	No.2047A	<h2 style="margin: 0;">2SB1167/2SD1724</h2> <p style="margin: 0;">PNP/NPN Epitaxial Planar Silicon Transistors</p> <p style="margin: 0;">100V/3A 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

( ): 2SB1167

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

			unit
Collector-to-Base Voltage	$V_{CB0}$	(-)120	V
Collector-to-Emitter Voltage	$V_{CEO}$	(-)100	V
Emitter-to-Base Voltage	$V_{EBO}$	(-)6	V
Collector Current	$I_C$	(-)3	A
Collector Current (Pulse)	$I_{CP}$	(-)6	A
Collector Dissipation	$P_C$	1.2	W
	$T_c=25^\circ\text{C}$	20	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

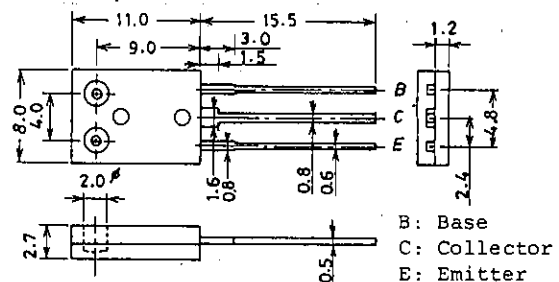
			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)100\text{V}, I_E=0$			(-)1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4\text{V}, I_C=0$			(-)1	$\mu\text{A}$
DC Current Gain	$h_{FE}(1)$	$V_{CE}=(-)5\text{V}, I_C=(-)0.5\text{A}$	70		400	
	$h_{FE}(2)$	$V_{CE}=(-)5\text{V}, I_C=(-)2\text{A}$	40			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10\text{V}, I_C=(-)0.5\text{A}$		180		MHz
				(130)		MHz
Output Capacitance	$c_{ob}$	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		25		pF
				(40)		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1.5\text{A}, I_B=(-)0.15\text{A}$		150	400	mV
				(-200)	(-500)	mV

Continued on next page.

\*: The 2SB1167/2SD1724 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)

