

	No.2046A	<h2 style="margin: 0;">2SB1165/2SD1722</h2> <p style="margin: 0;">PNP/NPN Epitaxial Planar Silicon Transistors</p> <p style="margin: 0;">50V/5A Switching Applications</p>
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**Applications**

- . Relay drivers, high-speed inverters, converters

**Features**

- . Low collector-to-emitter saturation voltage
- . High  $f_T$
- . Excellent linearity of  $h_{FE}$
- . Fast switching time

( ): 2SB1165

<b>Absolute Maximum Ratings at <math>T_a=25^\circ\text{C}</math></b>			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	$I_C$	(-)5	A
Collector Current (Pulse)	$I_{CP}$	(-)8	A
Collector Dissipation	$P_C$	1.2	W
		$T_c=25^\circ\text{C}$	20
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

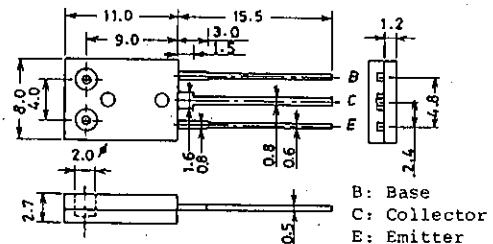
<b>Electrical Characteristics at <math>T_a=25^\circ\text{C}</math></b>			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)40\text{V}, I_E=0$			(-)1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4\text{V}, I_C=0$			(-)1	$\mu\text{A}$
DC Current Gain	$h_{FE}(1)$	$V_{CE}=(-)2\text{V}, I_C=(-)0.5\text{A}$	70		400*	
	$h_{FE}(2)$	$V_{CE}=(-)2\text{V}, I_C=(-)4\text{A}$	35			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5\text{V}, I_C=(-)1\text{A}$		180		MHz
				(130)		MHz
Output Capacitance	$c_{ob}$	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		40		pF
				(60)		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)3\text{A}, I_B=(-)0.15\text{A}$		220	400	mV
				(-280)	(-550)	mV

Continued on next page.

\*: The 2SB1165/2SD1722 are classified by 0.5A  $h_{FE}$  as follows:

70	Q	140	100	R	200	140	S	280	200	T	400
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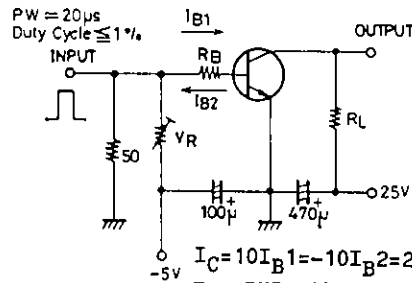
**Package Dimensions 2043A**  
(unit:mm)



