



2SA1415/2SC3645

High-Voltage Switching, Predriver Applications

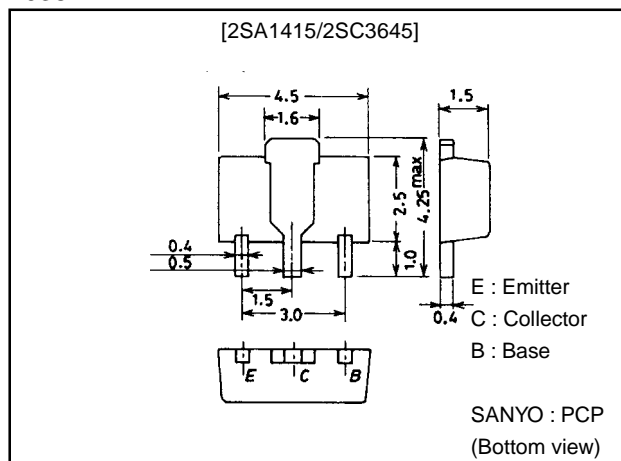
Features

- Adoption of FBET process.
- High breakdown voltage ($V_{CEO}=160V$).
- Excellent linearity of h_{FE} and small C_{ob} .
- Fast switching speed.
- Very small size marking it easy to provide high-density, small-sized hybrid ICs.

Package Dimensions

unit:mm

2038



() : 2SA1415

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)180	V
Collector-to-Emitter Voltage	V_{CEO}		(-)160	V
Emitter-to-Base Voltage	V_{EBO}		(-)5	V
Collector Current	I_C		(-)140	mA
Collector Current (Pulse)	I_{CP}		(-)200	mA
Collector Dissipation	$PC1$		500	mW
	$PC2$	Mounted on ceramic board (250mm ² ×0.8mm)	1.3	W
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Electrical Characteristics at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)80V, I_E=0$			(-)100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			(-)100	nA
DC Current Gain	h_{FE}	$V_{CE}=(-)5V, I_C=(-)10mA$	100*		400*	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)10mA$		150		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(4.0)		pF
					3.0	pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)50mA, I_B=(-)5mA$		(-0.14)	(-0.4)	V
				0.07	0.3	V
Turn-ON Time	t_{on}	See sepcified Test Circuit.		0.1		μs
Storage Time	t_{stg}	See sepcified Test Circuit.		1.5		μs
Fall Time	t_f	See sepcified Test Circuit.		0.1		μs

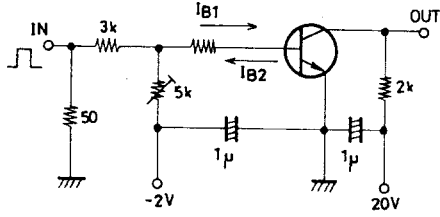
* : The 2SA1415/2SC3645 are classified by 10mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400
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Marking 2SA1415 : AA h_{FE} rank : R, S, T
 2SC3645 : CA

