



2SA1417 / 2SC3647 — High-Voltage Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistors

Features

- Adoption of FBET, MBIT processes.
- High breakdown voltage and large current capacity.
- Ultrasmall size making it easy to provide high-density small-sized hybrid ICs.

Specifications () : 2SA1417

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-)120	V
Collector-to-Emitter Voltage	V _{CEO}		(-)100	V
Emitter-to-Base Voltage	V _{EBO}		(-)6	V
Collector Current	I _C		(-)2	A
Collector Current (Pulse)	I _{CP}		(-)3	A
Collector Dissipation	P _C		500	mW
		Mounted on a ceramic board (250mm ² X0.8mm)	1.5	W
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} =(-)100V, 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 =(-)100mA	100*		400*	
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)100mA		120		MHz
Output Capacitance	C _{ob}	V _{CB} =(-)10V, f=1MHz		(25)16		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =(-)1A, I _B =(-)100mA		(-0.22)0.13	(-0.6)0.4	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =(-)1A, I _B =(-)100mA		(-)0.85	(-)1.2	V

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* ; The 2SA1417 / 2SC3647 are classified by 100mA h_{FE} as follows:

Rank	R	S	T
h _{FE}	100 to 200	140 to 280	200 to 400

Marking 2SA1417: AC

2SC3647: CC

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2SA1417 / 2SC3647

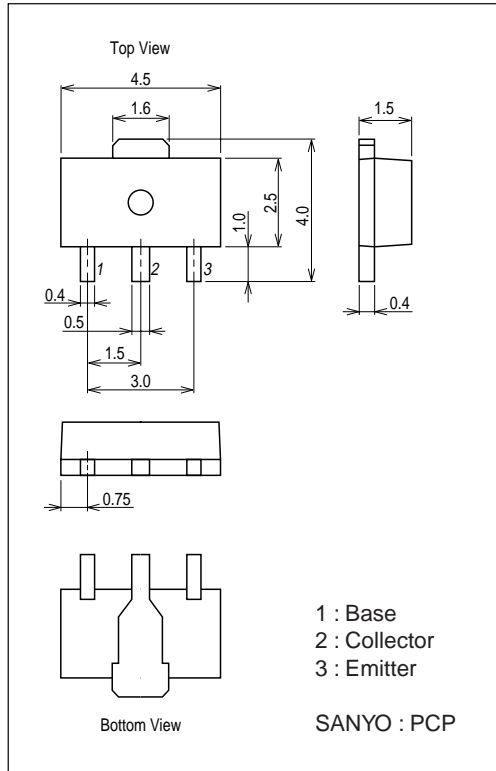
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0A$	(-120)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-100)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0A$	(-6)			V
Turn-On Time	t_{on}	See specified Test Circuit.		(80)80		ns
Storage Time	t_{stg}	See specified Test Circuit.		(750)1000		ns
Fall Time	t_f	See specified Test Circuit.		(40)50		ns

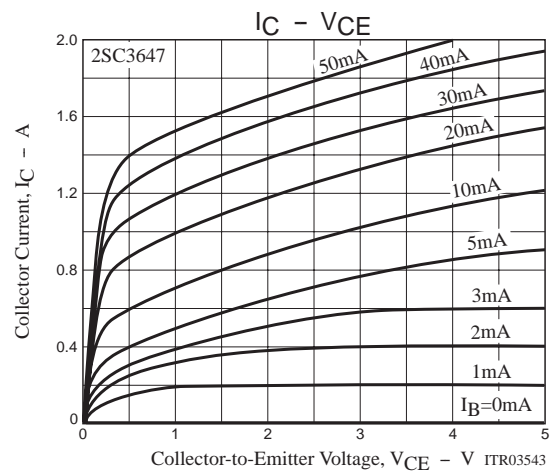
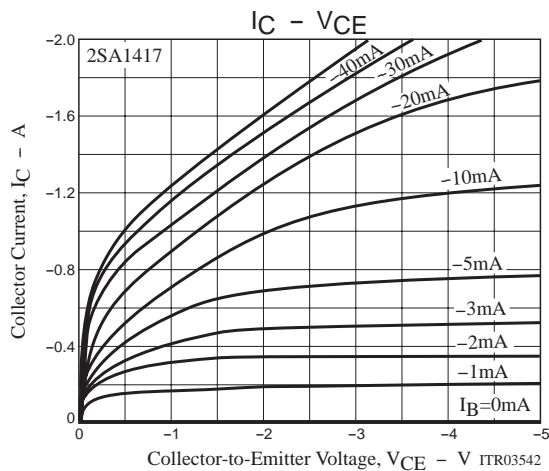
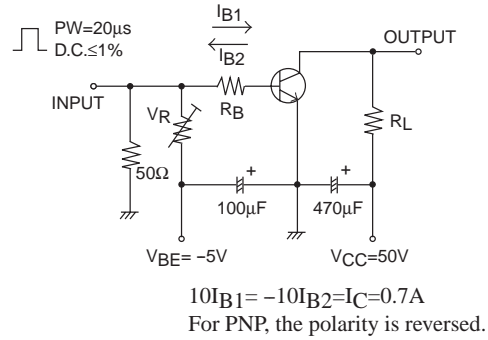
Package Dimensions

