

**FP303**

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

DC-DC Converter Applications

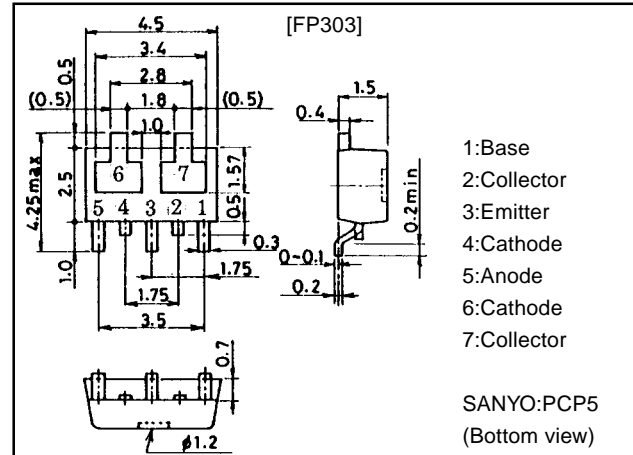
Features

- Composite type with NPN transistor and Schottky barrier diode facilitates high-density mounting.
- The FP303 is composed of chips equivalent to the 2SD1623 and SB05-05CP, which are placed in one package.

Package Dimensions

unit:mm

2099A



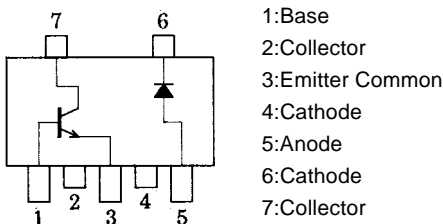
Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CB0}		60	V
Collector-to-Emitter Voltage	V_{CE0}		50	V
Emitter-to-Base Voltage	V_{EB0}		6	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		4	A
Base Current	I_B		400	mA
Collector Dissipation	P_C	Mounted on ceramic board (250mm \times 0.8mm)	0.8	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		50	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		55	V
Average Rectified Current	I_O		500	mA
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	T_J		-55 to +125	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Electrical Connection

Continued on next page.



(Top View)

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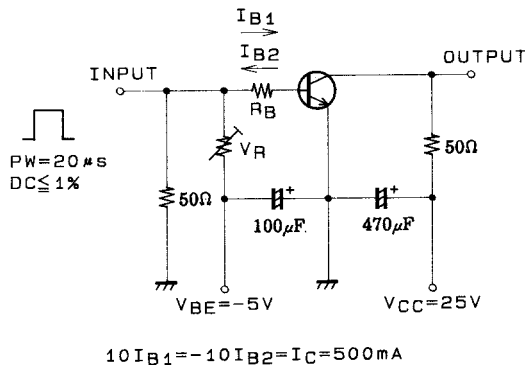
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=50V, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4V, I_C=0$			0.1	μA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=100mA$	140		560	
	h_{FE2}	$V_{CE}=2V, I_C=1.5A$	40			
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=50mA$		150		MHz
Output Capacitance	C_{ob}	$V_{CE}=10V, f=1MHz$		12		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=1.0A, I_B=50mA$		0.15	0.4	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=1.0A, I_B=50mA$		0.9	1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Turn-ON Time	t_{on}	See specified Test Circuit		60		ns
Storage Time	t_{stg}	See specified Test Circuit		550		ns
Fall Time	t_f	See specified Test Circuit		30		ns
[SBD]						
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	$V_R=10V, f=1MHz$		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

