



# 2SB817P / 2SD1047P

## 140V / 12A, AF80W Output Applications

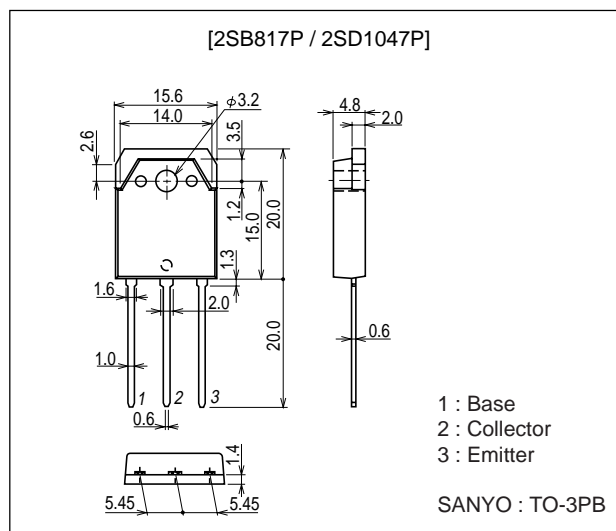
### Features

- Capable of being mounted easily because of one-point fixing type plastic molded package (Interchangeable with TO-3).
- Wide ASO because of built-in ballast resistance.
- Good dependence of  $f_T$  on current and good HF characteristic.

### Package Dimensions

unit : mm

2022A



### Specifications

( ) : 2SB817P

**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	$P_C$	$T_c=25^\circ\text{C}$	120	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

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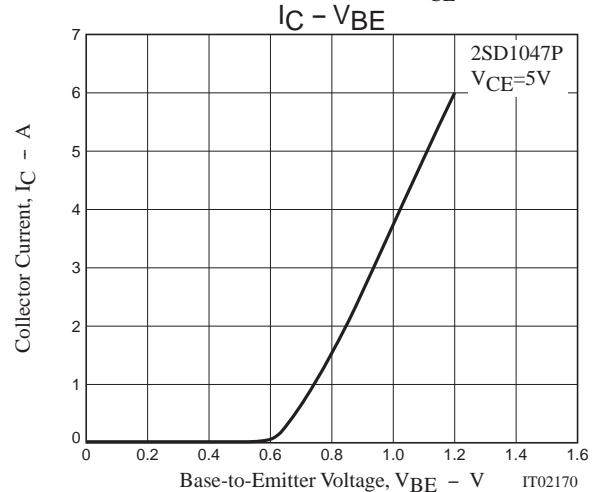
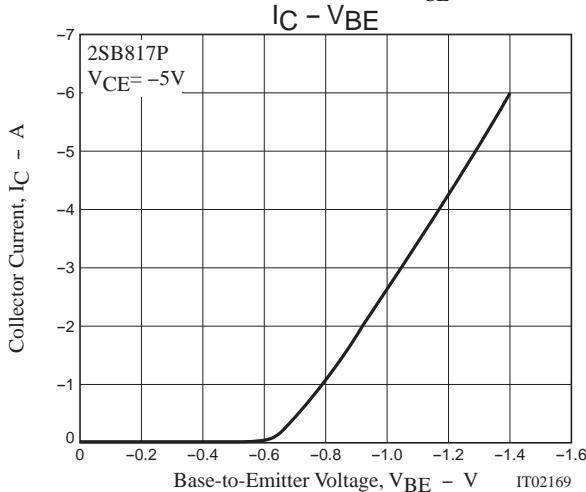
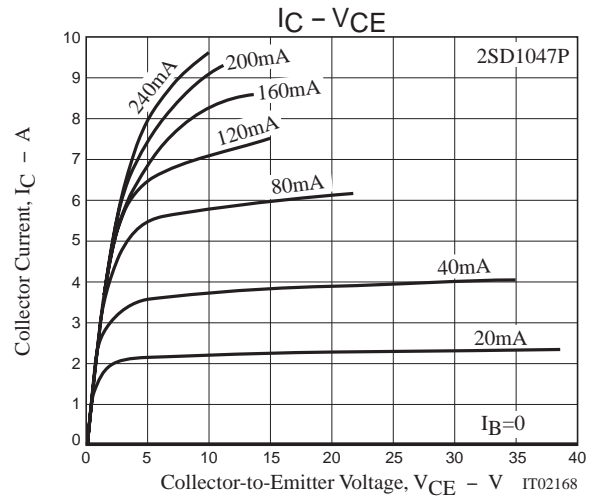
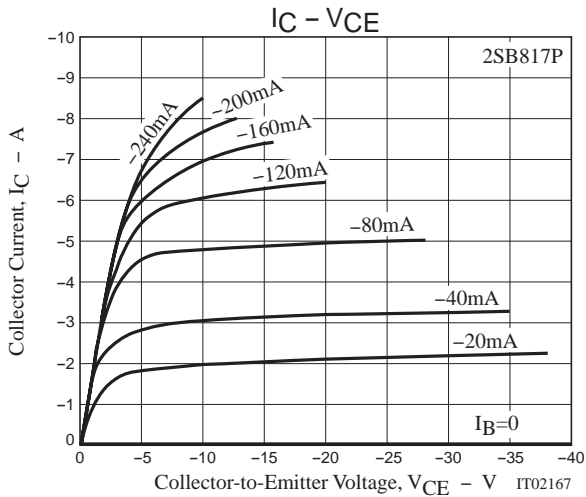
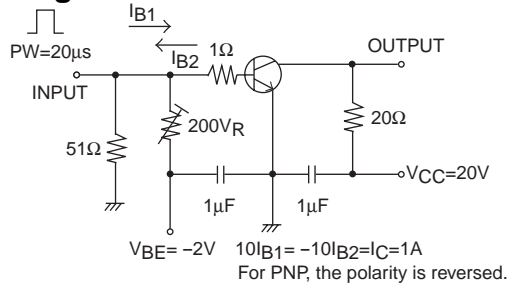
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)5V, I_C=(-)1A$	60*		200*	
	$h_{FE2}$	$V_{CE}=(-)5V, I_C=(-)6A$	20			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5V, I_C=(-)1A$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(300)210		pF
Base-to-Emitter Saturation Voltage	$V_{BE}$	$V_{CE}=(-)5V, I_C=(-)1A$			1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)5A, I_B=(-)0.5A$		(1.1)0.6	2.5	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)0.26		$\mu s$
Fall Time	$t_f$	See specified test circuit.		(0.53)0.68		$\mu s$
Storage Time	$t_{stg}$	See specified test circuit.		(1.61)6.88		$\mu s$

