Ordering number:ENN2069A

PNP Epitaxial Planar Silicon Transistor

2SB1140

20V/5A Switching Applications

Applications

· Strobes, power supplies, relay drivers, lamp drivers.

Features

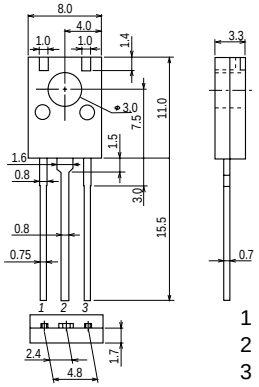
· Adoption of FBET, MBIT processes.
· Low saturation voltage.
· Large current capacity.
· Short switching time.

Package Dimensions

unit:mm

2042B

[2SB1140]



1 : Emitter
2 : Collector
3 : Base
SANYO : TO-126ML

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		–25	V
Collector-to-Emitter Voltage	V_{CEO}		–20	V
Emitter-to-Base Voltage	V_{EBO}		–5	V
Collector Current	I_C		–5	A
Collector Current (Pulse)	I_{CP}		–8	A
Base Current	I_B		–0.5	A
Collector Dissipation	P_C		1.5	W
		Tc=25˚C	10	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=–20V, I_E=0			–500	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=–4V, I_C=0			–500	nA
DC Current Gain	$h_{FE}1$	V_{CE}=–2V, I_C=–500mA	100*		400*	
	$h_{FE}2$	V_{CE}=–2V, I_C=–4A	60			
Gain-Bandwidth Product	f_T	V_{CE}=–5V, I_C=–200mA		320		MHz

* : The 2SB1140 is classified by 500mA h_{FE} as follows :

Rank	R	S	T
h_{FE}	100 to 200	140 to 280	200 to 400

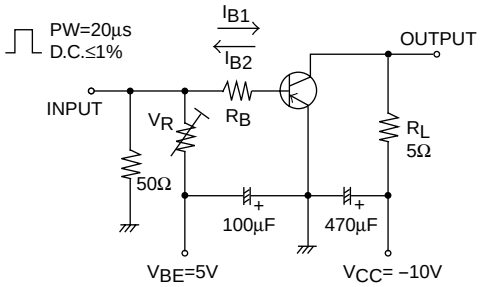
Continued on next page.

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

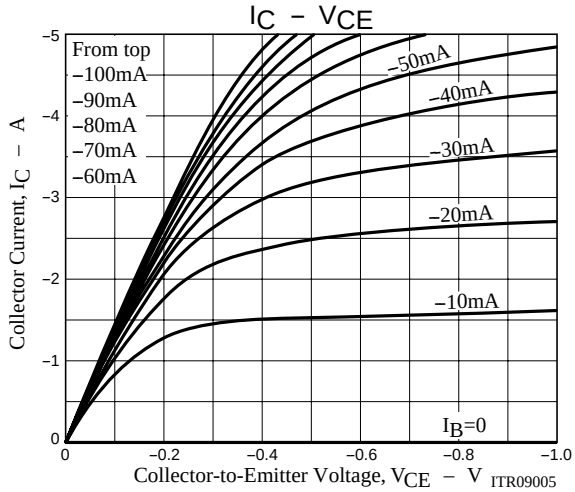
Continued from preceding page.

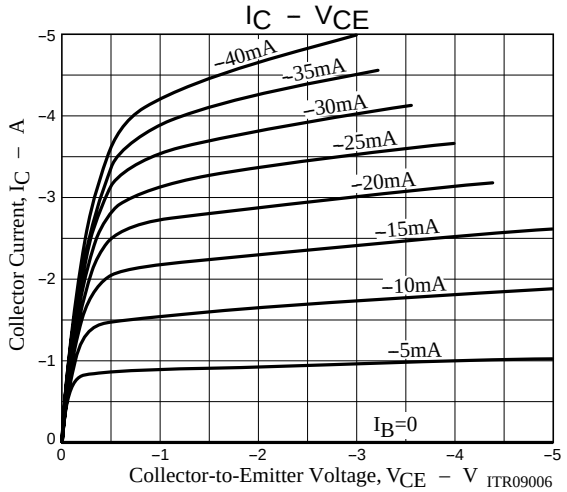
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=–10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=–3A, I_B=–60mA		–250	–500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=–3A, I_B=–60mA		–1.0	–1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	–25			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	–20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	–5			V
Turn-ON Time	t_{on}	See specified Test Circuti.		40		ns
Storage Time	t_{stg}	See specified Test Circuit.		200		ns
Fall Time	t_f	See specified Test Circuit.		10		ns

