Ordering number : ENN6999

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

CPH6704

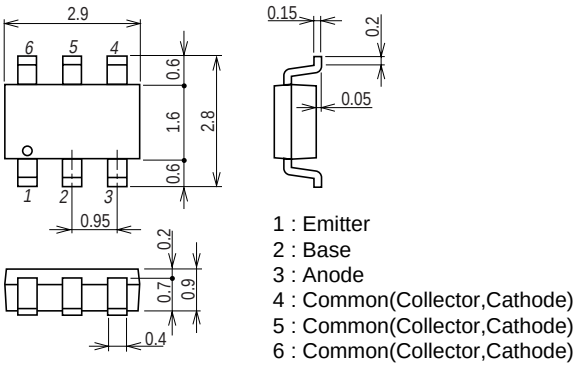
DC / DC Converter Applications

Features

- Composite type with a PNP transistor and a schottky barrier diode contained in one package facilitating high-density mounting.
- The CPH6704 consists of two chips which are equivalent to the 2SB1396 and the SB07-03C, respectively.
- Ultraminiature package facilitates miniaturization in end products.

Package Dimensions

unit : mm
2153A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CBO}		−15	V
Collector-to-Emitter Voltage	V_{CEO}		−11	V
Emitter-to-Base Voltage	V_{EBO}		−7	V
Collector Current	I_C		−3	A
Collector Current (Pulse)	I_{CP}		−5	A
Base Current	I_B		−600	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8mm)	1.3	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		35	V
Average Recified Current	I_O		0.7	A
Surge Current	I_{FSM}	50Hz sine wave, 1cycle	5	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

Marking : PD

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SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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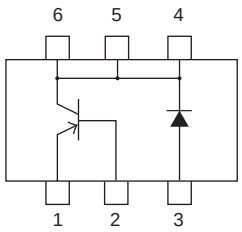
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	V_{CB}=−12V, I_E=0			−0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−6V, I_C=0			−0.1	μA
DC Current Gain	h_{FE}	V_{CE}=−2V, I_C=−500mA	140		560	
Gain-Bandwidth Product	f_T	V_{CE}=−10V, I_C=−300mA		400		MHz
Output Capacitance	Cob	V_{CB}=−10V, f=1MHz		26		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−1.5A, I_B=−30mA		−0.22	−0.4	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−1.5A, I_B=−30mA		−0.9	−1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=−10μA, I_E=0	−15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=−1mA, R_{BE}=∞	−11			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=−10μA, I_C=0	−7			V
Turn-ON Time	t_{on}	See specified Test Circuit		25		ns
Storage Time	t_{stg}	See specified Test Circuit		200		ns
Fall Time	t_f	See specified Test Circuit		10		ns
[SBD]						
Reverse Voltage	V_R	I_R=300μA	30			V
Forward Voltage	V_F	I_F=0.7A			0.55	V
Reverse Current	I_R	V_R=10V			80	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz		28		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit			10	ns

Electrical Connection

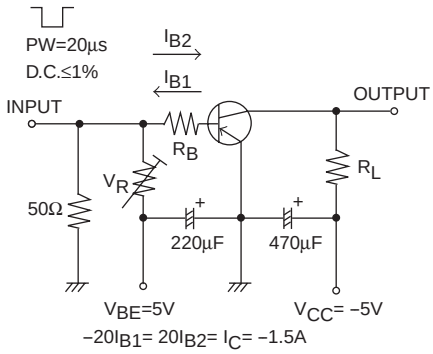


1 : Emitter
2 : Base
3 : Anode
4 : Common(Collector,Cathode)
5 : Common(Collector,Cathode)
6 : Common(Collector,Cathode)

(Top view)

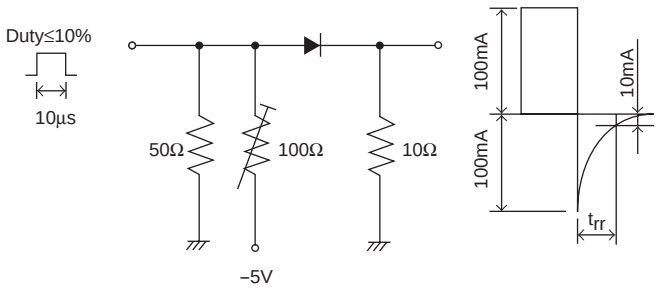
Switching Time Test Circuit

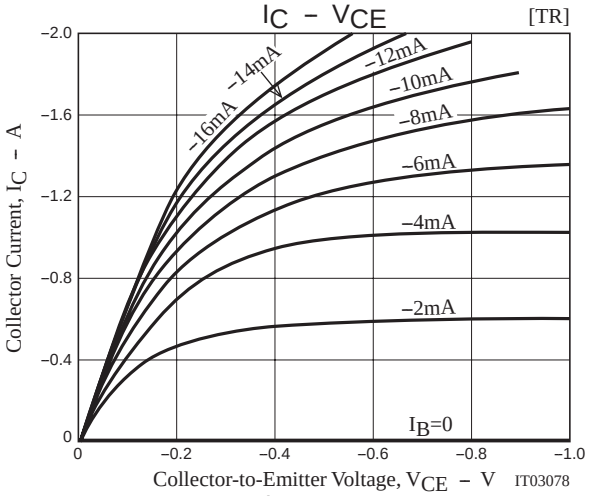
[TR]

