

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



CPH5701

DC/DC Converter Applications

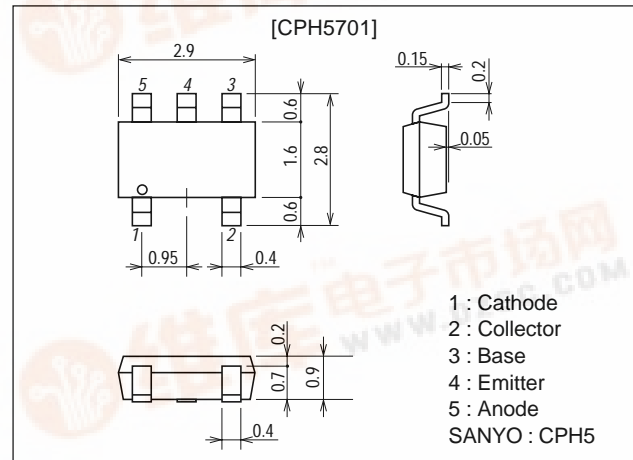
Features

- Composite type with a PNP transistor and a Schottky barrier diode contained in one package facilitating high-density mounting.
- Each device incorporated in the CPH5701 is equivalent to the CPH3106 and to 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 _{CB0}		-15	V
Collector-to-Emitter Voltage	V _{CE0}		-12	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 (600mm ² ×0.8mm)	0.9	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-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 Current	I _{FSM}	50Hz sine wave, 1 cycle	10	A
Junction Temperature	T _J		-55 to +125	°C
Storage Temperature	T _{stg}		-55 to +125	°C

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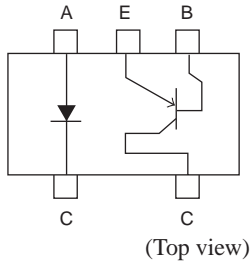


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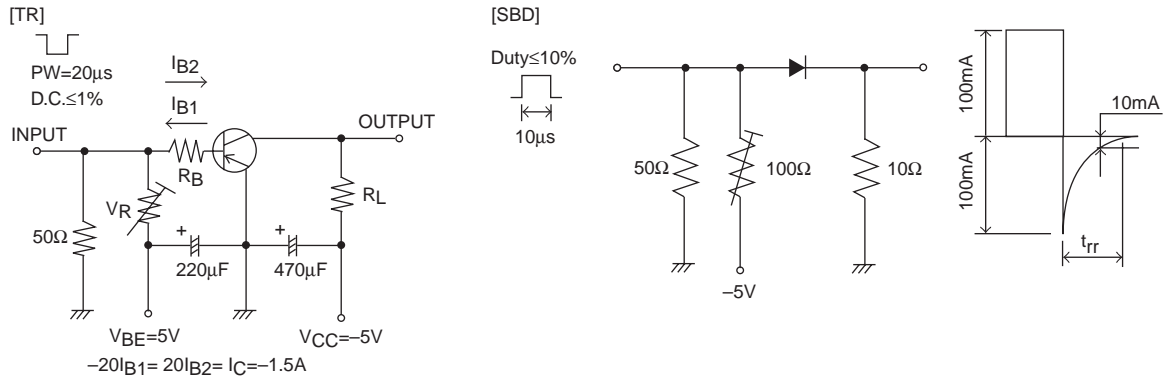
Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=-12\text{V}, I_E=0$			-0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0$			-0.1	μA
DC Current Gain	h_{FE1}	$V_{CE}=-2\text{V}, I_C=-0.5\text{A}$	200		560	
	h_{FE2}	$V_{CE}=-2\text{V}, I_C=-3\text{A}$	70			
Gain-Bandwidth Product	f_T	$V_{CE}=-2\text{V}, I_C=-0.5\text{A}$		280		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, f=1\text{MHz}$		36		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-1.5\text{A}, I_B=-30\text{mA}$		-110	-165	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-1.5\text{A}, I_B=-30\text{mA}$		-0.85	-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	-12			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		30		ns
Storage Time	t_{stg}	See specified Test Circuit.		90		ns
Fall Time	t_f	See specified Test Circuit.		10		ns
[SBD]						
Reverse Voltage	V_R	$I_R=1\text{mA}$	15			V
Forward Voltage	V_{F1}	$I_F=0.5\text{A}$		0.30	0.35	V
	V_{F2}	$I_F=1\text{A}$		0.35	0.40	V
Reverse Current	I_R	$V_R=6\text{V}$			500	μA
Interterminal Capacitance	C	$V_R=10\text{V}, f=1\text{MHz}$		42		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100\text{mA}$, See specified Test Circuit.			15	ns
Thermal Resistance	R_{thj-a}	Mounted on a ceramic board (600mm ² ×0.8mm)		110		$^\circ\text{C/W}$

