

Ordering number:EN4539



FP301

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

DC-DC Converter Applications

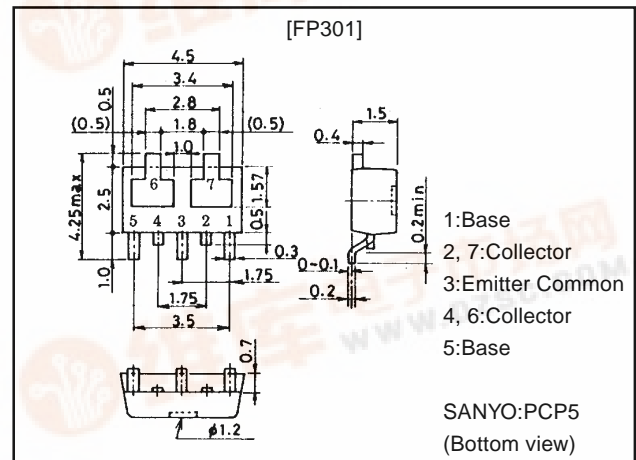
Features

- Composite type with 2 devices (NPN transistor and Schottky barrier diode) contained in one package, facilitating high-density mounting.
- The FP301 is formed with a chip being equivalent to the 2SD1621 and a chip being equivalent to the SB07-03C placed in one package.

Package Dimensions

unit:mm

2099A



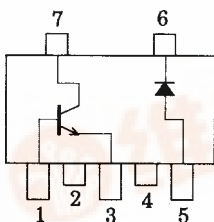
Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CBO}		30	V
Collector-to-Emitter Voltage	V_{CEO}		25	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		5	A
Base Current	I_B		400	mA
Collector Dissipation	P_C	Mounted on ceramic board (250mm ² ×0.8mm)	0.8	W
Junction Temperature	T_J		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		700	mA
Surge Forward Current	I_{FSM}	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, 7:Collector
- 3:Emitter Common
- 4, 6:Collector
- 5:Base

(Top view)



FP301

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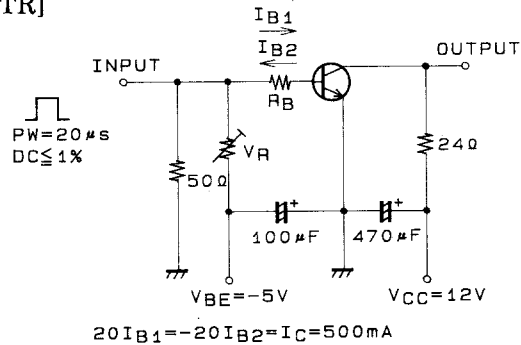
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=20\text{V}, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			0.1	μA
DC Current Gain	h_{FE1}	$V_{CE}=2\text{V}, I_C=100\text{mA}$	140		560	
	h_{FE2}	$V_{CE}=2\text{V}, I_C=1.5\text{A}$	65			
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=50\text{mA}$		150		MHz
Output Capacitance	C_{ob}	$V_{CE}=10\text{V}, f=1\text{MHz}$		19		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=1.5\text{A}, I_B=75\text{mA}$		0.18	0.4	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5\text{A}, I_B=75\text{mA}$		0.85	1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	30			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, R_{BE}=\infty$	25			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6			V
Turn-ON Time	t_{on}	See specified Test Circuit		60		ns
Storage Time	t_{stg}	See specified Test Circuit		500		ns
Fall Time	t_f	See specified Test Circuit		25		ns
[SBD]						
Reverse Voltage	V_R	$I_R=300\mu\text{A}$	30			V
Forward Voltage	V_F	$I_F=700\text{mA}$			0.55	V
Reverse Current	I_R	$V_R=15\text{V}$			80	μA
Interterminal Capacitance	C	$V_R=10\text{V}, f=1\text{MHz cycle}$		28		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100\text{mA}$, See specified Test Circuit.			10	ns
Thermal Resistance	R_{thj-a}	Mounted on ceramic board ($250\text{mm}^2 \times 0.8\text{mm}$)		170		$^\circ\text{C/W}$

Marking:301

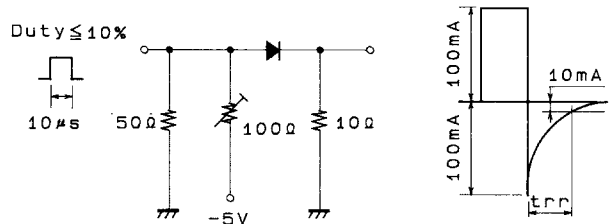
Switching Time Test Circuit

[TR]

