

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



CPH5703

DC/DC Converter Applications

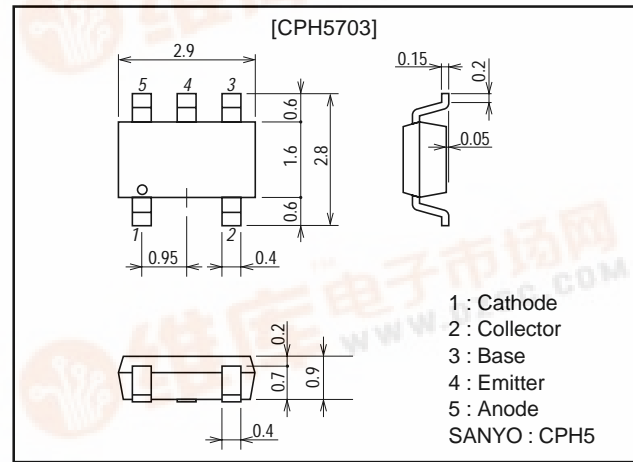
Features

- Composite type with a NPN transistor and a Schottky barrier diode contained in one package facilitating high-density mounting.
- The CPH5703 consists of two chips encapsulated in a package which are equivalent to the CPH3205 and the SB05-05CP, respectively.
- Ultrasmall-sized package permitting applied sets to be made small and slim (0.9mm).

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}		60	V
Collector-to-Emitter Voltage	V _{CEO}		50	V
Emitter-to-Base Voltage	V _{EBO}		6	V
Collector Current	I _C		3	A
Collector Current (Pulse)	I _{CP}		6	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}		50	V
Non-repetitive Peak Reverse Surge Voltage	V _{RSM}		55	V
Average Output Current	I _O		500	mA
Surge 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

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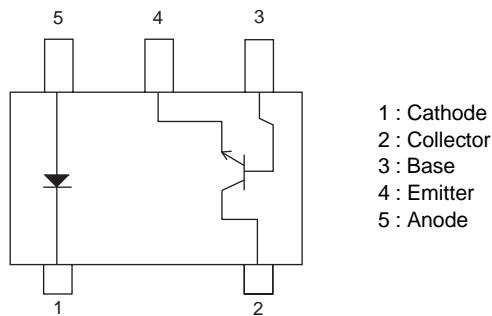


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Electrical Characteristics at $T_a = 25^\circ\text{C}$

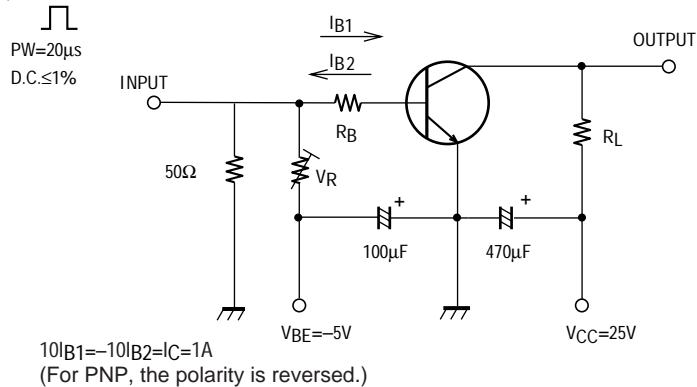
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=40\text{V}, I_E=0$			1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			1	μA
DC Current Gain	h_{FE}	$V_{CE}=2\text{V}, I_C=100\text{mA}$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=500\text{mA}$		380		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		13		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=1.0\text{A}, I_B=50\text{mA}$		80	120	mV
	$V_{CE(sat)2}$	$I_C=2.0\text{A}, I_B=100\text{mA}$		140	210	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.0\text{A}, I_B=50\text{mA}$		0.9	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, R_{BE}=\infty$	50			V
Emitter-to-Base 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.		35		ns
Storage Time	t_{stg}	See specified Test Circuit.		300		ns
Turn-OFF Time	t_f	See specified Test Circuit.		22		ns
[SBD]						
Reverse Voltage	V_R	$I_R=200\mu\text{A}$	50			V
Forward Voltage	V_F	$I_F=500\text{mA}$			0.55	V
Reverse Current	I_R	$V_R=25\text{V}$			50	μA
Interterminal Capacitance	C	$V_R=10\text{V}, f=1\text{MHz}$		22		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 a ceramic board (600mm ² ×0.8mm)		151		$^\circ\text{C/W}$

