



2SB1143/2SD1683

50V/4A Switching Applications

Applications

- Voltage regulators, relay drivers, lamp drivers, electrical equipment.

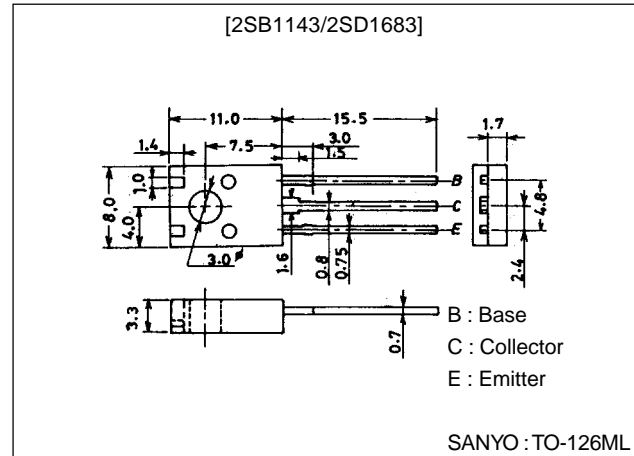
Features

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

Package Dimensions

unit:mm

2042A



() : 2SB1143

Specifications

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

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_{EBO}		(-)-6	V
Collector Current	I_C		(-)-4	A
Collector Current (Pulse)	I_{CP}		(-)-6	A
Collector Dissipation	P_C		1.5	W
		$T_c=25^\circ\text{C}$	10	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)40\text{V}, I_E=0$			(-)-1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0$			(-)-1	μA
DC Current Gain	h_{FE1}	$V_{CE}=(-)2\text{V}, I_C=(-)100\text{mA}$	100*		560*	
	h_{FE2}	$V_{CE}=(-)2\text{V}, I_C=(-)3\text{A}$	40			
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10\text{V}, I_C=(-)50\text{mA}$		150		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(39)25		pF

* ; The 2SB1143/2SD1683 are classified by 100mA h_{FE} as follows :

100 R	200	140 S	280	200 T	400	280 U	560
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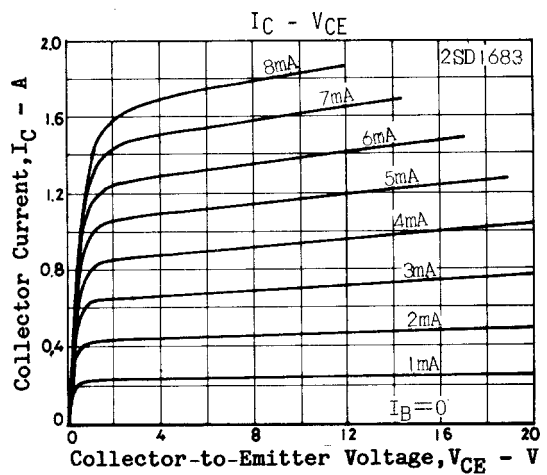
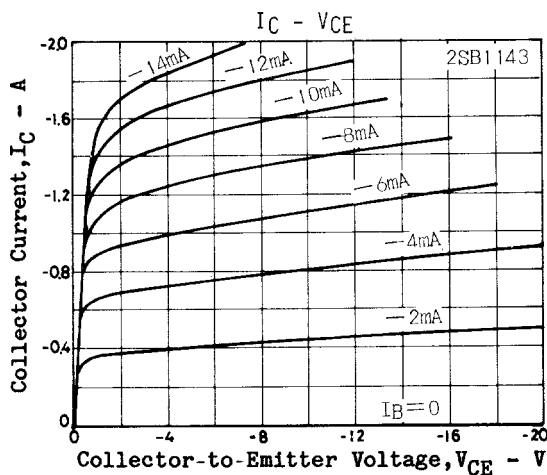
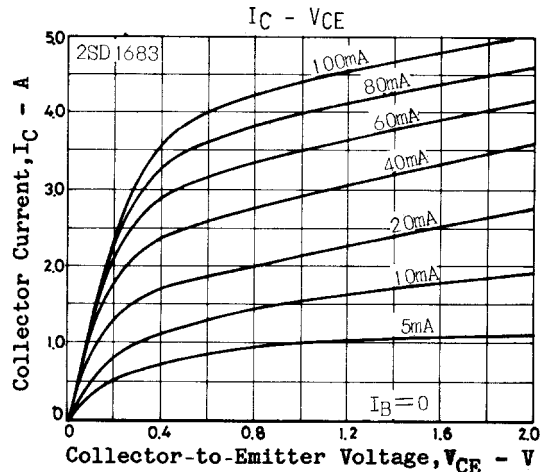
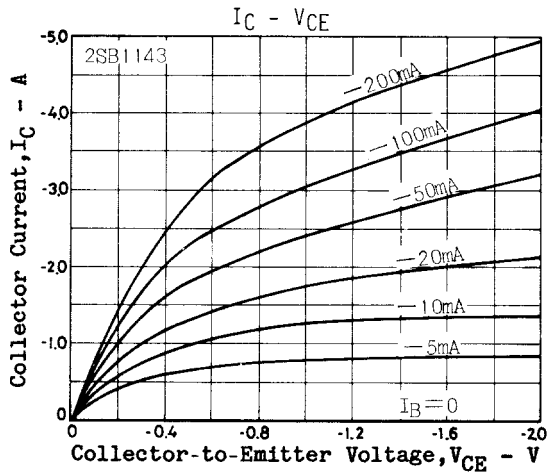
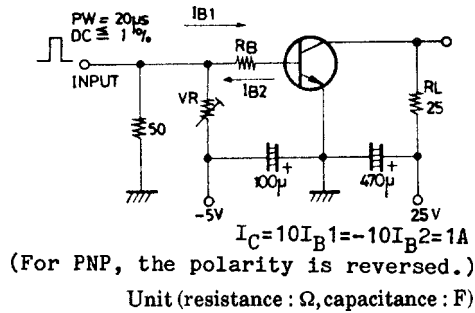
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92098HA (KT)/4137KI/D176TA, TS No.2063-1/4