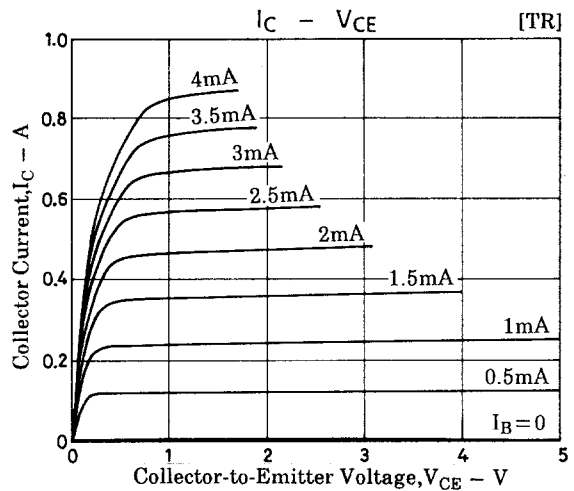
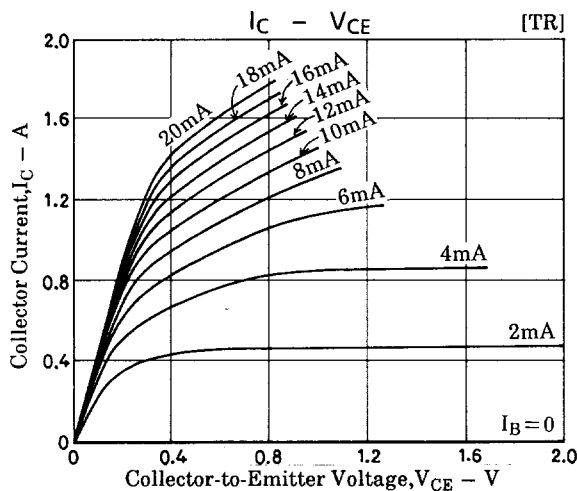


