



2SA1685/2SC4443

High-Speed Switching Applications

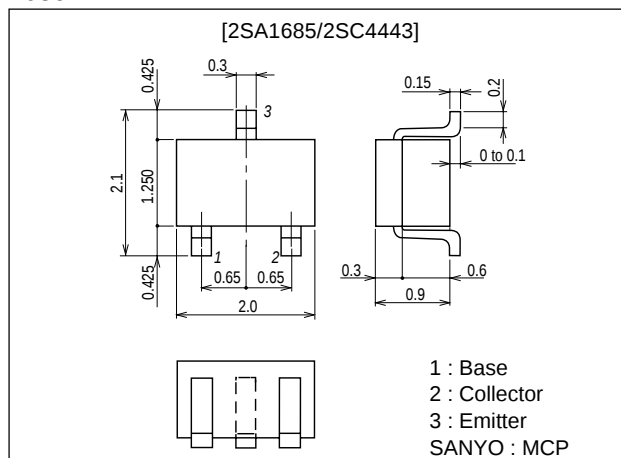
Features

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

Package Dimensions

unit:mm

2059B



() : 2SA1685

Specifications

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

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	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)30\text{V}, I_E=0$			(-)0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0$			(-)0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=(-)1\text{V}, I_C=(-)10\text{mA}$	60*		270*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10\text{V}, I_C=(-)10\text{mA}$		700		MHz
				(400)		MHz

Continued on next page.

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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

SANYO Electric Co.,Ltd. Semiconductor Company

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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
				2.6		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		0.08	(-)0.2	V
				(-0.07)		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		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 Votage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)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 follos :

2SA1685	Rank	3	4
	h_{FE}	60 to 120	90 to 180

2SC4443	Rank	3	4	5
	h_{FE}	60 to 120	90 to 180	135 to 270

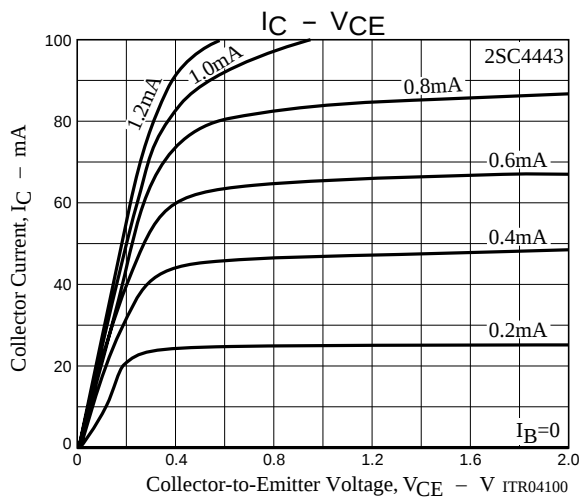
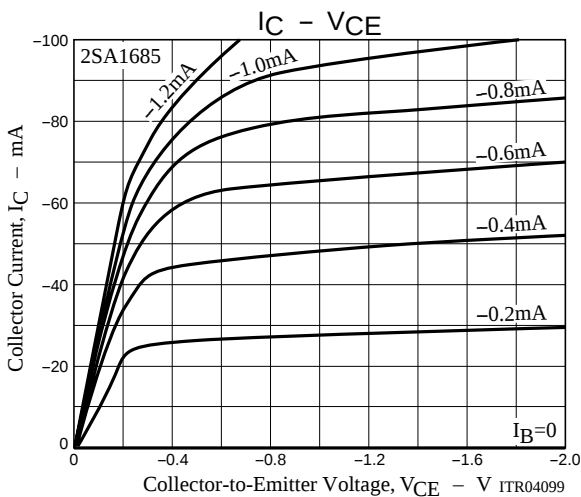
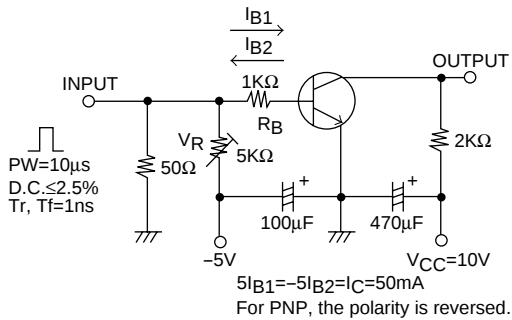
Marking 2SA1685 : YL

