

**FP302**
 TR:NPN Epitaxial Planar Silicon Transistor
 SBD:Schottky Barrier Diode

DC-DC Converter Applications

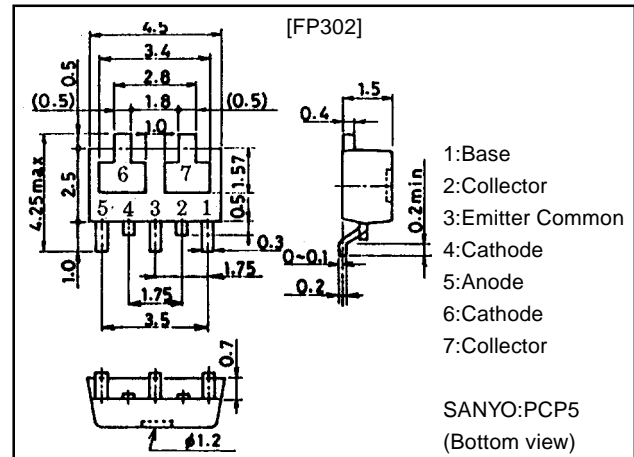
Features

- Composite type with NPN transistor and Schottky barrier diode facilitating high-density mounting.
- The FP302 is composed of chips equivalent to the 2SC4520 and SB05-05CP, which are placed in one package.

Package Dimensions

unit:mm

2099A



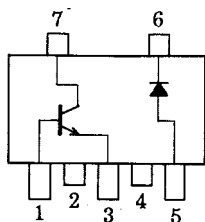
Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V _{CB0}		60	V
Collector-to-Emitter Voltage	V _{CE0}		45	V
Emitter-to-Base Voltage	V _{EB0}		5	V
Collector Current	I _C		1.5	A
Collector Current (Pulse)	I _{CP}		3	A
Base Current	I _B		300	mA
Collector Dissipation	P _C	Mounted on ceramic board (250mm ² ×0.8mm)	0.8	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
[SBD]				
Repetitive Peak Reverse Voltage	V _R RM		50	V
Non-repetitive Peak Reverse Surge Voltage	V _R S		55	V
Average Rectified Current	I _O		500	mA
Surge Forward Current	I _F SM	50Hz sine wave, 1 cycle	5	A
Junction Temperature	T _J		-55 to +125	°C
Storage Temperature	T _{stg}		-55 to +125	°C

Electrical Connection

Continued on next page.



- 1:Base
- 2:Collector
- 3:Emitter Common
- 4:Cathode
- 5:Anode
- 6:Cathode
- 7:Collector

(Top view)

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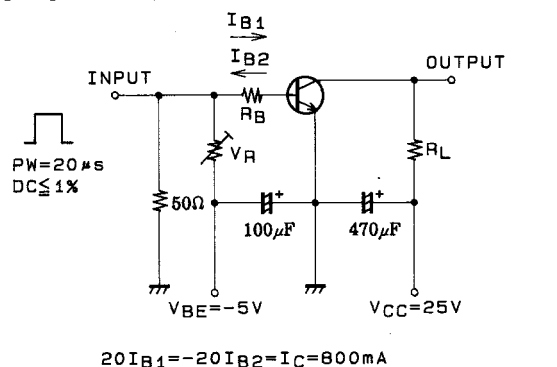
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Electrical Characteristics at Ta=25°C

