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DATA SHEET**2SA1415 / 2SC3645** — PNP / NPN Epitaxial Planar Silicon Transistors
**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.
- Ultrasmall size marking it easy to provide high-density, small-sized hybrid ICs.

Specifications () : 2SA1415**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	IC		(-)140	mA
Collector Current (Pulse)	ICP		(-)200	mA
Collector Dissipation	PC		500	mW
		Moutned on ceramic board (250mm ² ×0.8mm)	1.3	W
Junction Temperature	TJ		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking : 2SA1415 : AA, 2SC3645: CA

2SA1415 / 2SC3645

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = (-)80V, I_E = 0A$			(-)100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)4V, I_C = 0A$			(-)100	nA
DC Current Gain	h_{FE}	$V_{CE} = (-)5V, I_C = (-)10mA$	140*		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)3.0		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)50mA, I_B = (-)5mA$		(-0.14)0.07	(-0.4)0.3	V
Turn-ON Time	t_{on}	See sepcified Test Circuit.		0.1		μs
Strage Time	t_{stg}	See sepcified Test Circuit.		1.5		μs
Fall Time	t_f	See sepcified Test Circuit.		0.1		μs

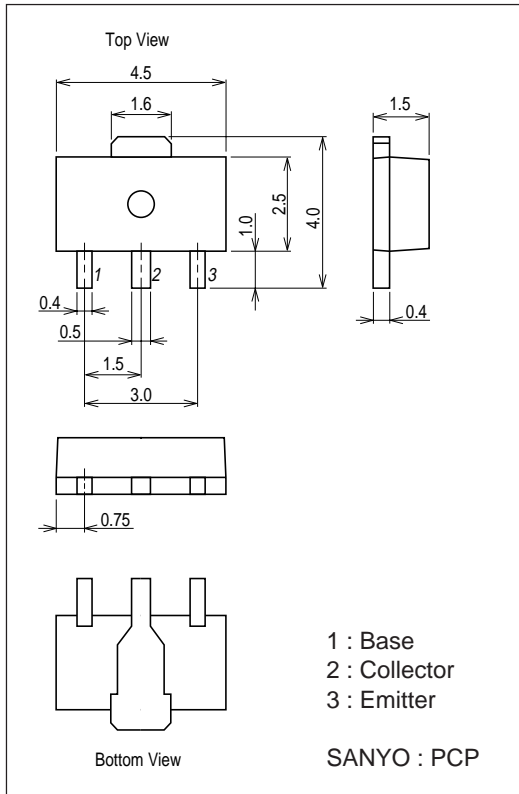
* : The 2SA1415/2SC3645 are classified by 10mA h_{FE} as follows :

Rank	S	T
h_{FE}	140 to 280	200 to 400

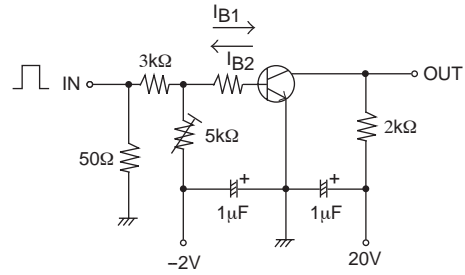
Package Dimensions

unit : mm (typ)