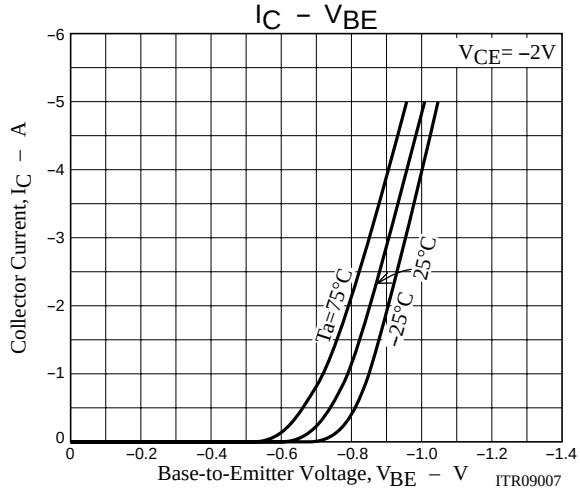
Switching Time Test Circuit

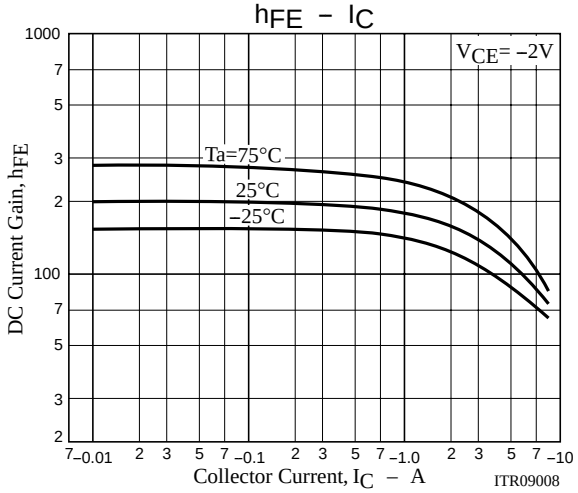


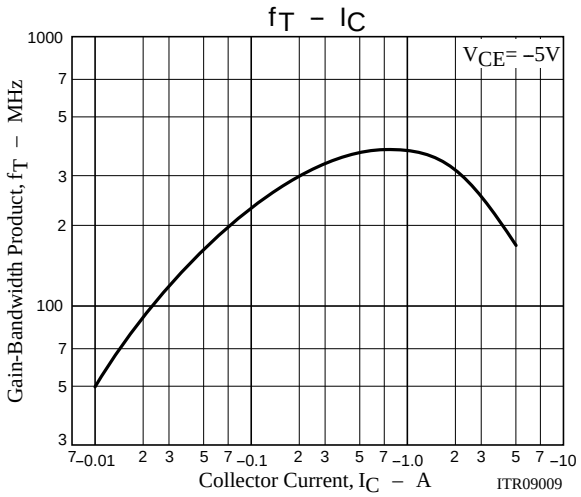
I_C=10I_{B1}= −10I_{B2}=−2A
(For PNP, the polarity is reversed.)

