Ordering number:ENN680F

PNP Epitaxial Planar Silicon Transistors
NPN Triple Diffused Planar Silicon Transistors

2SB817/2SD1047

140V/12A AF 60W Output Applications

Features

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

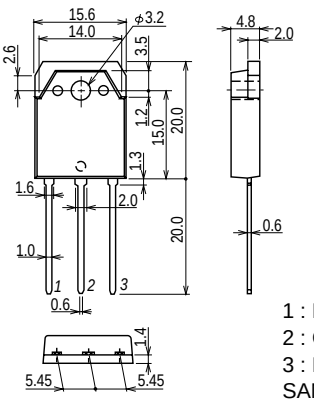
The descriptions in parentheses are for the 2SB817 only : other descriptions than those in parentheses are common to the 2SB817 and 2SD1047.

Package Dimensions

unit:mm

2022A

[2SB817/2SD1047]



1 : Base
2 : Collector
3 : Emitter
SANYO : TO-3PB

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)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	Tc=25˚C	100	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–40 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)80V, I_E=0			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	mA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)1A	60*		200*	
	$h_{FE}2$	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)		pF
				210		pF

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

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

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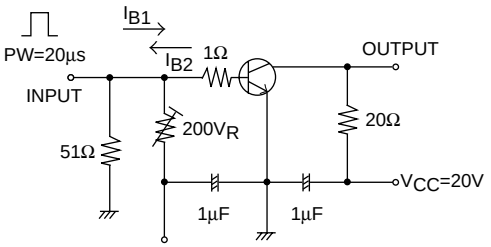
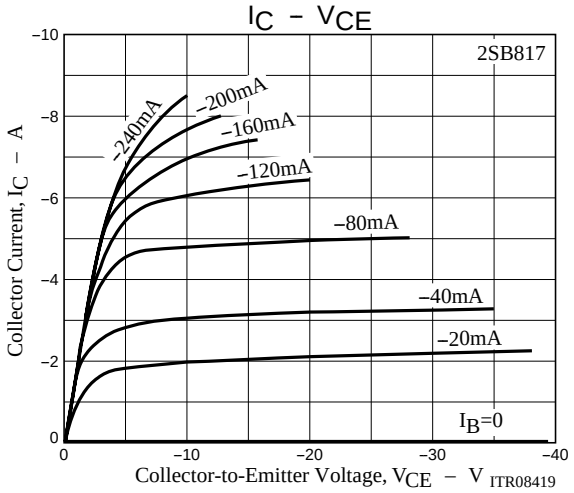
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Voltage	V_{BE}	V_{CE}=(–)5V, I_C=(–)1A			1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)5A, I_B=(–)0.5A		0.6	2.5	V
				(1.1)		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)5mA, I_E=0	(–)160			V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