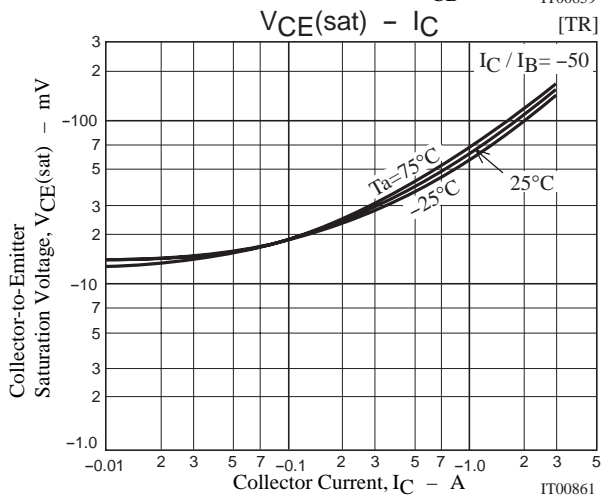
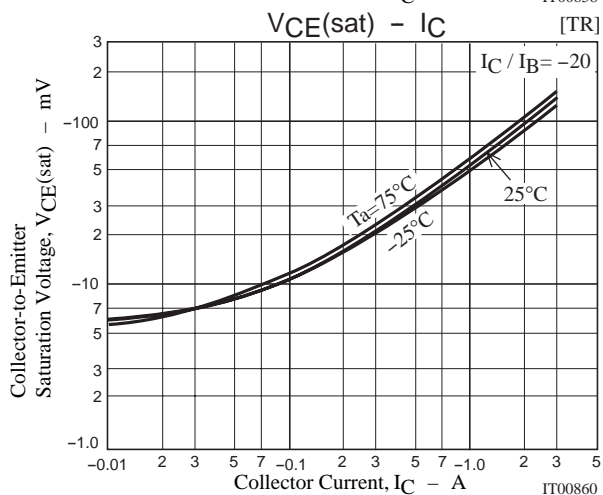
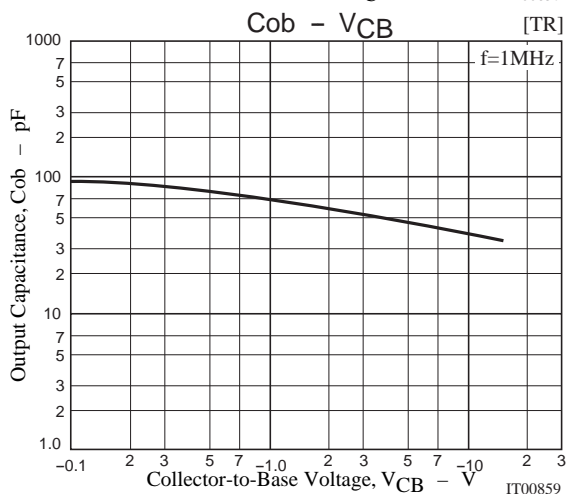
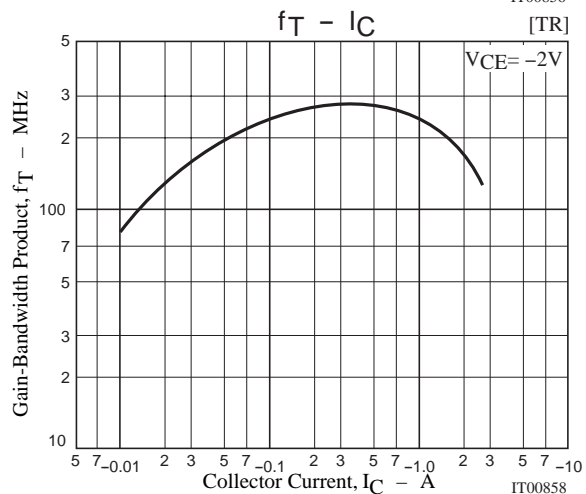
