Ordering number : ENN6591

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

CPH5705

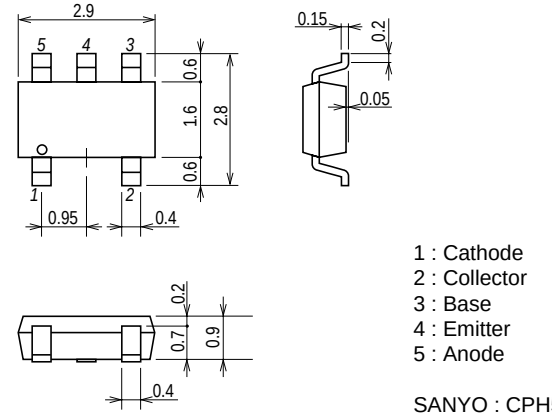
DC / DC Converter Applications

Features

- Composite type with a PNP transistor and a Schottky barrier diode contained in one package facilitating high-density mounting.
- The CPH5705 consists of two chips which are equivalent to the CPH3109 and the SBS004, respectively.
- Ultrasmall package facilitates miniaturization in end products.

Package Dimensions

unit : mm
2156



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}		-30	V
Emitter-to-Base Voltage	V_{EBO}		-5	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)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		15	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		15	V
Average Output Current	I_O		1	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1cycle	10	A
Junction Temperature	Tj		-55 to +125	°C
Storage Temperature	Tstg		-55 to +125	°C

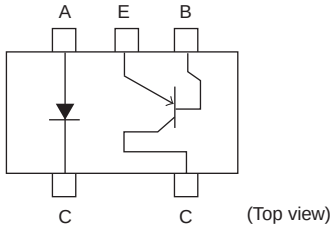
Marking : PE

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

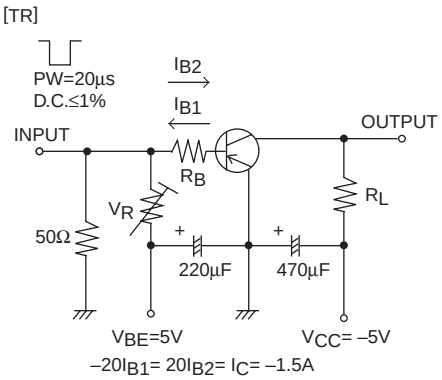
Electrical Characteristics at Ta=25°C

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}=–4V, I_C=0			–0.1	μA
DC Current Gain	h_{FE}	V_{CE}=–2V, I_C=–0.5A	200		560	
Gain Bandwidth Product	f_T	V_{CE}=–2V, I_C=–0.5A		380		MHz
Output Capacitance	Cob	V_{CB}=–10V, f=1MHz		25		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=–1.5A, I_B=–30mA		–155	–230	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=–1.5A, I_B=–30mA		–0.83	–1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=–10μA, I_E=0	–30			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=–1mA, R_{BE}=∞	–30			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=–10μA, I_C=0	–5			V
Turn-ON Time	t_{on}	See specified Test Circuit		50		ns
Storage Time	t_{stg}	See specified Test Circuit		270		ns
Fall Time	t_f	See specified Test Circuit		25		ns
[SBD]						
Reverse Voltage	V_R	I_R=1mA	15			V
Forward Voltage	V_F1	I_F=0.5A		0.30	0.35	V
	V_F2	I_F=1A		0.35	0.40	V
Reverse Current	I_R	V_R=6V			500	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz		42		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit			15	ns
Thermal Resistance	Rth j-a	Mounted on a ceramic board (600mm²×0.8mm)		110		°C/W