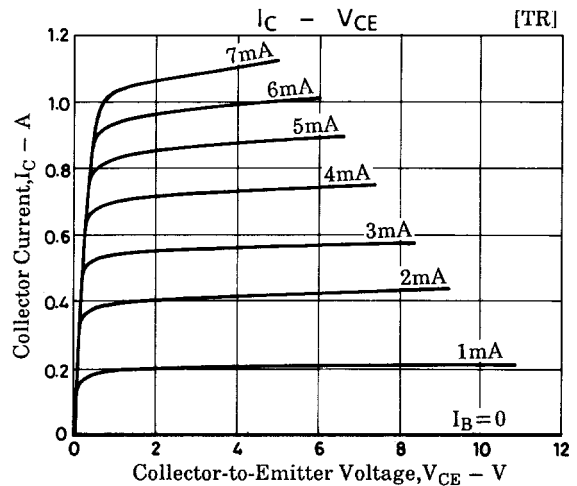
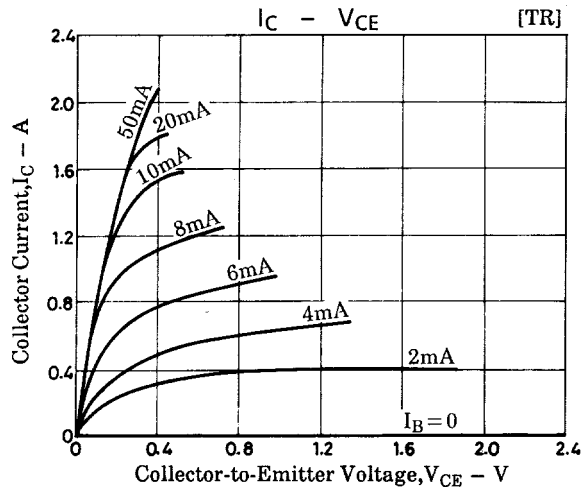
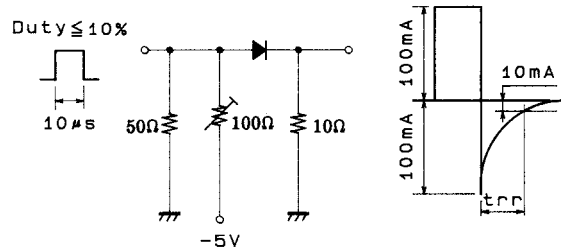
Marking:303

