Ordering number:EN5052

FX802

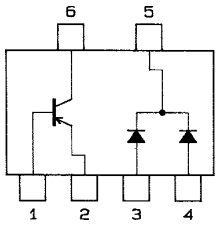
TR:PNP Epitaxial Planar Silicon Transistor
SBD:Schottky Barrier Diode (Twin type · Cathode Common)

DC-DC Converter

Features

- Complex type of a low saturation voltage, high speed switching and large current PNP transistor and a fast recovery and low forward voltage Schottky barrier diode facilitating high-sensity mounting.
- The FX802 is composed of 2 chips, one being equivalent to the 2SB1302 and the other the SB20W03P, placed in one packae.

Electrical Connection



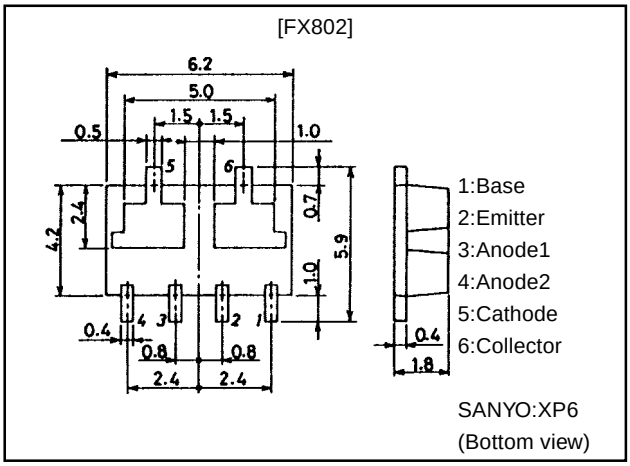
1:Base
2:Emitter
3:Anode1
4:Anode2
5:Cathode
6:Collector

(Top view)

Package Dimensions

unit:mm

2126



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
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		–1	A
Collector Dissipation	P_C	Mounted on ceramic board (750mm^2×0.8mm) 1 unit	1.5	W
Junction Temperature	Tj		150	˚C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		35	V
Average Rectified Current	I_O		2	A
	I_O	(Total)	4	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	10	A
Junction Temperature	Tj		–55 to +125	˚C
Storage Temperature	Tstg		–55 to +125	˚C

· Marking:802

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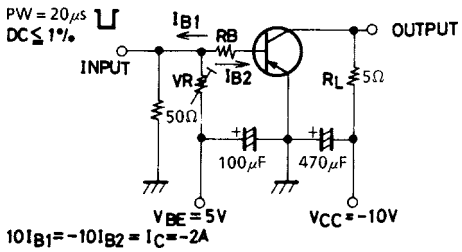
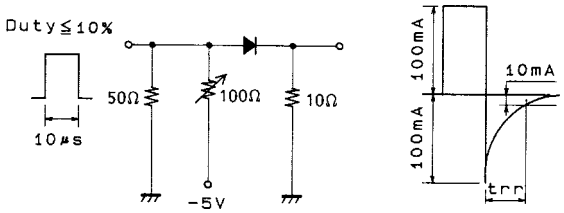
Electrical Characteristics at Ta = 25˚C

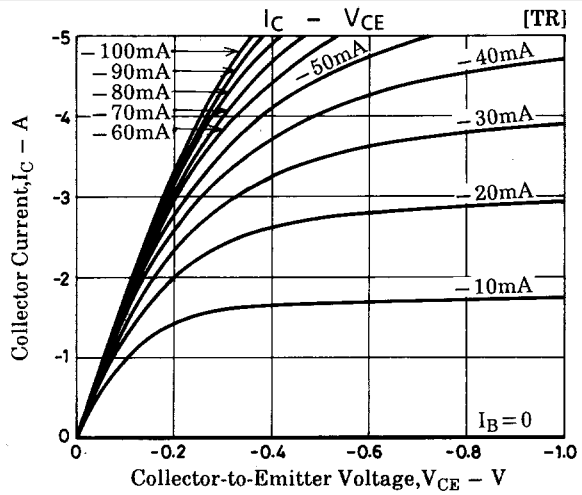
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	V_{CB}=–20V, I_E=0			–500	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=–4V, I_C=0			–500	nA
DC Current Gain	$h_{FE}1$	V_{CE}=–2V, I_C=–500mA	140		400	
	$h_{FE}2$	V_{CE}=–2V, I_C=–4A	60			
Gain-Bandwidth Product	f_T	V_{CE}=–5V, I_C=–200mA		320		MHz
Output Capacitance	Cob	V_{CE}=–10V, f=1MHz		60		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=–3A, I_B=–60mA		–250	–500	mV
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=–3A, I_B=–60mA		–1.0	–1.3	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=–10μA, I_E=0	–25			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_E=–1mA, R_{BE}=∞	–20			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=–10μA, I_C=0	–5			V
Turn-ON Time	t_{on}	See sepcified Test Circuit		40		ns
Storage Time	t_{stg}	See sepcified Test Circuit		200		ns
Fall Time	t_f	See sepcified Test Circuit		10		ns
[SBD] (Value per element)						
Reverse Voltage	V_R	I_R=500μA	30			V
Forward Voltage	V_F	I_F=2A			0.55	V
Reverse Current	I_R	V_R=15V			100	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz		70		pF
Reverse Recovery Time	trr	I_F=I_R=100mA, See specified Test Circuit			20	ns
Thermal Resistance	Rthj-a	Mounted on ceramic board (750mm²×0.8mm)		85		˚C/W

