

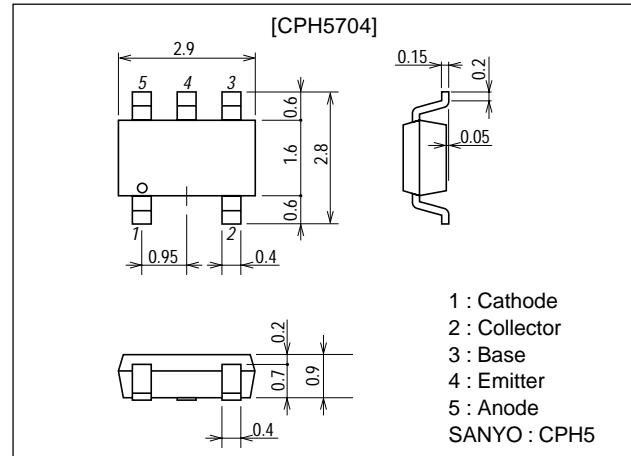
**CPH5704****DC/DC Converter Applications****Features**

- Composite type with an NPN transistor and a Schottky barrier diode contained in one package facilitating high-density mounting.
- Each device incorporated in the CPH5704 is equivalent to the CPH3206 and to the SBS004, respectively.
- Ultrasmall package facilitates miniaturization in end products.

Package Dimensions

unit:mm

2156

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

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		15	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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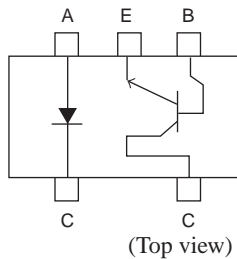
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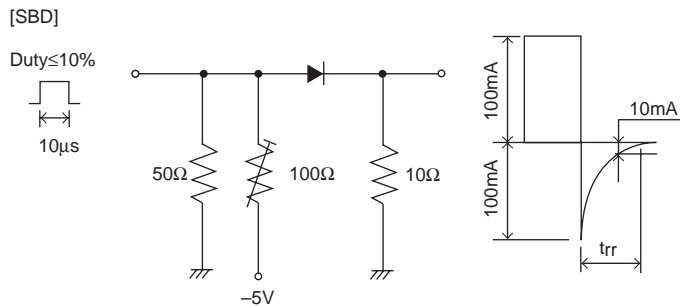
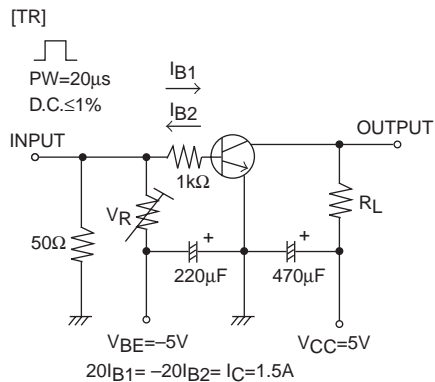
Electrical Characteristics at Ta = 25°C

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	C_{ob}	$V_{CB}=10V, f=1MHz$		23		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.5A, I_B=30mA$		100	150	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5A, I_B=30mA$		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	15			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		30		ns
Storage Time	t_{stg}	See specified Test Circuit.		210		ns
Fall Time	t_f	See specified Test Circuit.		11		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	R_{thj-a}	Mounted on a ceramic board (600mm ² ×0.8mm)		110		°C/W