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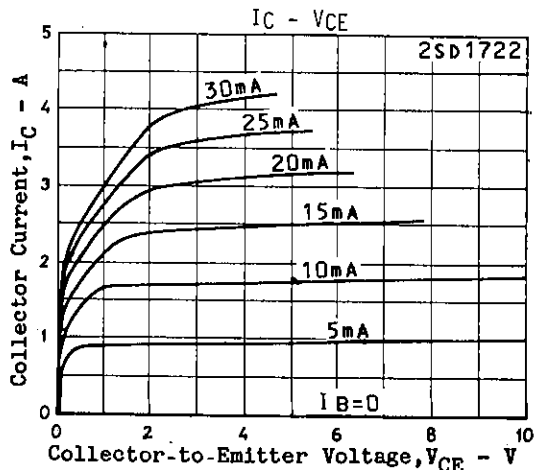
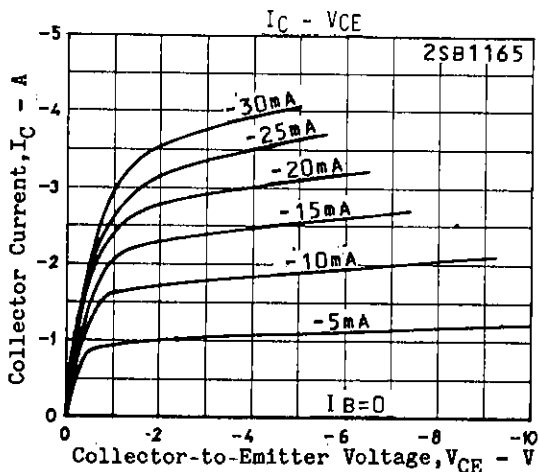
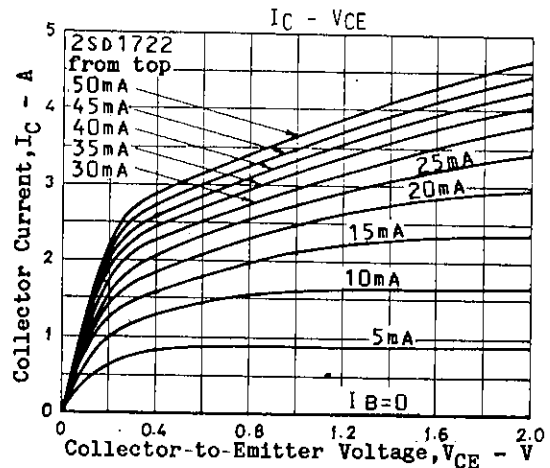
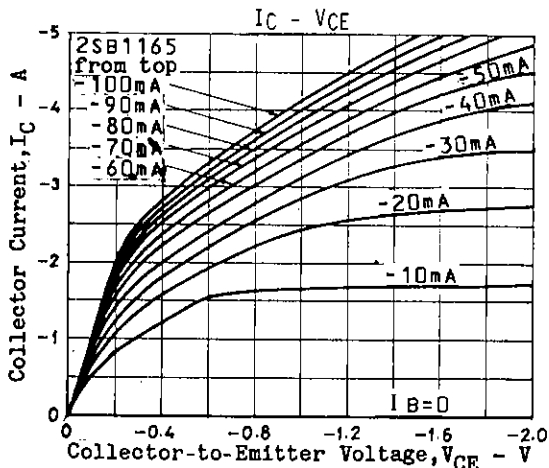
			min	typ	max	unit
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)3A, I_B=(-)0.15A$	(-)0.95	(-)1.3		V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)6			V
Turn-on Time	$t_{on}$	See specified Test Circuit.		50		ns
				(50)		ns
Storage Time	$t_{stg}$	"		500		ns
				(450)		ns
Fall Time	$t_f$	"		20		ns
				(20)		ns