Electrical Connection (Top view)

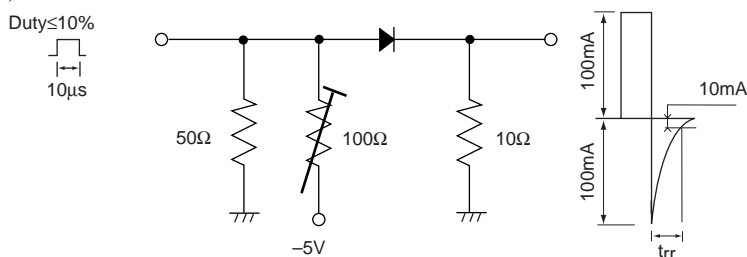


Switching Time Test Circuit

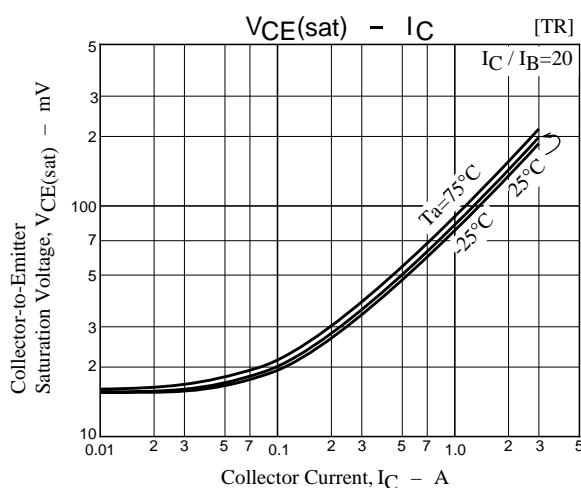
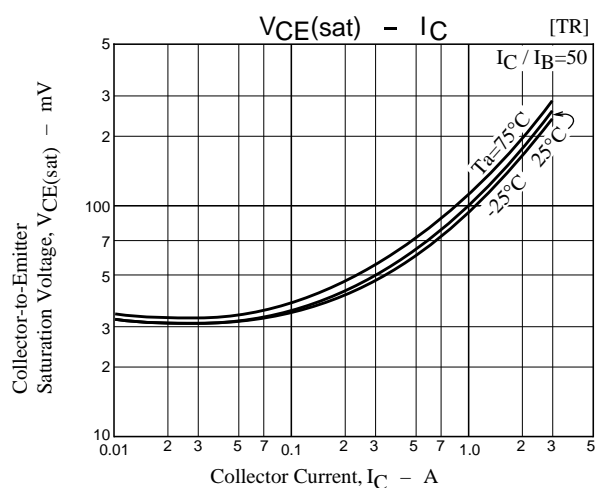