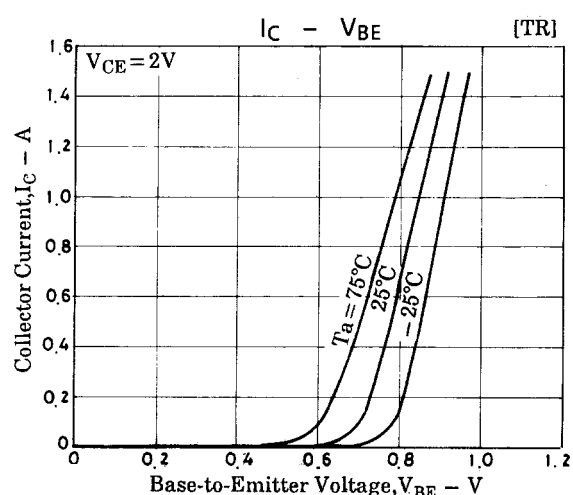
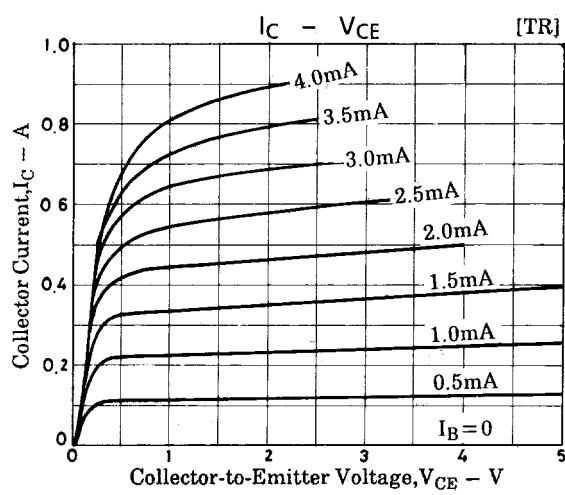
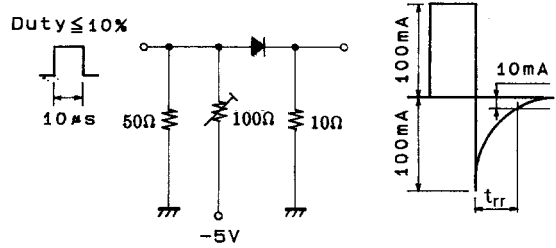
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=45V, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=3V, I_C=0$			1.0	μA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=100mA$	100		400	
	h_{FE2}	$V_{CE}=2V, I_C=1.5A$	40			
Gain-Bandwidth Product	f_T	$V_{CE}=2V, I_C=100mA$		300		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		13		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=800mA, I_B=40mA$		0.25	0.7	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=800mA, I_B=40mA$		0.9	1.3	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	45			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Turn-ON Time	t_{on}	See specified Test Circuit		50		ns
Storage Time	t_{stg}	See specified Test Circuit		150		ns
Turn-OFF Time	t_{off}	See specified Test Circuit		180		ns
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Reverse Voltage	V_R	$I_R=200\mu A$	50			V
Forward Voltage	V_F	$I_F=500mA$			0.55	V
Reverse Current	I_R	$V_R=25V$			50	μA
Interterminal Capacitance	C	$V_R=10V, f=1MHz$ cycle		22		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100mA$, See specified Test Circuit.			10	ns
Thermal Resistance	R_{thj-a}	Mounted on ceramic board (250mm ² ×0.8mm)		170		°C/W