Switching Time Test Circuit

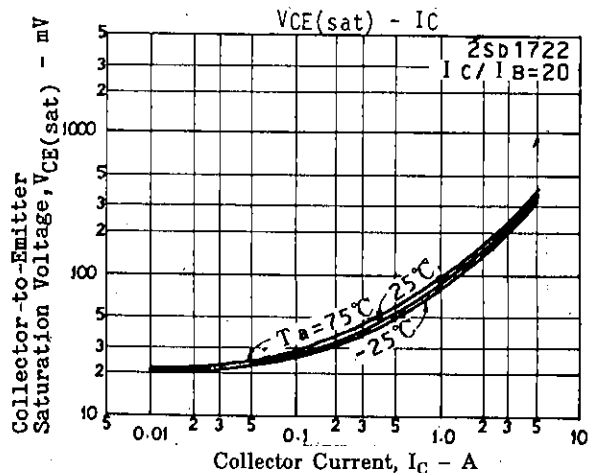
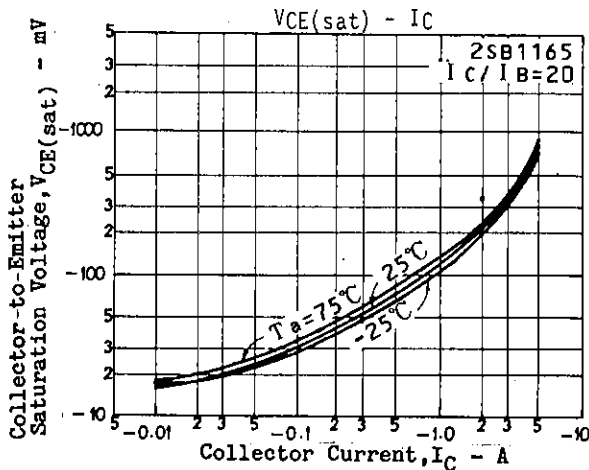
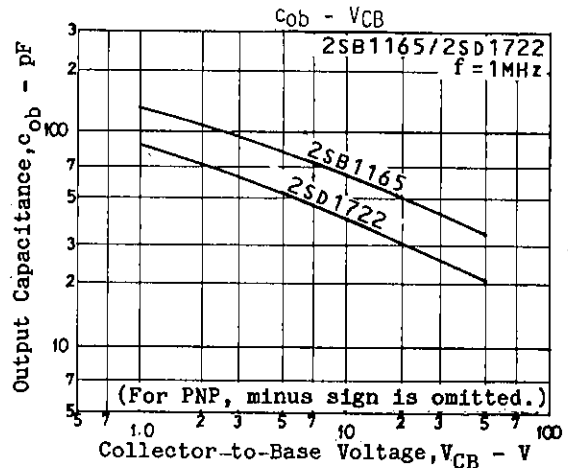
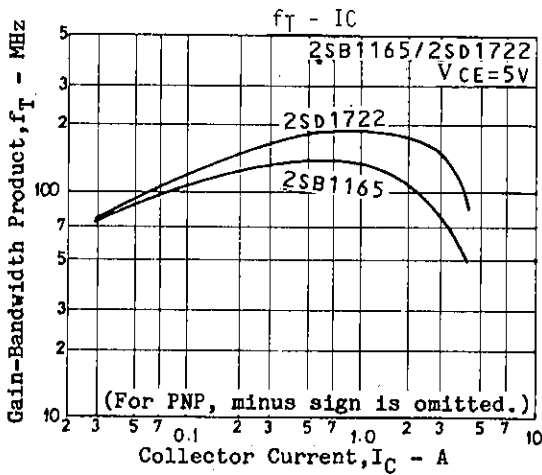
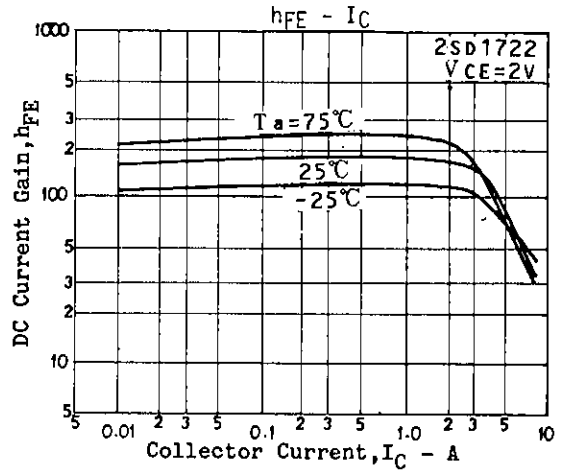
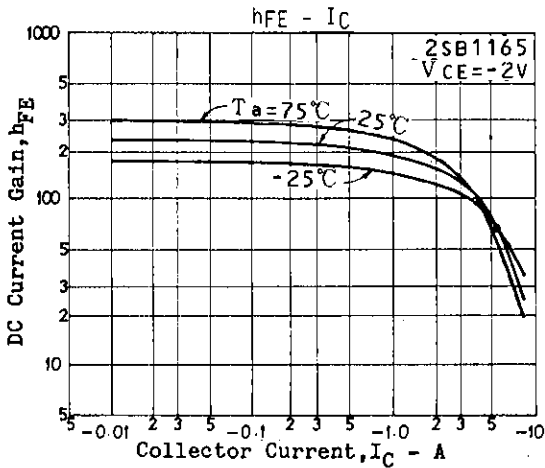
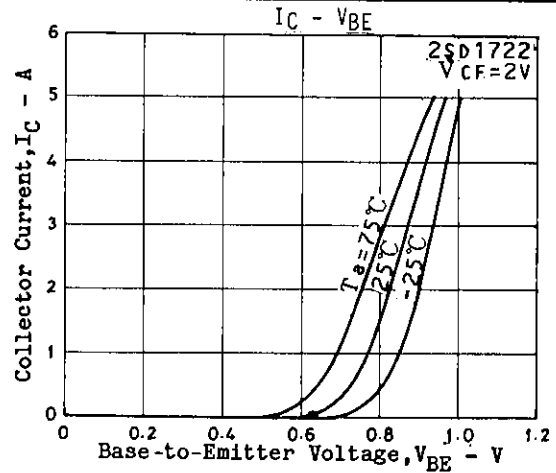
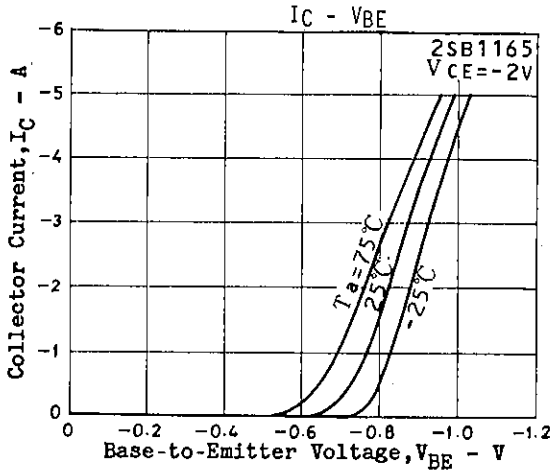