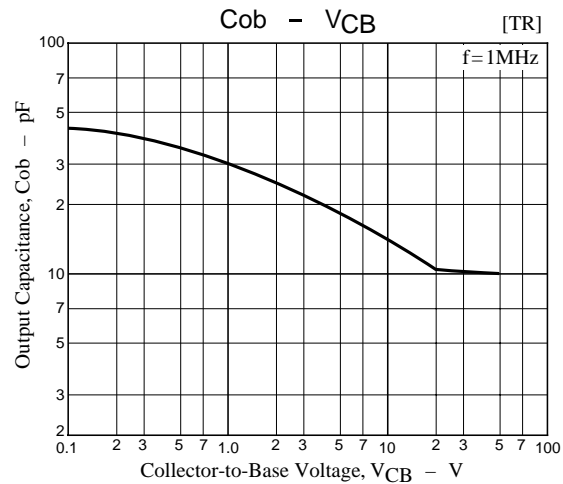
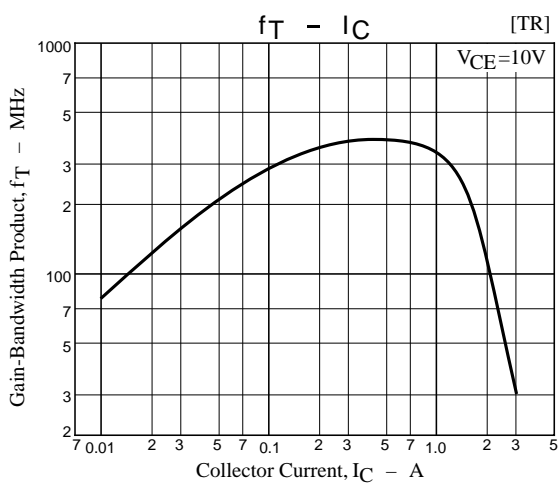
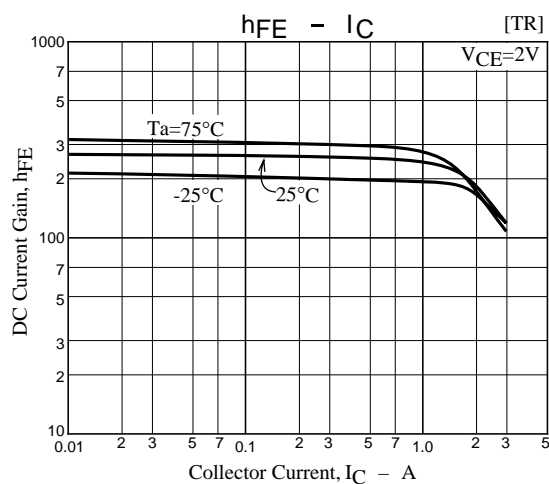
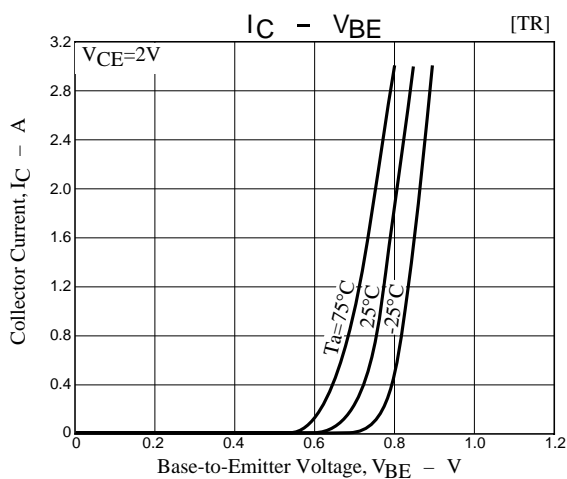
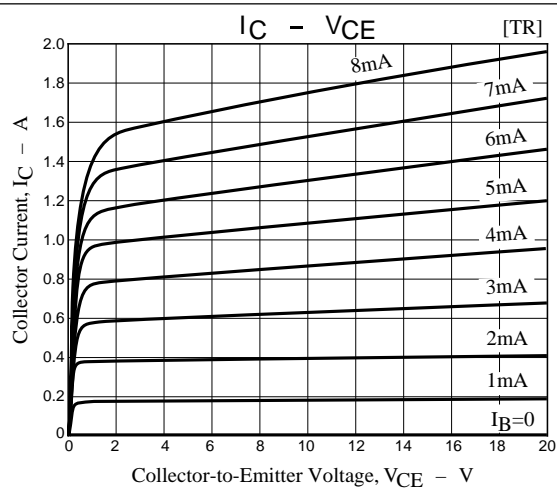