Switching Time Test Circuit

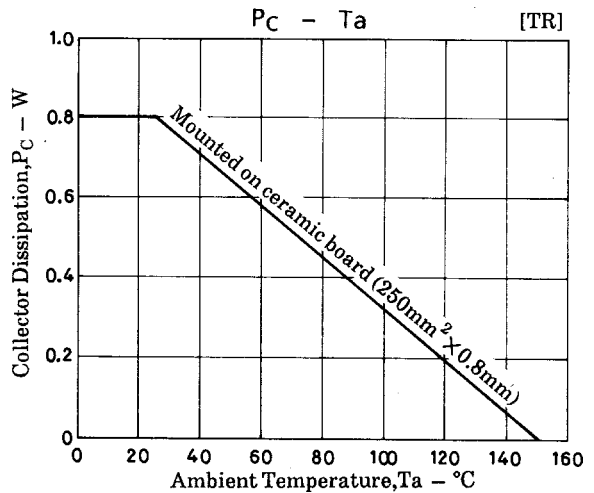
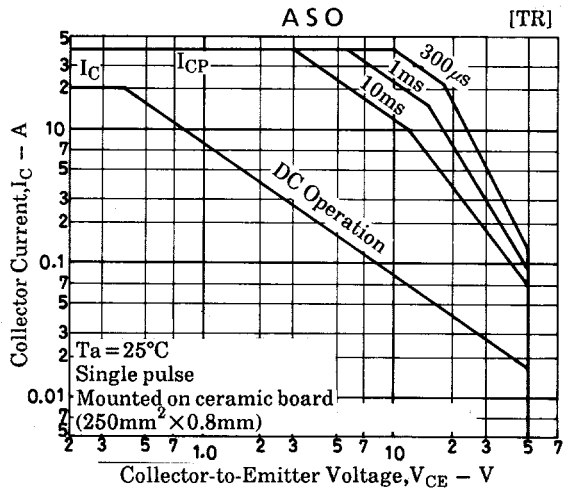
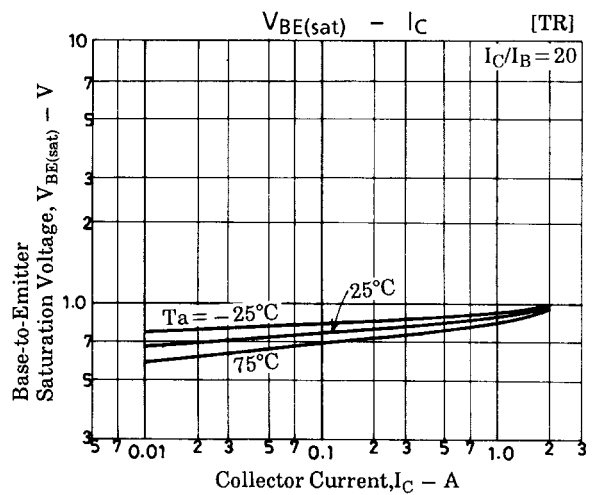
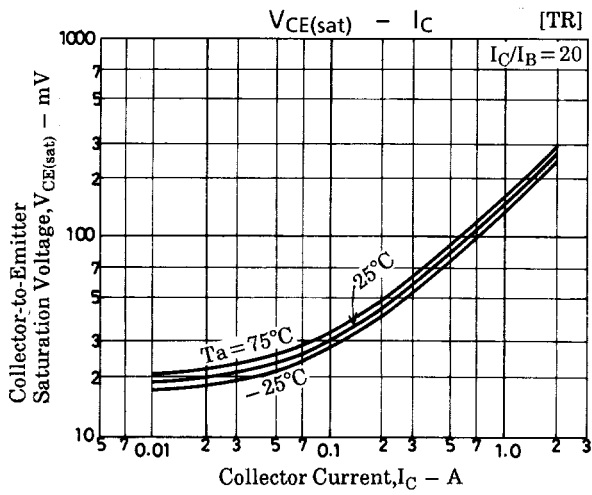
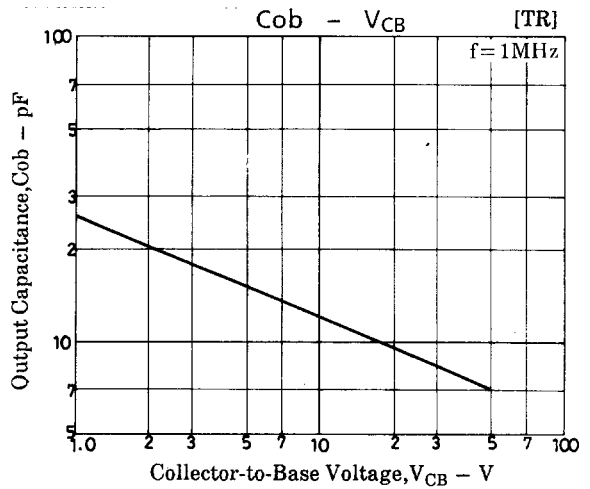
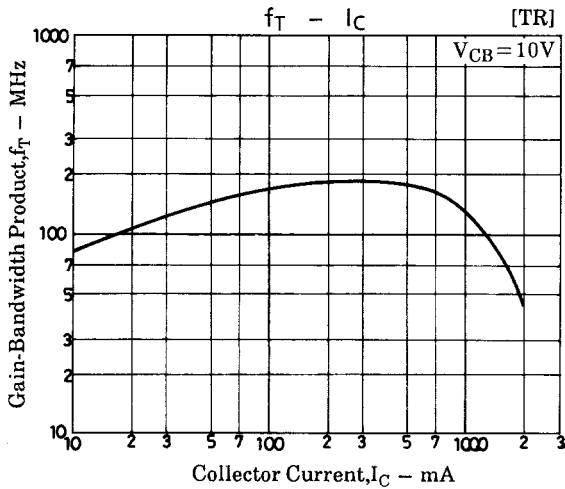
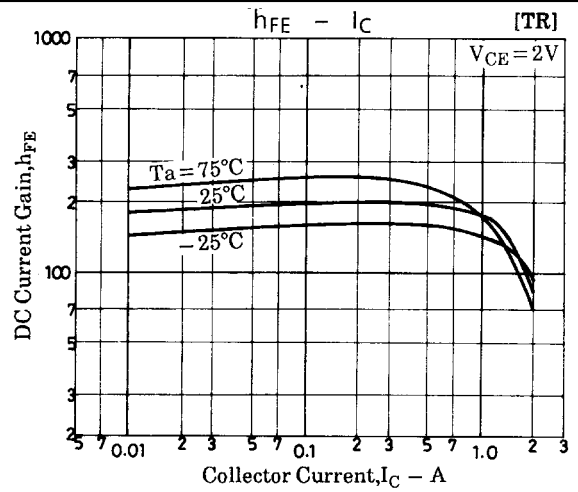
