Ordering number : ENA0871A

SANYO Semiconductors
DATA SHEET

CPH3251 — NPN Epitaxial Planar Silicon Transistor
High-Voltage Switching Applications

Applications

- DC / DC converters, relay drivers, lamp drivers, motor drivers, inverters.

Features

- Adoption of FBET, MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package permitting applied sets to be small and slim (mounting height: 0.9mm).
- High allowable power dissipation.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		150	V
Collector-to-Emitter Voltage	V_{CES}		150	V
Collector-to-Emitter Voltage	V_{CEO}		120	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		3	A
Base Current	I_B		400	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm²×0.8mm)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking : DW

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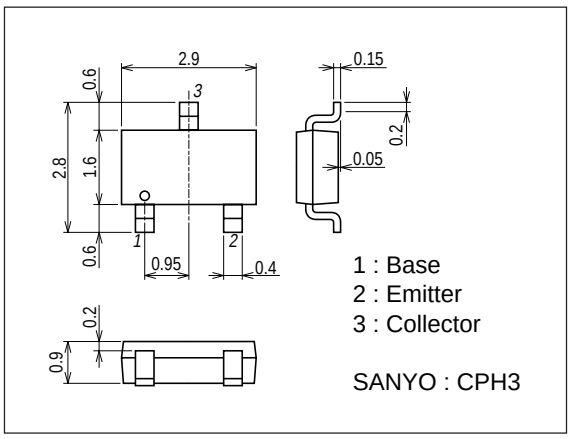
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=100V, I_E=0A			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0A			1	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=100mA		130		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		13		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=1A, I_B=100mA		100	150	mV
	V_{CE}(sat)2	I_C=0.5A, I_B=50mA		60	90	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=1A, I_B=100mA		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0A	150			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=100μA, R_{BE}=0Ω	150			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	120			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0A	7			V
Turn-ON Time	t_{on}	See specified Test Circuit.		50		ns
Storage Time	t_{stg}	See specified Test Circuit.		1250		ns
Fall Time	t_f	See specified Test Circuit.		60		ns

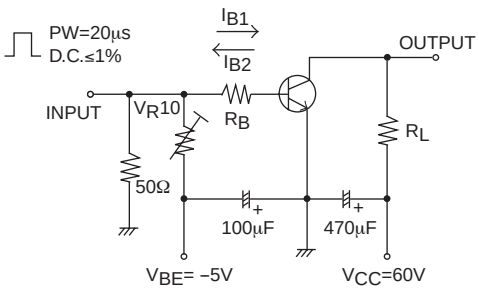
Package Dimensions

unit : mm (typ)

