

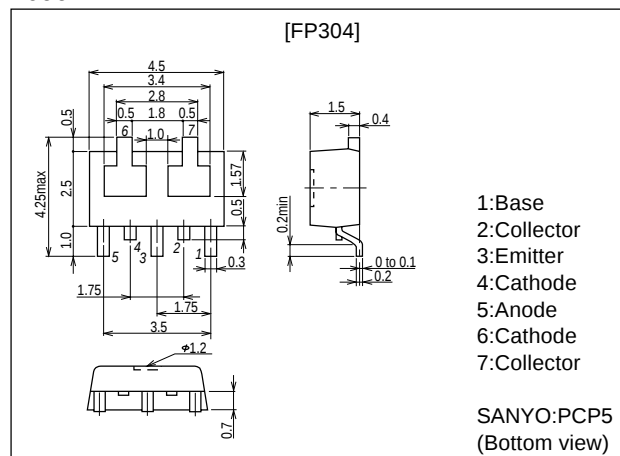
**FP304****DC-DC Converter****Features**

- Complex type with an NPN transistor and a Schottky barrier diode facilitating high-density mounting.
- The FP304 is composed of 2 chips, one being equivalent to the 2SD1620 and the other the SB07-03C, placed in one package.

Package Dimensions

unit:mm

2099A

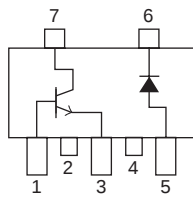
**Specifications****Absolute Maximum Ratings** at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CBO}		30	V
Collector-to-Emitter Voltage	V_{CEO}		10	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		3	A
Collector Current (Pulse)	I_{CP}		5	A
Base Current	I_B		500	mA
Collector Dissipation	P_C	Mounted on ceramic board (250mm $\times$ 0.8mm)	0.8	W
Junction Temperature	T_J		150	$^\circ\text{C}$
[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	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

Electrical Connection



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

(Top view)

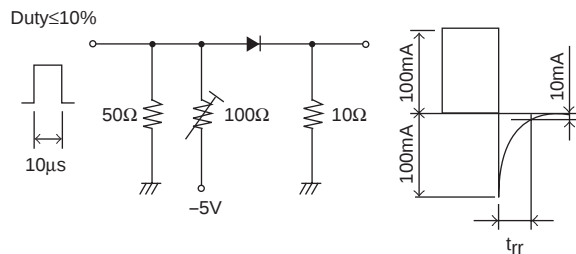
Electrical Characteristics at $T_a=25^\circ\text{C}$