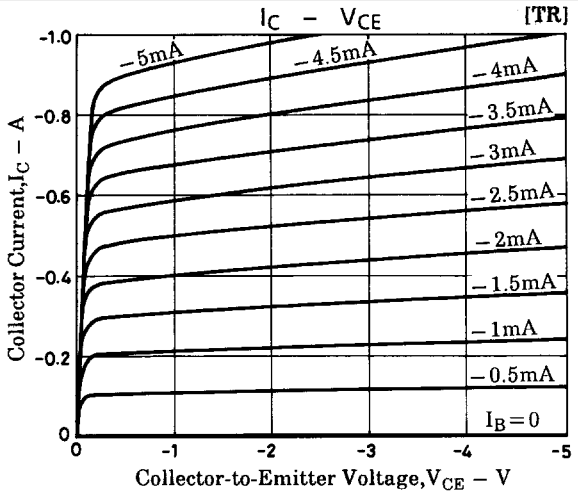
Switching Time Test Circuit

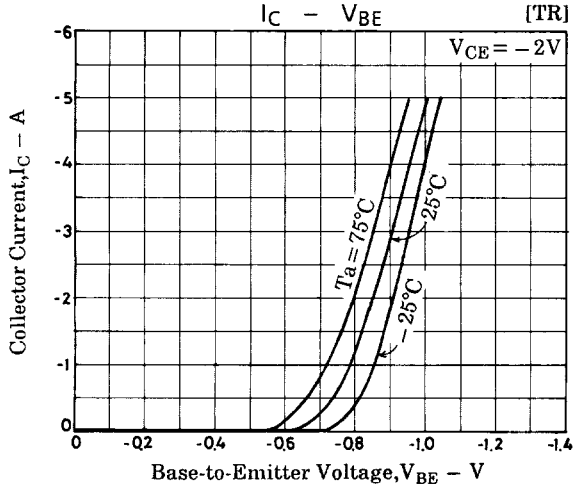


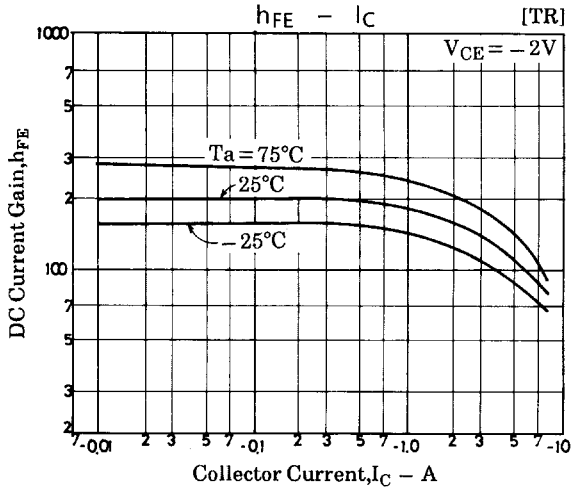
Trr Test Circuit

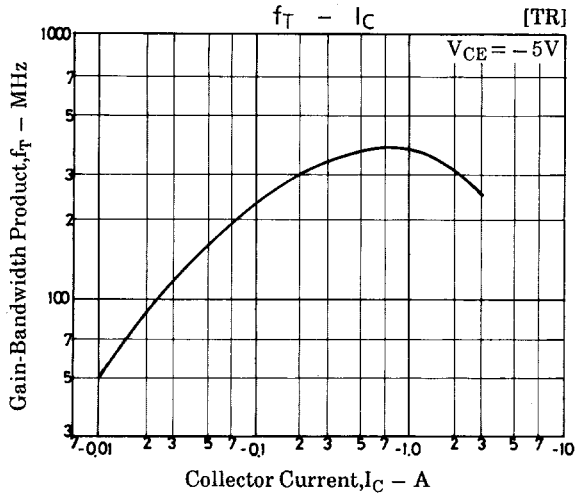


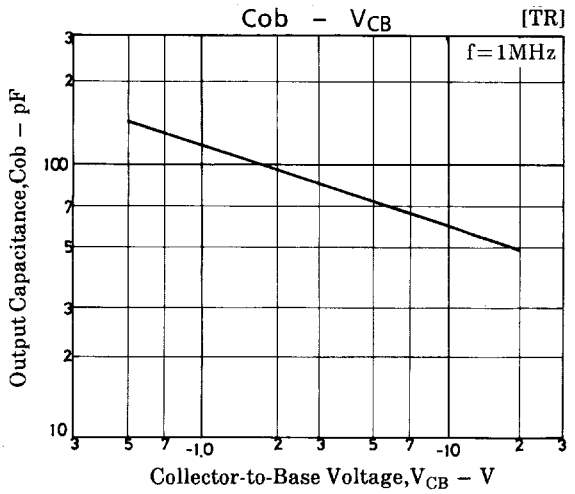

IC – VCE [TR]
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V
–100mA
–90mA
–80mA
–70mA
–60mA
–50mA
–40mA
–30mA
–20mA
–10mA
IB=0