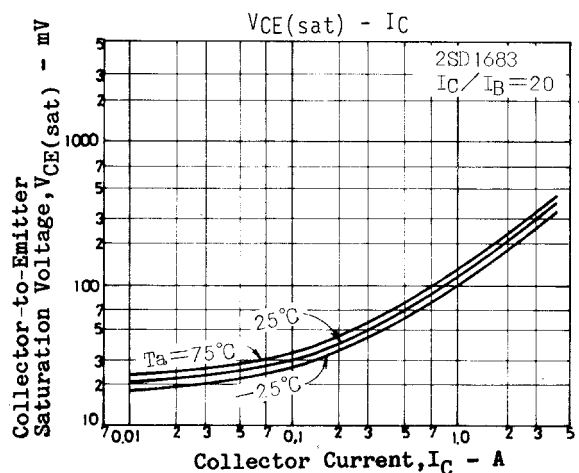
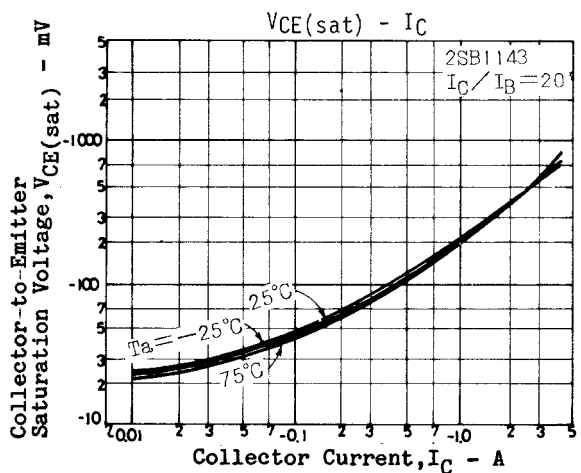
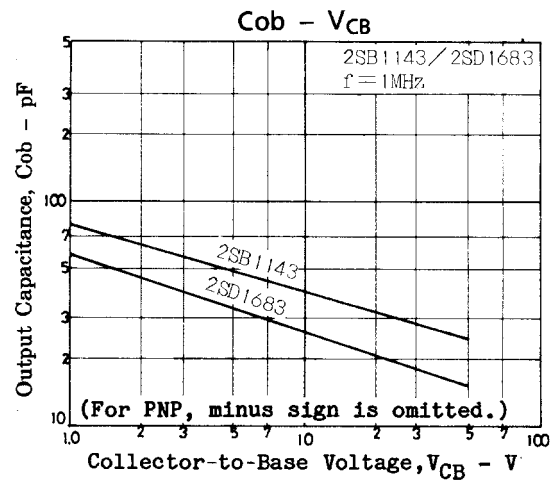
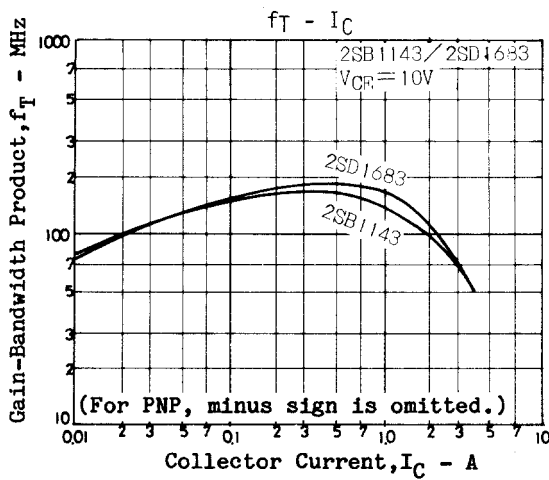