2SC4443 : GT

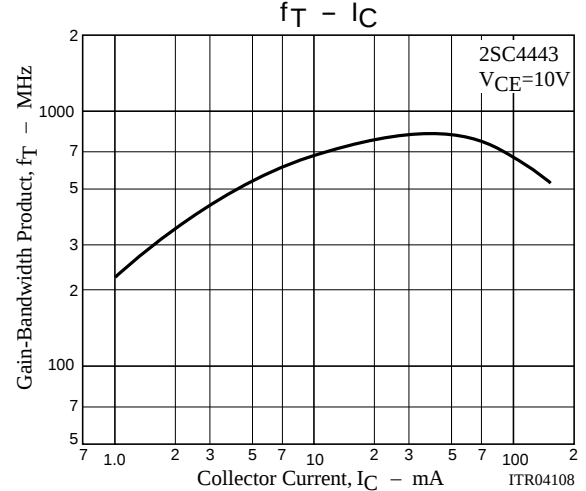
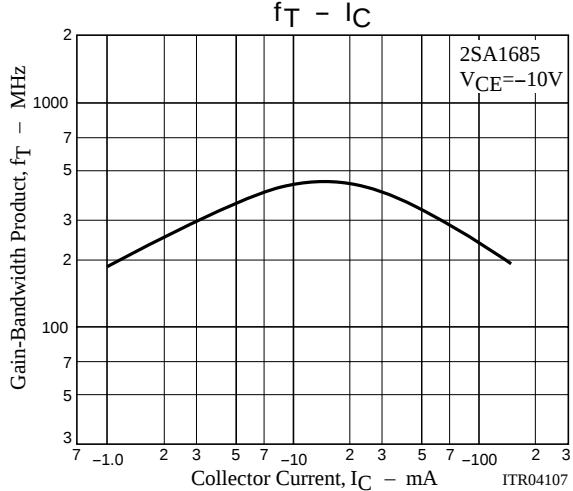
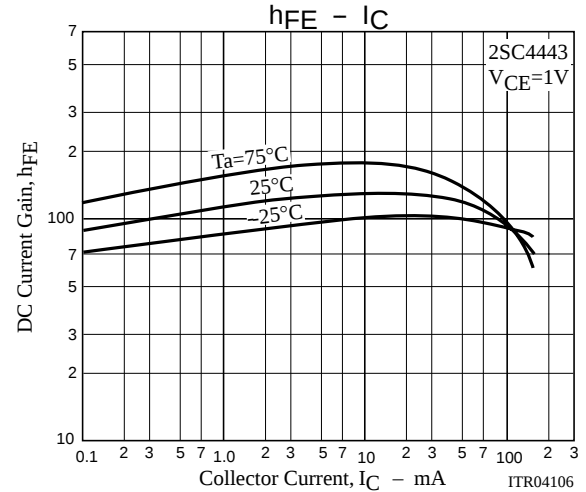
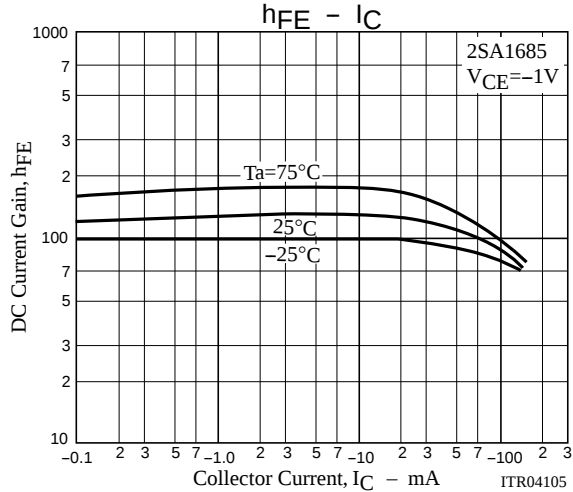