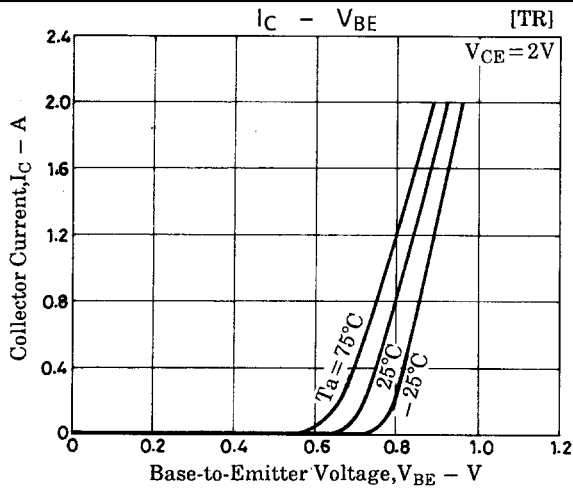
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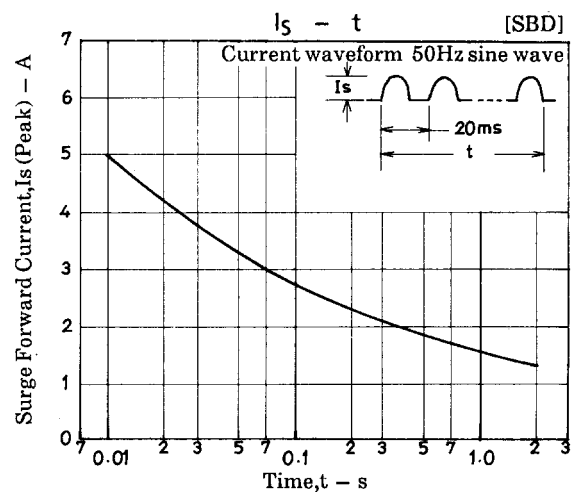
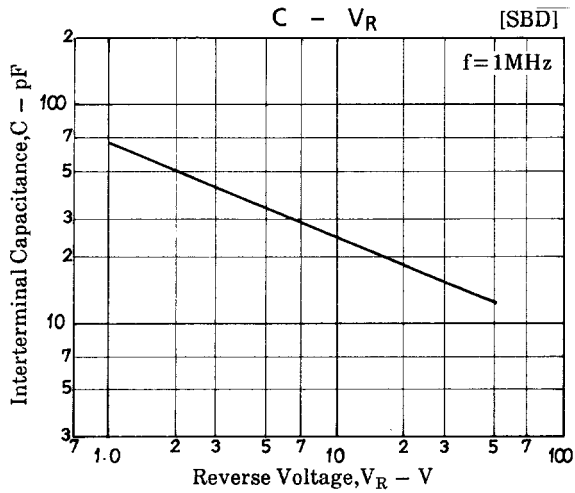
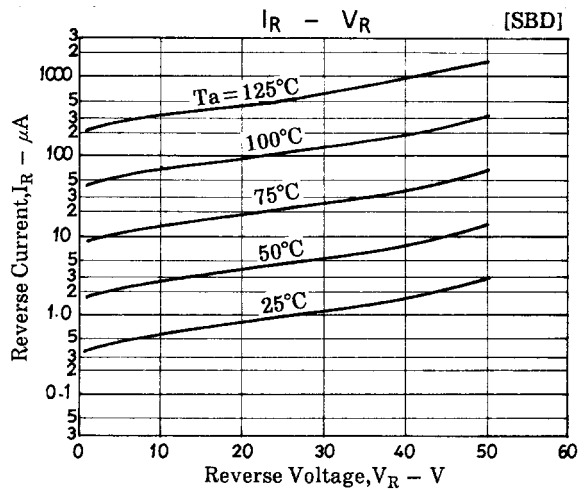
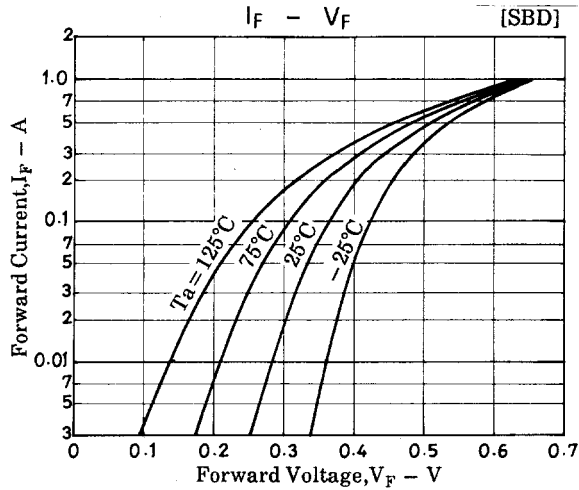


[SBD]



FP303





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