

<b>SANYO</b>	No.2020A	<b>2SB1141/2SD1681</b>
		PNP/NPN Epitaxial Planar Silicon Transistors <b>18V/1.2A Switching Applications</b>

**Applications**

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

**Features**

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

( ) : 2SB1141

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

			unit
Collector-to-Base Voltage	$V_{CBO}$	(- )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
		10	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	- 55 to + 125	$^\circ\text{C}$

$T_c = 25^\circ\text{C}$

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

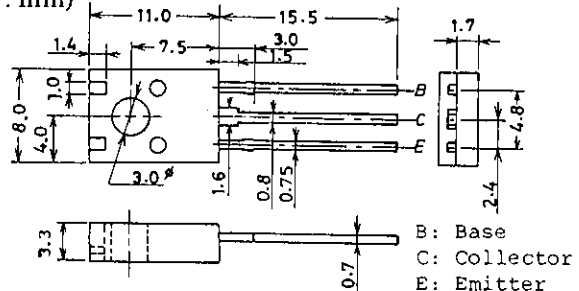
			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)15\text{V}, I_E = 0$			(- )100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(- )100	nA
DC Current Gain	$h_{FE(1)}$	$V_{CE} = (-)2\text{V}, I_C = (-)100\text{mA}$	70*		400*	
	$h_{FE(2)}$	$V_{CE} = (-)2\text{V}, I_C = (-)1\text{A}$	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
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)500\text{mA}, I_B = (-)50\text{mA}$		(- )170	(- )400	mV
				120	300	mV
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)500\text{mA}, I_B = (-)50\text{mA}$		(- )0.85	(- )1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu\text{A}, I_E = 0$	(- )20			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1\text{mA}, R_{BE} = \infty$	(- )18			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu\text{A}, I_C = 0$	(- )5			V

Continued on next page.

\* : 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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**Package Dimensions 2042A**  
(unit : mm)



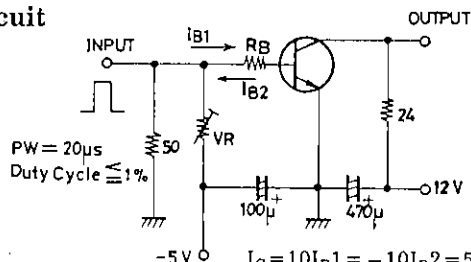
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# 2SB1141/2SD1681