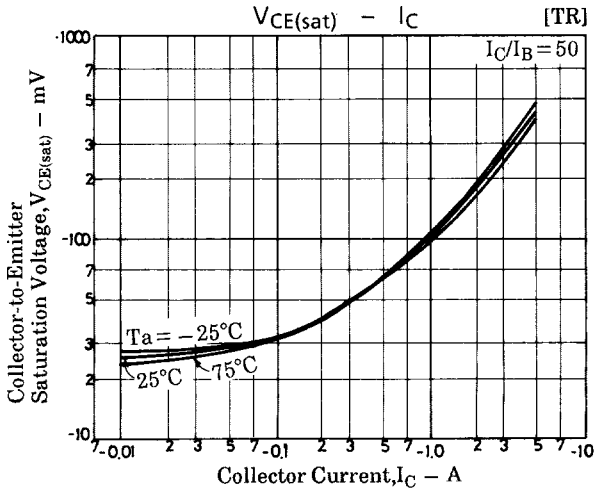

IC – VCE [TR]
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V
–5mA
–4.5mA
–4mA
–3.5mA
–3mA
–2.5mA
–2mA
–1.5mA
–1mA
–0.5mA
IB=0

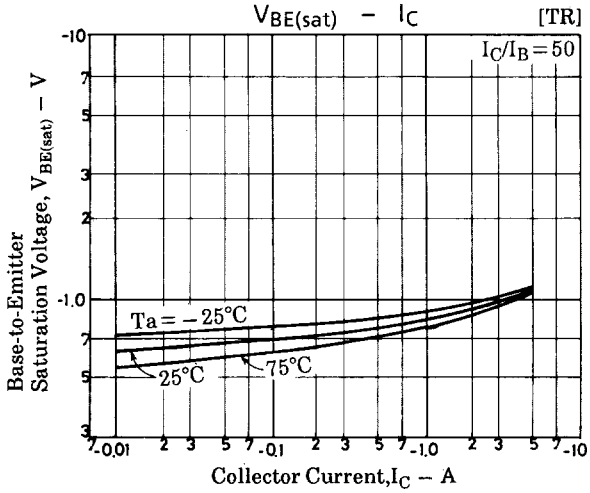

IC – VBE [TR]
VCE=–2V
Collector Current,IC – A
Base-to-Emitter Voltage,VBE – V
Ta=75°C
25°C
–25°C


hFE – IC [TR]
VCE=–2V
DC Current Gain,hFE
Collector Current,IC – A
Ta=75°C
25°C
–25°C