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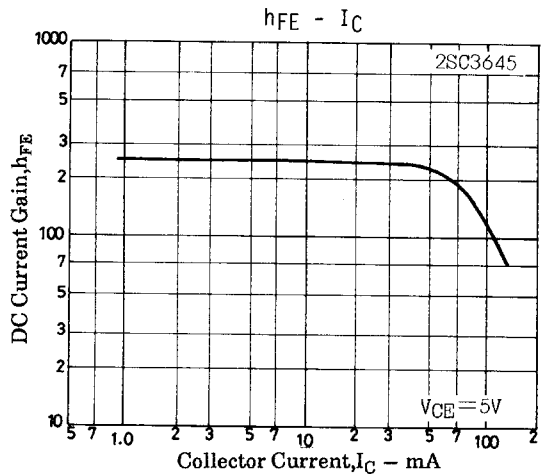
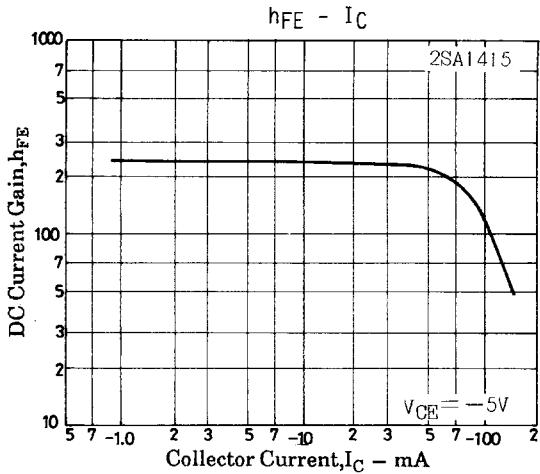
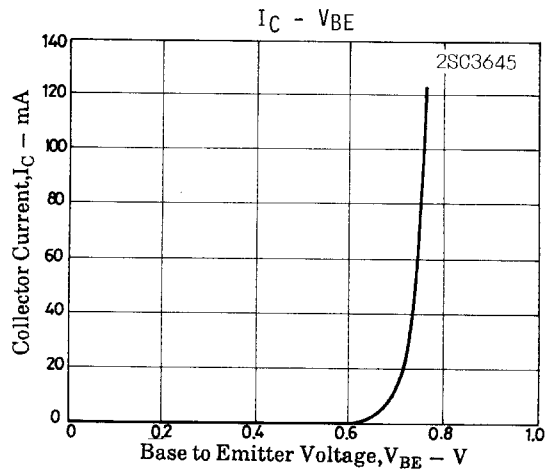
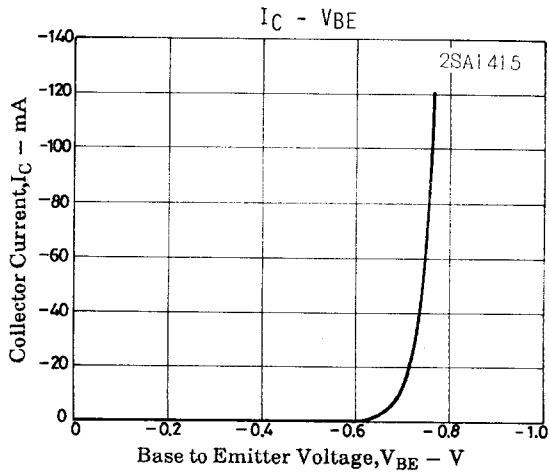
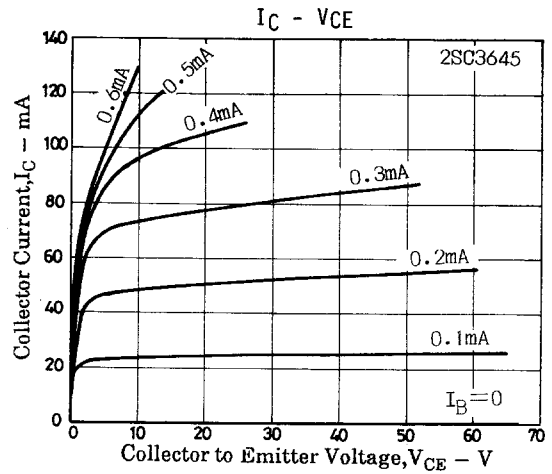
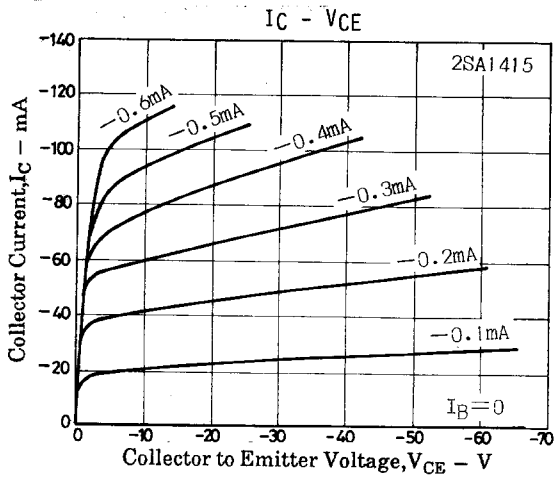
Switching Time Test Circuit