unit : mm

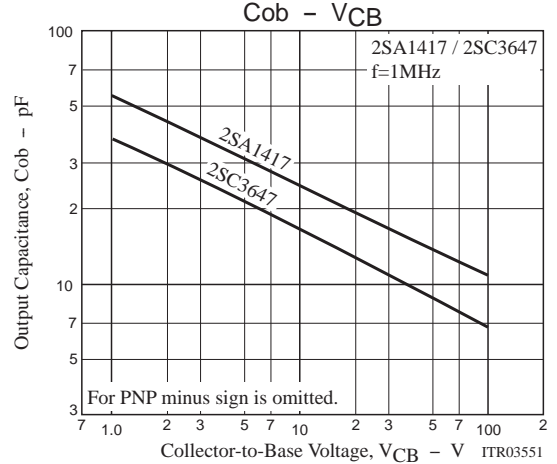
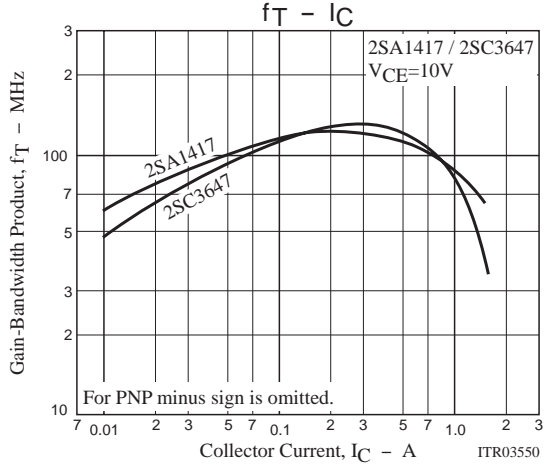
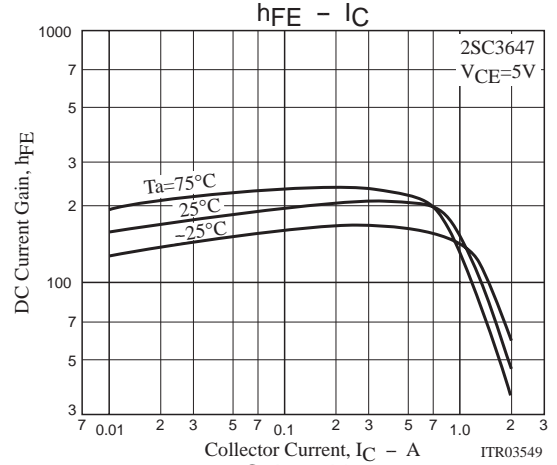
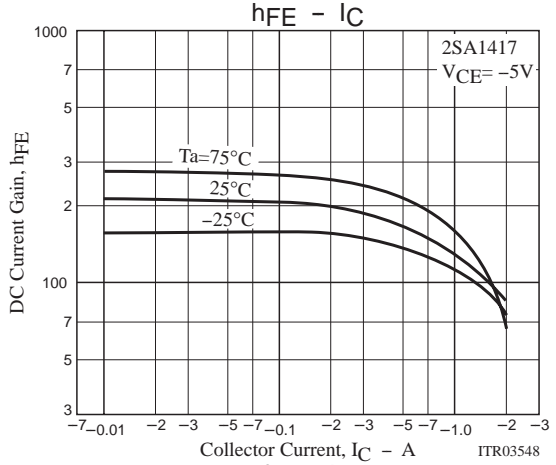
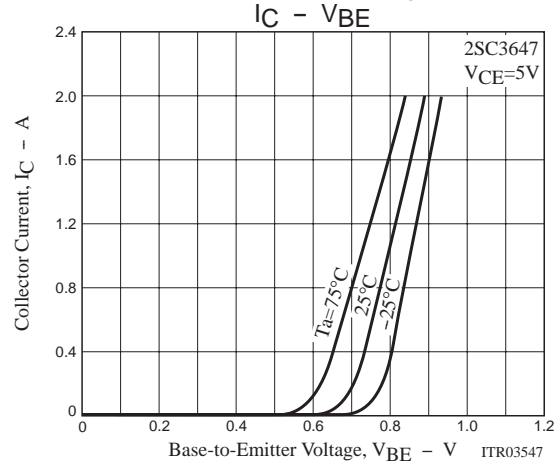
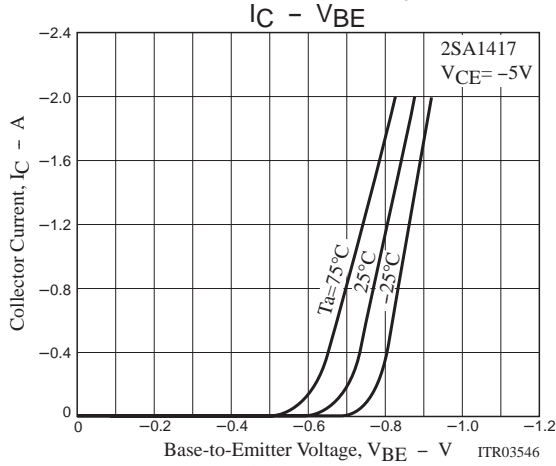
