



SANYO Semiconductors

DATA SHEET

2SB1142 / 2SD1682 — 50V / 2.5A High-Speed Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistors

Applications

- Power supplies, relay drivers, lamp drivers.

Features

- Adoption of FBET and MBIT processes.
- Low saturation voltage.
- Large current capacity and wide ASO.

Specifications () : 2SB1142

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-)60	V
Collector-to-Emitter Voltage	V _{CEO}		(-)50	V
Emitter-to-Base Voltage	V _{EB0}		(-)6	V
Collector Current	I _C		(-)2.5	A
Collector Current (Pulse)	I _{CP}		(-)5.0	A
Collector Dissipation	P _C		1.5	W
		T _c =25°C	10	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 _{CB0}	V _{CB} =(-)50V, I _E =0A			(-)100	nA
Emitter Cutoff Current	I _{EB0}	V _{EB} =(-)4V, I _C =0A			(-)100	nA
DC Current Gain	h _{FE1}	V _{CE} =(-)2V, I _C =(-)100mA	(100)*		(400)*	
	h _{FE2}	V _{CE} =(-)2V, I _C =(-)2A	35		560*	

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* : The 2SB1142 / 2SD1682 are classified by 100mA h_{FE} as follows :

	Rank	R	S	T	U
2SB1142	h _{FE}	100 to 200	140 to 280	200 to 400	
2SD1682	h _{FE}	100 to 200	140 to 280	200 to 400	280 to 560

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2SB1142 / 2SD1682

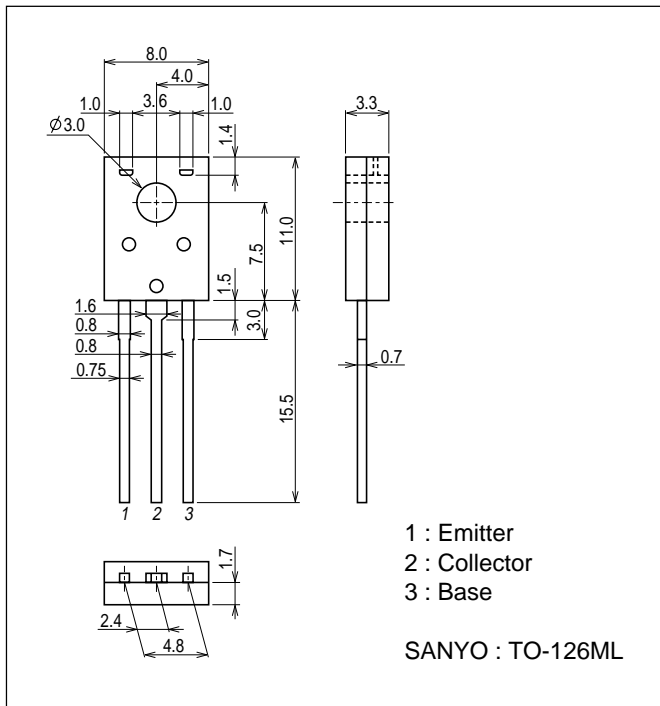
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$		140		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(25)16		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		(-250)110	(-500)300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-60)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			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.		(35)35		ns
Storage Time	t_{stg}	See specified Test Circuit.		(350)550		ns
Fall Time	t_f	See specified Test Circuit.		(30)30		ns

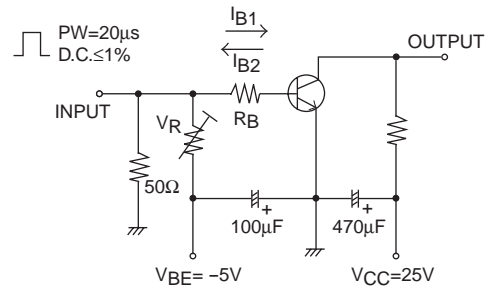
Package Dimensions

unit : mm (typ)