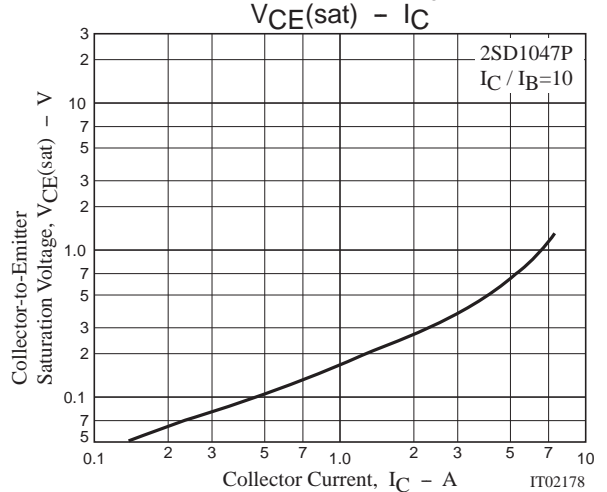
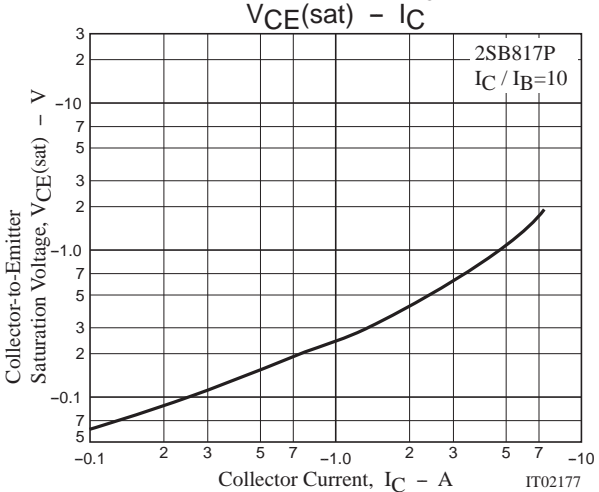
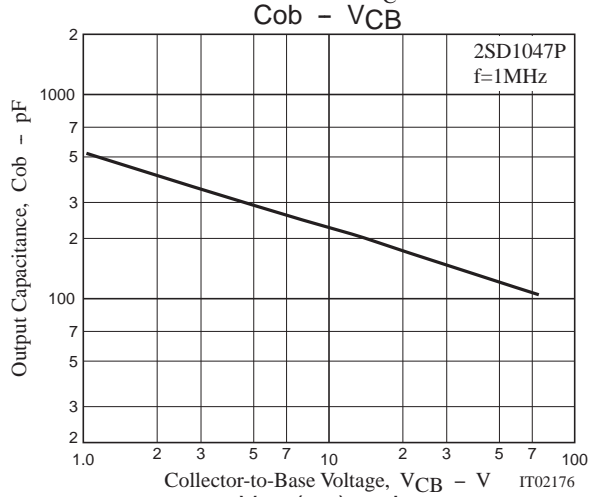
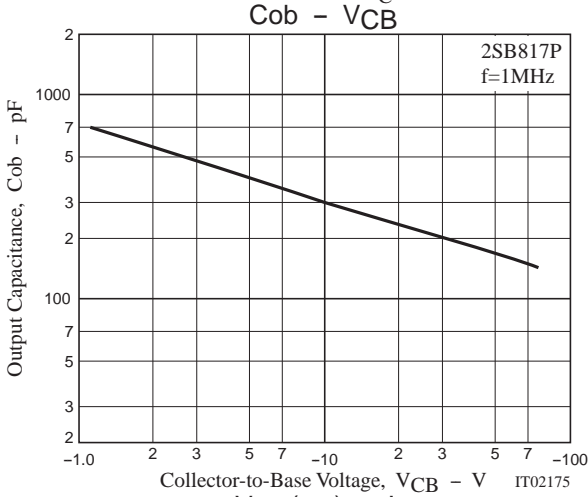
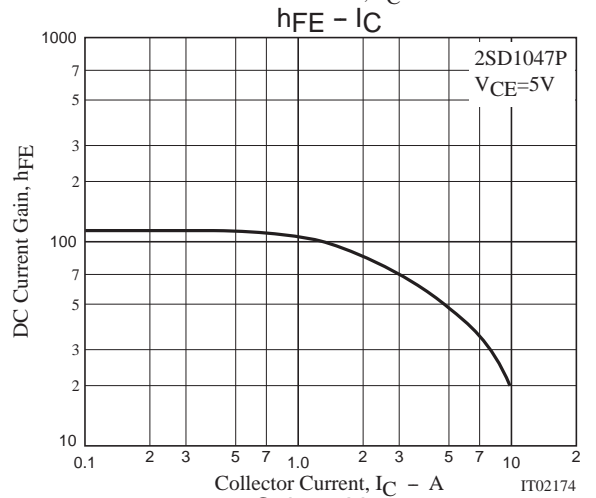