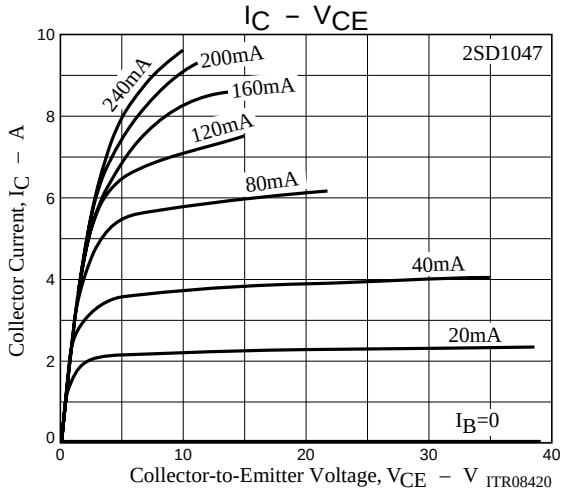
Switching Time Test Circuit

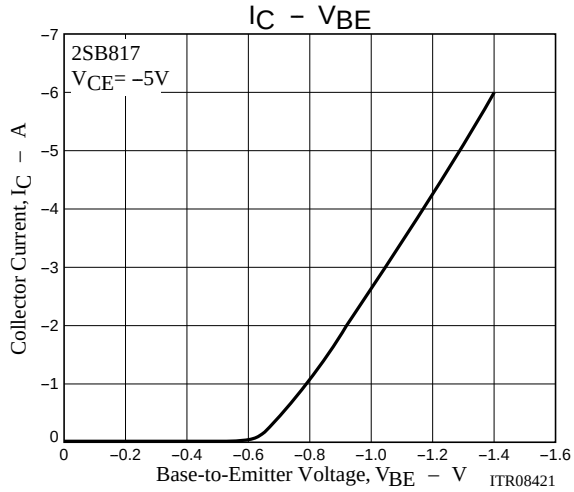


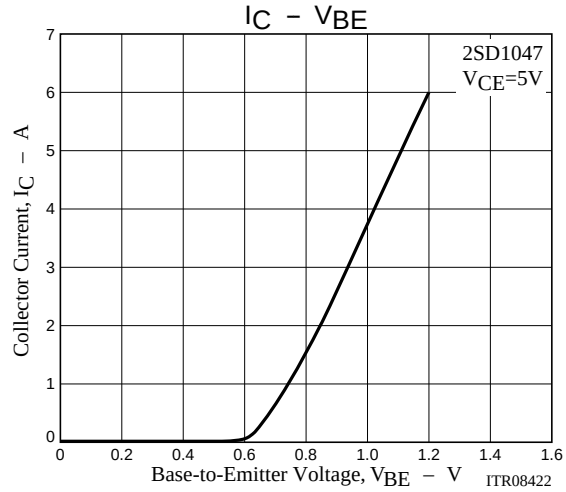
V_{BE}= –2V $10I_{B1}$= $-10I_{B2}$=I_C=1A

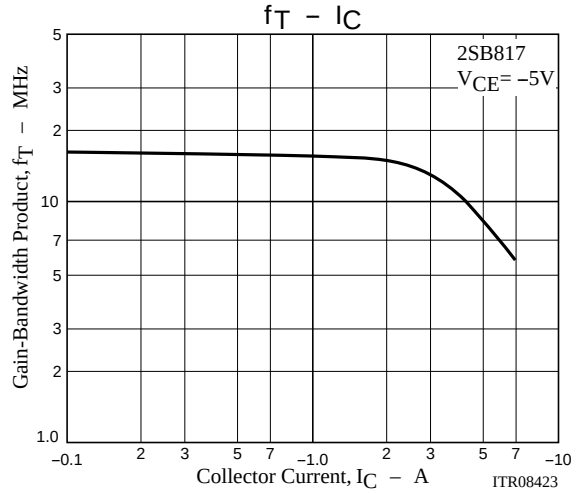
(For PNP, the polarity is reversed.)