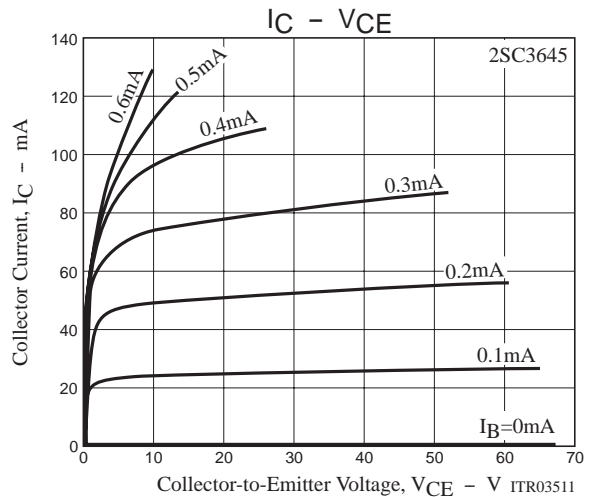
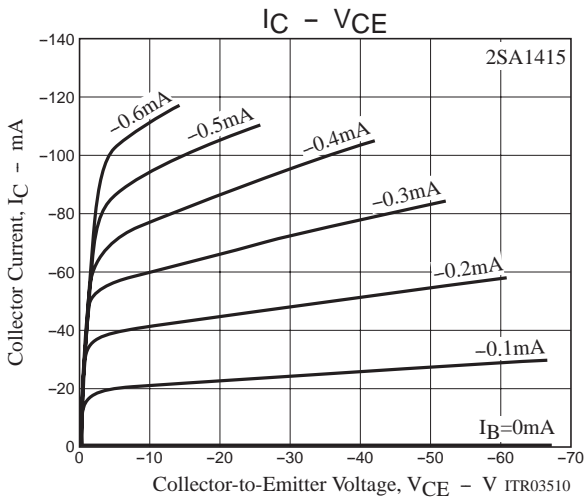
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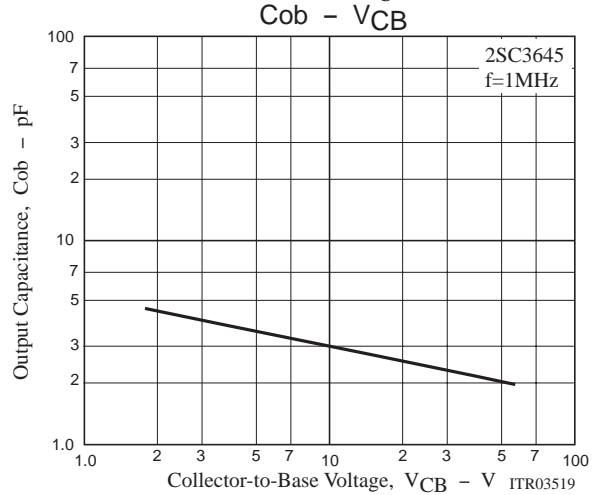
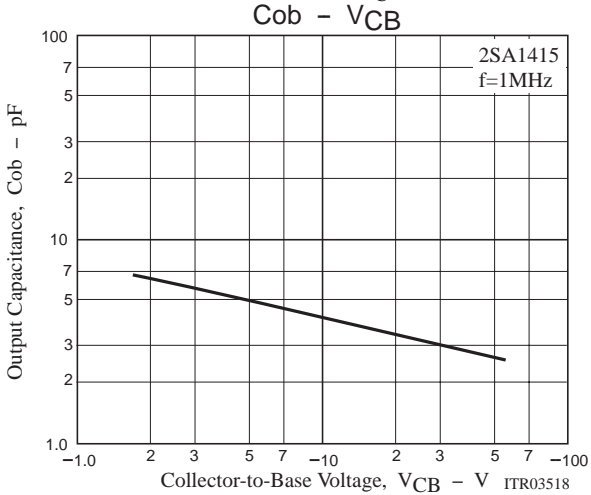
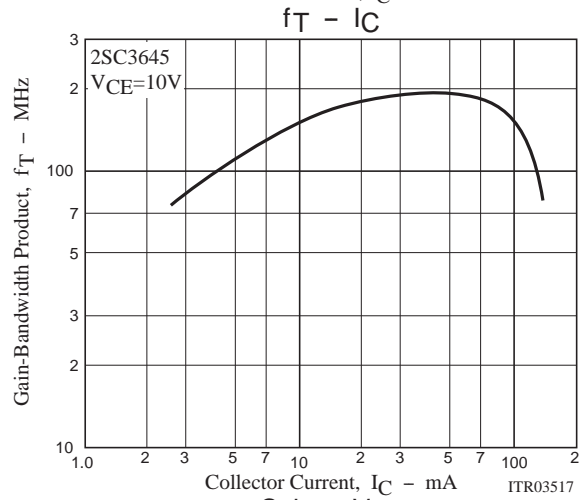