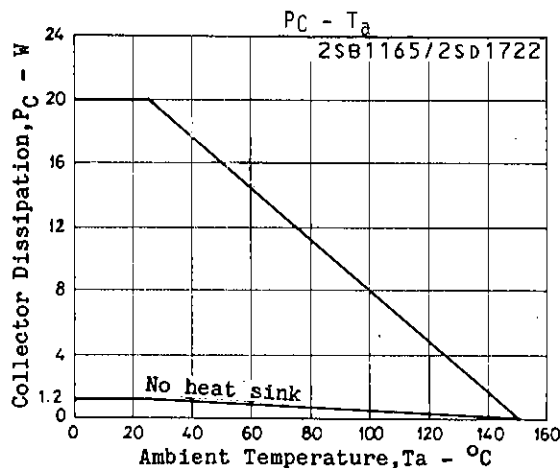
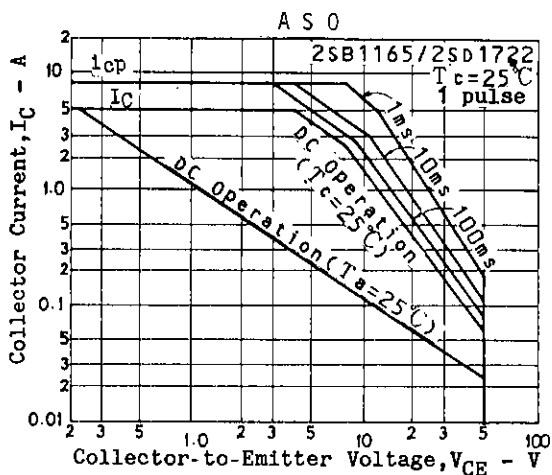
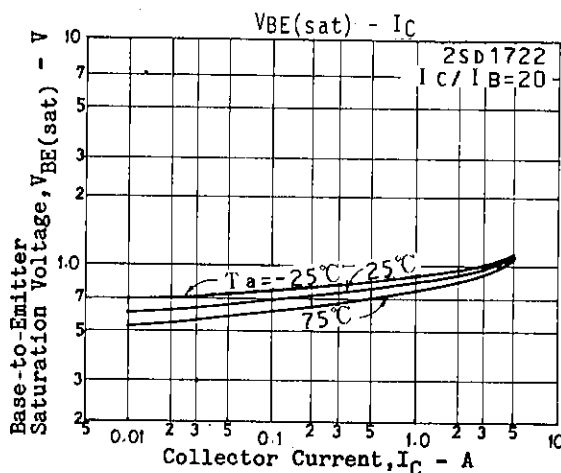
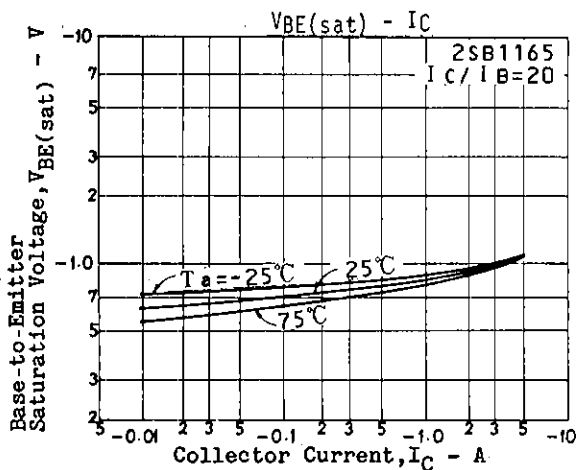
For PNP, the polarity is reversed.

Unit (Resistance : Ω, Capacitance : F)



2SB1165/2SD1722





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