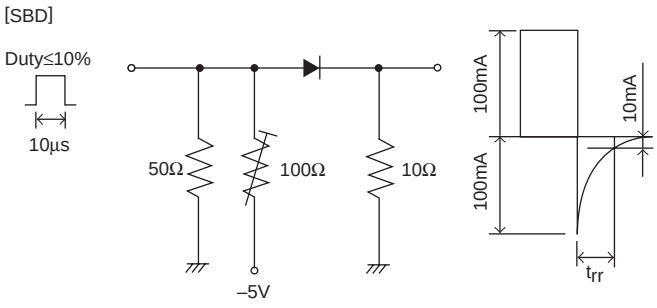
Electrical Connection

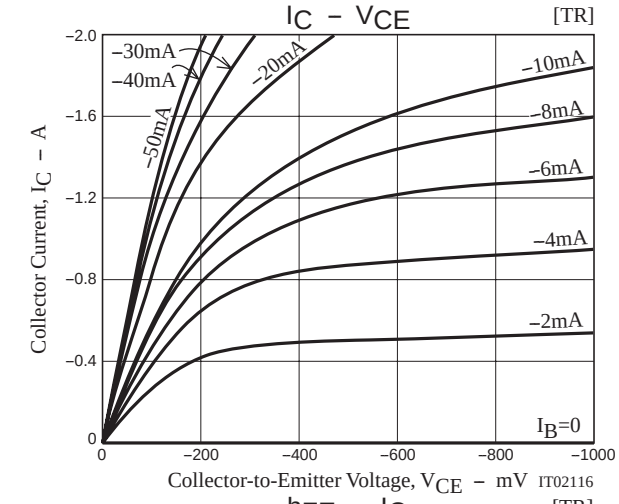


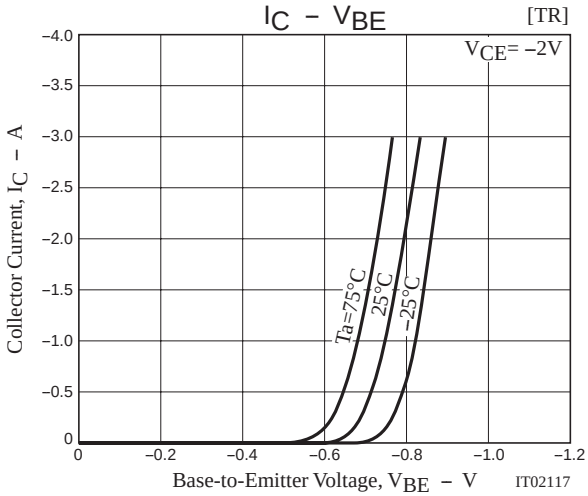
Switching Time Test Circuit

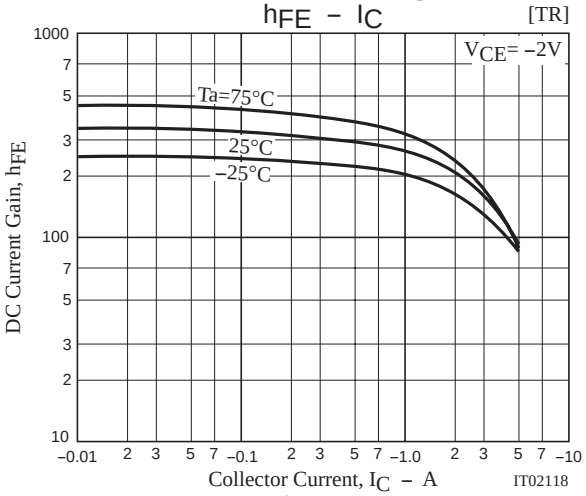


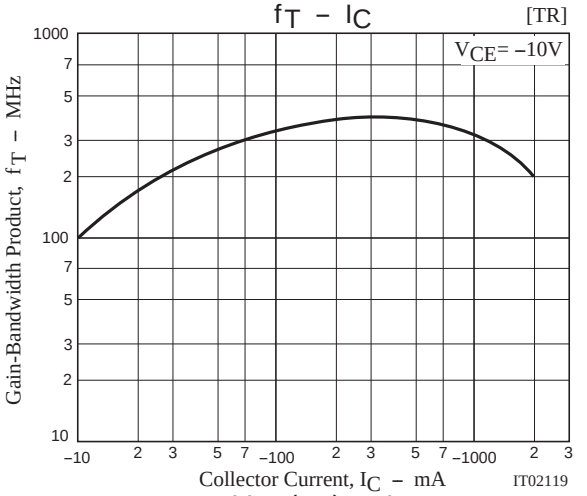
trr Test Circuit

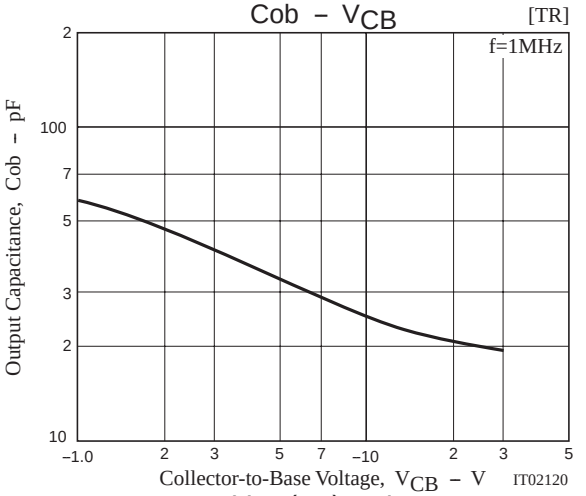


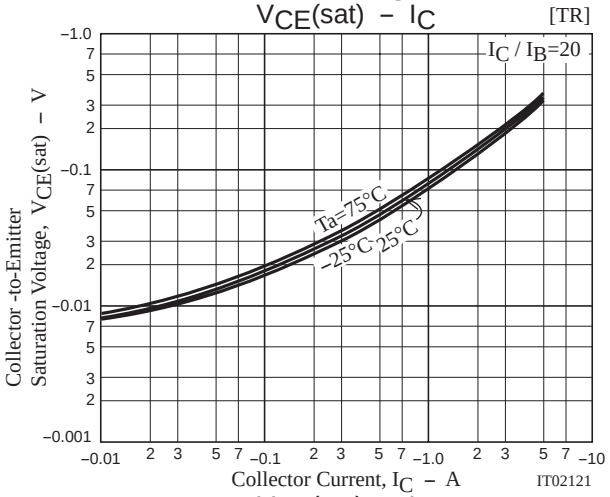

I_C – V_{CE}
[TR]
–30mA
–40mA
–50mA
–20mA
–10mA
–8mA
–6mA
–4mA
–2mA
I_B=0