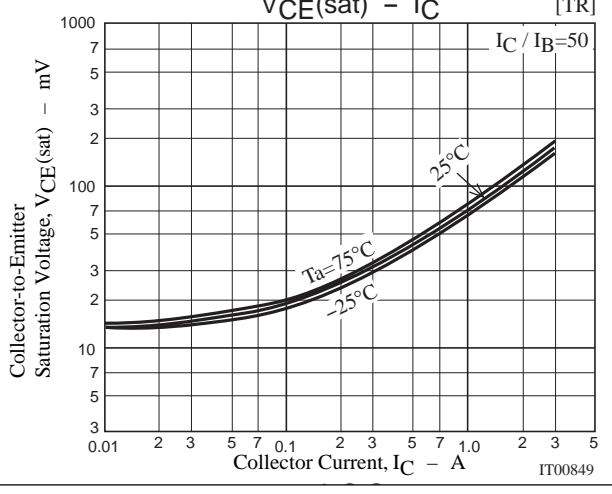
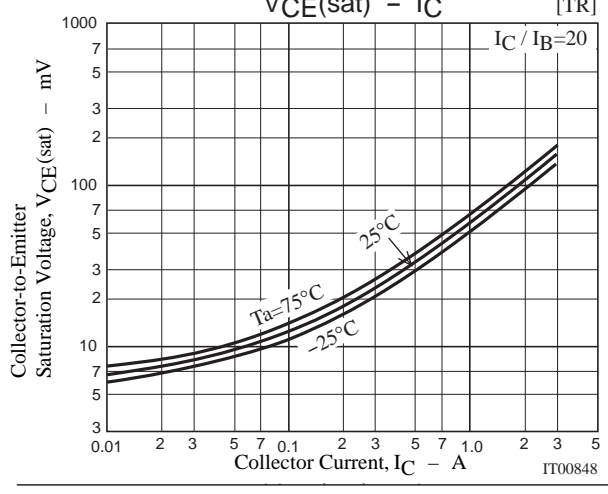
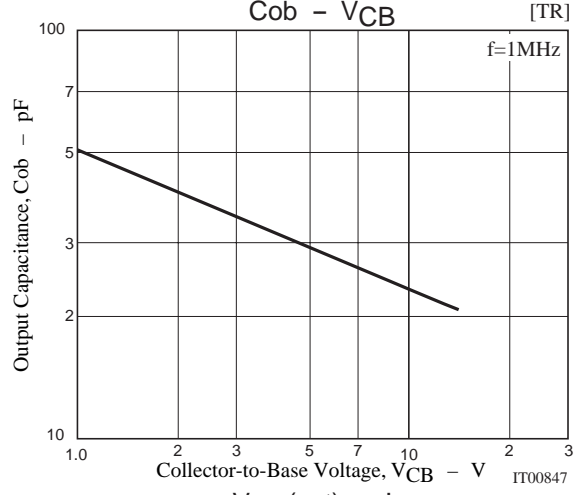
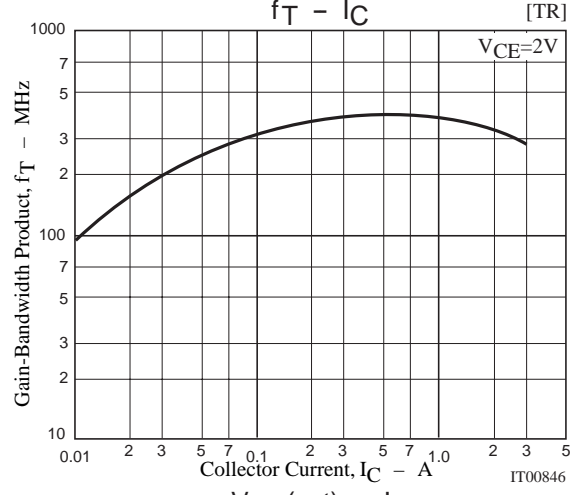
