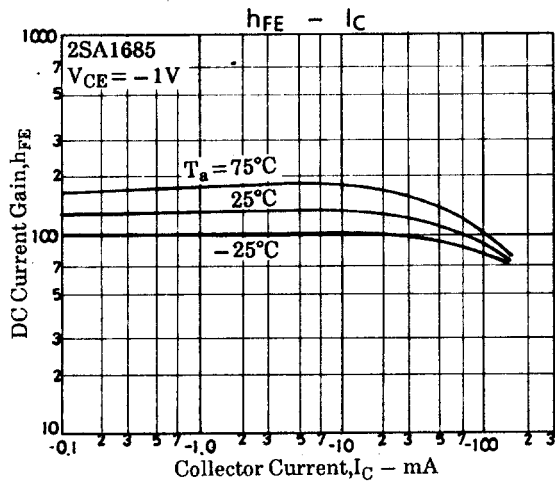
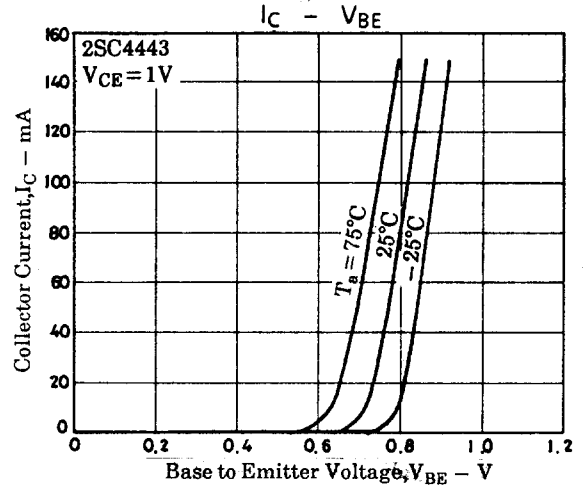
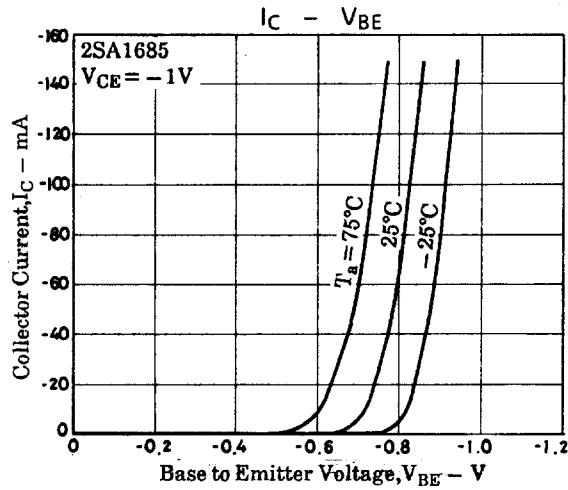
Switching Time Test Circuit

