



## 2SB817/2SD1047

### 140V/12A AF 60W Output Applications

#### Features

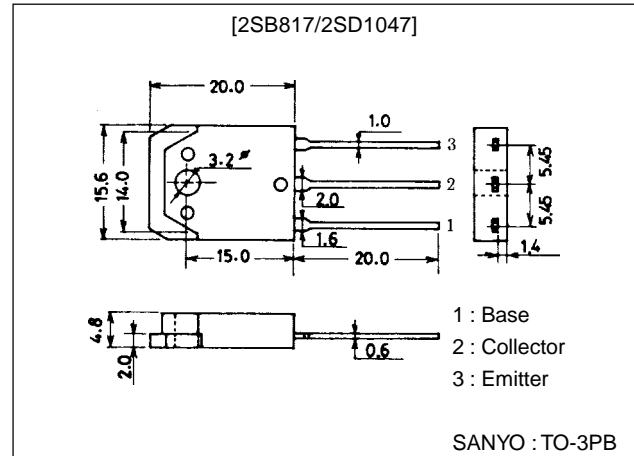
- Capable of being mounted easily because of one-point fixing type plastic molded package (Interchangeable with TO-3).
- Wide ASO because of on-chip ballast resistance.
- Good dependence of  $f_T$  on current and excellent high frequency response.

The descriptions in parentheses are for the 2SB817 only :  
other descriptions than those in parentheses are common to the 2SB817 and 2SD1047.

#### Package Dimensions

unit:mm

2022A



#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-160)	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-140)	V
Emitter-to-Base Voltage	$V_{EBO}$		(-6)	V
Collector Current	$I_C$		(-12)	A
Collector Current (Pulse)	$I_{CP}$		(-15)	A
Collector Dissipation	$P_C$	$T_c=25^\circ\text{C}$	100	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 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	$I_{CBO}$	$V_{CB} = (-)80\text{V}, I_E = 0$			(-0.1)	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-0.1)	mA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$	60*		200*	
	$h_{FE2}$	$V_{CE} = (-)5\text{V}, I_C = (-)6\text{A}$	20			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(300)		pF
				210		pF

\* : The 2SB817/2SD1047 are classified by  $1\text{A } h_{FE}$  as follows :

