



High-Voltage Switching Applications

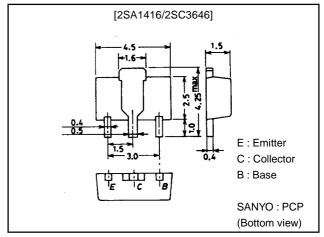
Features

- · Adoption of FBET, MBIT processes.
- · High breakdown voltage and large current capacity.
- · Fast switching time.
- · Very small size making it easy to provide highdensity, small-sized hybrid ICs.

Package Dimensions

unit:mm

2038



(): 2SA1416

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		(–)120	V
Collector-to-Emitter Voltage	VCEO		(–)100	V
Emitter-to-Base Voltage	V _{EBO}		(–)6	V
Collector Current	IC		(-)1	Α
Collector Current (Pulse)	I _{CP}		(-)2	Α
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

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions		Ratings		
Farameter	Symbol	Conditions	min	typ	max	Unit
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	hFE	V _{CE} =(-)5V, I _C =(-)100mA	100*		400*	
Gain-Bandwidth Product	fT	V _{CE} =(-)10V, I _C =(-)100mA		120		MHz
Output Capacitance	C _{ob}	V _{CB} =(-)10V, f=1MHz		(13)		pF
				8.5		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =(-)400mA, I _B =(-)40mA		(-0.2)	(-0.6)	V
				0.1	0.4	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =(-)400mA, I _B =(-)40mA		(-)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	V _(BR) CBO	I _C =(-)10μΑ, I _E =0	(-)120			V
Collector-to-Emitter Breakdown Voltage	V _(BR) CEO	I _C =(-)1mA, R _{BE} =∞	(-)100			V
Emitter-to-Base Breakdown Votage	V(BR)EBO	I _E =(-)10μΑ, I _C =0	(–)6			V
Turn-ON Time	ton	See specified Test Circuit.		(80)		ns
				80		ns
Storage Time	t _{stg}	See specified Test Circuit.		(700)		ns
				850		ns
Fall Time	t _f	See specified Test Circuit.		(40)		ns
				50		ns

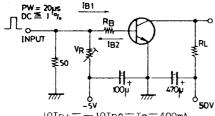
* : The 2SA1416/2SC3646 are classified by 100mA h_{FE} as follows :

100	R	200	140	S	280	200	Т	400
2SA1416 · AB			her rank · R S T					

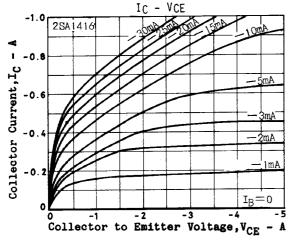
Marking

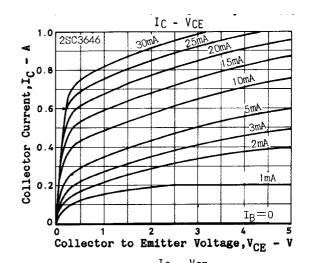
2SC3646 : CB

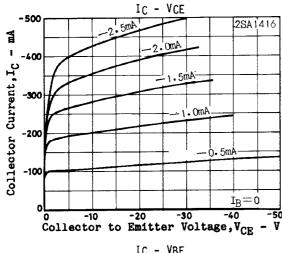
Switching Time Test Circuit

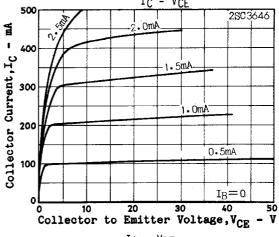


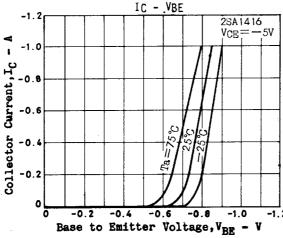
 $10I_{B2}=I_{C}=400mA$ (For PNP, the polarity is reversed) Unit (resistance : Ω , capacitance : F)

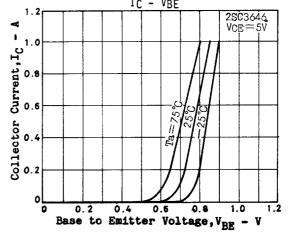


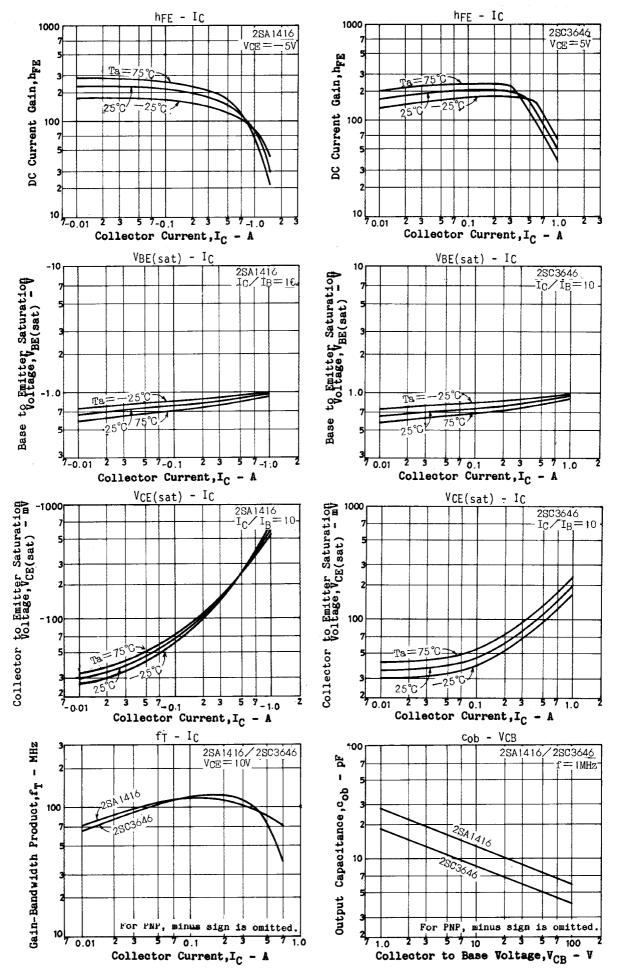




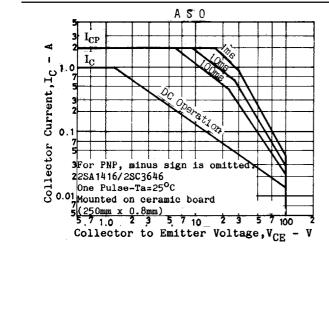


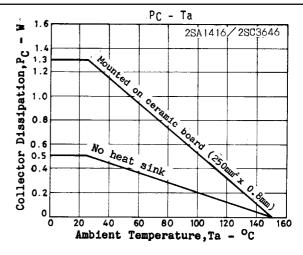






2SA1416/2SC3646





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