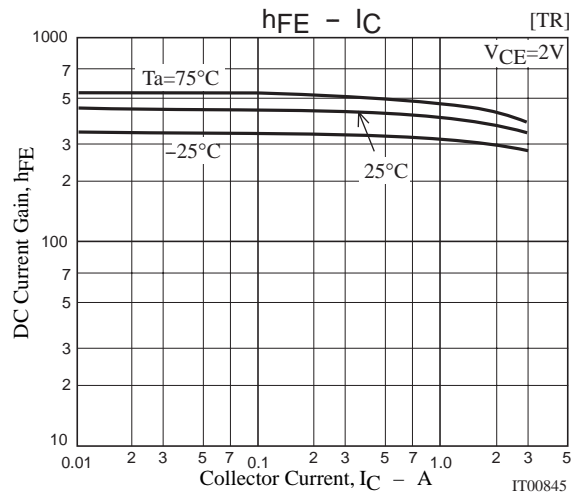
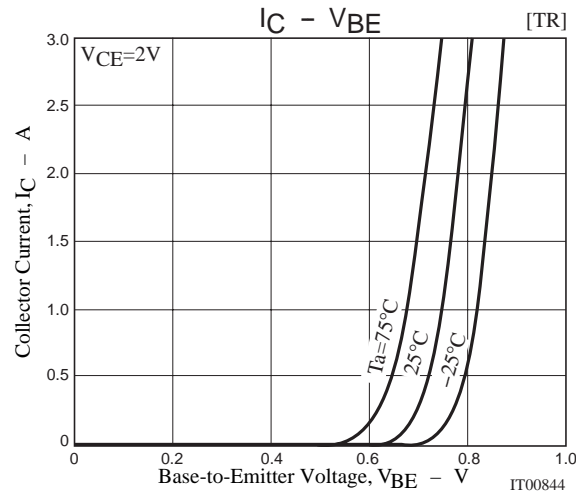
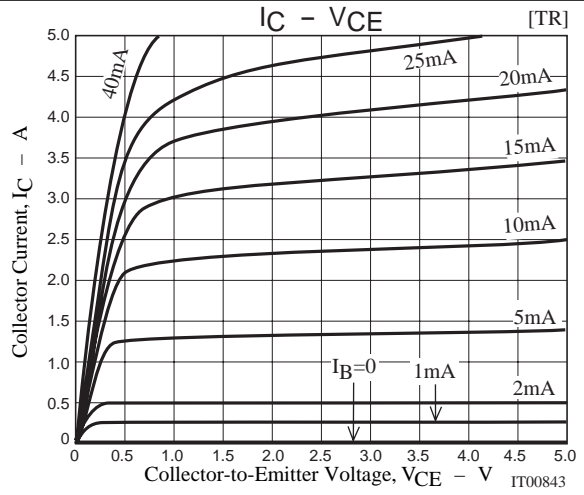
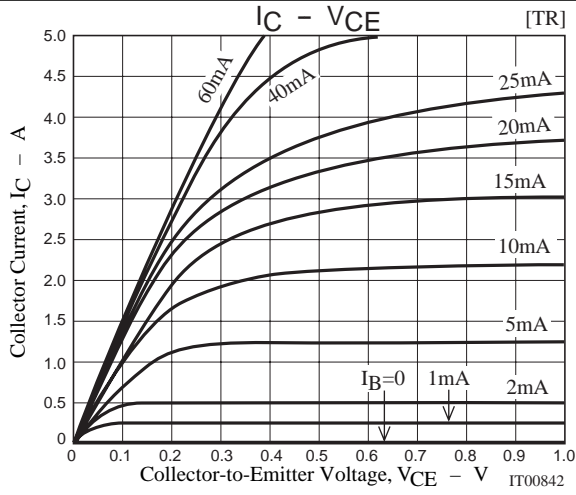
Electrical Connection