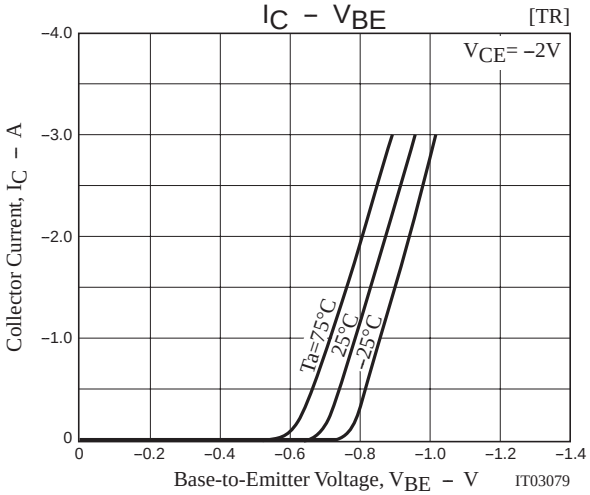


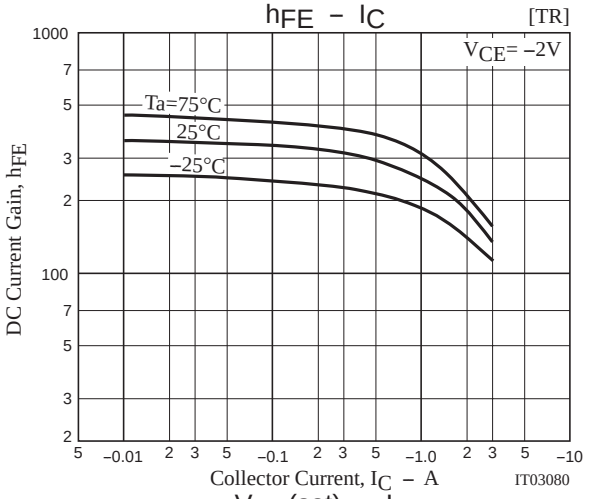
t_{rr} Test Circuit

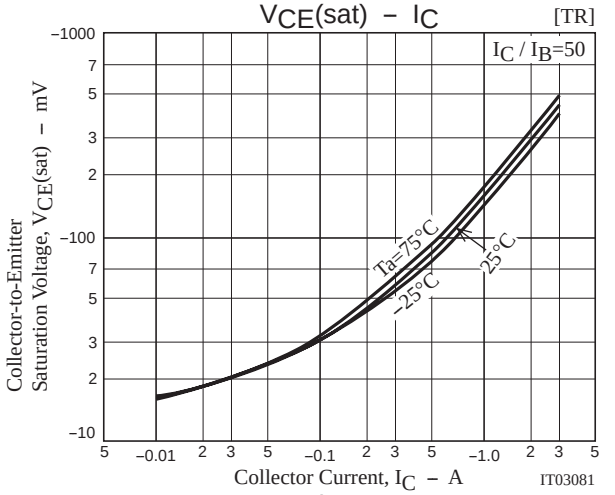
[SBD]