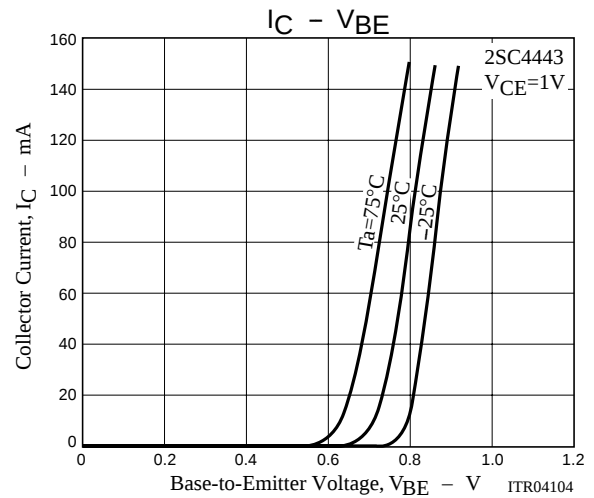
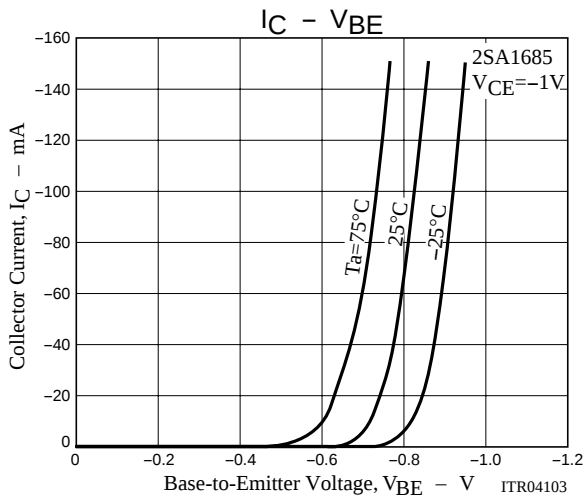
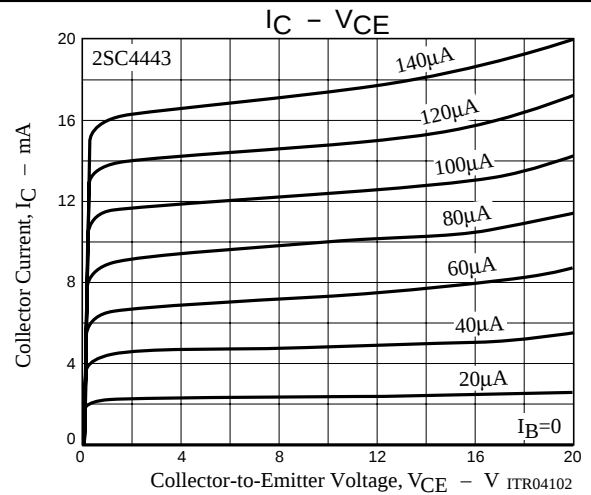
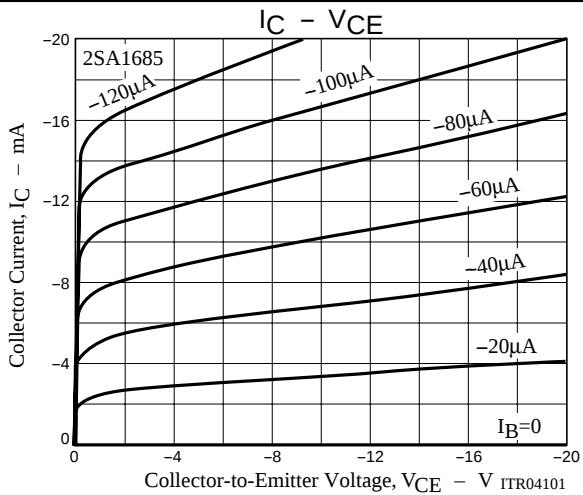
h_{FE} rank 2SA1685 : 3, 4