60	D	120	100	E	200
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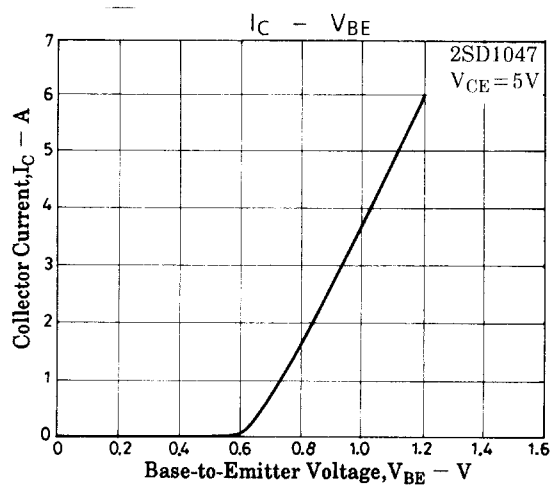
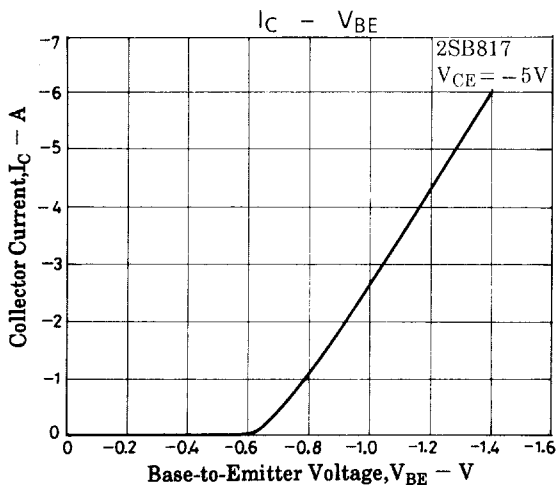
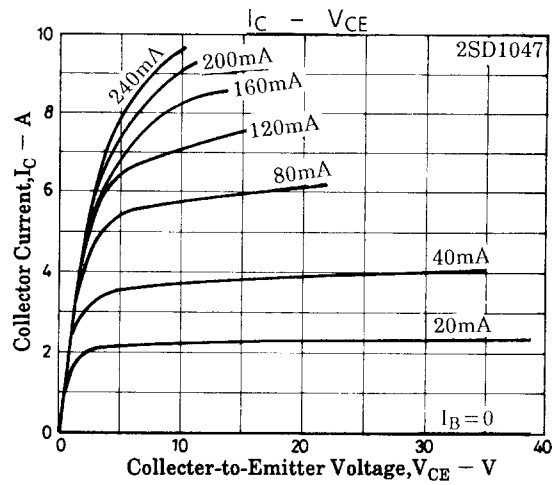
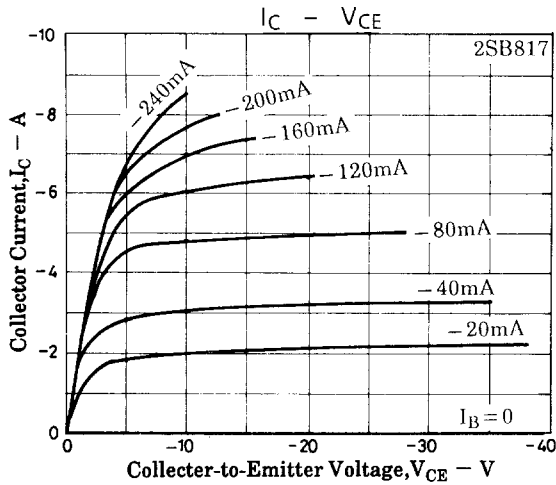
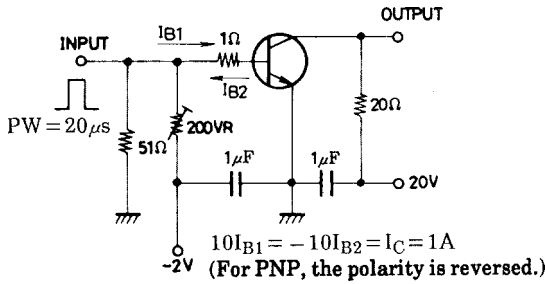
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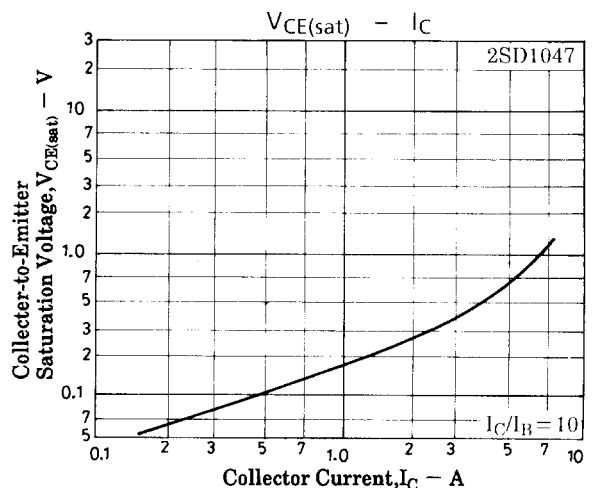