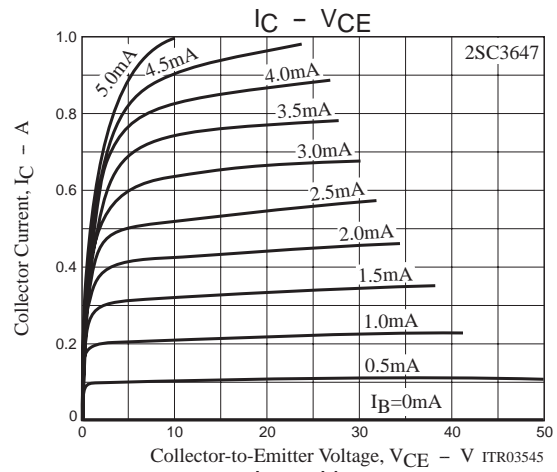
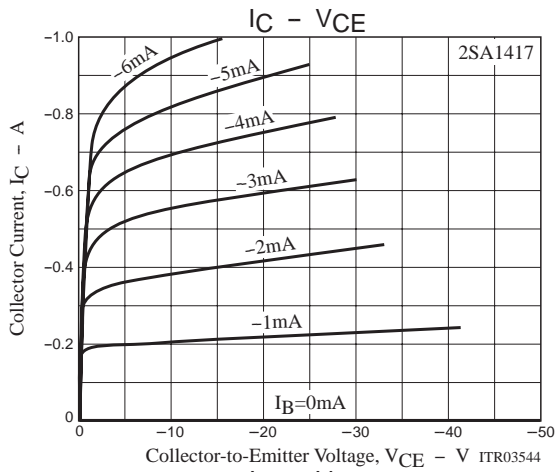
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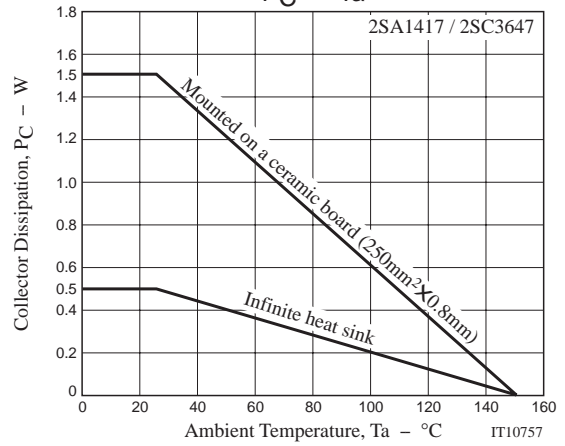
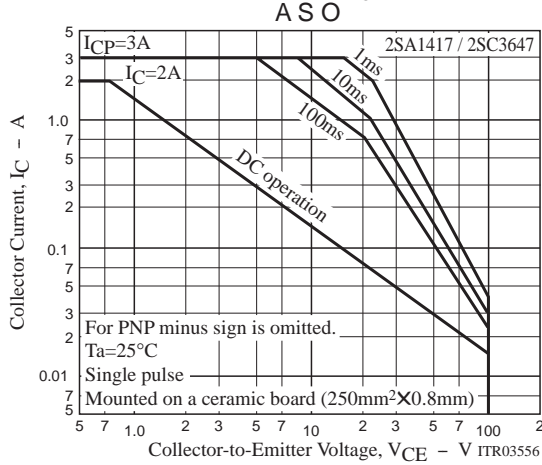