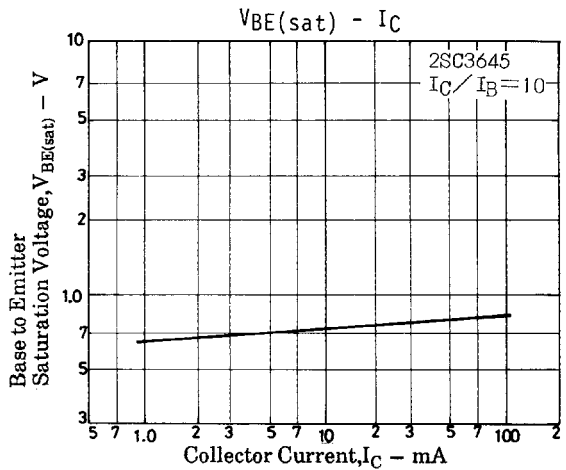
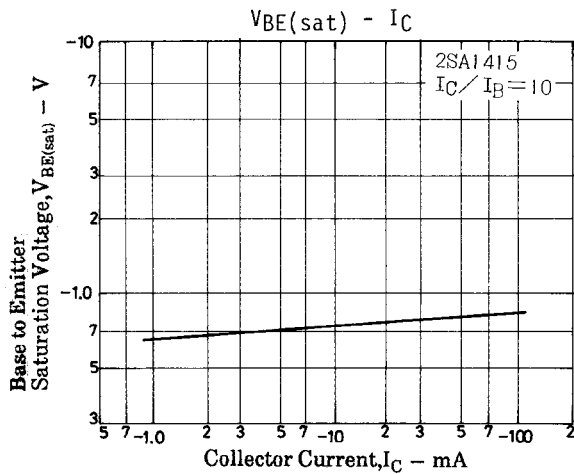
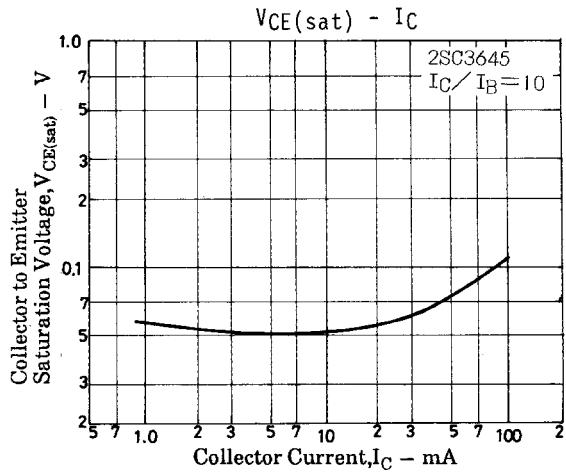
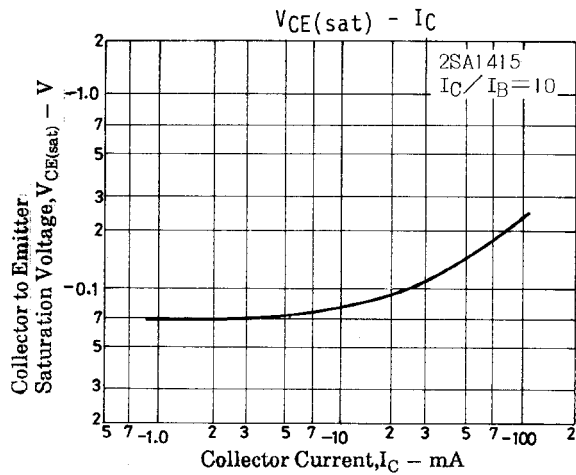
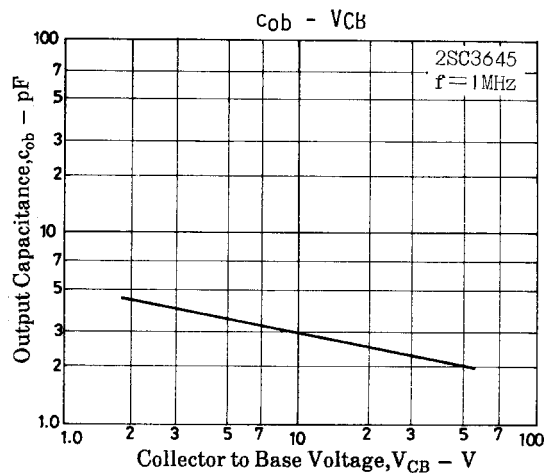
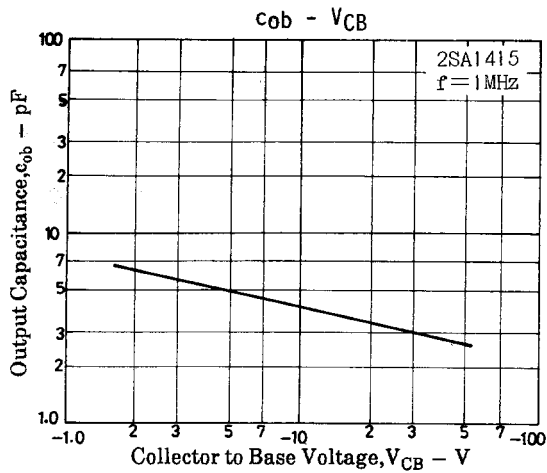
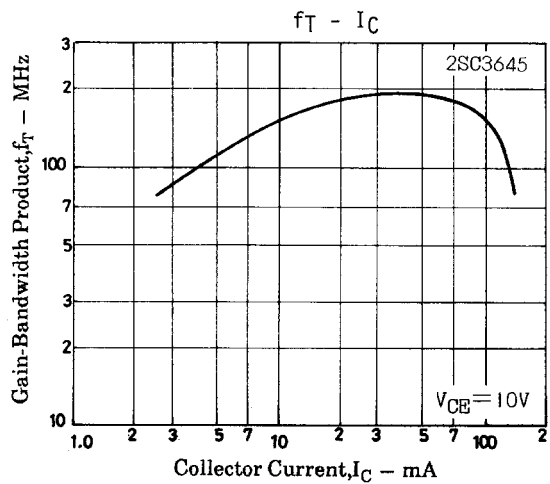
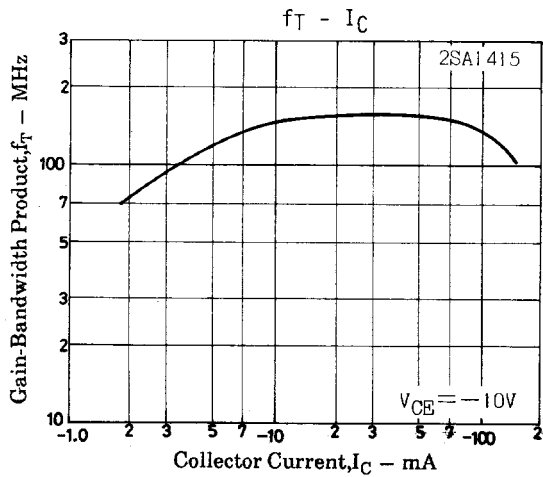
$$I_C = 10I_{B1} = 10I_{B2} = 10\text{mA}$$