Switching Time Test Circuit

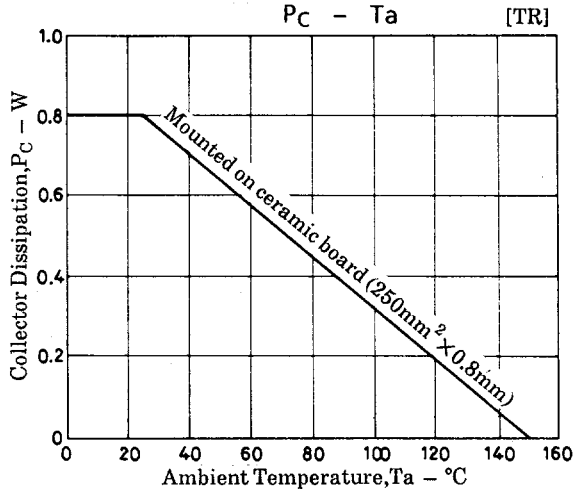
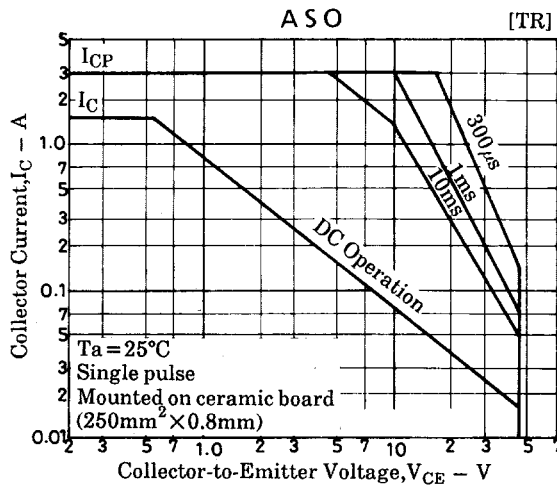
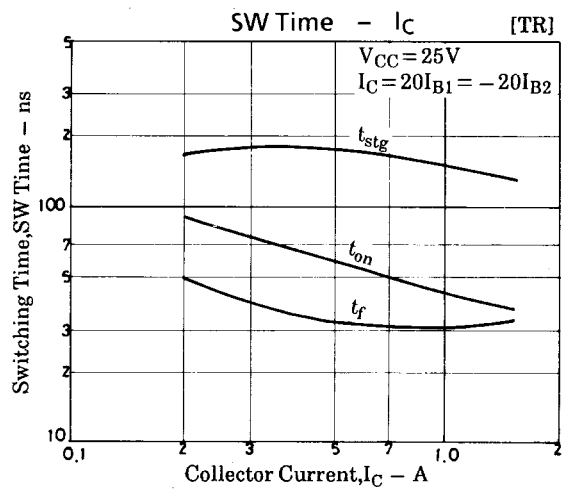
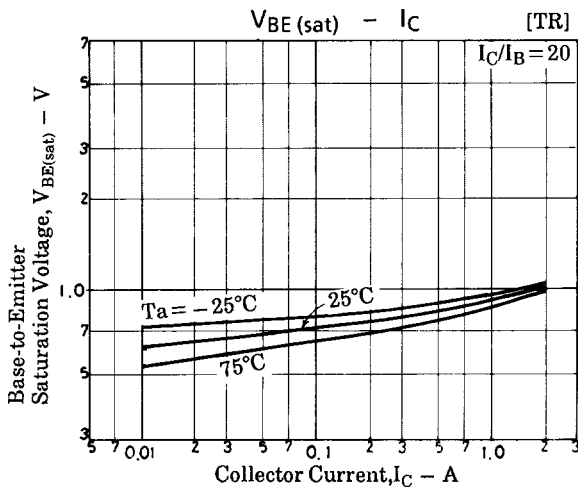
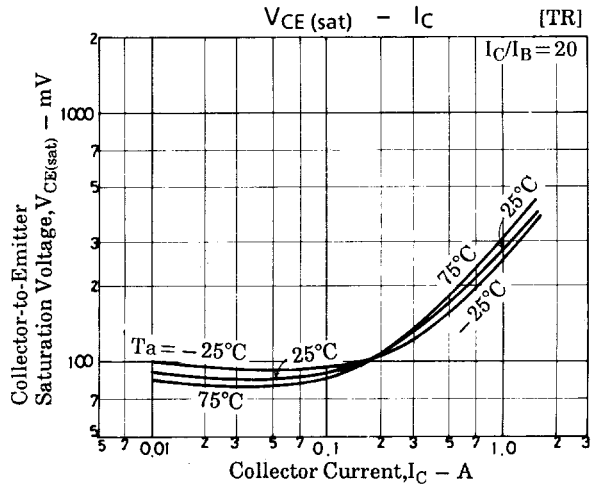
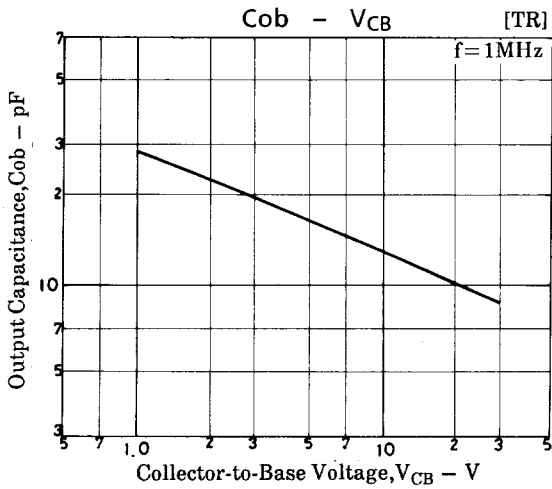
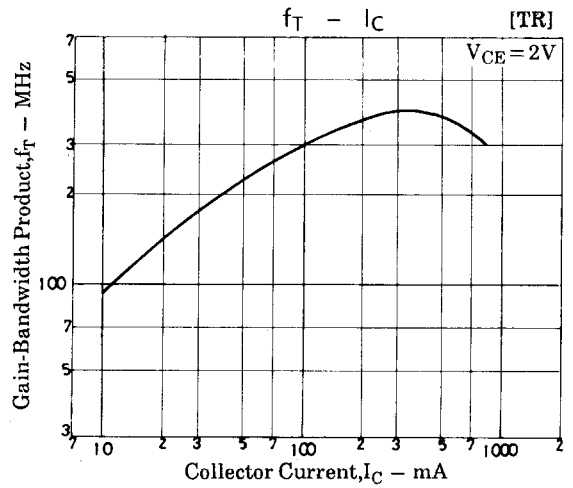