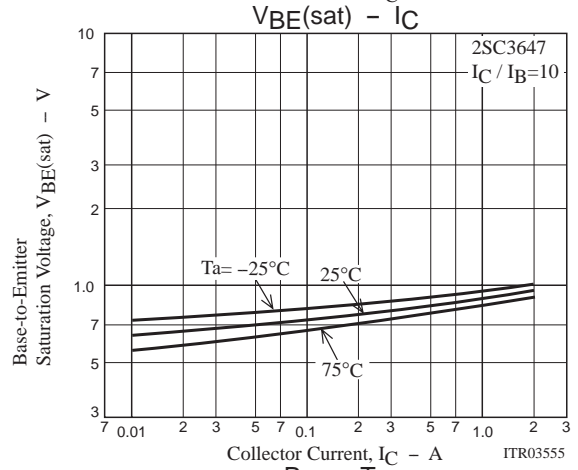
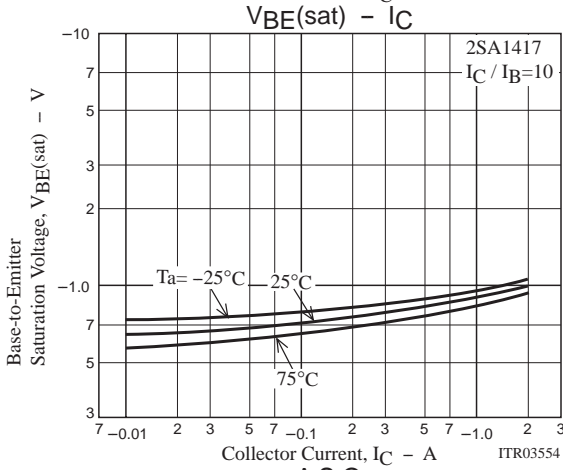
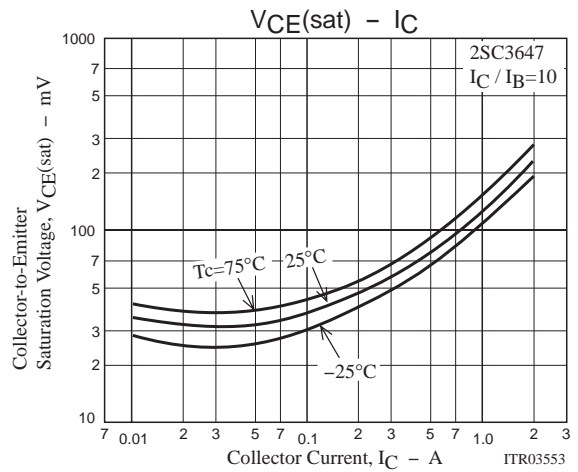
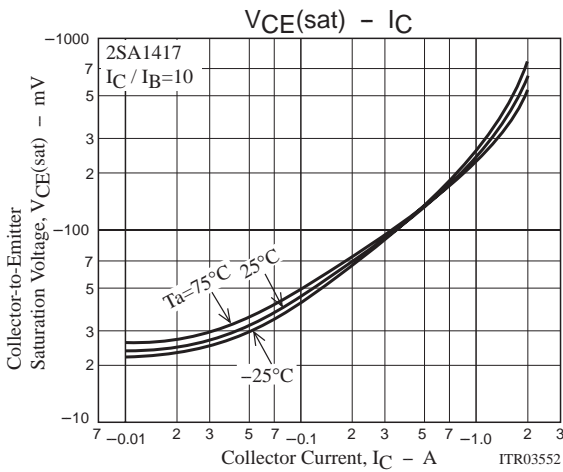
Switching Time Test Circuit



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