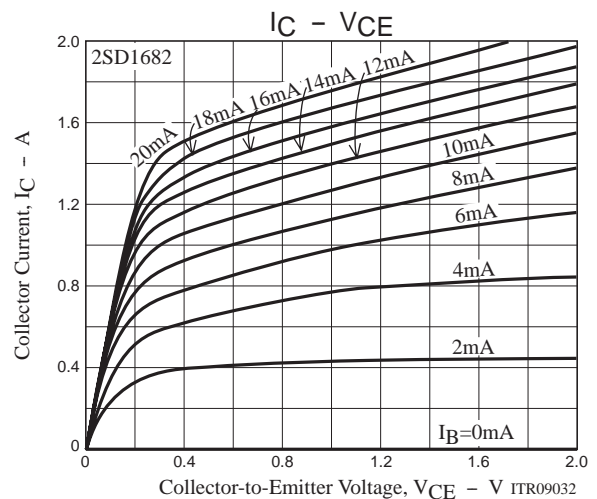
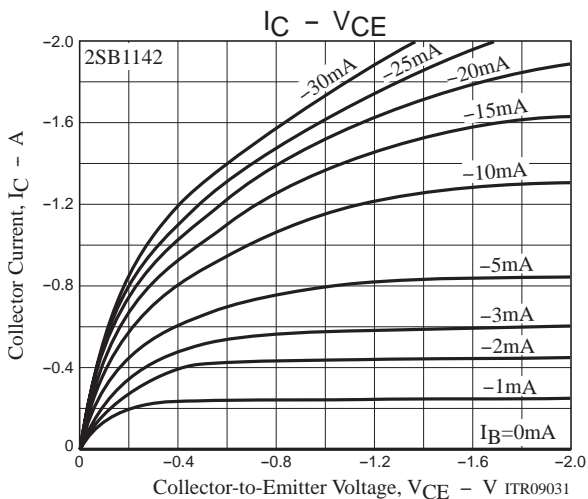
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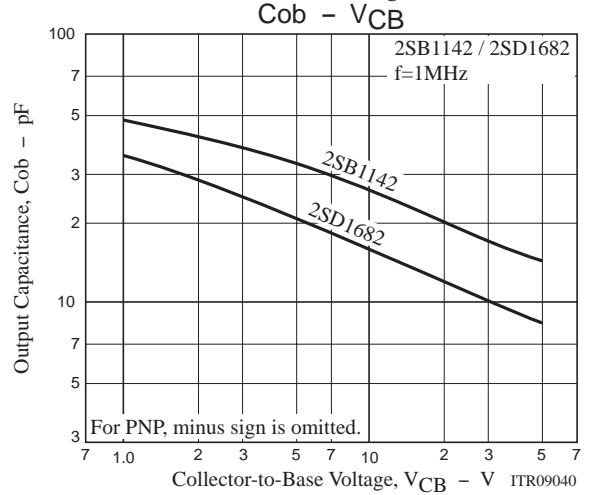
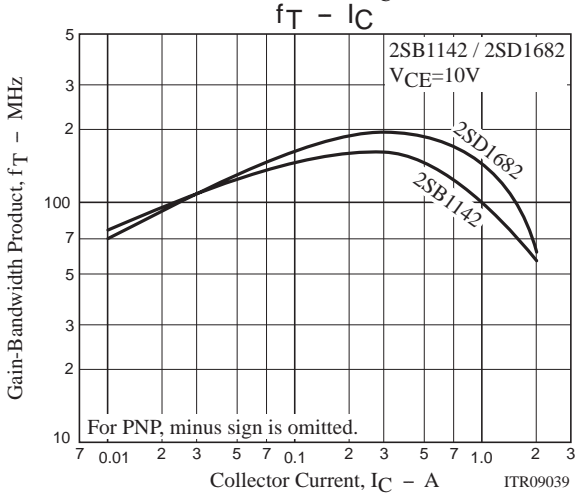
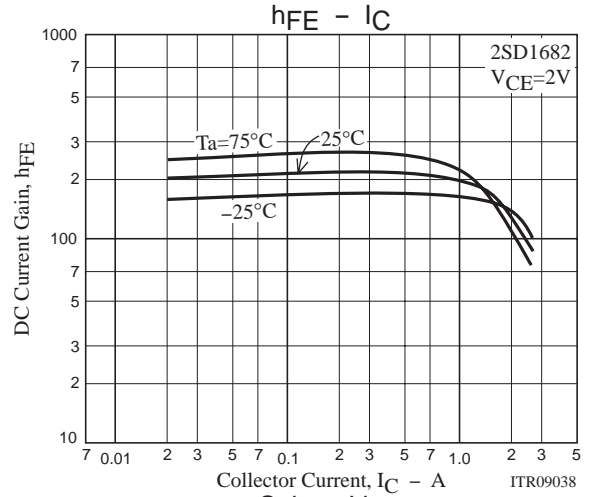