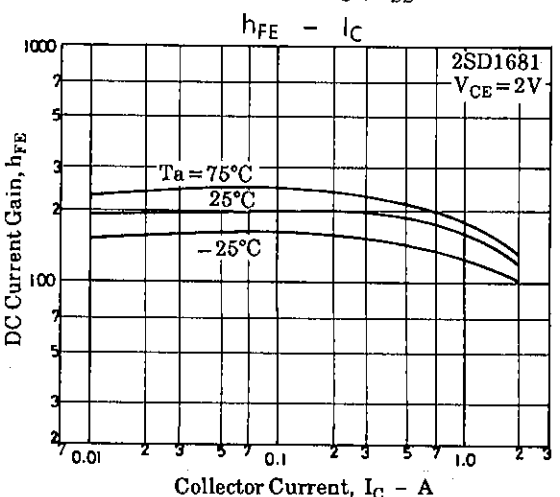
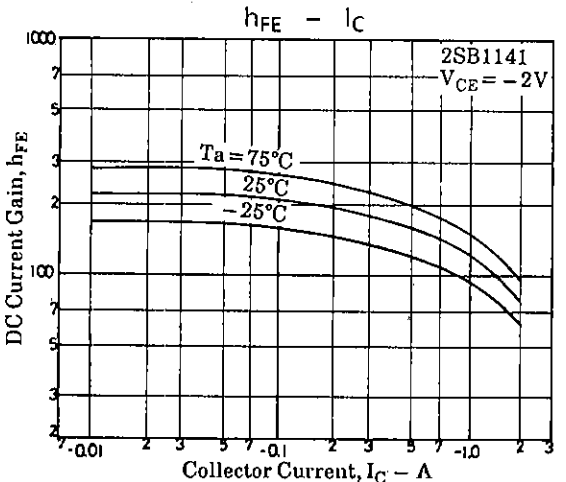
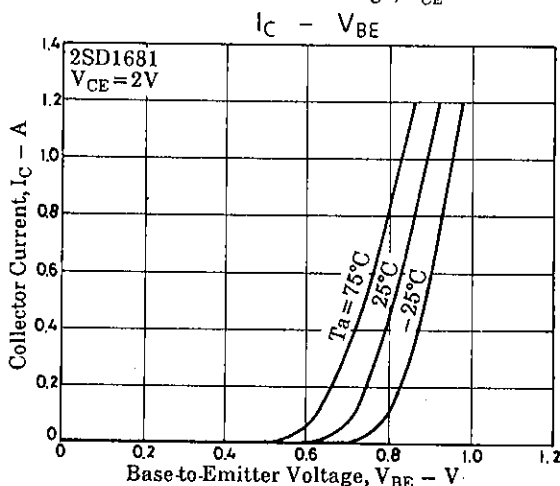
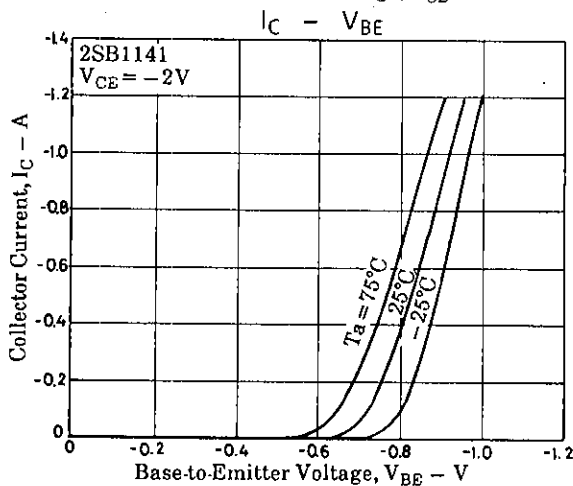
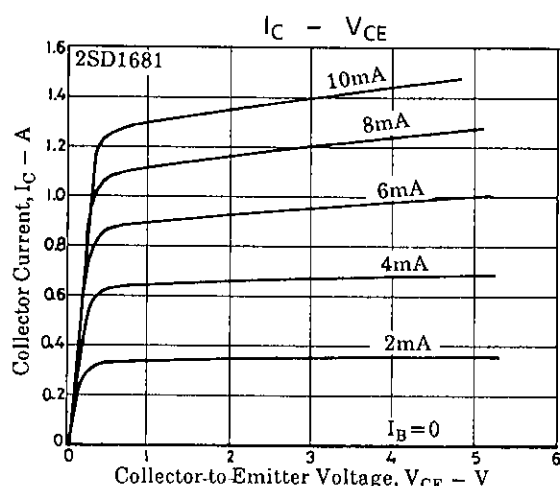
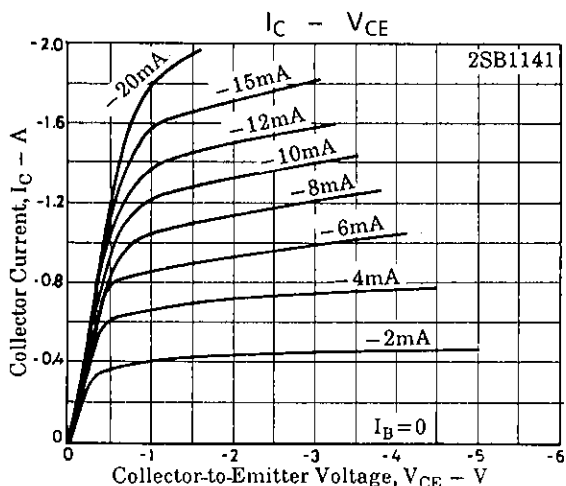
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		min	typ	max	unit
Turn-on Time	$t_{on}$		50		ns
Storage Time	$t_{stg}$		(60)200		ns
Fall Time	$t_f$		70		ns