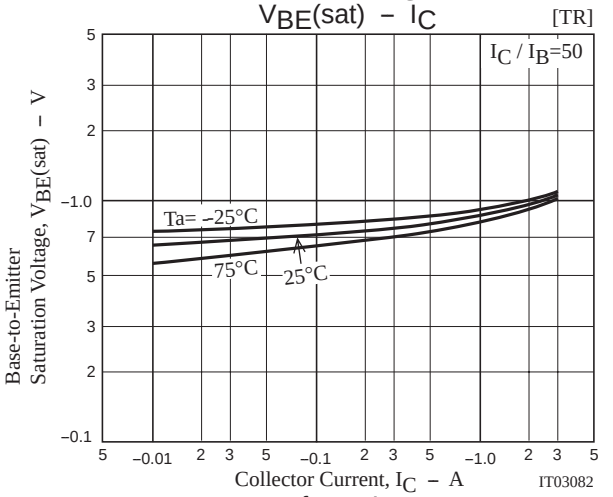


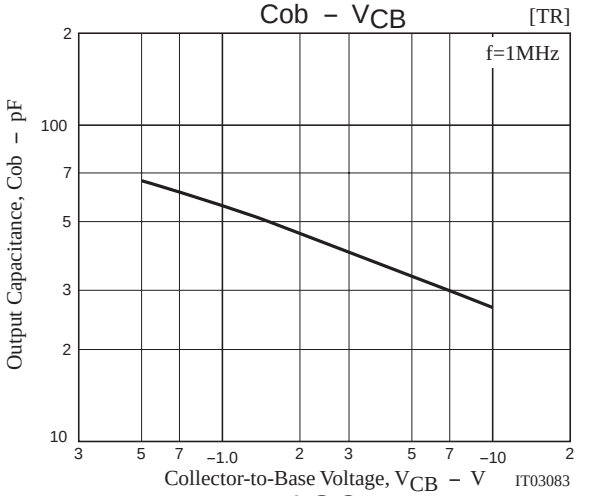

I_C – V_{CE}
[TR]
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V
IT03078
−16mA
−14mA
−12mA
−10mA
−8mA
−6mA
−4mA
−2mA
I_B=0

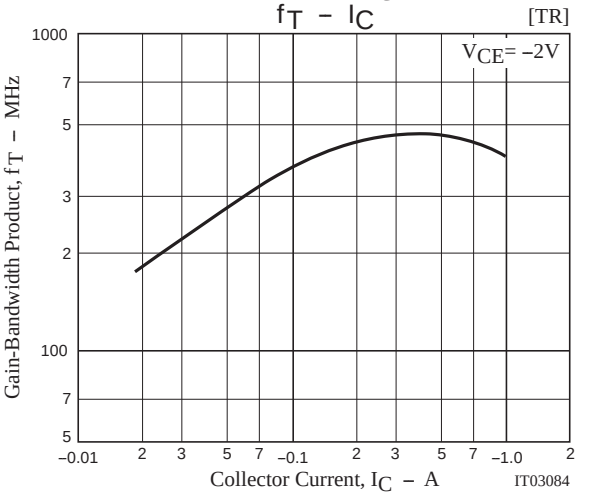

I_C – V_{BE}
[TR]
V_{CE}= −2V
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V
IT03079
Ta=75°C
25°C
−25°C

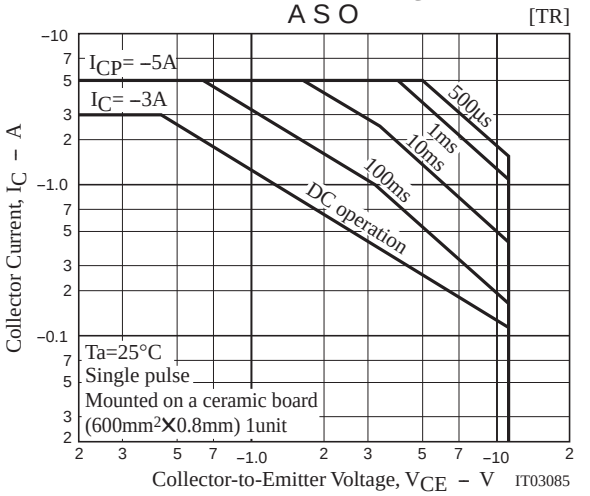

h_{FE} – I_C
[TR]
V_{CE}= −2V
DC Current Gain, h_{FE}
Collector Current, I_C – A
IT03080
Ta=75°C
25°C
−25°C


V_{CE}(sat) – I_C
[TR]
I_C / I_B=50
Collector-to-Emitter Saturation Voltage, V_{CE}(sat) – mV
Collector Current, I_C – A
IT03081
Ta=75°C
25°C
−25°C

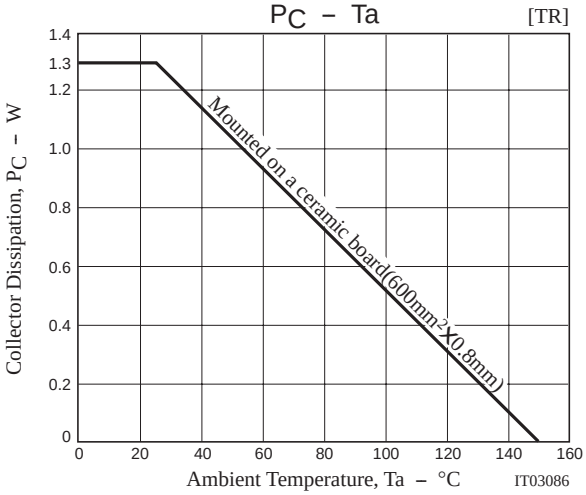

V_{BE}(sat) – I_C
[TR]
I_C / I_B=50
Base-to-Emitter Saturation Voltage, V_{BE}(sat) – V
Collector Current, I_C – A
IT03082
Ta= −25°C
75°C
25°C