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – mV
IT02116

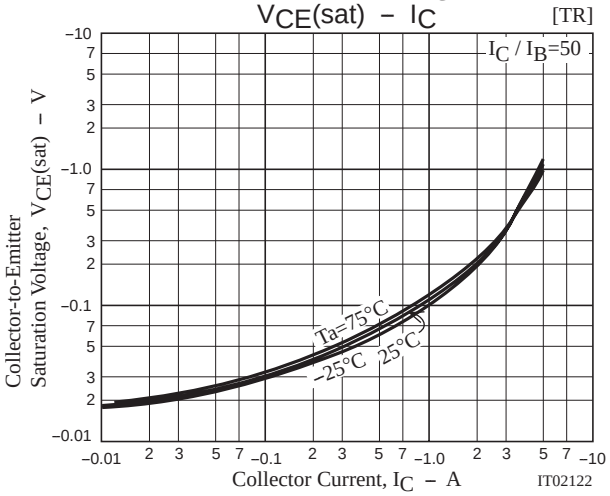

I_C – V_{BE}
[TR]
V_{CE}= –2V
Ta=75°C
25°C
–25°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V
IT02117

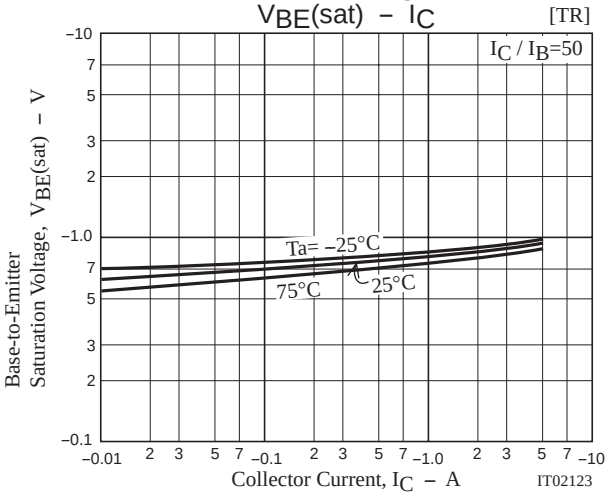

h_{FE} – I_C
[TR]
V_{CE}= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A
IT02118


f_T – I_C
[TR]
V_{CE}= –10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – mA
IT02119