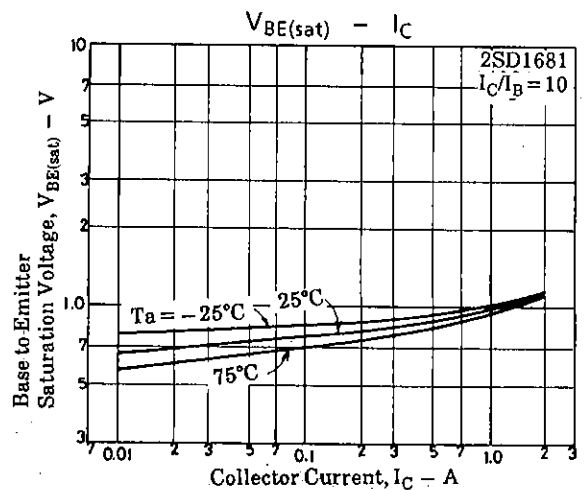
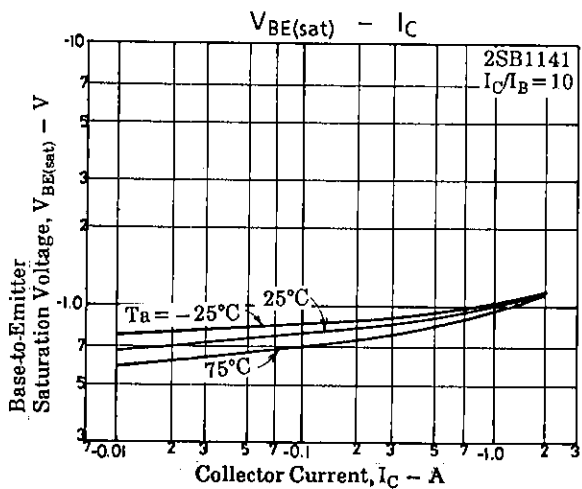
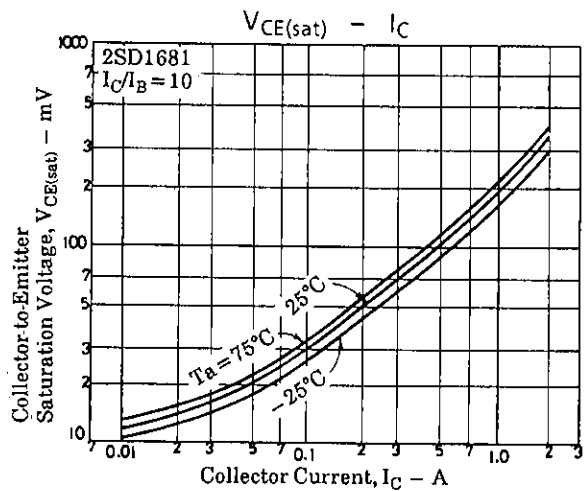
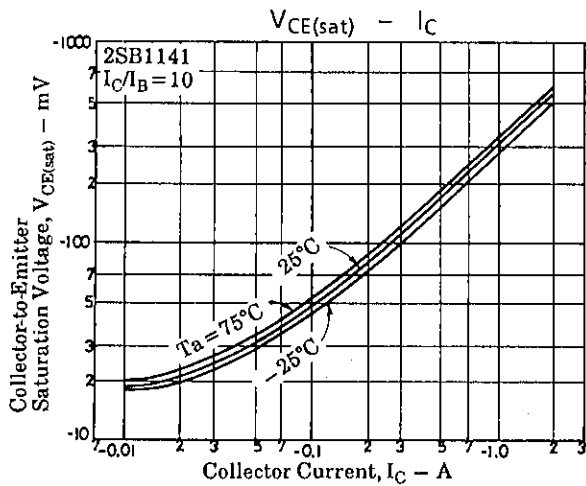
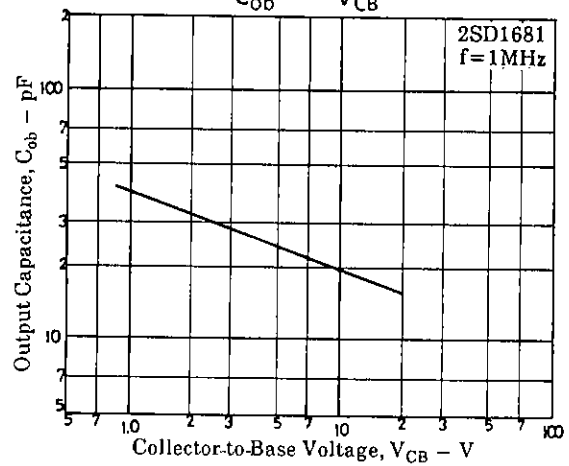
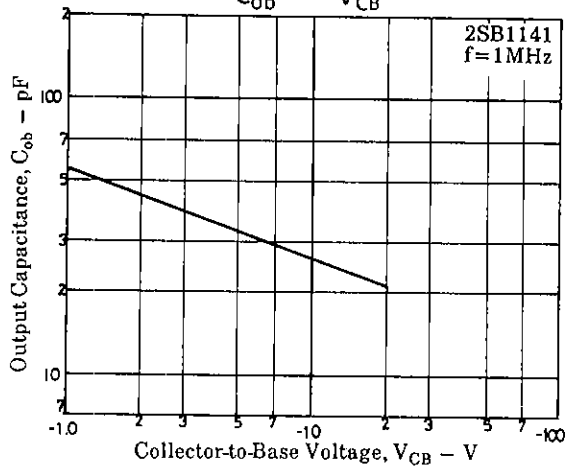
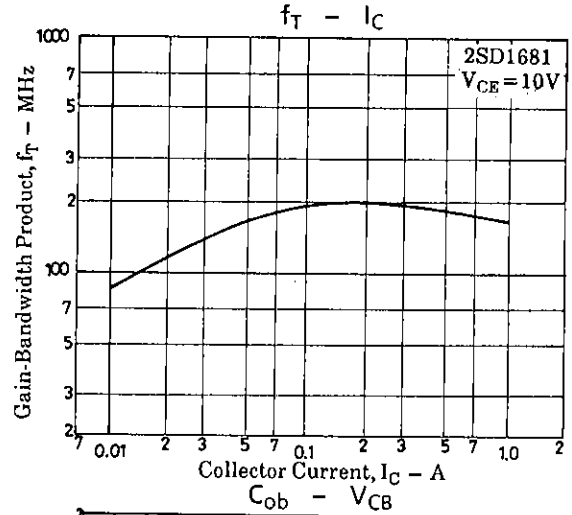
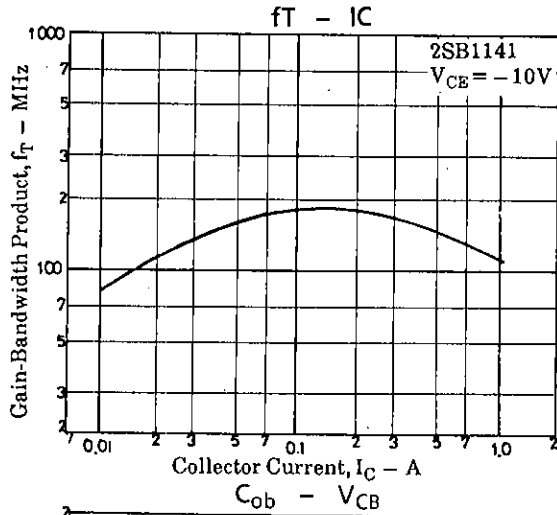
## Switching Time Test Circuit



