



## 2SB1141/2SD1681

### 18V/1.2A Switching Applications

#### Applications

- Converters, relay drivers, low-voltage and high power AF Amplifier.

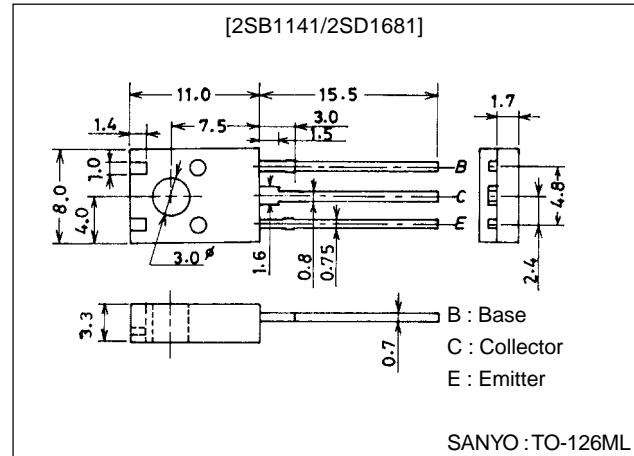
#### Features

- Low saturation voltage and excellent linearity of  $h_{FE}$ .
- Wide ASO.

#### Package Dimensions

unit:mm

2042A



() : 2SB1141

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)20	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)18	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)5	V
Collector Current	$I_C$		(-)1.2	A
Collector Current (Pulse)	$I_{CP}$		(-)2.0	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 +125	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)15\text{V}, I_E = 0$			(-)100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)100	nA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2\text{V}, I_C = (-)100\text{mA}$	70*		400*	
	$h_{FE2}$	$V_{CE} = (-)2\text{V}, I_C = (-)1\text{A}$	40			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(30)20		pF

\* : The 2SB1141/2SD1681 are classified by 100mA  $h_{FE}$  as follows :