Cob – V_{CB}
[TR]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, V_{CB} – V
IT03083

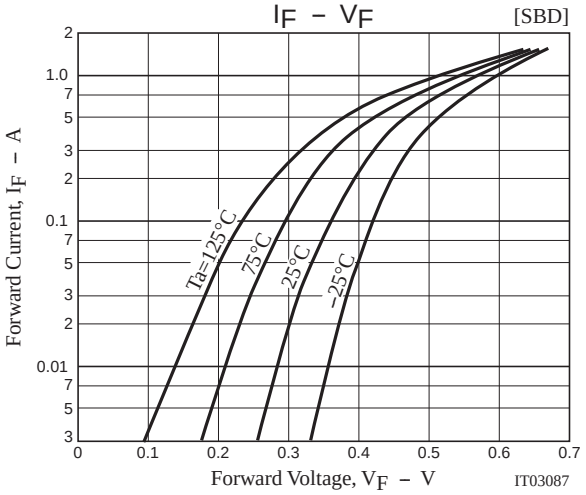

f_T – I_C
[TR]
V_{CE}= −2V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – A
IT03084


A S O
[TR]
I_{CP}= −5A
I_C= −3A
500µs
1ms
10ms
100ms
DC operation
Ta=25°C
Single pulse
Mounted on a ceramic board
(600mm²×0.8mm) 1unit
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V
IT03085

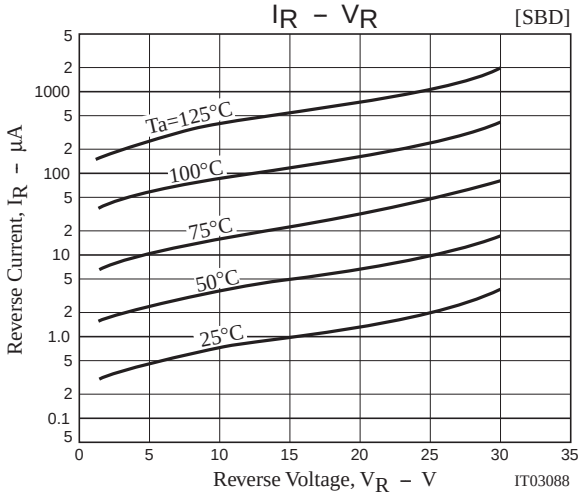
P_C – Ta [TR]



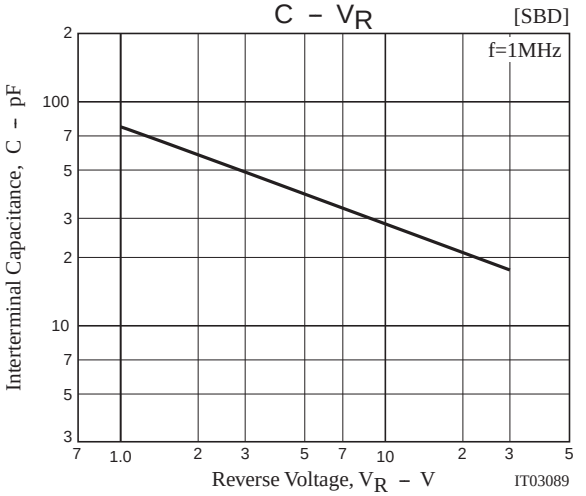
I_F – V_F [SBD]



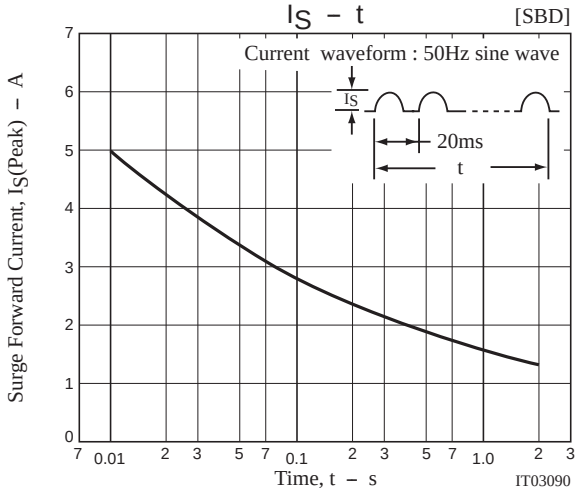
I_R – V_R [SBD]



C – V_R [SBD]



I_S – t [SBD]



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