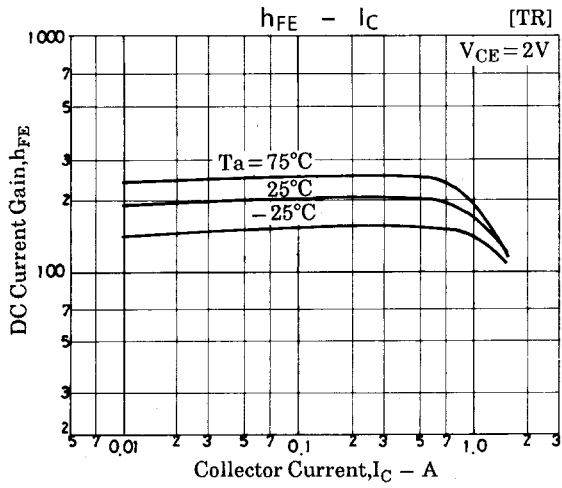
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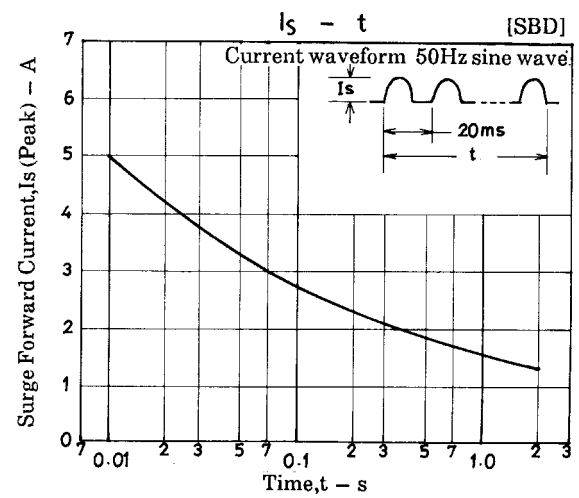
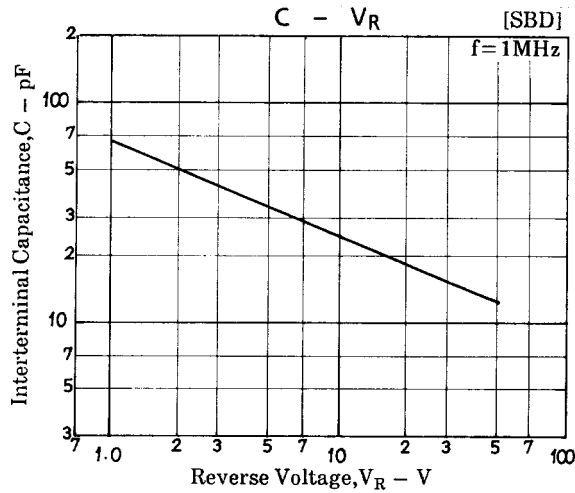
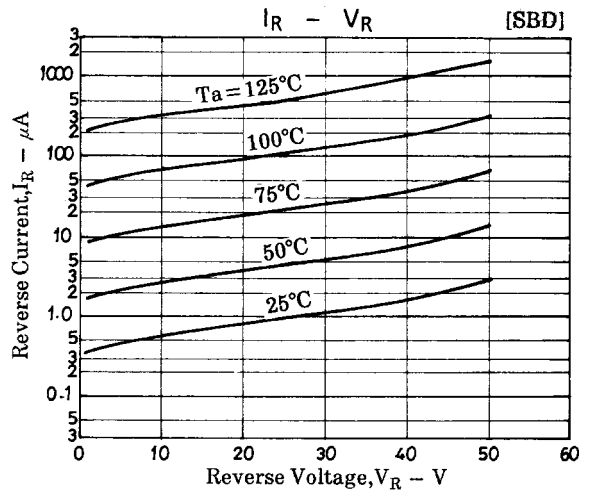
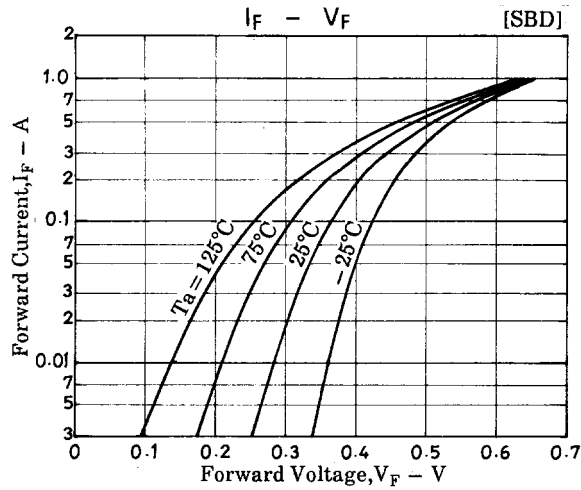


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