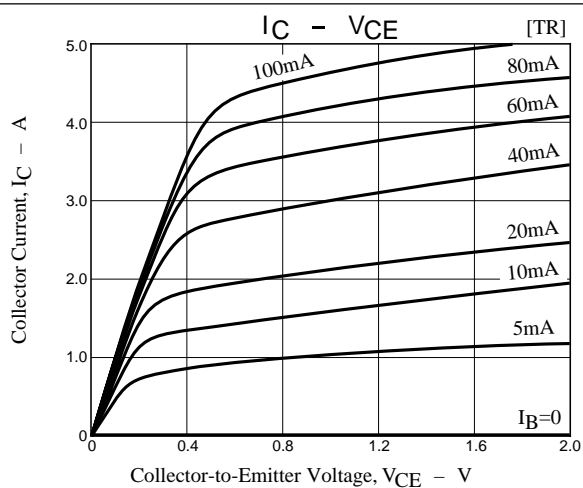
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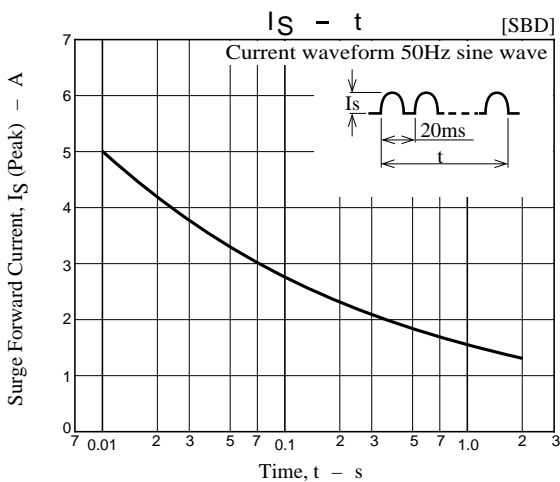
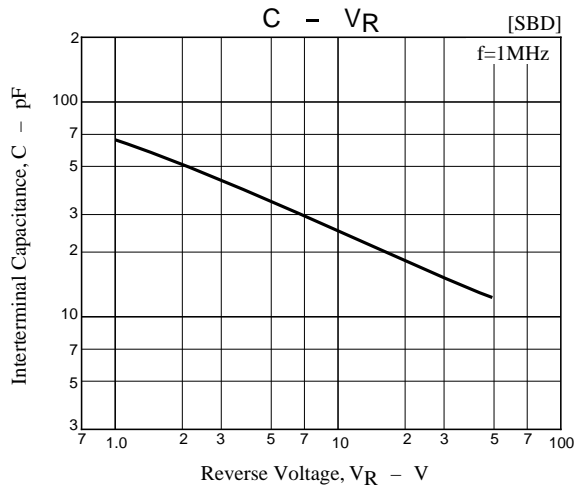
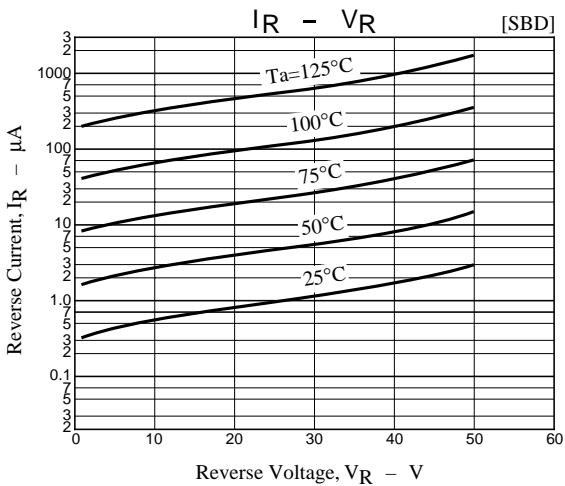