(For PNP, the polarity is reversed)

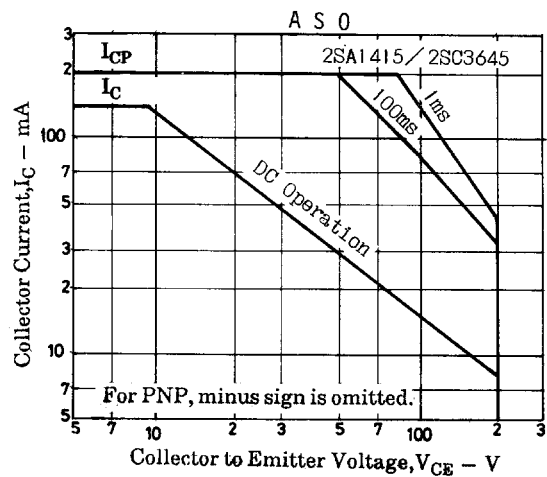
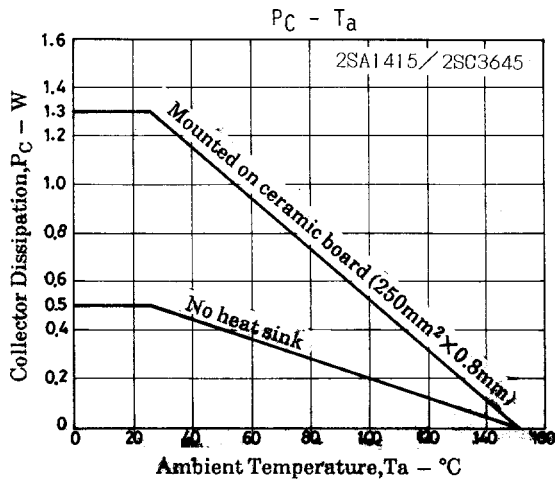
Unit (resistance : Ω , capacitance : F)



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