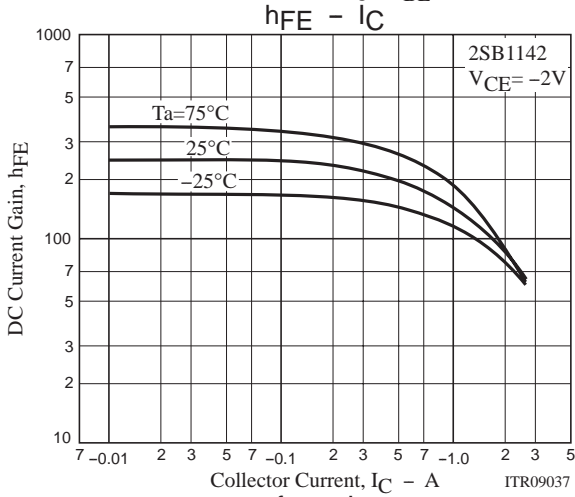
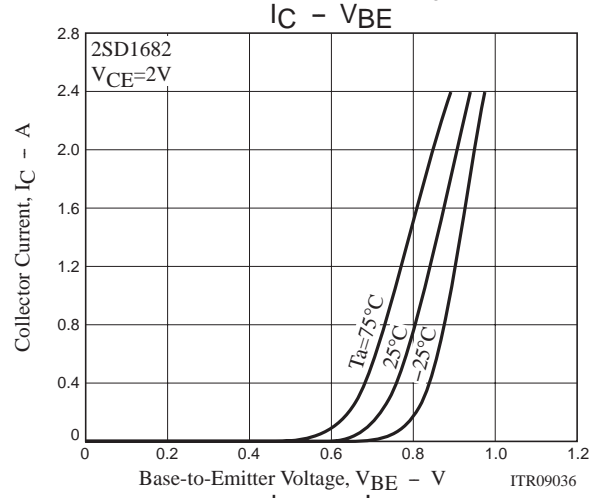
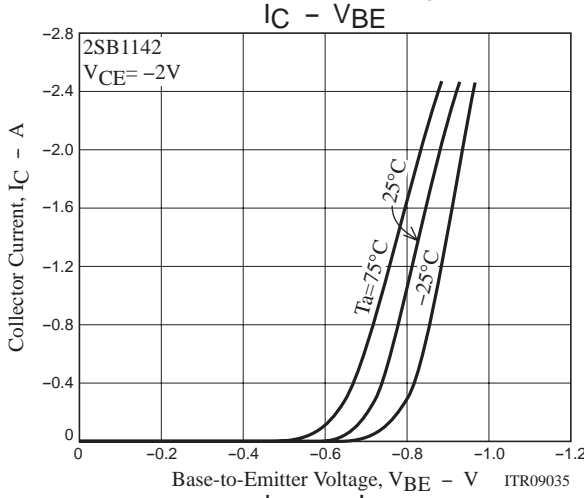
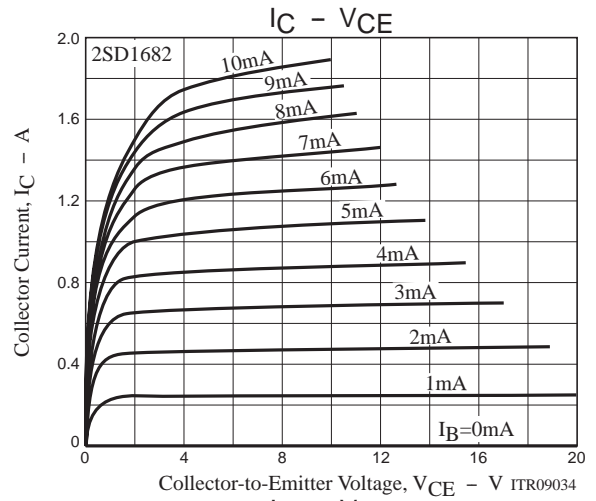
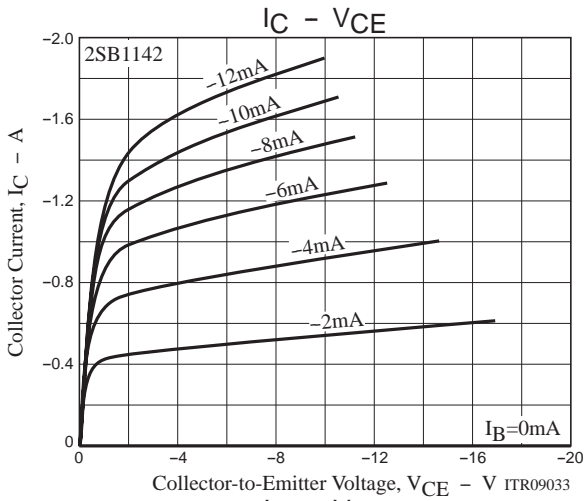
Switching Time Test Circuit