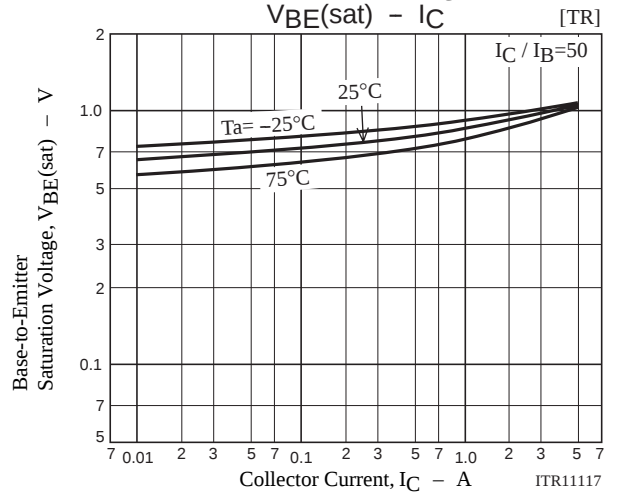
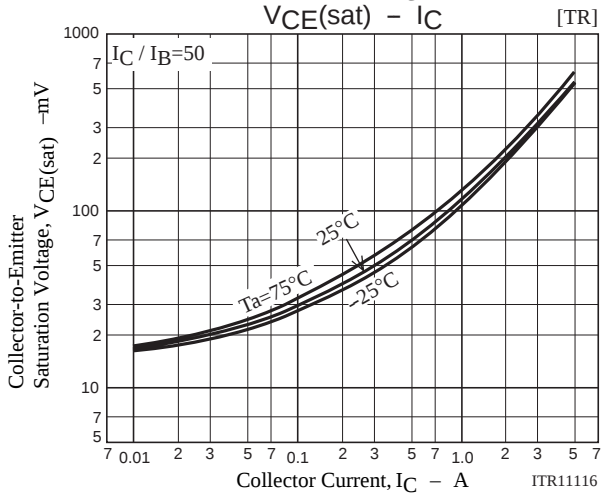
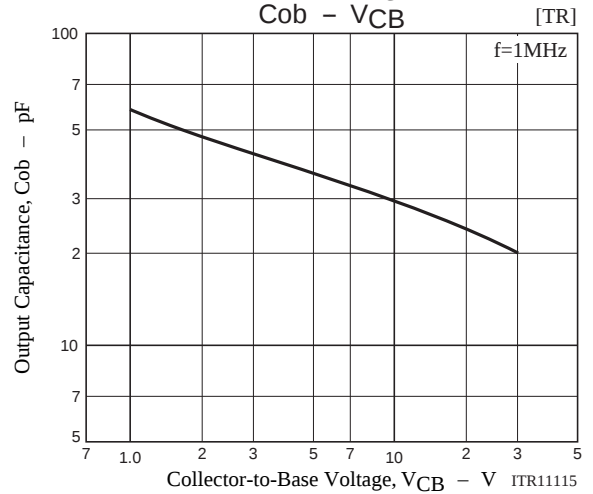
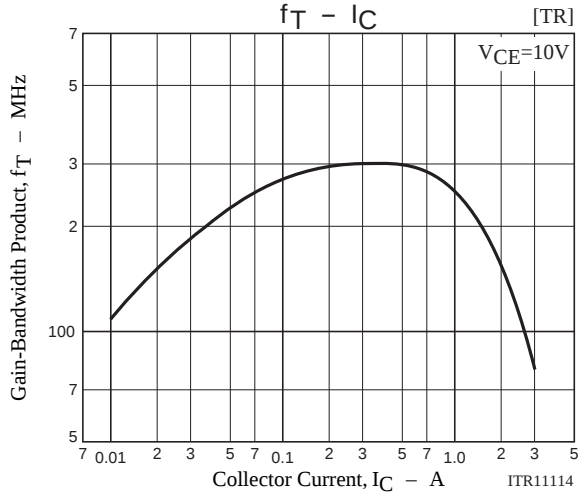
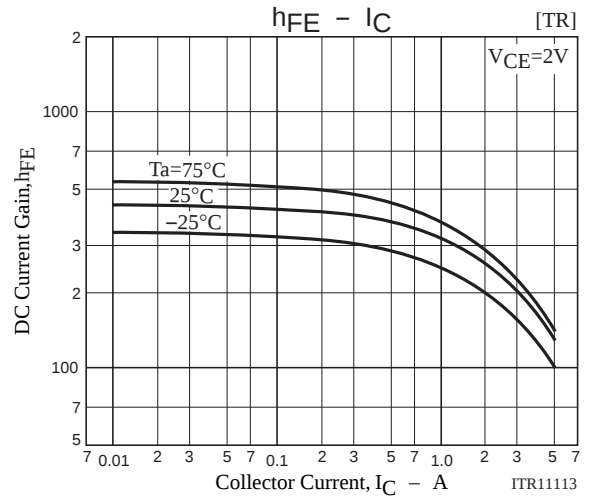
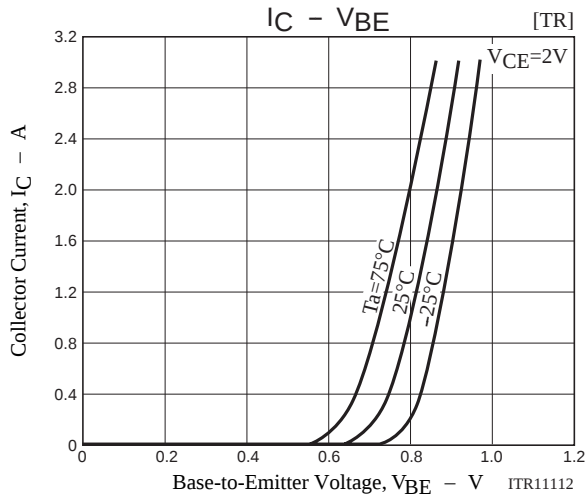
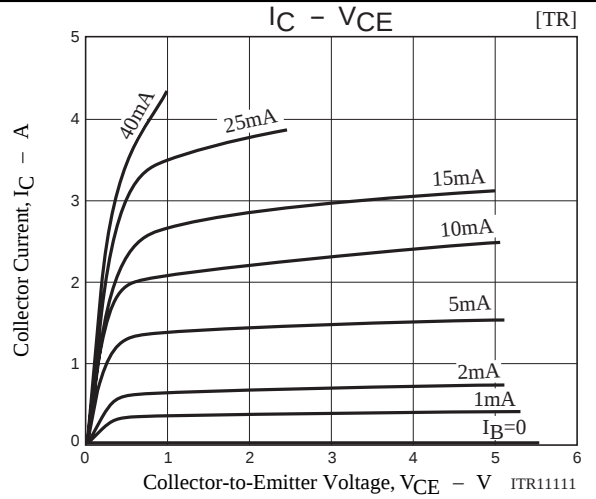
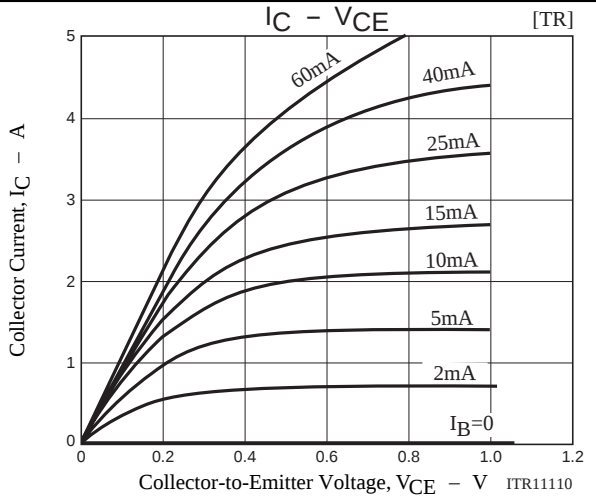
Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I _{CBO}	V _{CB} =20V, I _E =0			0.1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =4V, I _C =0			0.1	μA
DC Current Gain	h _{FE1}	V _{CE} =2V, I _C =500mA	200			
	h _{FE2}	V _{CE} =2V, I _C =3A	140			
Gain-Bandwidth Product	f _T	V _{CE} =10V, I _C =50mA		200		MHz
Output Capacitance	Cob	V _{CB} =10V, f=1MHz		30		pF
C-E Saturation Voltage	V _{CE(sat)}	I _C =3A, I _B =60mA		0.3	0.4	V
B-E Saturation Voltage	V _{BE(sat)}	I _C =3A, I _B =60mA		0.95	1.35	V
C-B Breakdown Voltage	V _{(BR)CBO}	I _C =10μA, I _E =0	30			V
C-E Breakdown Voltage	V _{(BR)CEO}	I _C =1mA, R _{BE} =∞	10			V
E-B Breakdown Voltage	V _{(BR)EBO}	I _E =10μA, I _C =0	6			V
[SBD]						
Reverse Voltage	V _R	I _R =300μA	30			V
Forward Voltage	V _F	I _F =700mA			0.55	V
Reverse Current	I _R	V _R =15V			80	μA
Interterminal Capacitance	C	V _R =10V, f=1MHz		28		pF
Reverse Recovery Time	t _{rr}	I _F =I _R =100mA, See sepcified Test Circuit.			10	ns
Thermal Resistance	Rthj-a	Mounted on ceramic board (250mm²×0.8mm)		170		°C/W