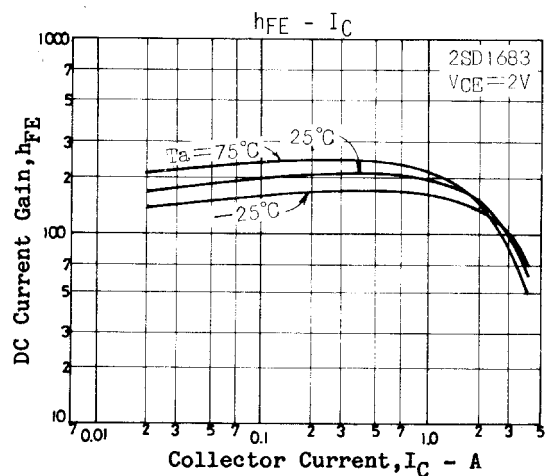
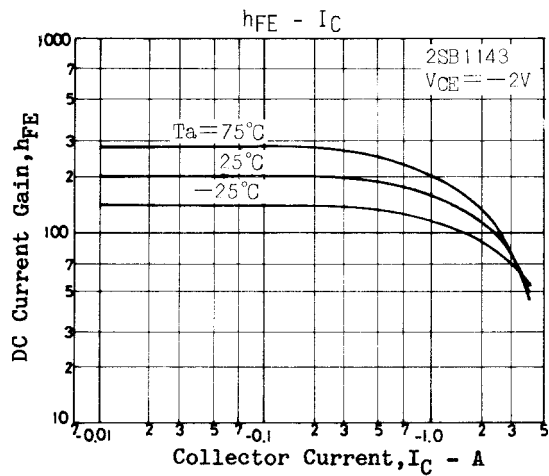
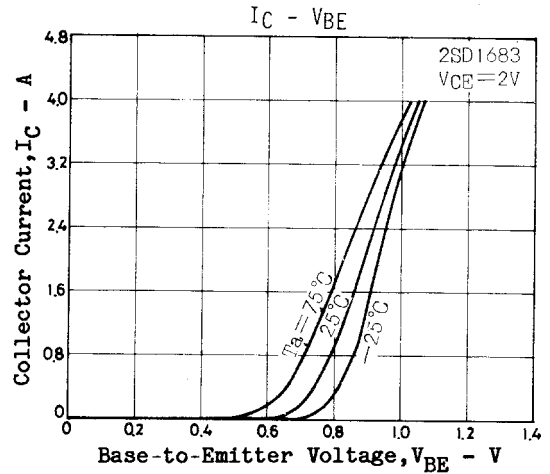
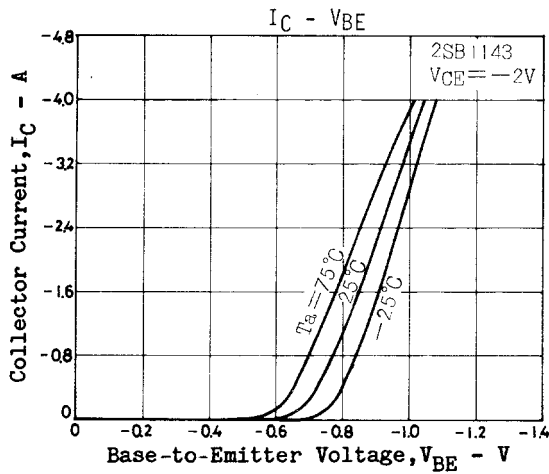
2SB1143/2SD1683