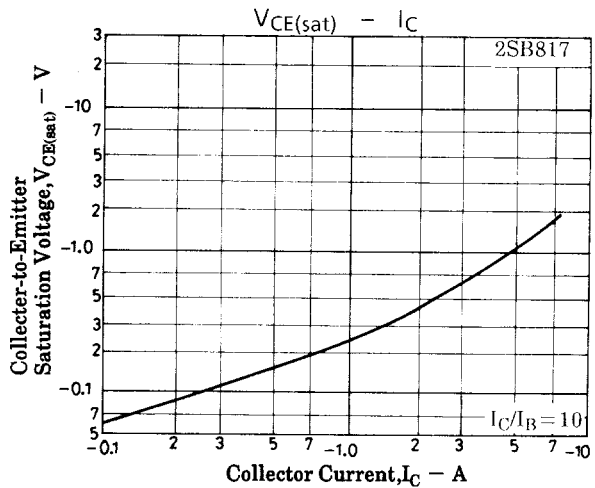
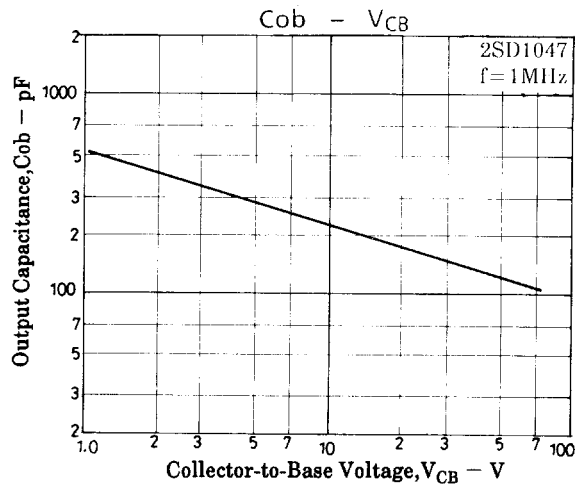
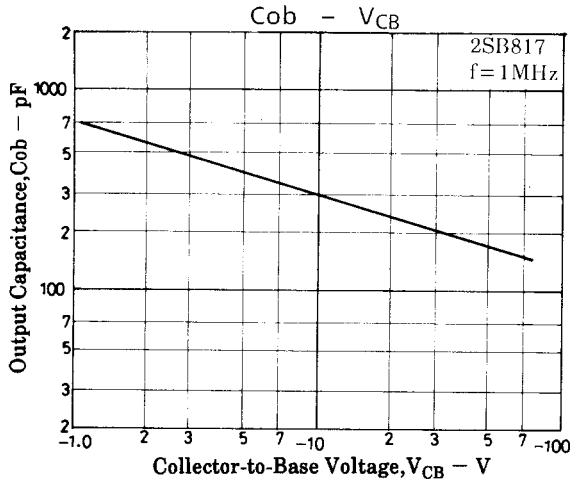
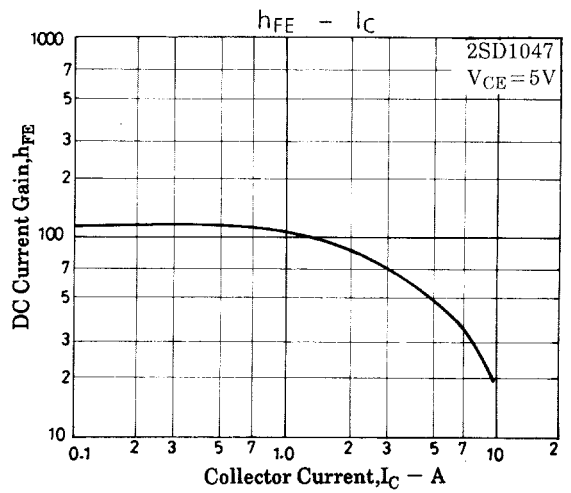
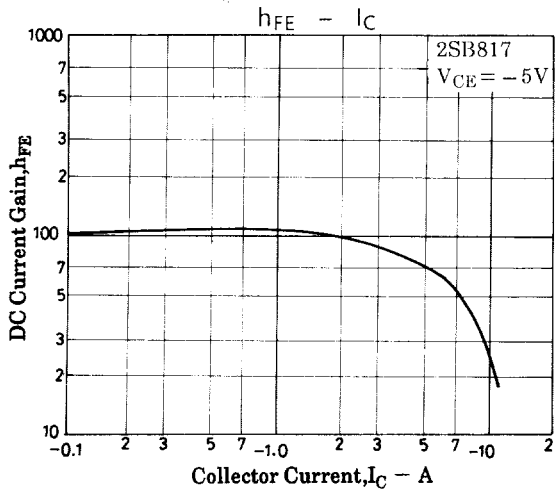
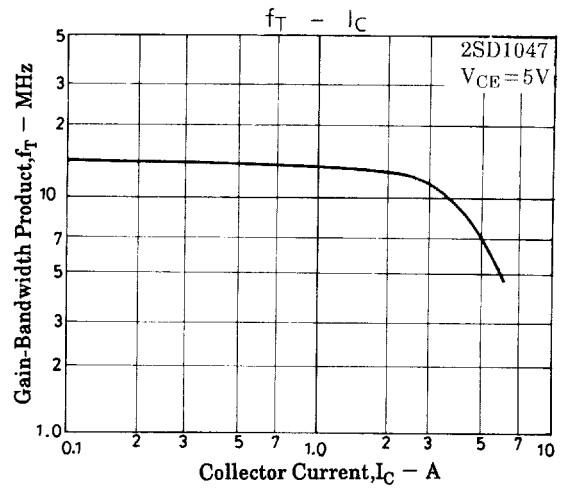
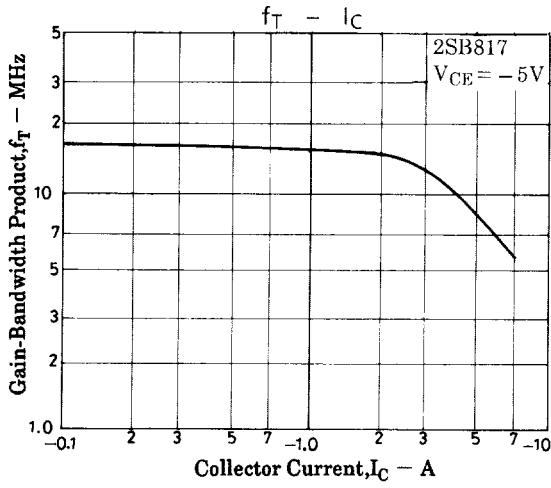
# 2SB817/2SD1047