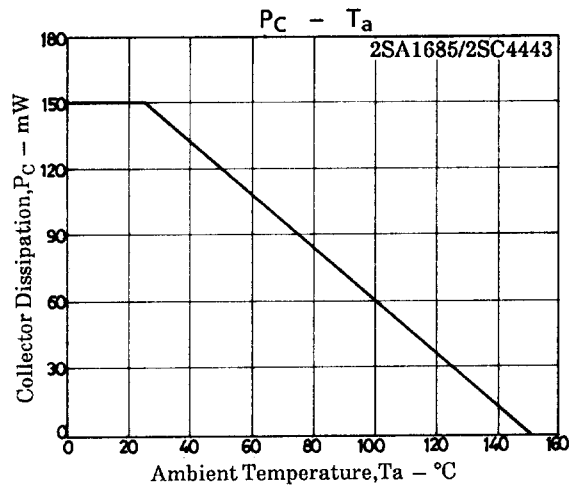
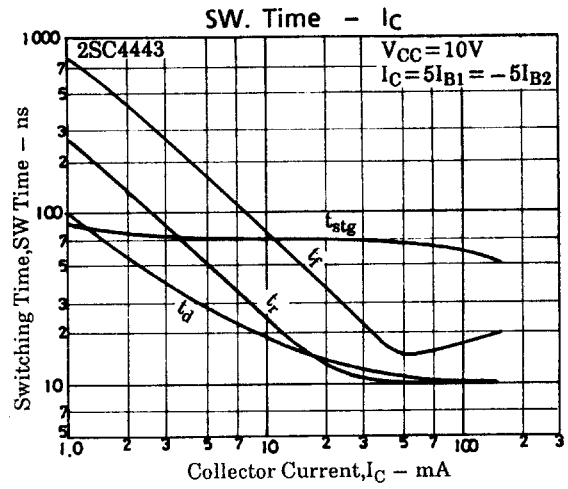
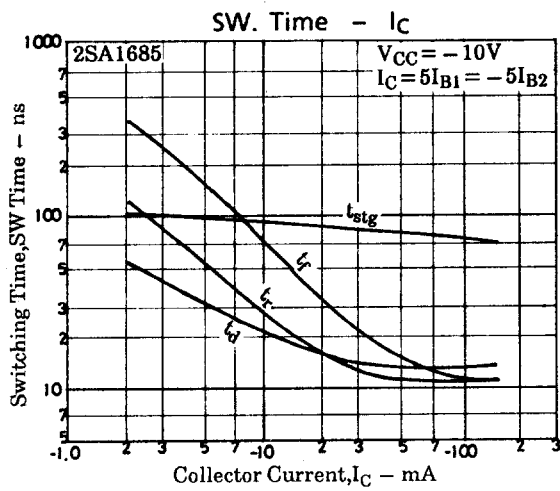
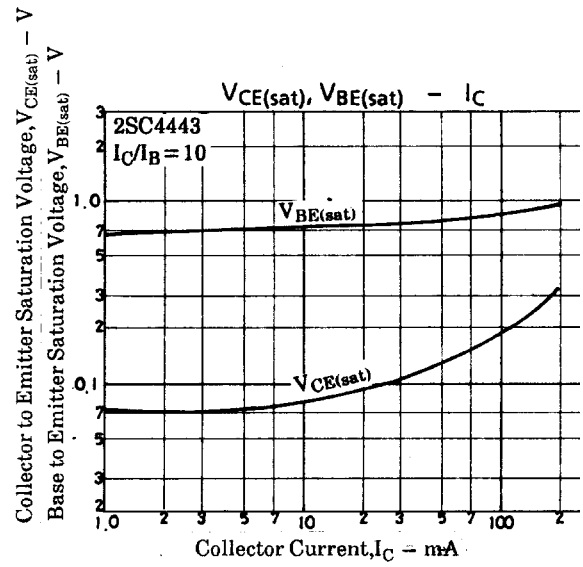
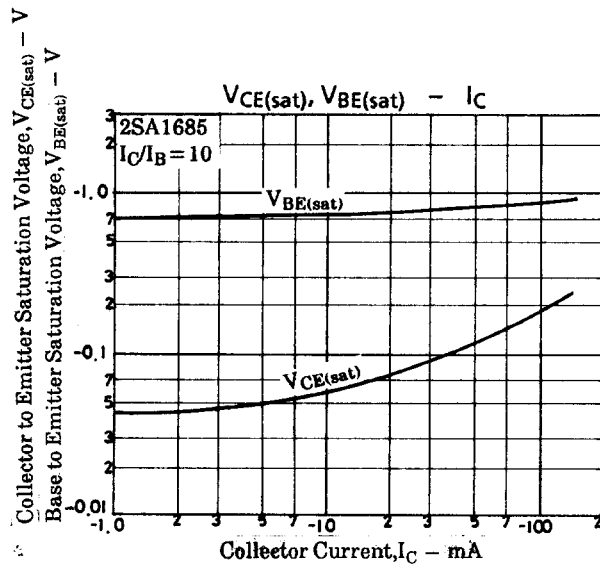


$5I_{B1} = -5I_{B2} = I_C = 50mA$
(For PNP, the polarity is reversed.)
Unit (resistance : Ω , capacitance : F)



2SA1685/2SC4443





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