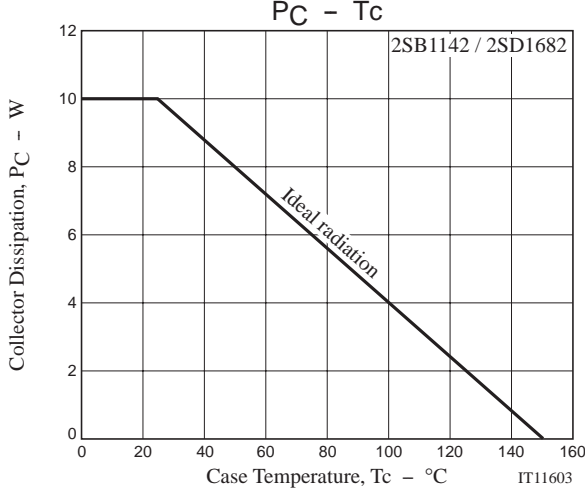
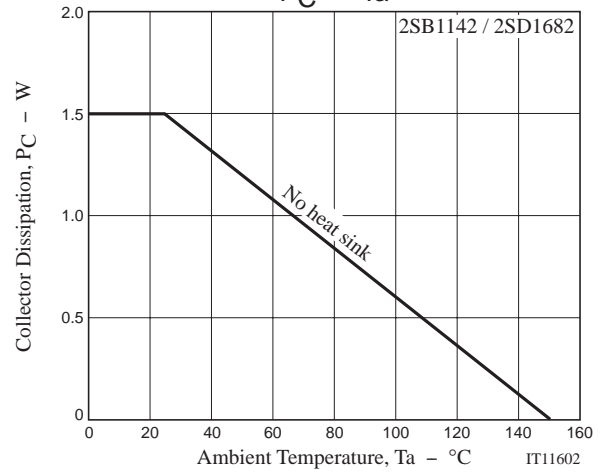
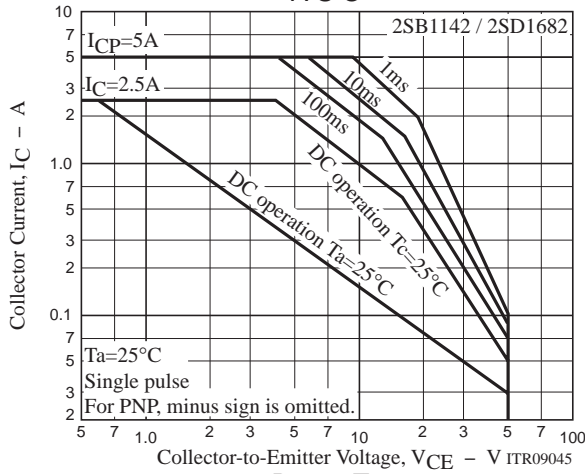
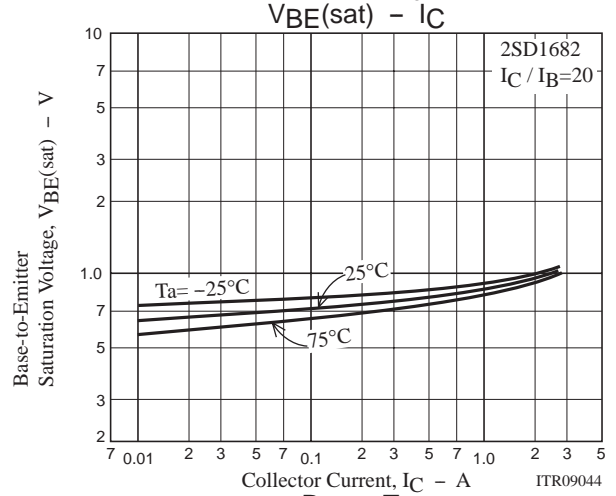
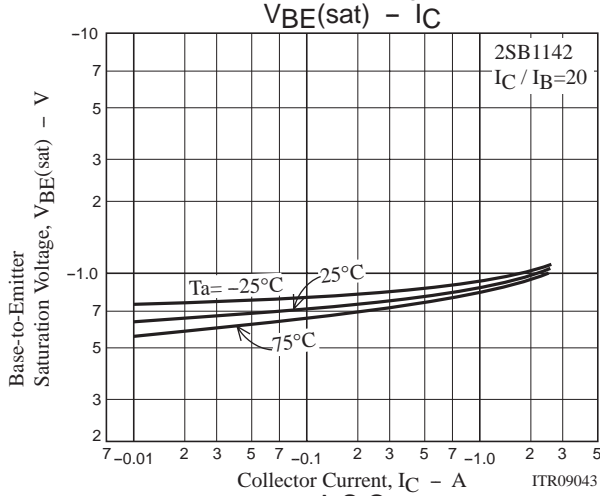