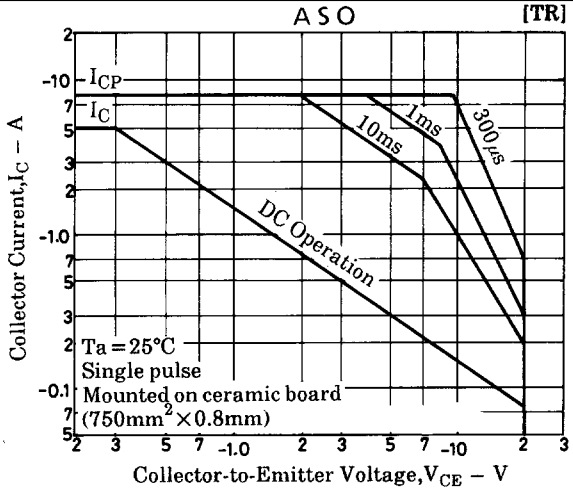

fT – IC [TR]
VCE=–5V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – A


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

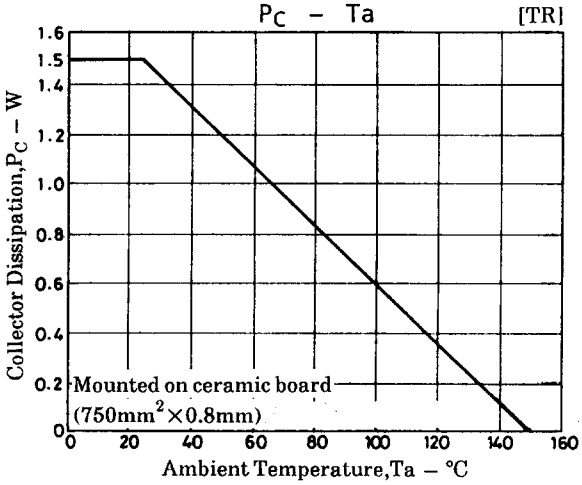

VCE(sat) – IC [TR]
IC/IB=50
Collector-to-Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A
Ta=–25°C
25°C
75°C


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

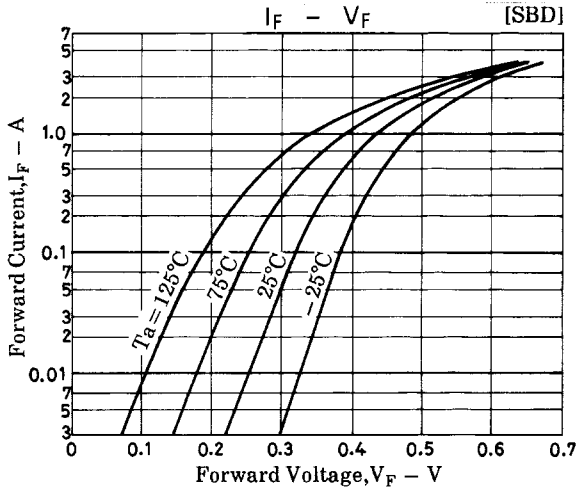
ASO [TR]



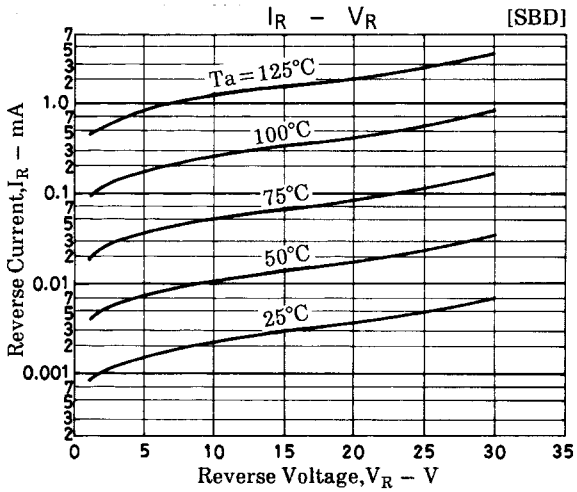
P_C – Ta [TR]



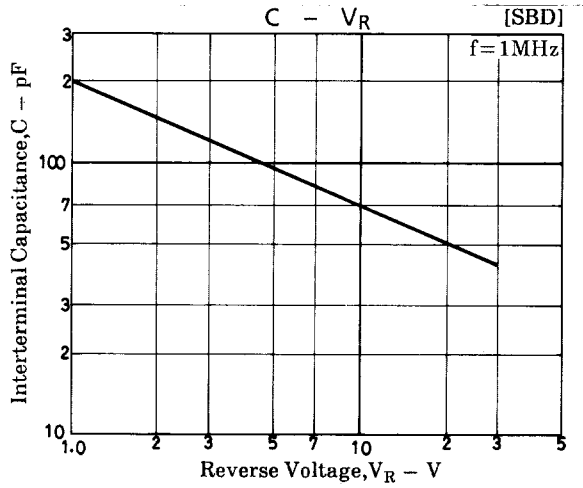
I_F – V_F [SBD]



I_R – V_R [SBD]



C – V_R [SBD]



I_S – t [SBD]