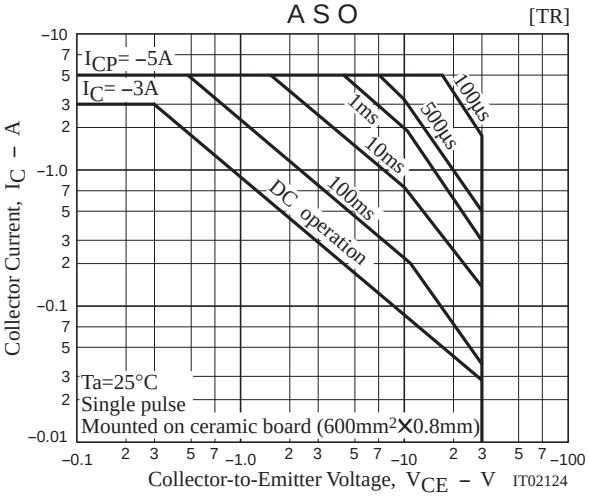

Cob – V_{CB}
[TR]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, V_{CB} – V
IT02120


V_{CE}(sat) – I_C
[TR]
I_C / I_B=20
Ta=75°C
–25°C
25°C
Collector -to-Emitter Saturation Voltage, V_{CE}(sat) – V
Collector Current, I_C – A
IT02121

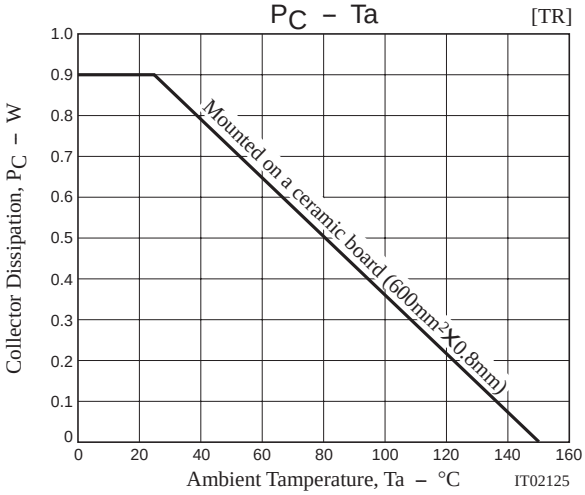

V_{CE}(sat) – I_C
[TR]
I_C / I_B=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, V_{CE}(sat) – V
Collector Current, I_C – A
IT02122


V_{BE}(sat) – I_C
[TR]
I_C / I_B=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, V_{BE}(sat) – V
Collector Current, I_C – A
IT02123

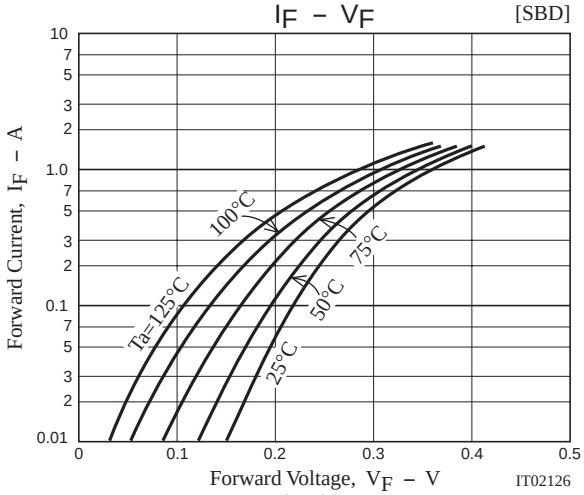
ASO [TR]



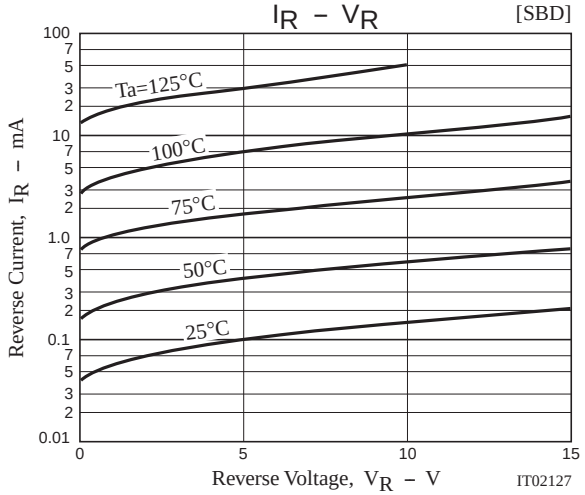
PC − Ta [TR]



IF − VF [SBD]



IR − VR [SBD]



PF(AV) − IO [SBD]