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-350)	(-700)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-0.94)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-60)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Turn-ON Time	t_{on}	See specified Test Circuit		(70)70		ns
Storage Time	t_{stg}	See specified Test Circuit		(450)		ns
				650		ns
Fall Time	t_f	See specified Test Circuit		(30)35		ns

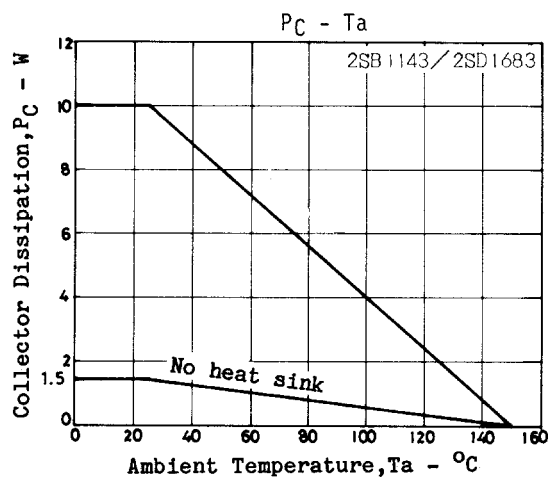
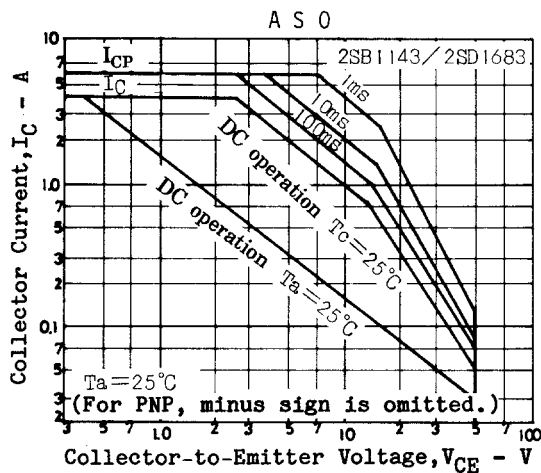
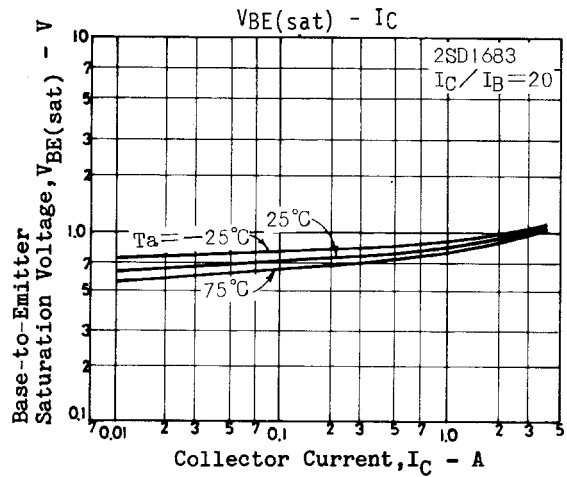
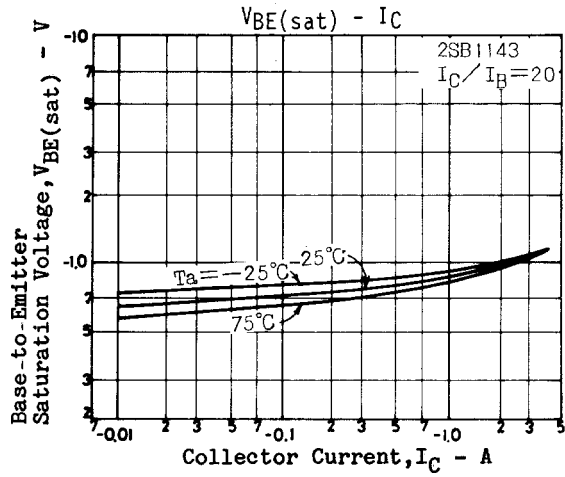
Switching Time Test Circuit



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