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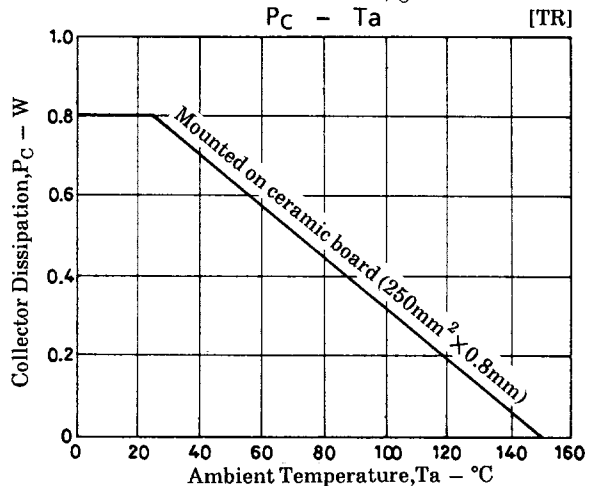
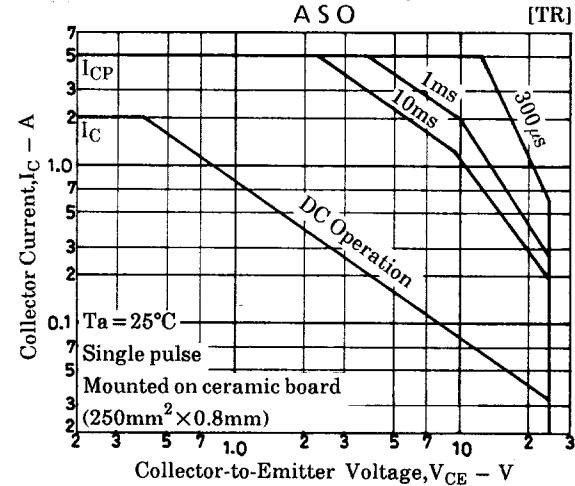
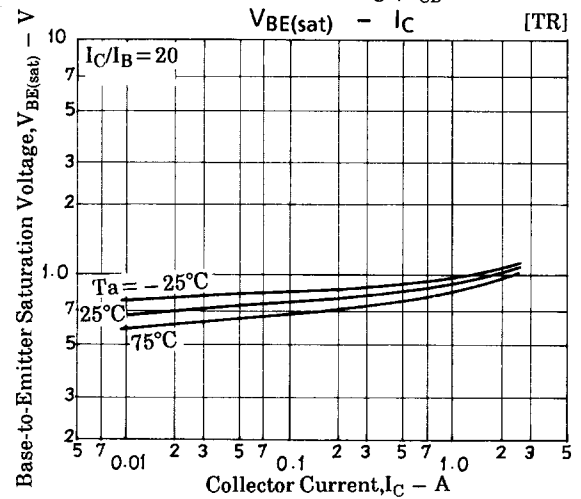
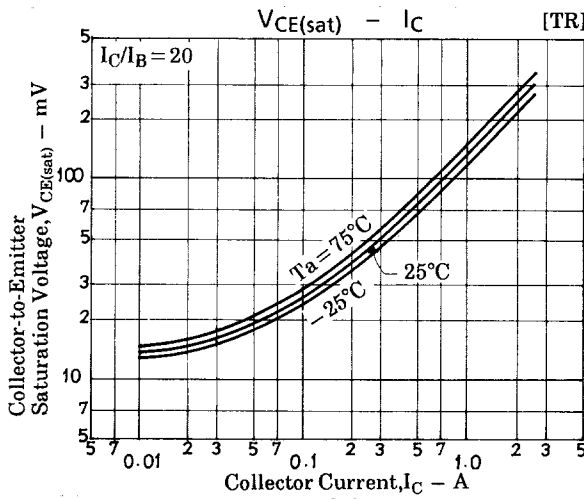
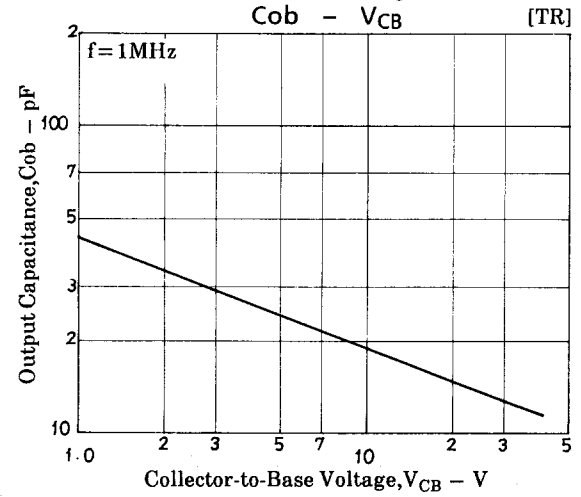
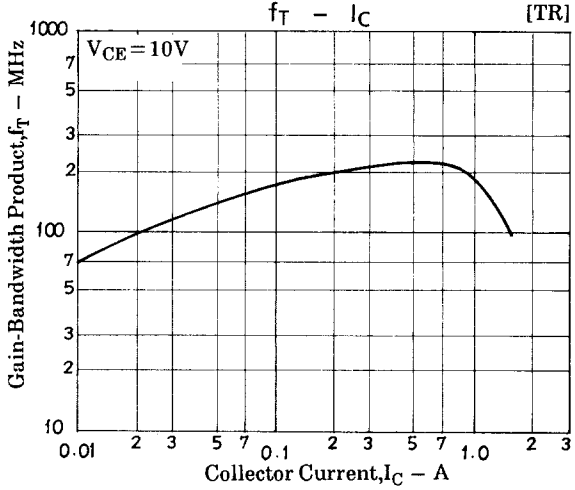
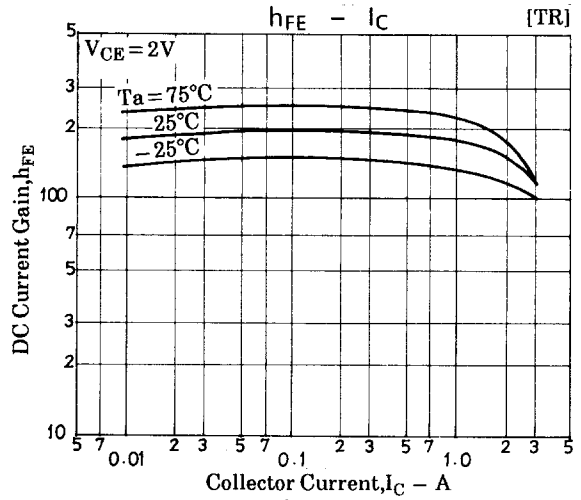