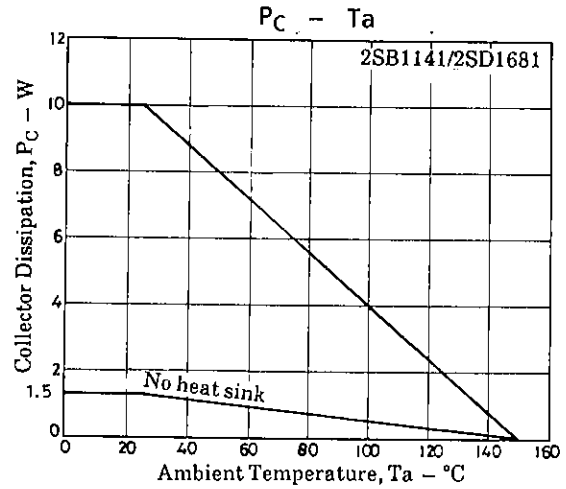
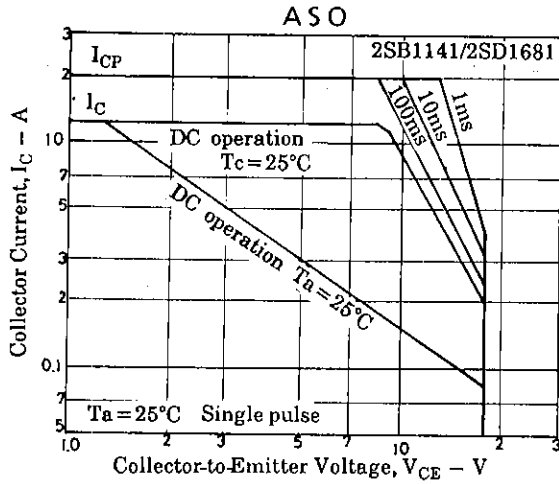
Unit (Resistance :  $\Omega$ , Capacitance : F)  
 $I_C = 10I_{B1} = -10I_{B2} = 500mA$   
 (For PNP, the polarity is reversed).



2SB1141/2SD1681



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