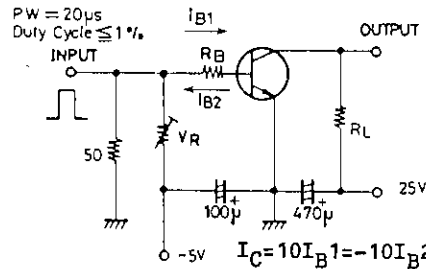


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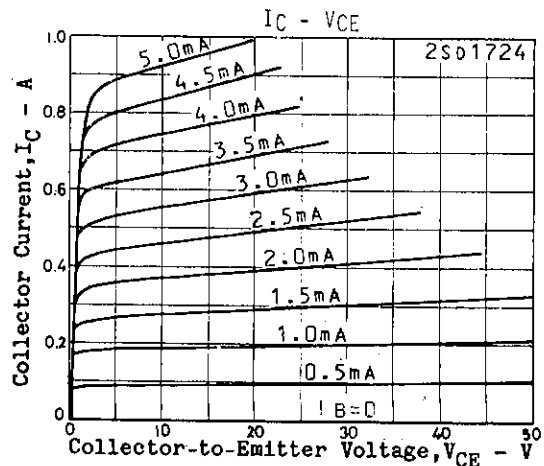
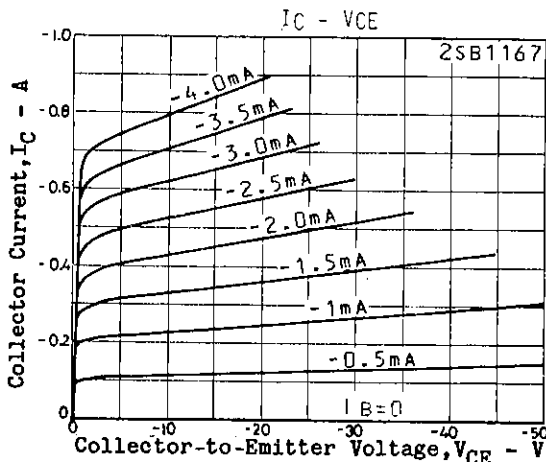
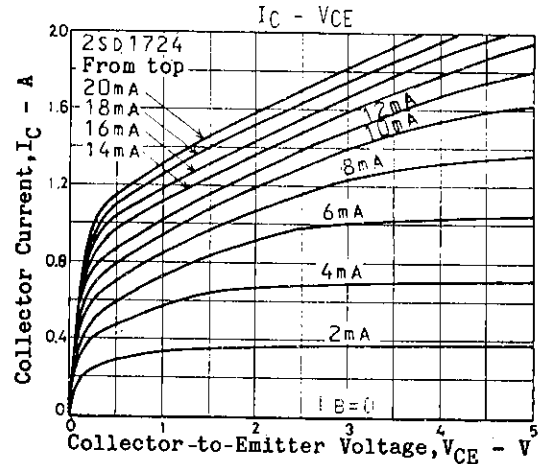
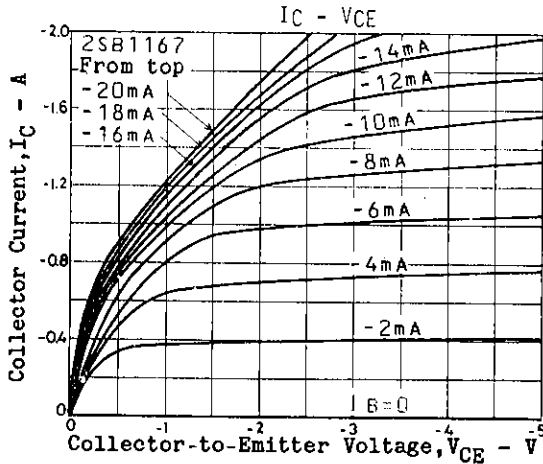
			min	typ	max	unit
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1.5A, I_B=(-)0.15A$			$(-)0.9(-)1.2$	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$			$(-)120$	V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$			$(-)100$	V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$			$(-)6$	V
Turn-on Time	$t_{on}$	See specified Test Circuit.		100		ns
Storage Time	$t_{stg}$	"		(100)		ns
				900		ns
Fall Time	$t_f$	"		(800)		ns
				50		ns
				(50)		ns