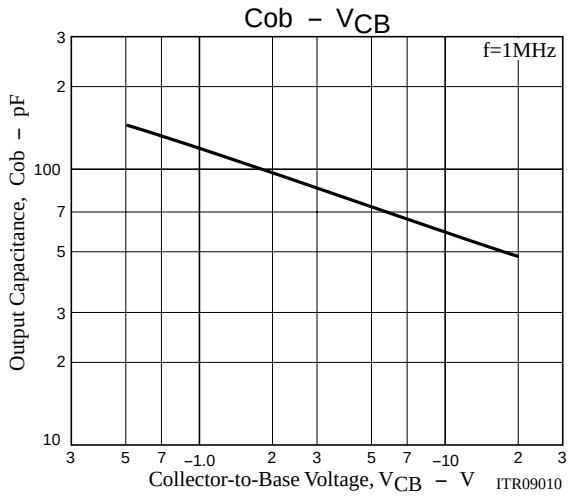


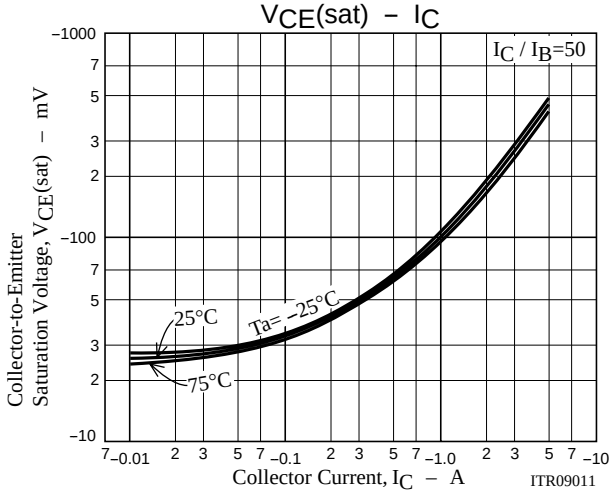


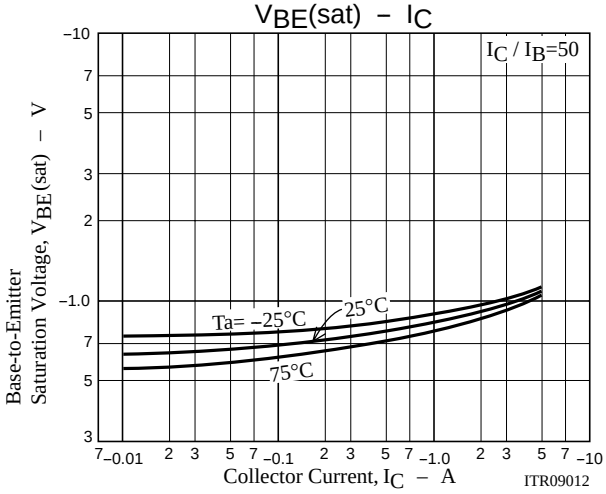


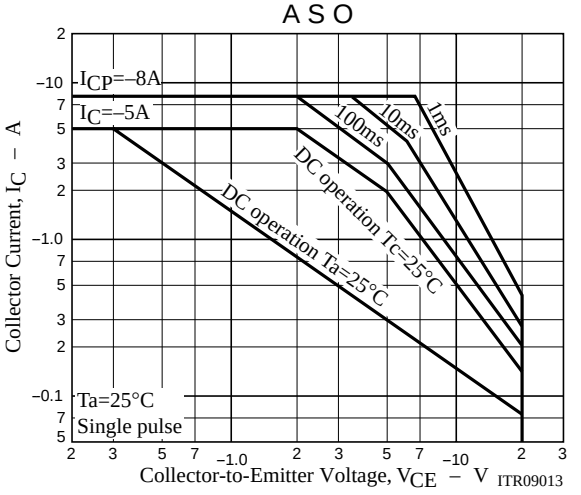


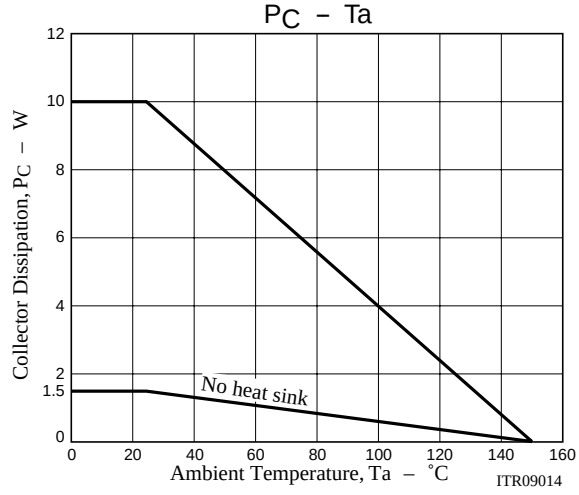

fT – IC
VCE= –5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR09009


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR09010


VCE(sat) – IC
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
25°C
Ta= –25°C
75°C
Collector Current, IC – A
ITR09011


VBE(sat) – IC
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
25°C
75°C
Collector Current, IC – A
ITR09012


A S O
ICP=–8A
IC=–5A
1ms
10ms
100ms
DC operation Tc=25°C
DC operation Ta=25°C
Ta=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09013


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
ITR09014