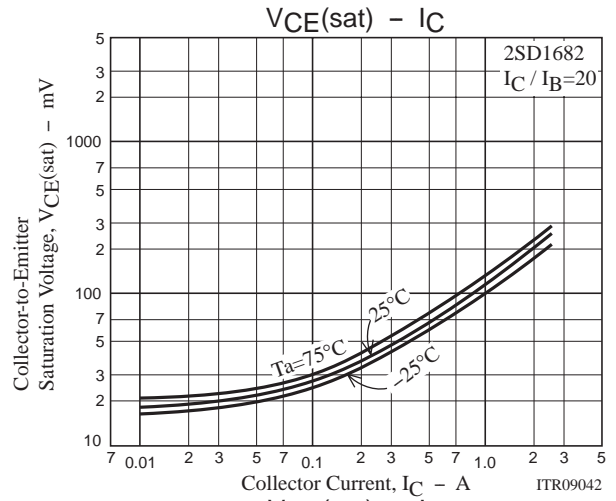
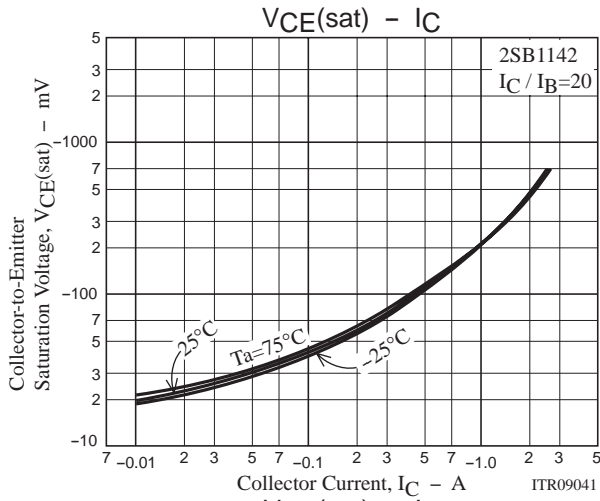
$I_C = 10I_{B1} = -10I_{B2} = 1A$
For PNP, the polarity is reversed.



2SB1142 / 2SD1682



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