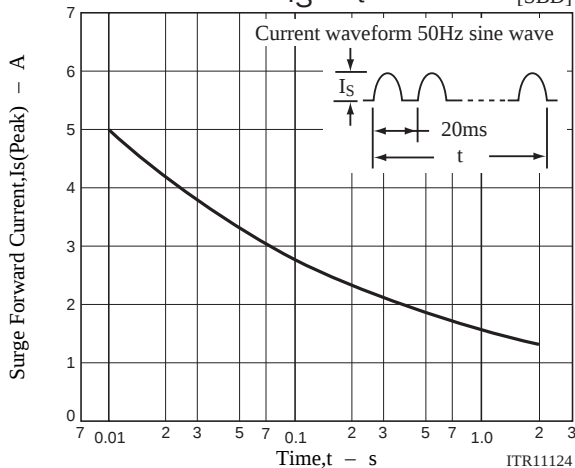
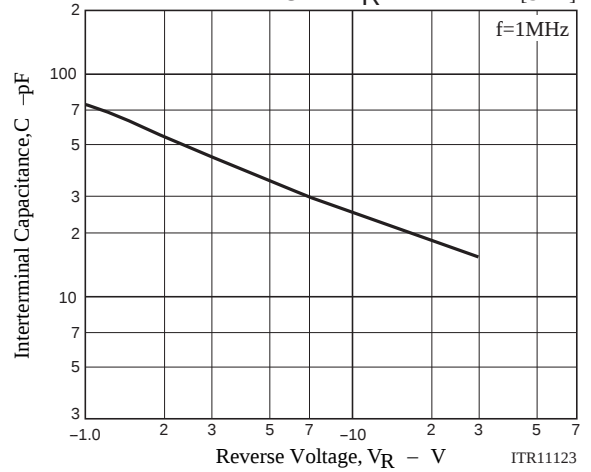
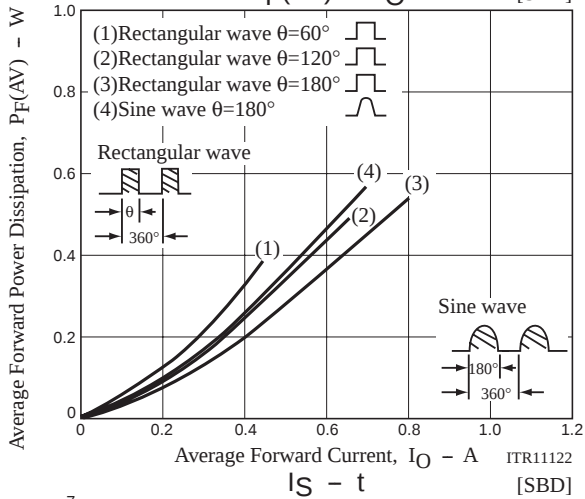
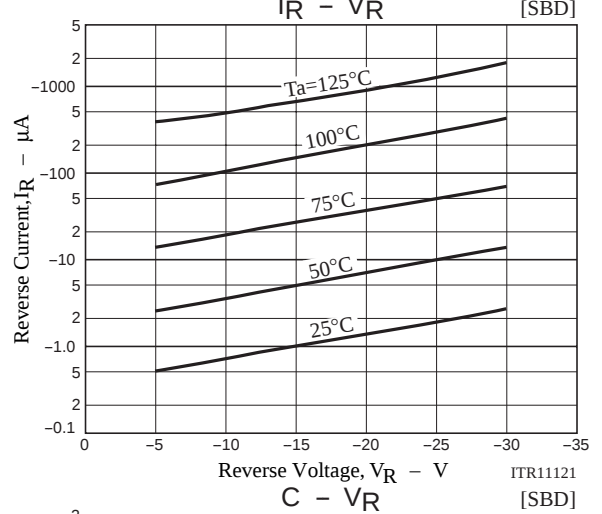
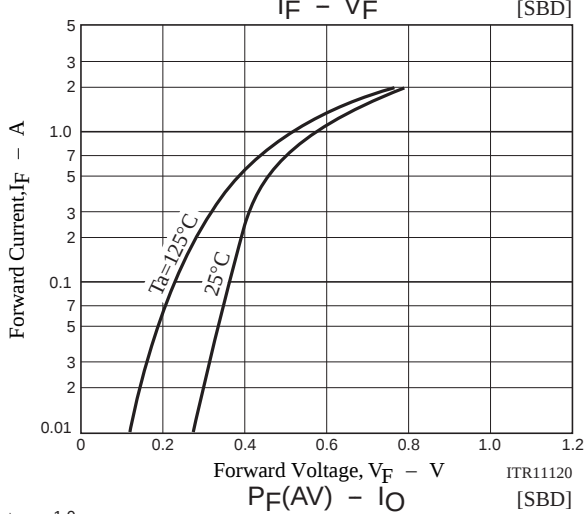
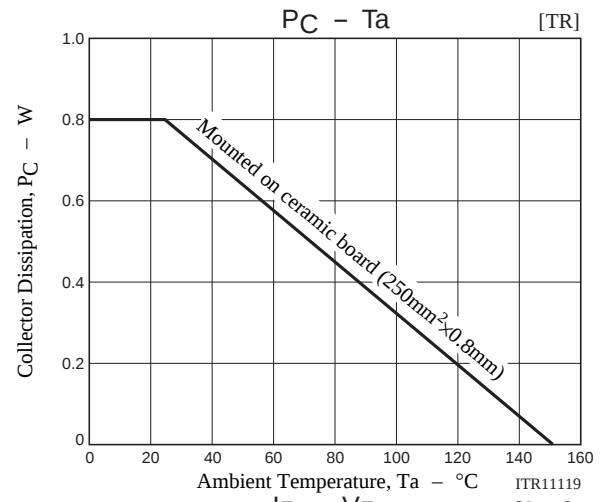
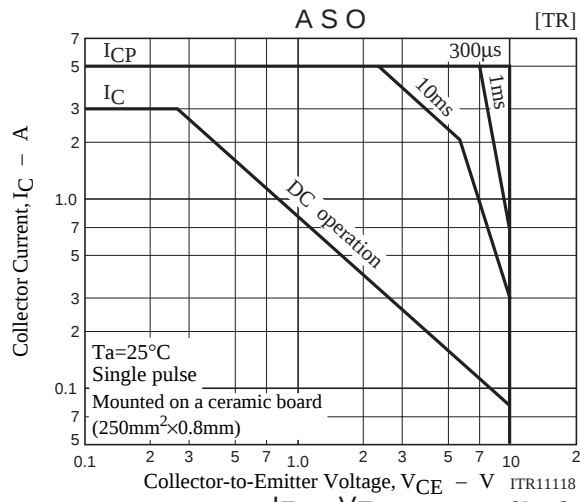
Marking:304

Switching Time Test Circuit

[SBD]







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