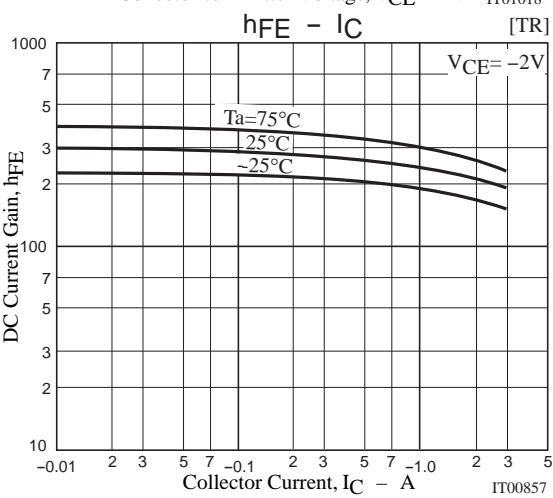
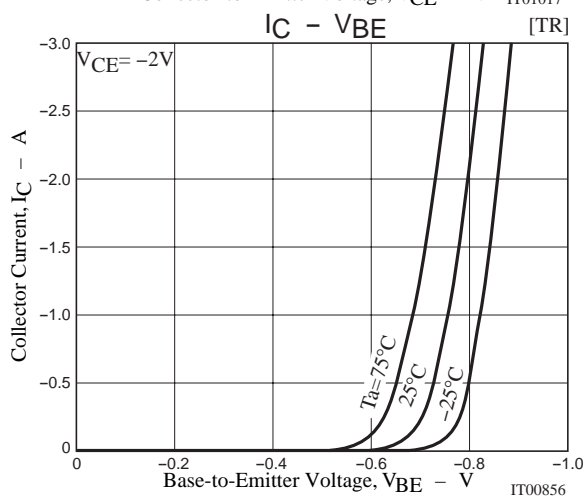
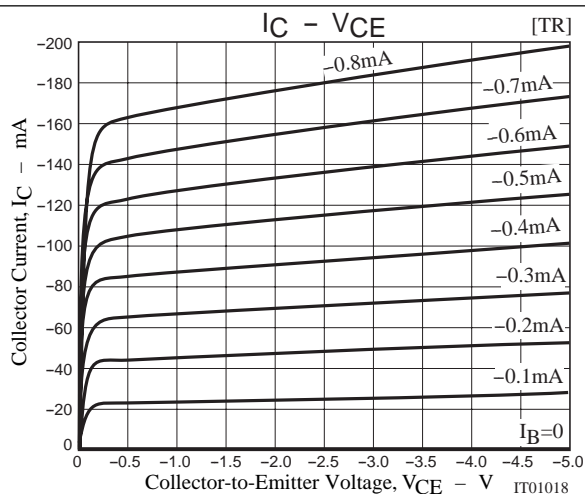
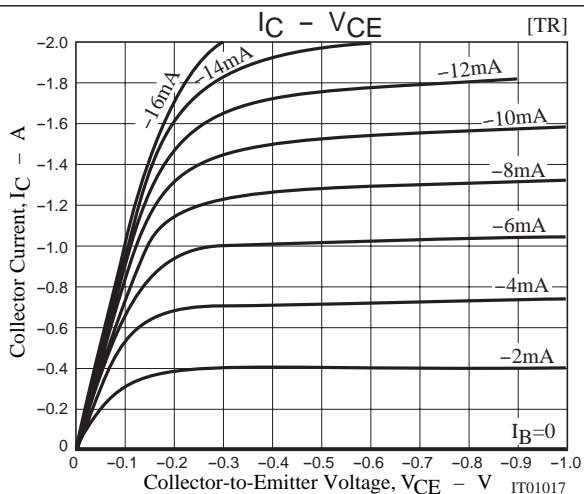
Electrical Connection