70	Q	140	100	R	200	140	S	280	200	T	400
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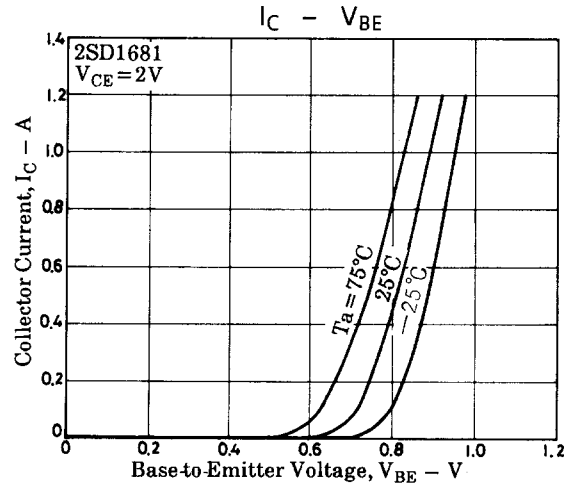
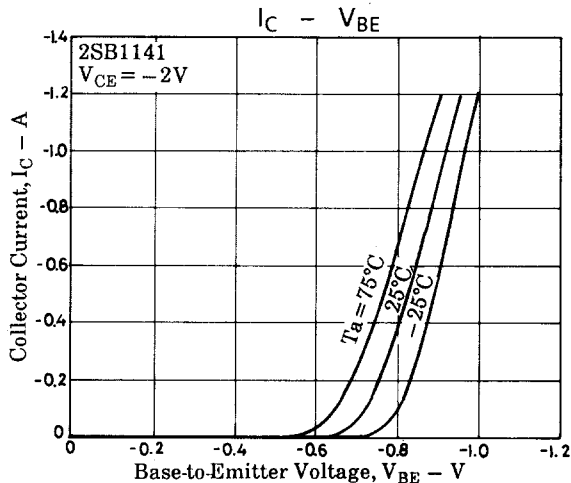
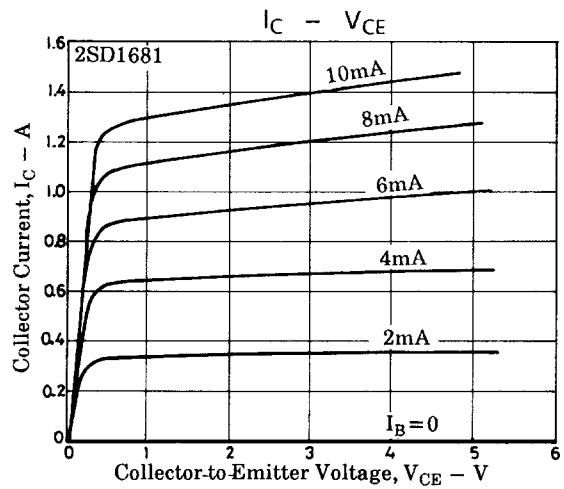
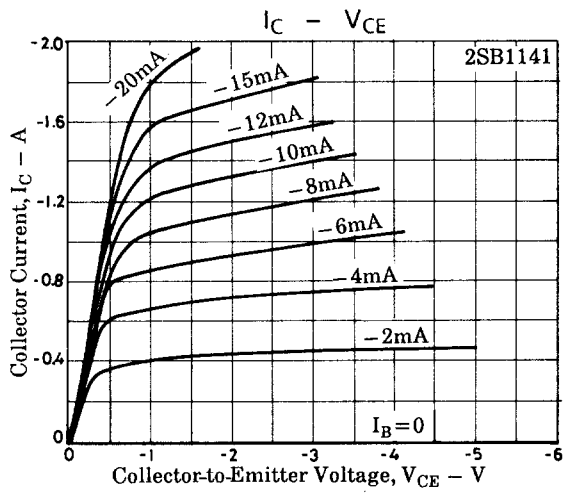
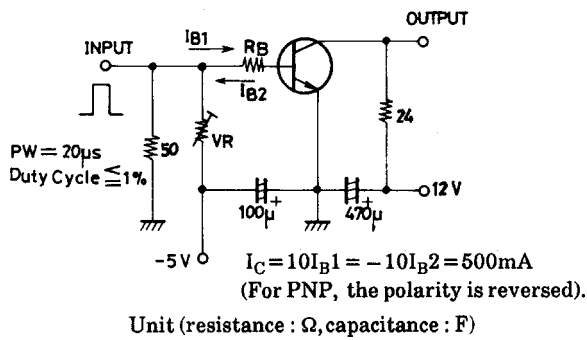
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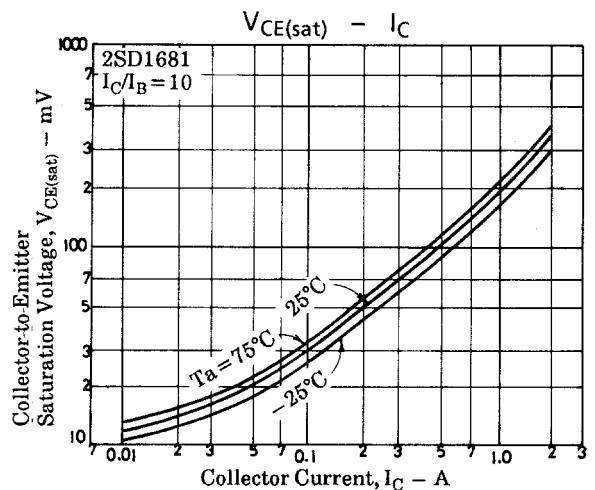