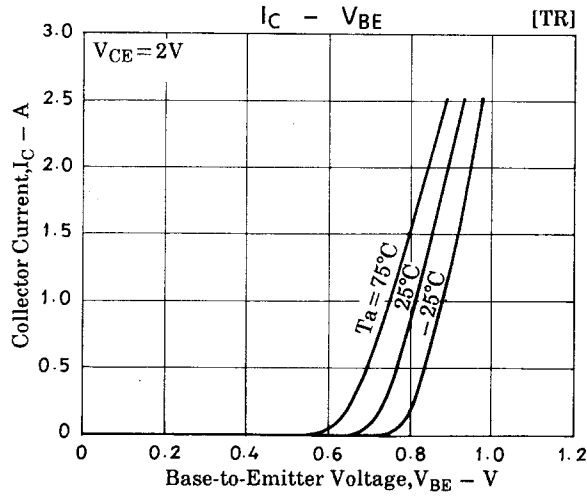
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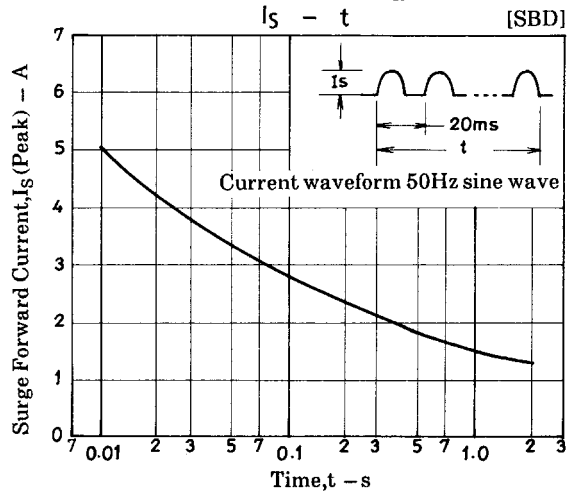
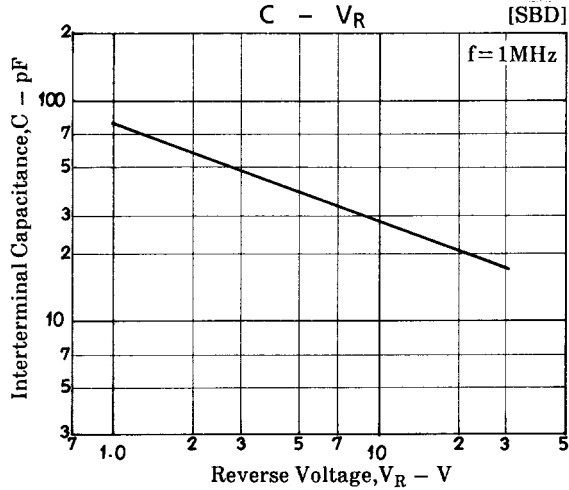
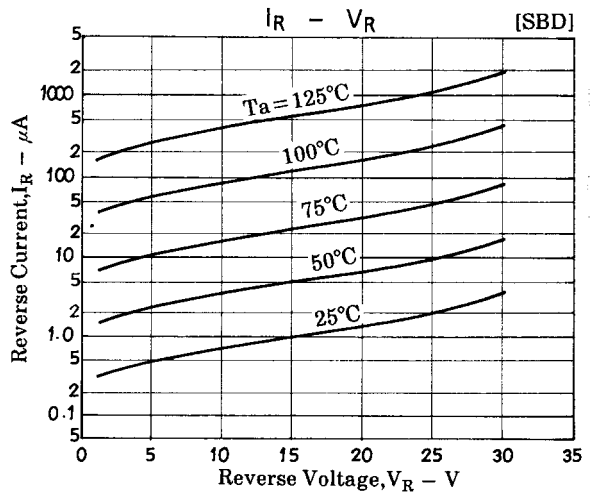
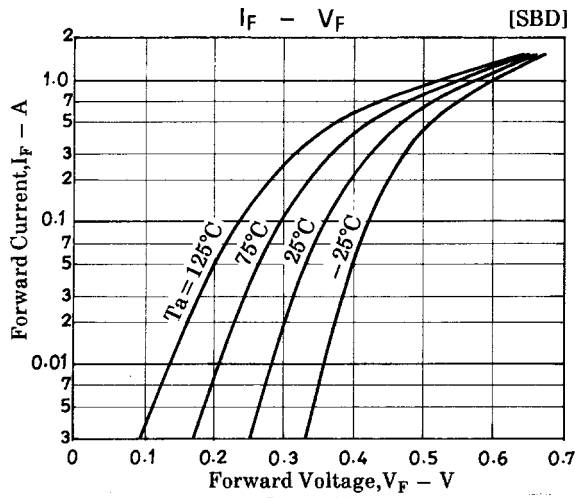
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