Switching Time Test Circuit

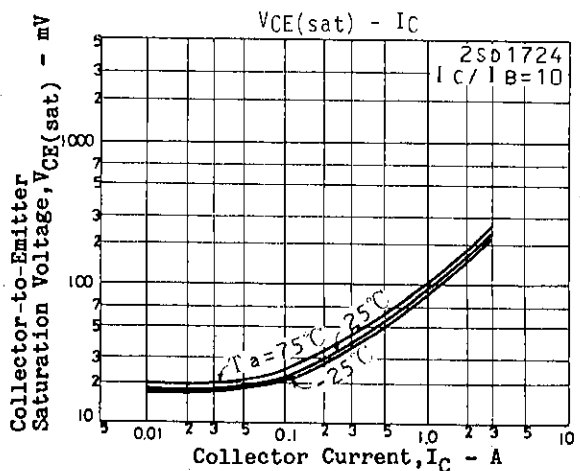
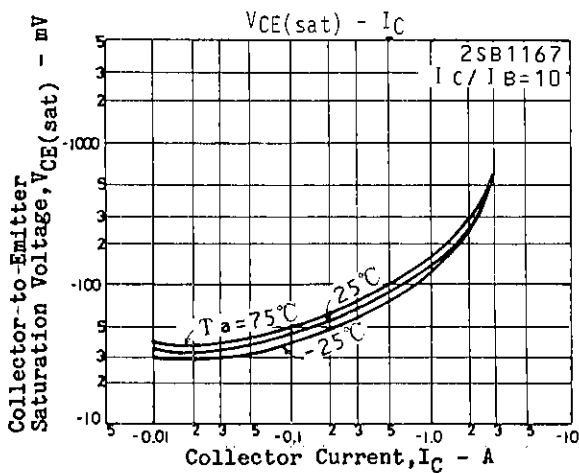
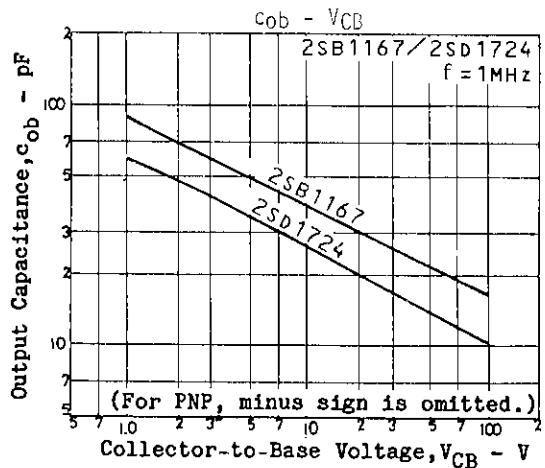
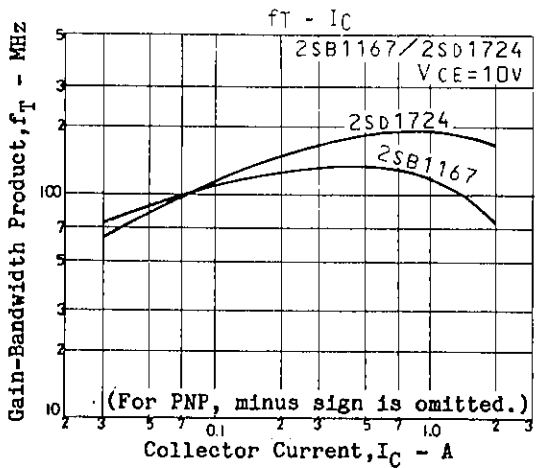
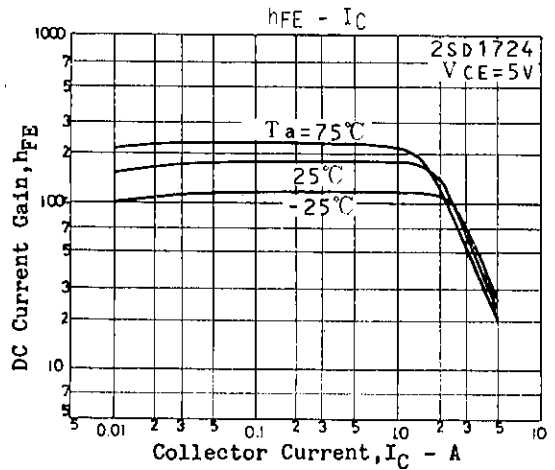
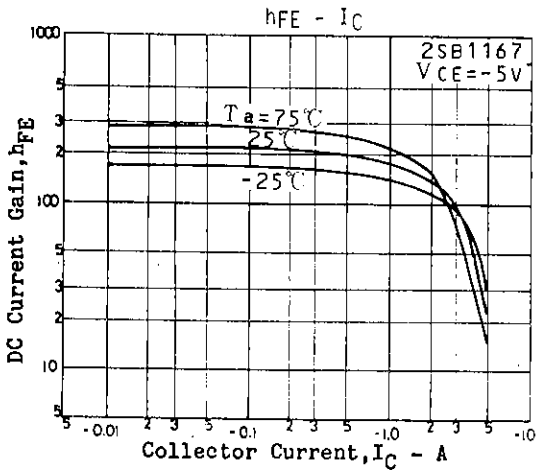
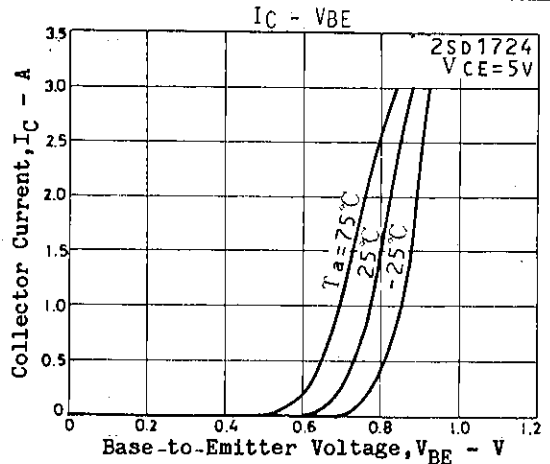
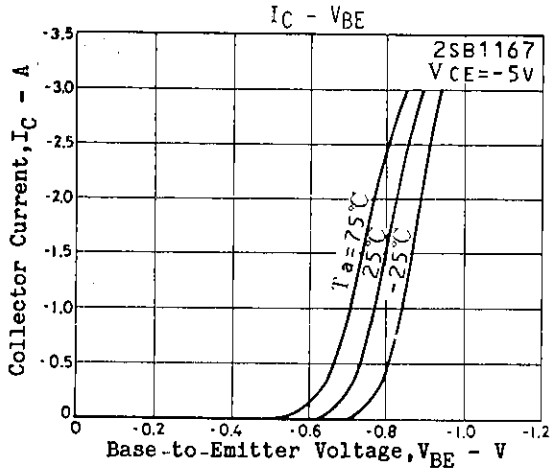