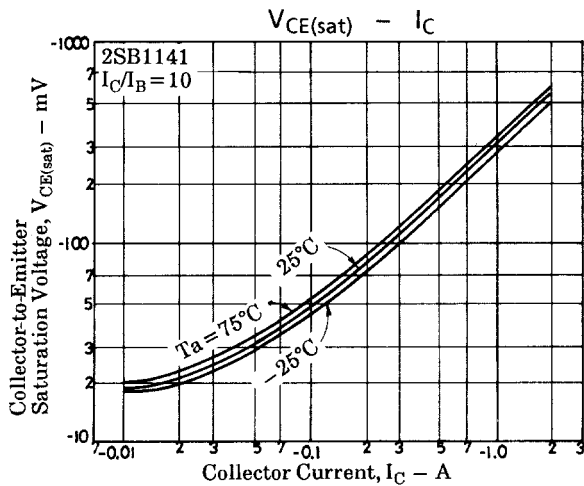
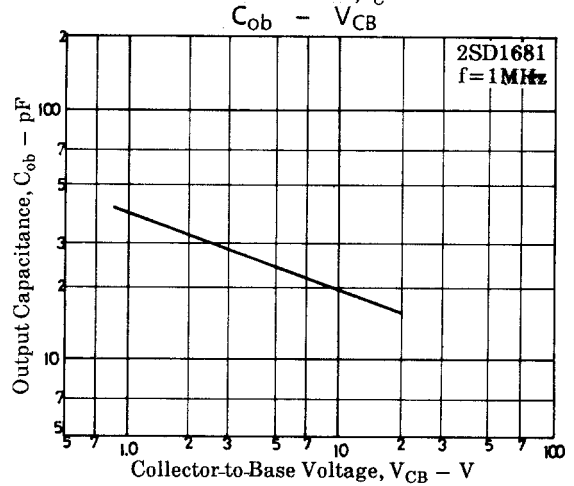
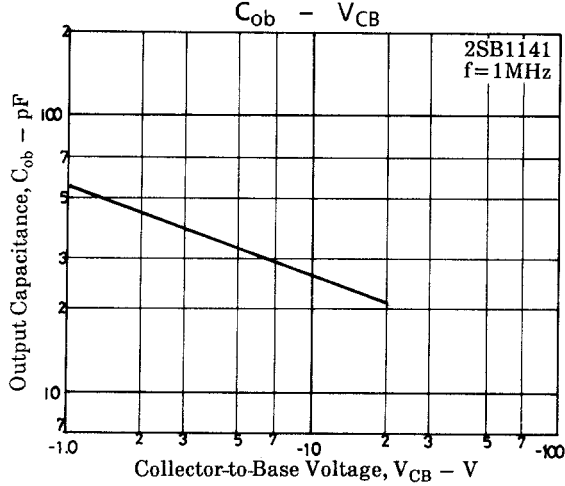
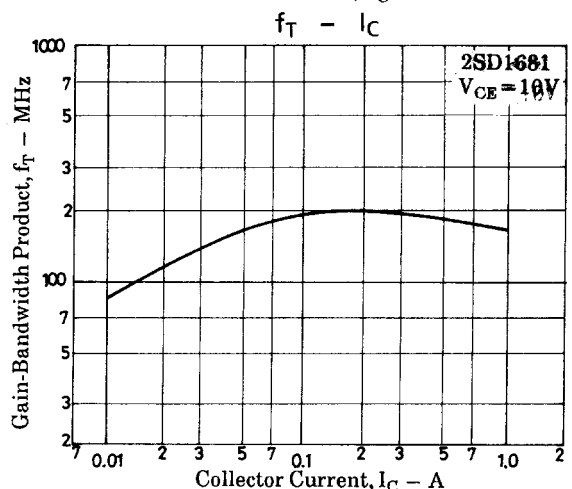
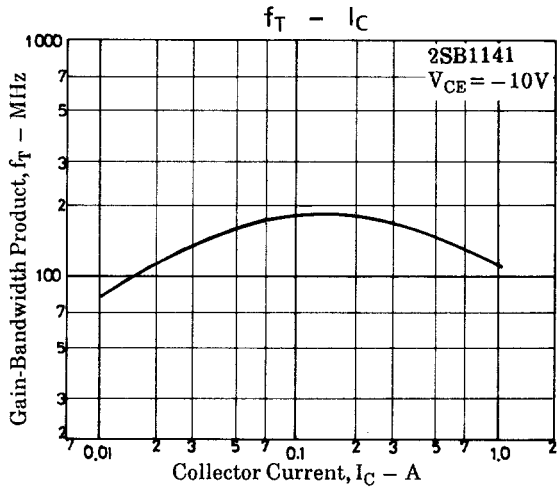
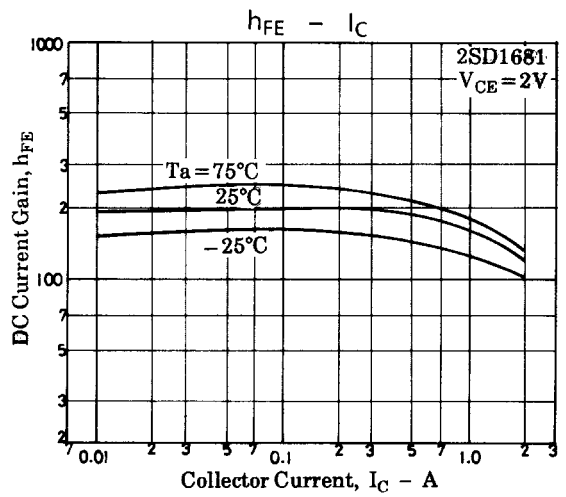
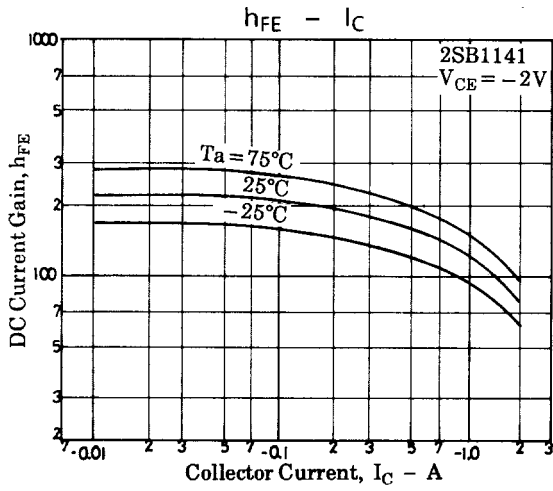
# 2SB1141/2SD1681