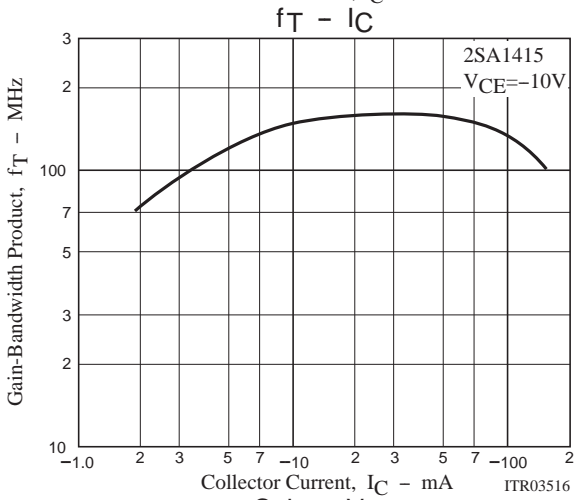
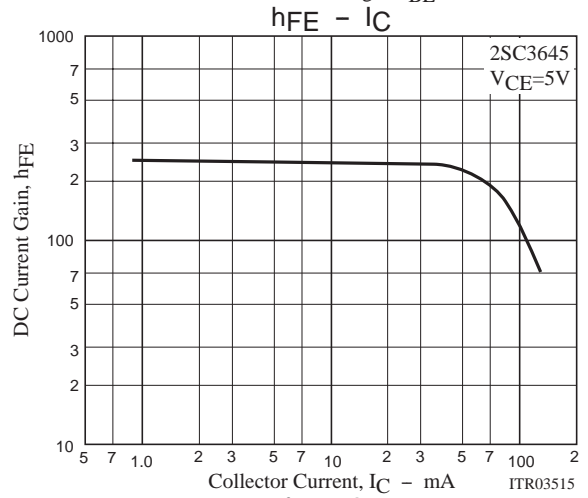
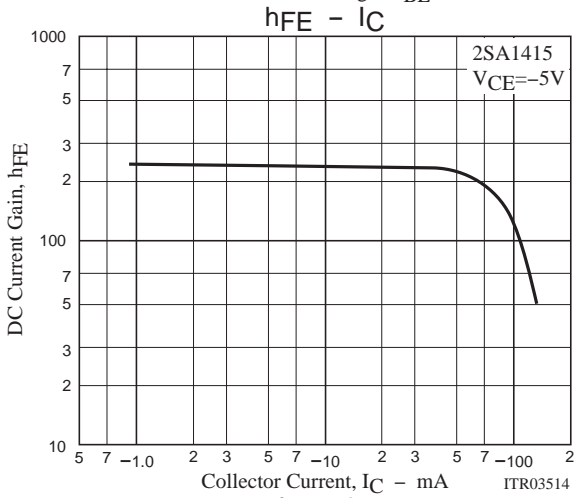
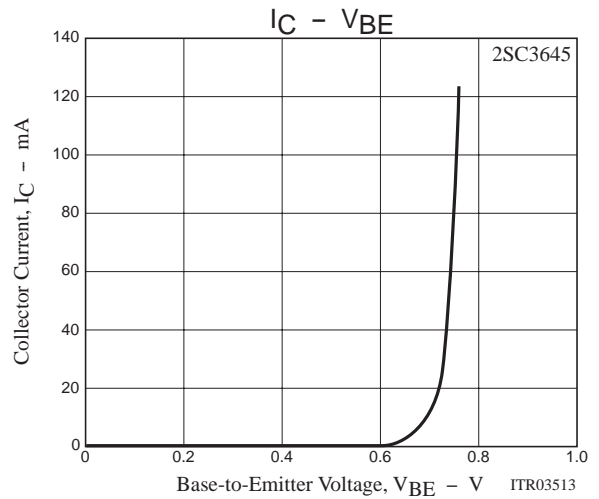
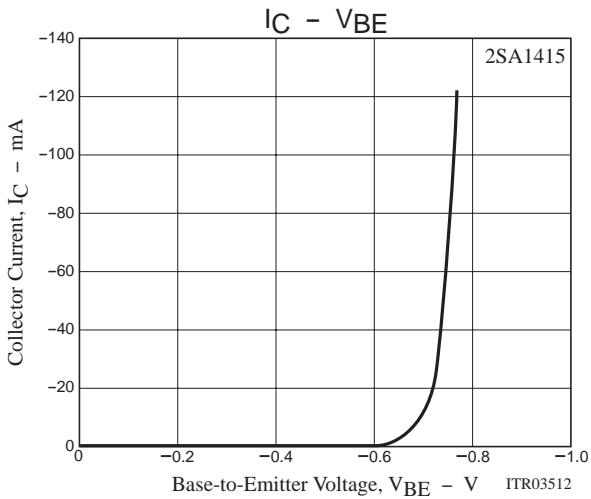
Switching Time Test Circuit