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Voltage	$V_{BE}$	$V_{CE}=(-)5V, I_C=(-)1A$			1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)5A, I_B=(-)0.5A$		0.6	2.5	V
				(1.1)		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)5mA, I_E=0$	(-)160			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)5mA, R_{BE}=\infty$	(-)140			V
		$I_C=(-)50mA, R_{BE}=\infty$	(-)140			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)5mA, I_C=0$	(-)6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		(0.25)		$\mu s$
				0.26		$\mu s$
Fall Time	$t_f$	See specified Test Circuit		(0.53)		$\mu s$
				0.68		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit		(1.61)		$\mu s$
				6.88		$\mu s$

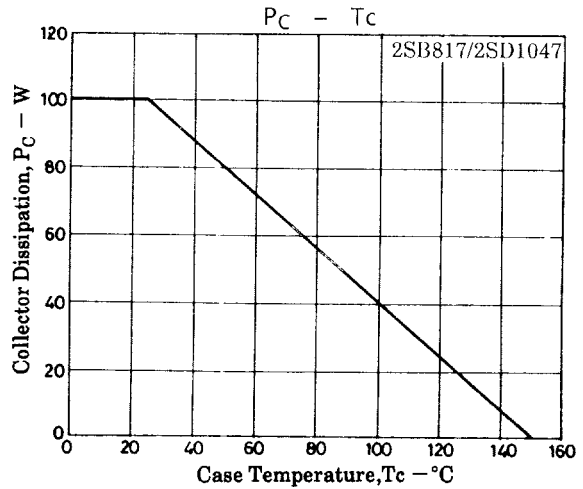
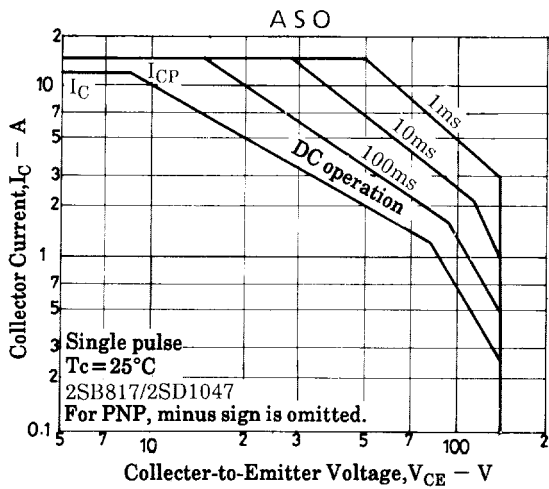
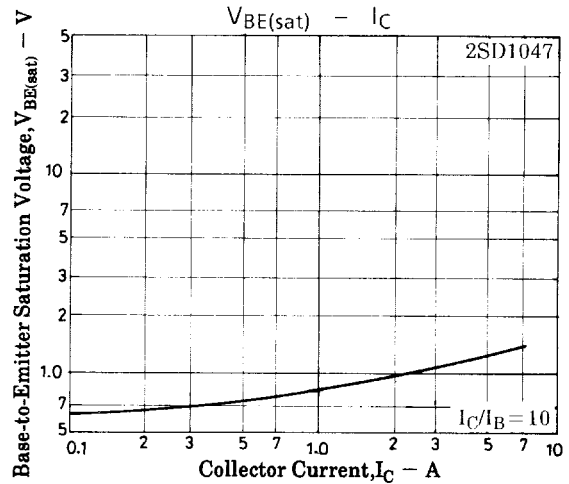
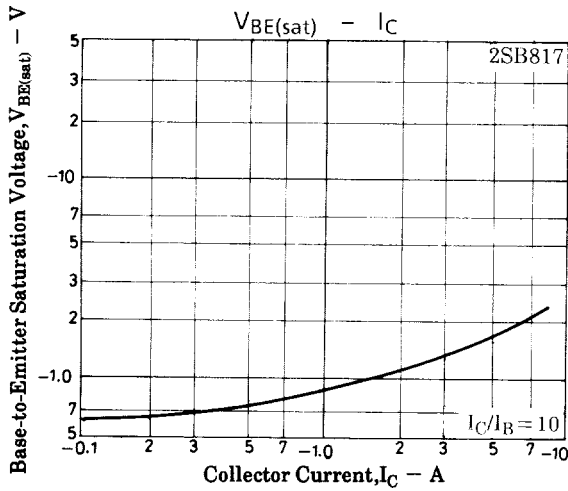
## Switching Time Test Circuit



# 2SB817/2SD1047



## 2SB817/2SD1047



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