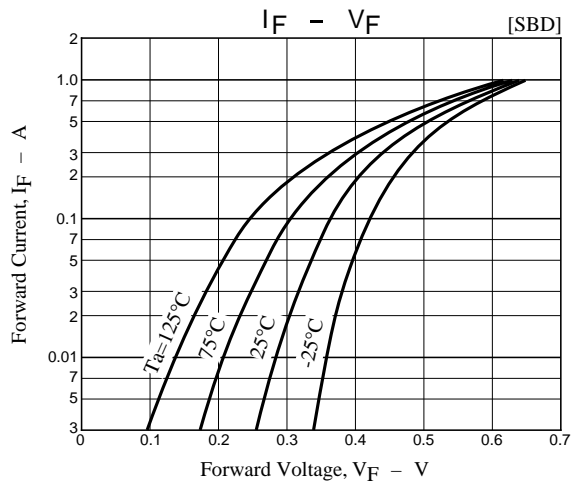
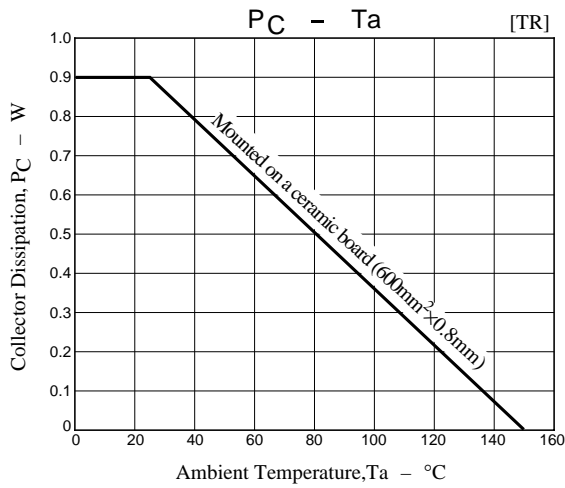
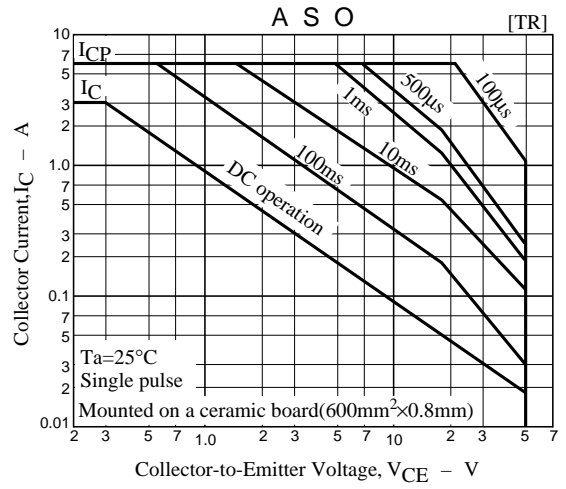
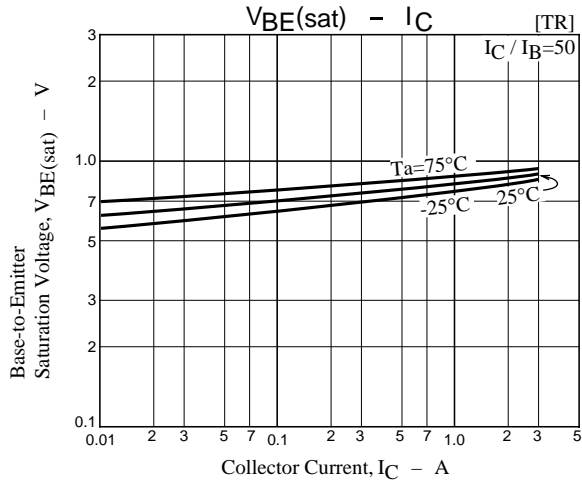
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