2SC4443 : 3, 4, 5

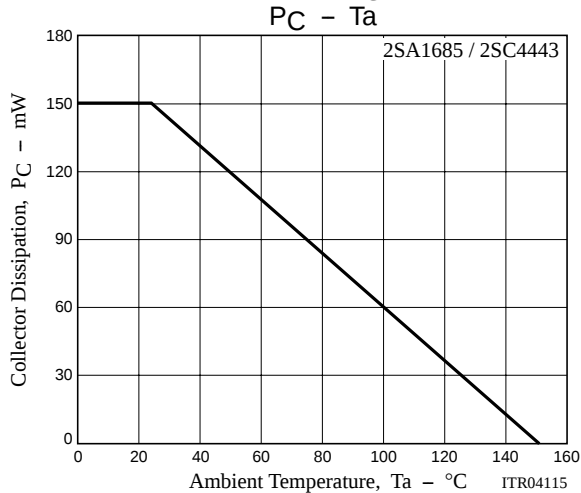
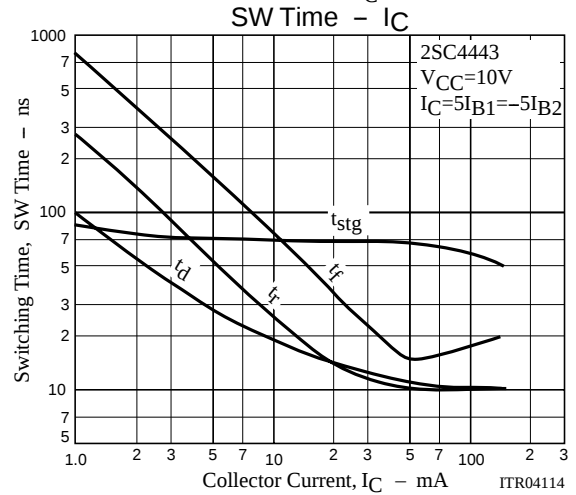
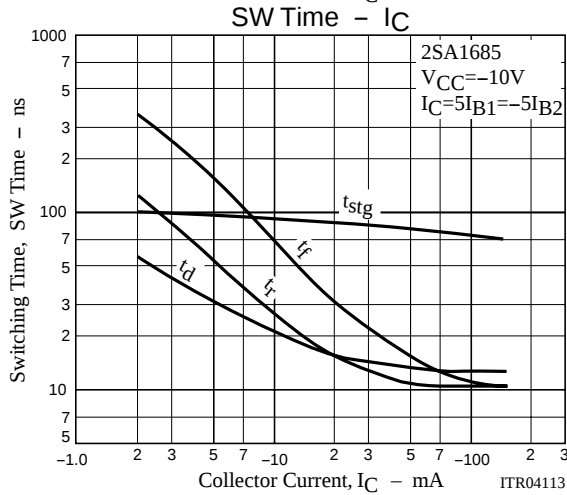
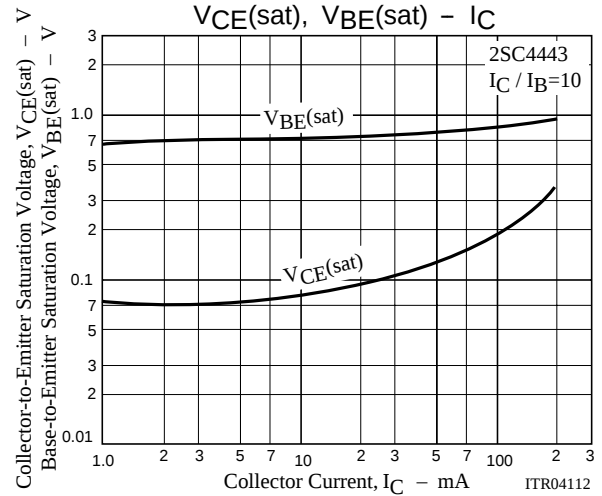
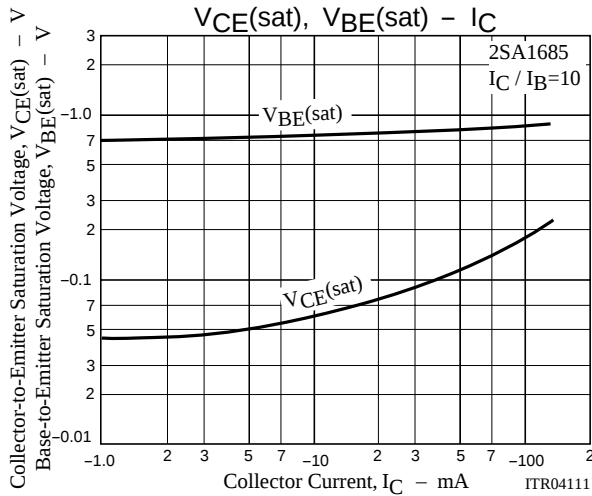
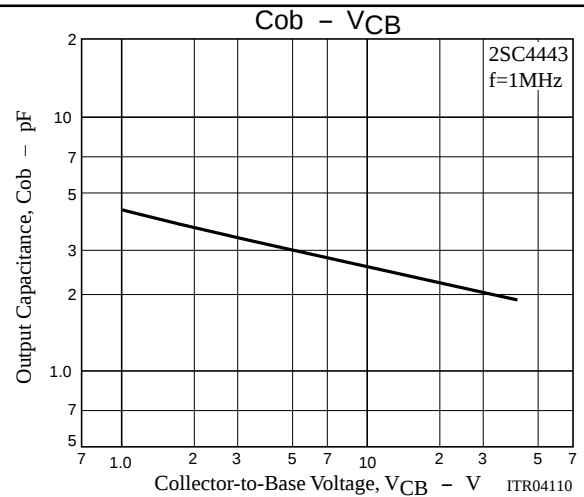
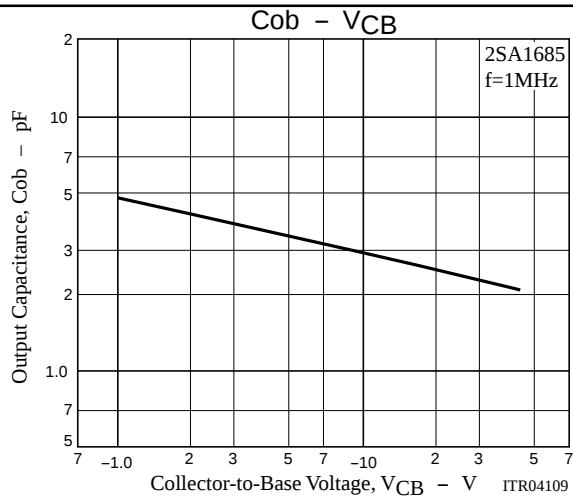
Switching Time Test Circuit



2SA1685/2SC4443



2SA1685/2SC4443



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