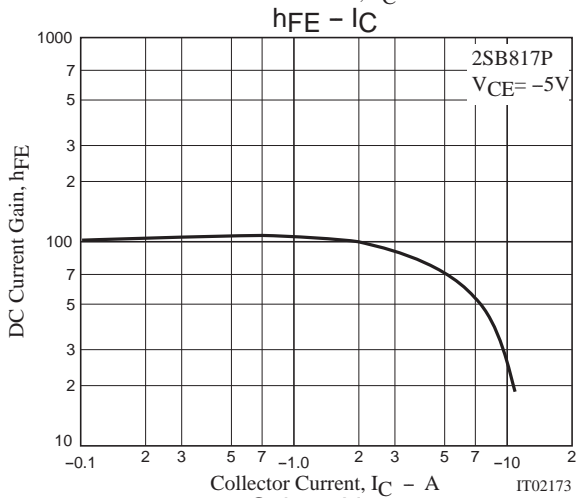
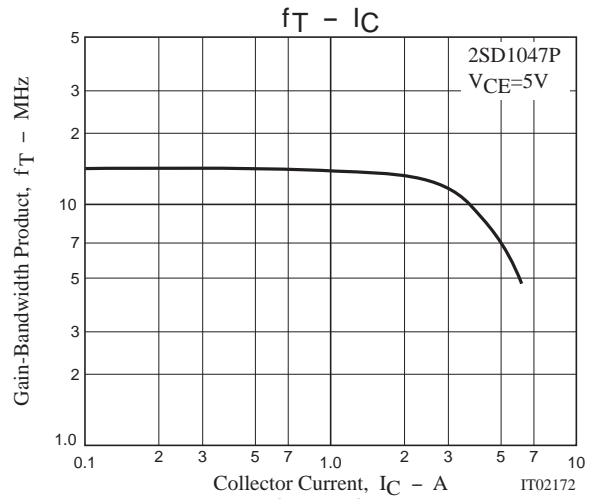
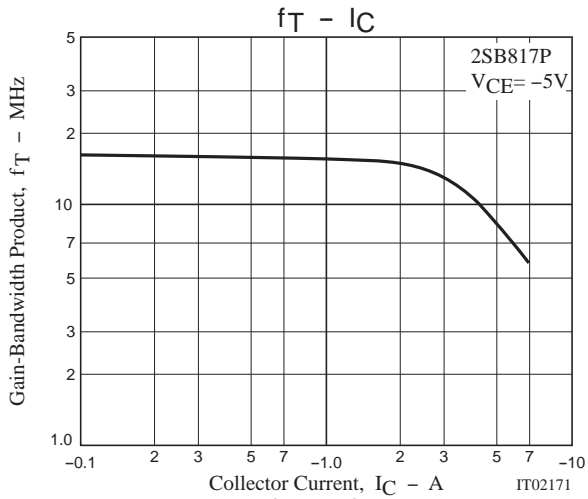
\* : The 2SB817P / 2SD1047P are classified by 1A  $h_{FE}$  as follows