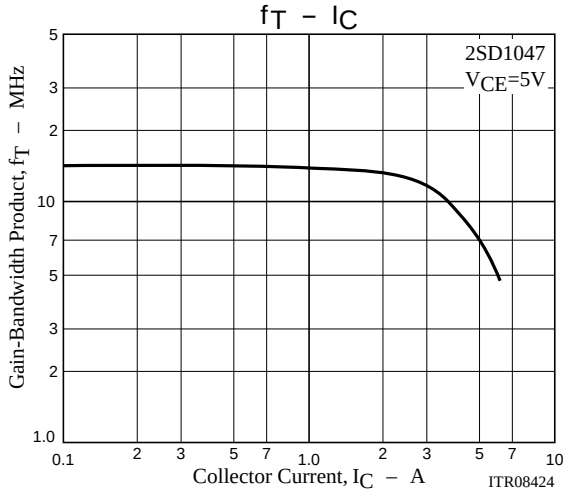


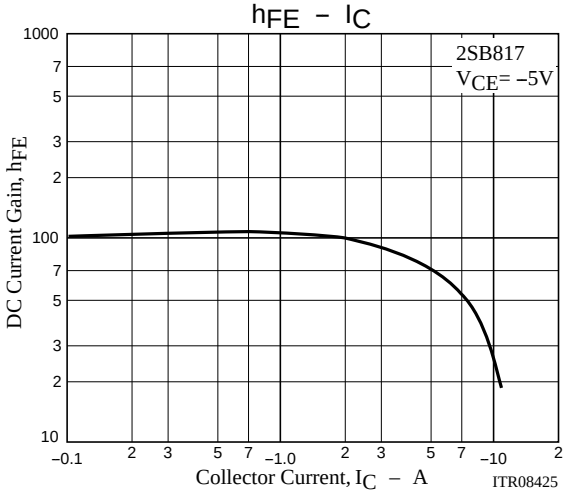


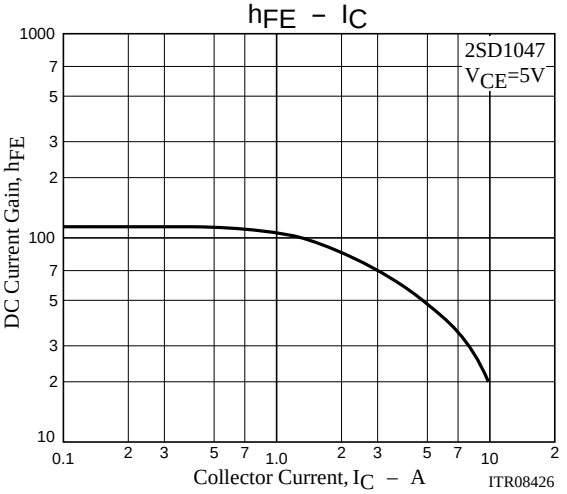


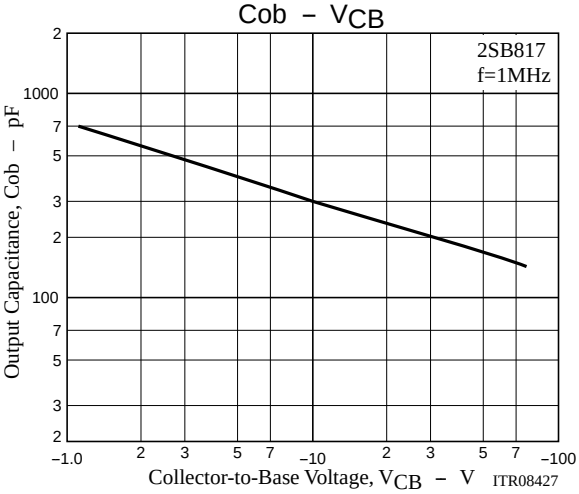


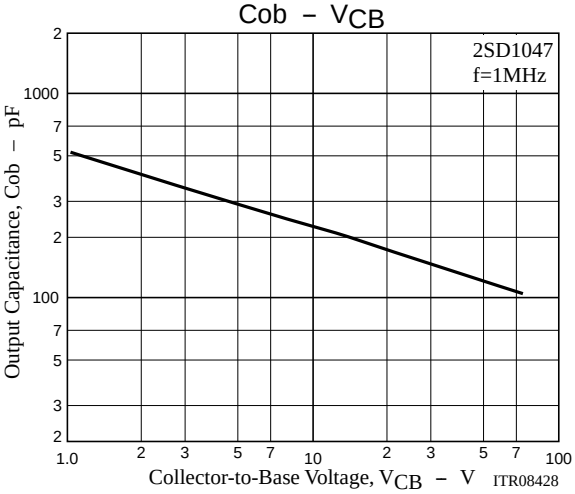

fT – IC
2SB817
VCE= –5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR08423

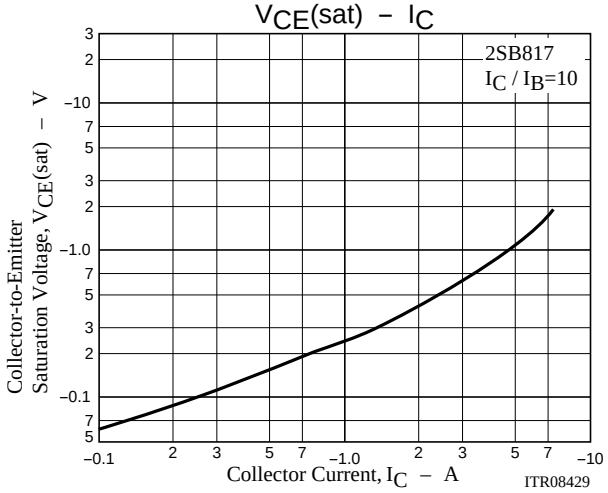

fT – IC
2SD1047
VCE=5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR08424

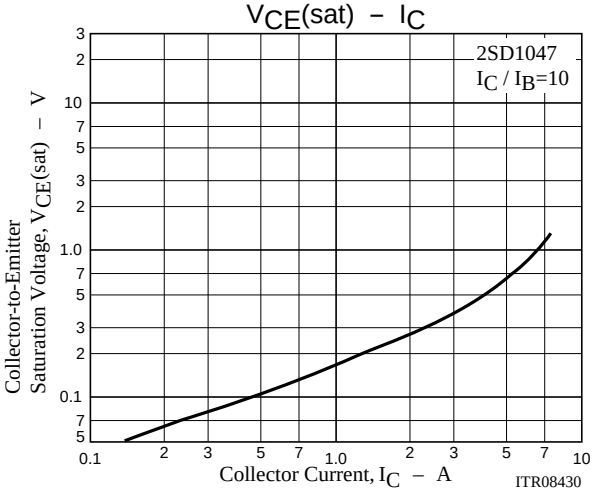

hFE – IC
2SB817
VCE= –5V
DC Current Gain, hFE
Collector Current, IC – A
ITR08425


hFE – IC
2SD1047
VCE=5V
DC Current Gain, hFE
Collector Current, IC – A
ITR08426


Cob – VCB
2SB817
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR08427


Cob – VCB
2SD1047
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR08428


VCE(sat) – IC
2SB817
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08429


VCE(sat) – IC
2SD1047
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08430