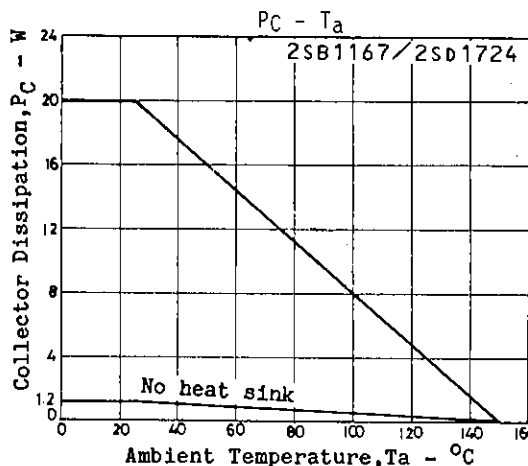
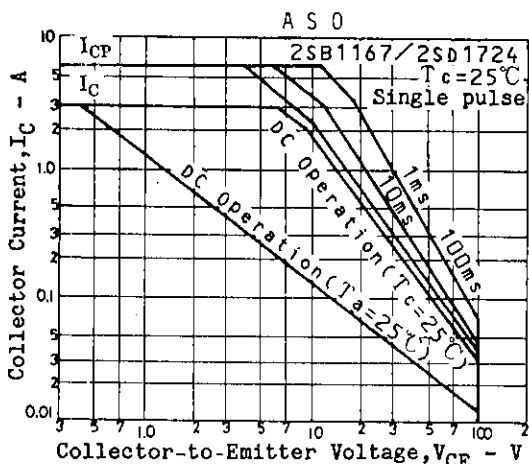
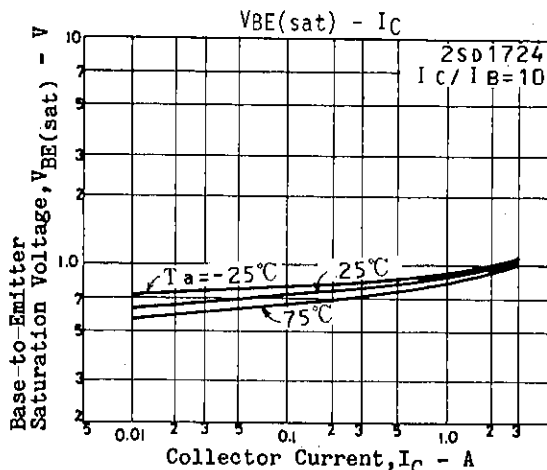
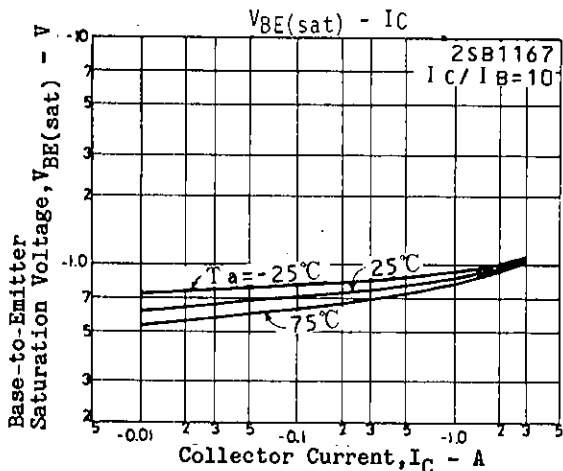
Unit (Resistance :  $\Omega$ , Capacitance : F)

$I_C = 10I_{B1} = -10I_{B2} = 1.5A$   
For PNP, the polarity is reversed.



2SB1167/2SD1724





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