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-170)	(-400)	mV
				120	300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)20			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)18			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		50		ns
Storage Time	$t_{stg}$	See specified Test Circuit		(60)		ns
				200		ns
Fall Time	$t_f$	See specified Test Circuit		70		ns

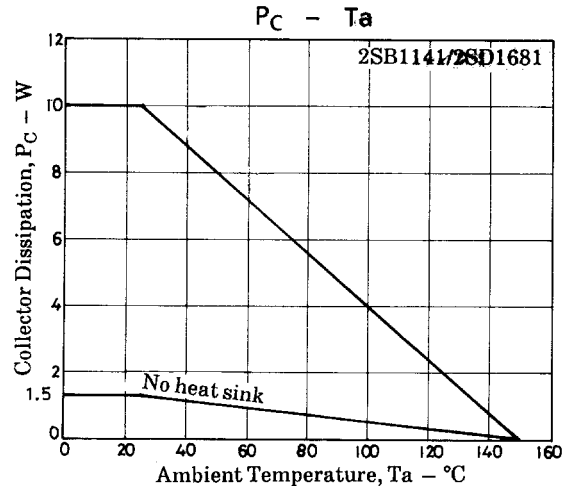
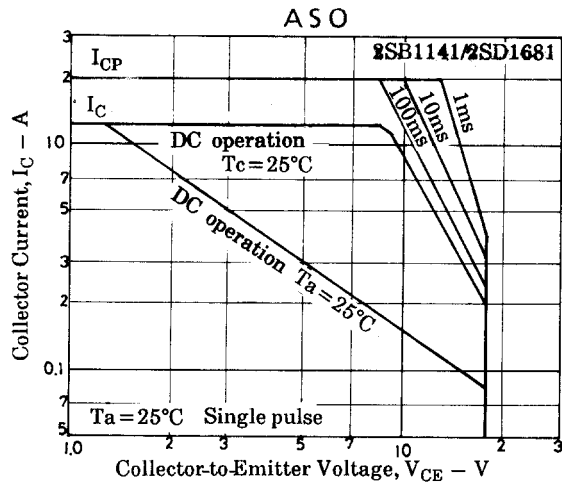
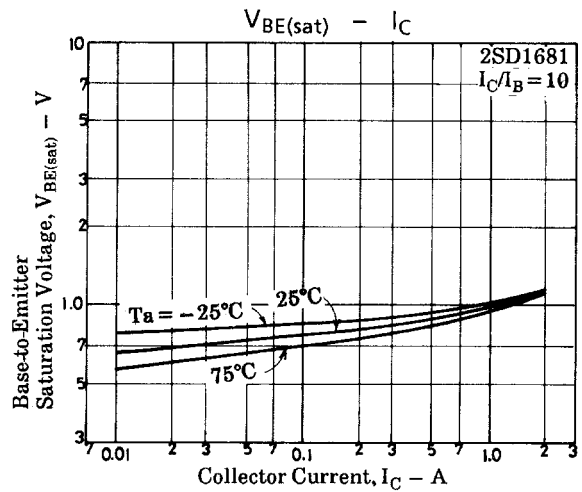
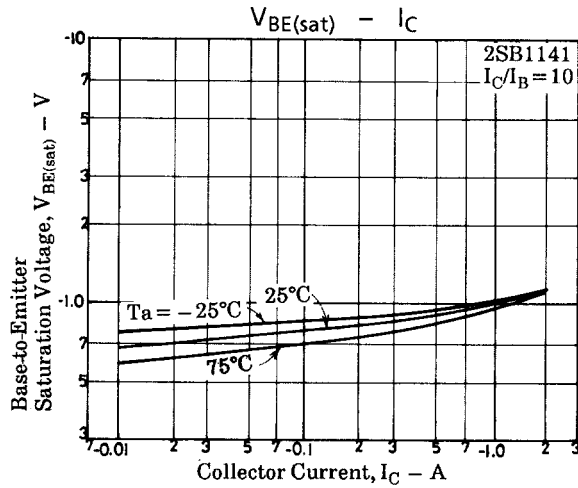
## Switching Time Test Circuit



# 2SB1141/2SD1681



## 2SB1141/2SD1681



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