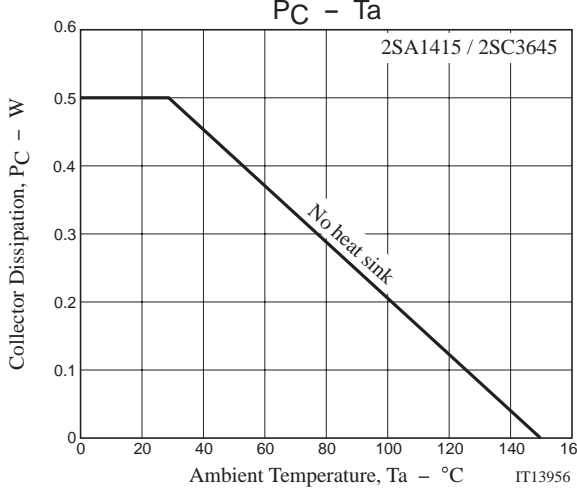
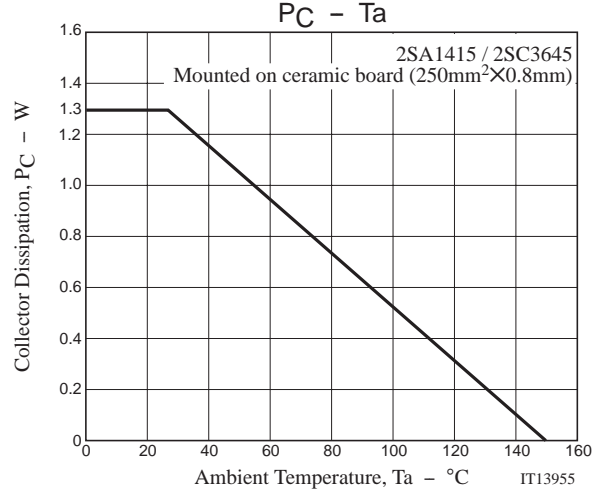
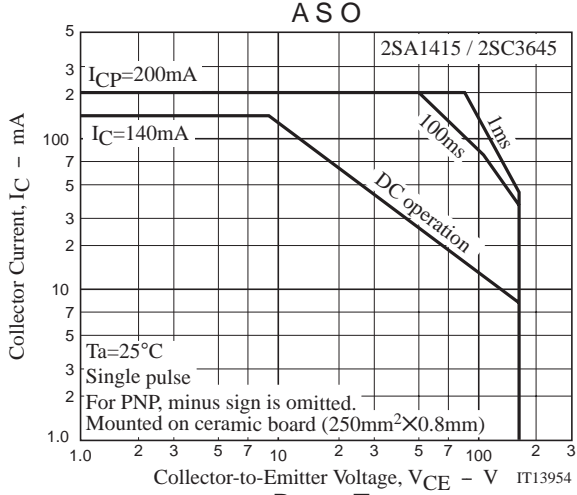
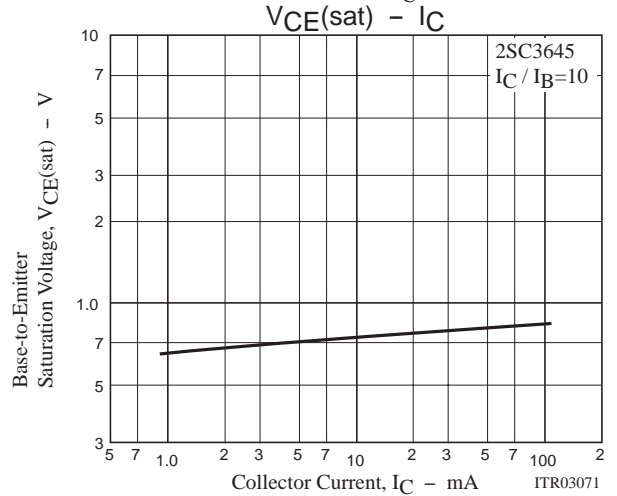
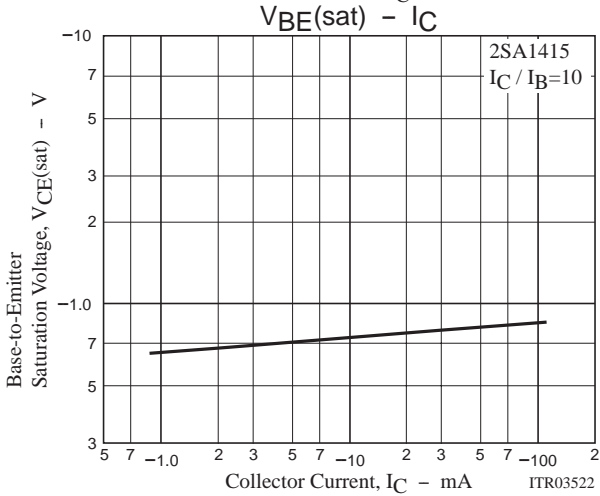