Rank	D	E
$h_{FE}$	60 to 120	100 to 200

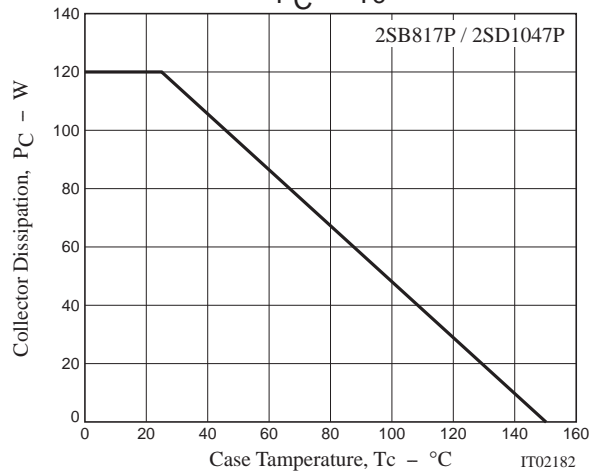
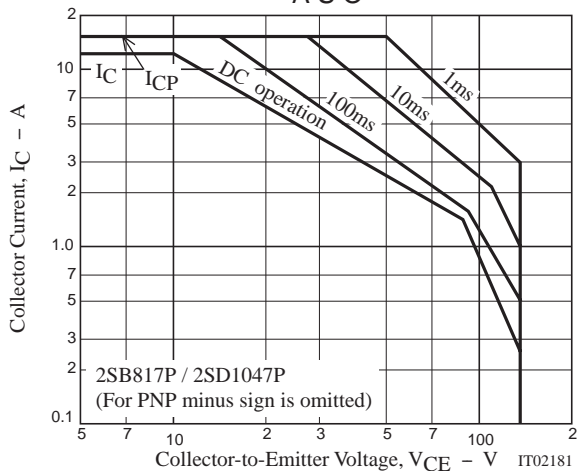
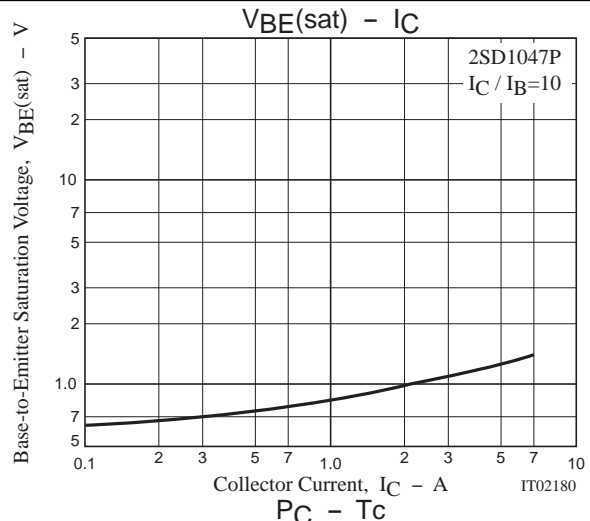
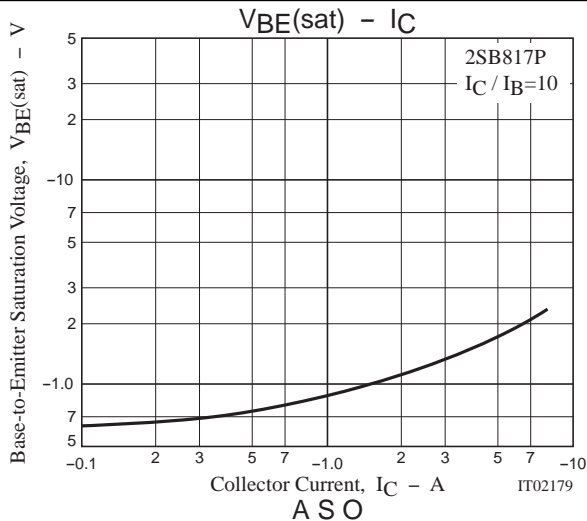
### Switching Time Test Circuit



2SB817P / 2SD1047P



## 2SB817P / 2SD1047P



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