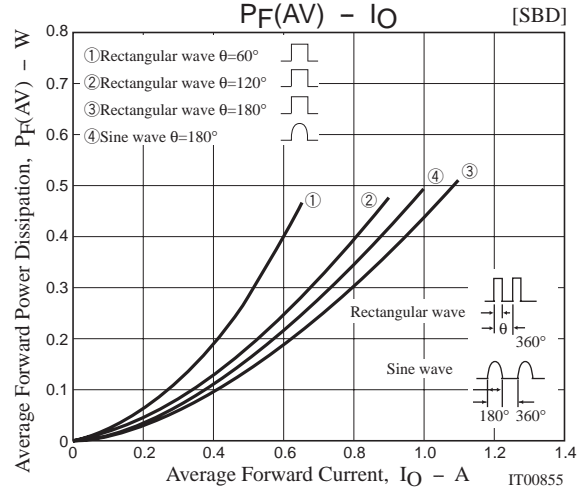
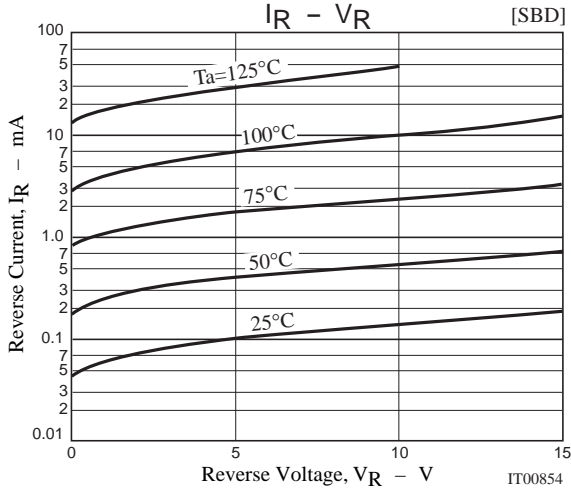
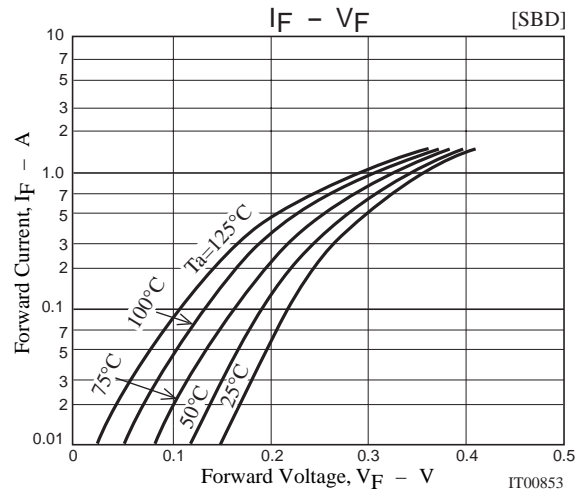
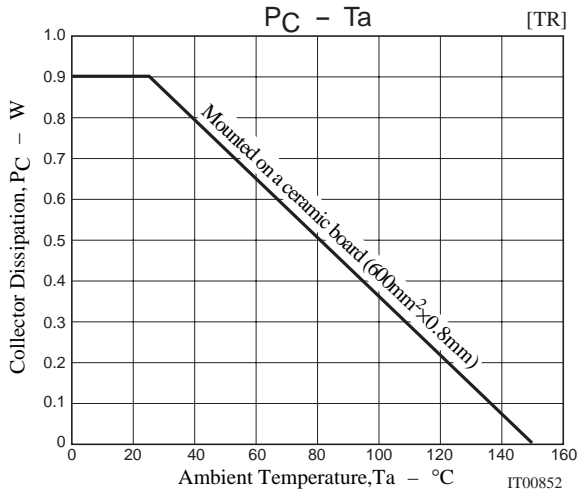
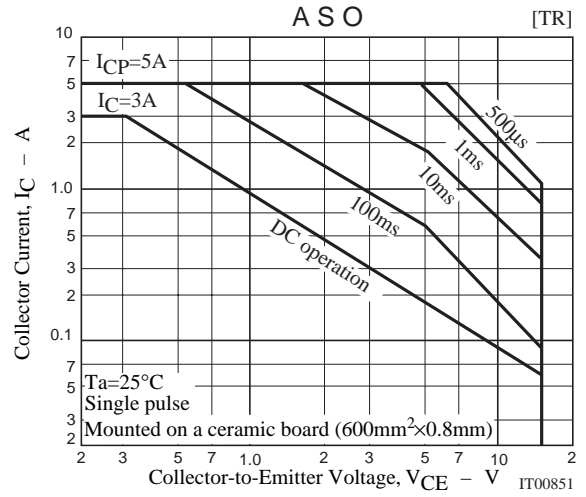
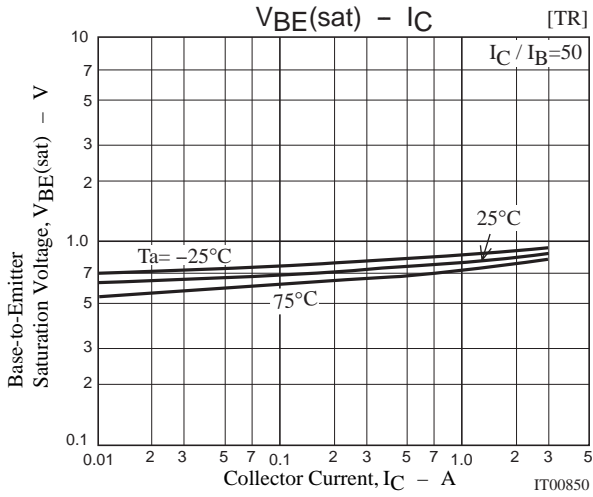
Switching Time Test Circuit



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