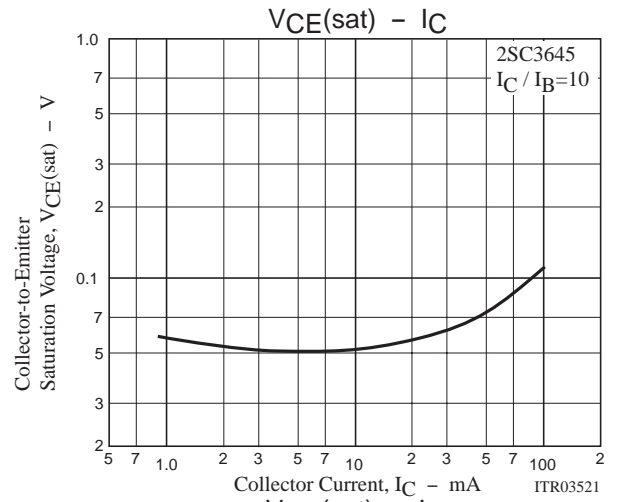
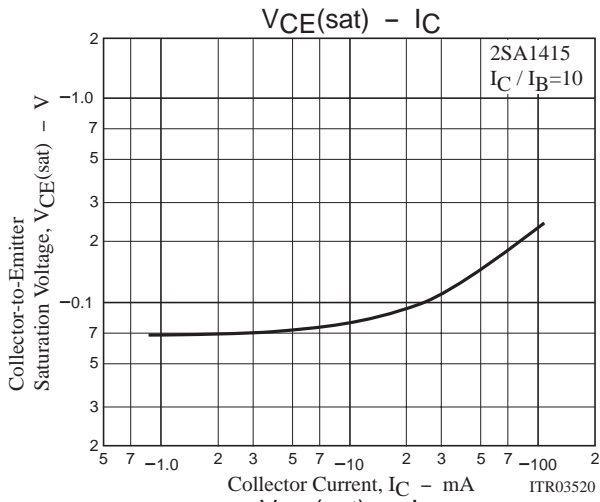
$I_C = 10I_{B1} = -10I_{B2} = 10mA$
For PNP, the polarity is reversed.



2SA1415 / 2SC3645



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