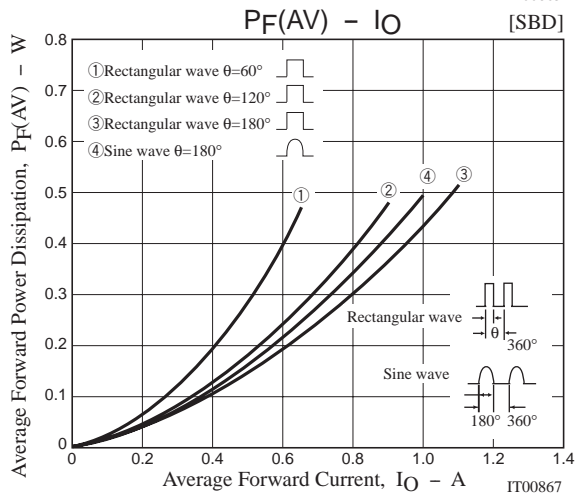
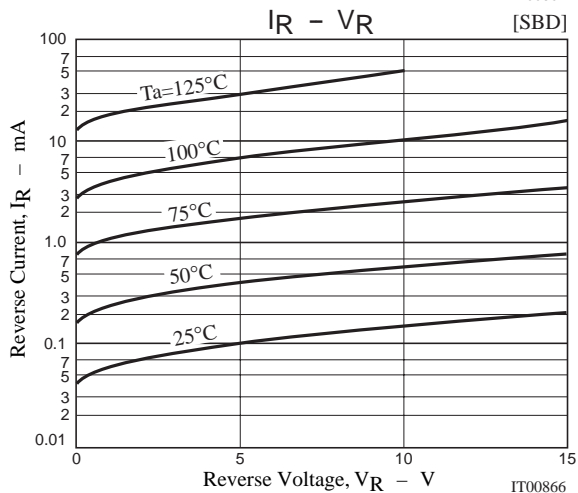
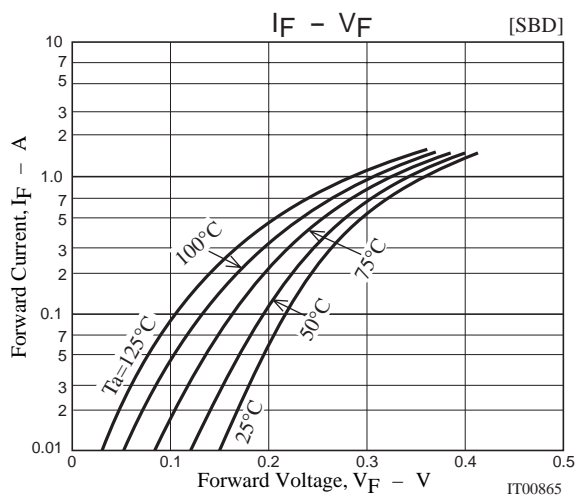
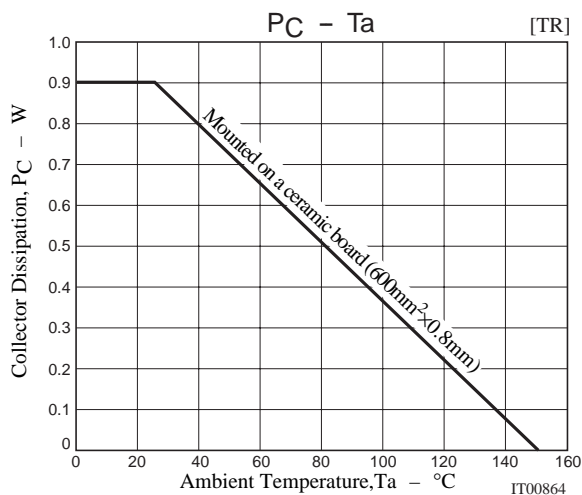
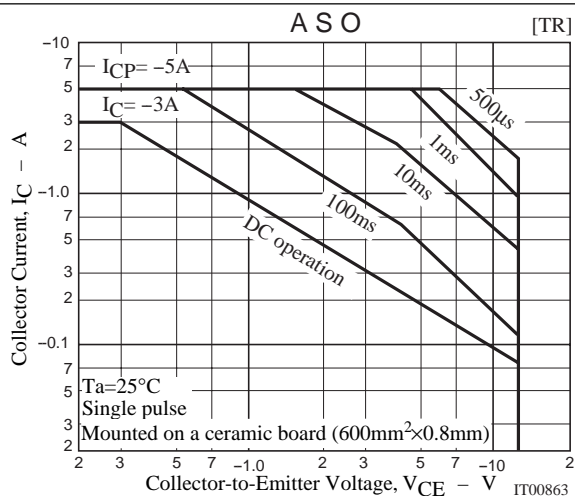
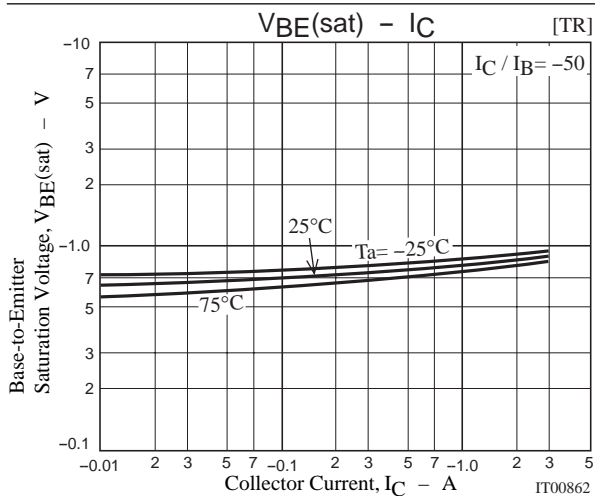
Switching Time Test Circuit



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