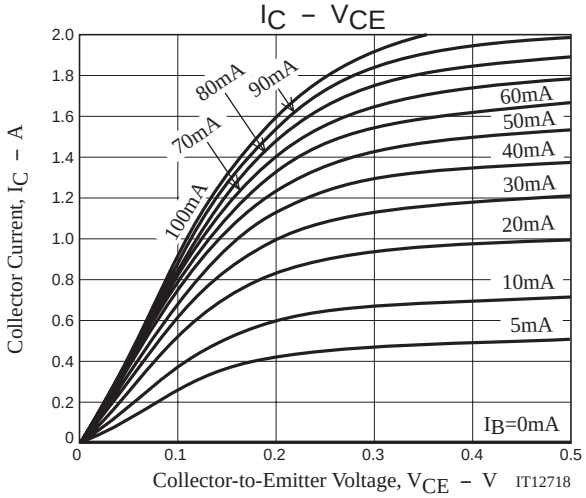
7015A-003

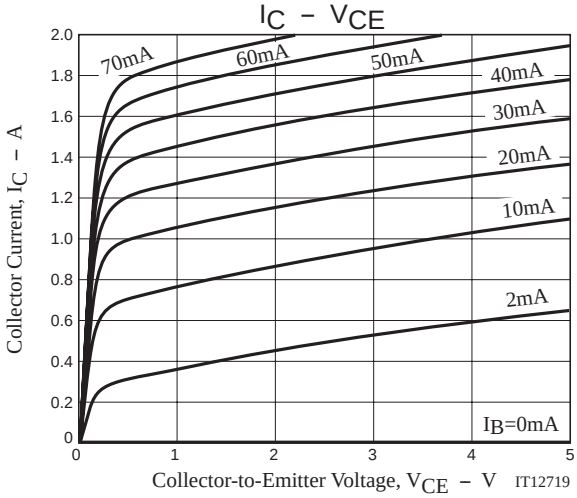


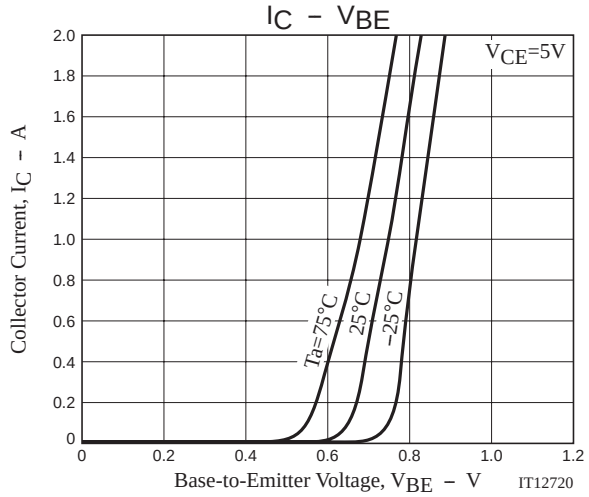
Switching Time Test Circuit

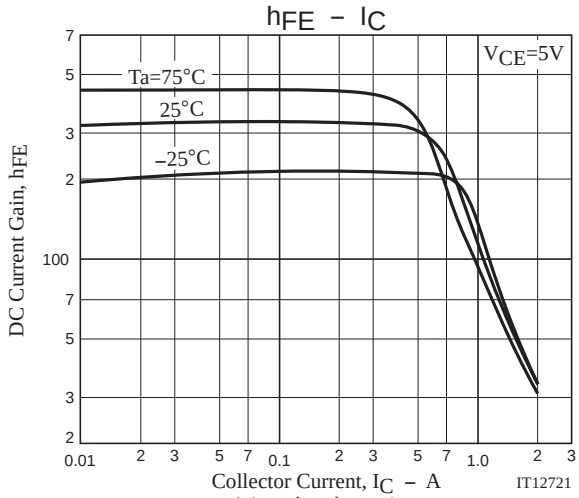


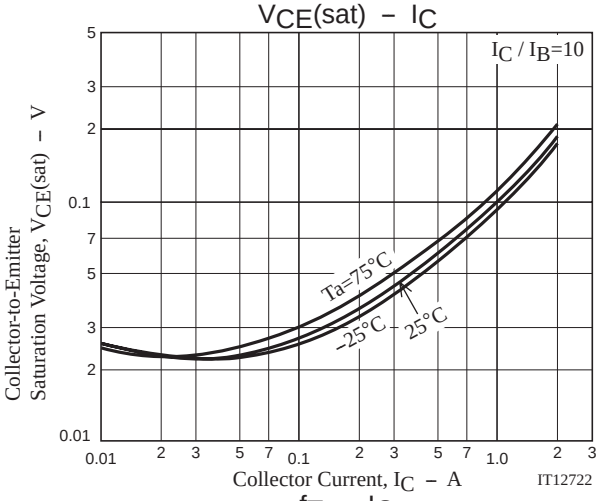
I_C=10I_{B1}= −10I_{B2}=0.5A

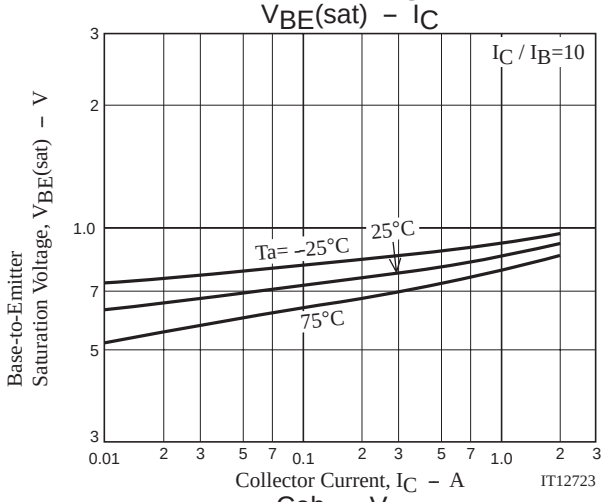


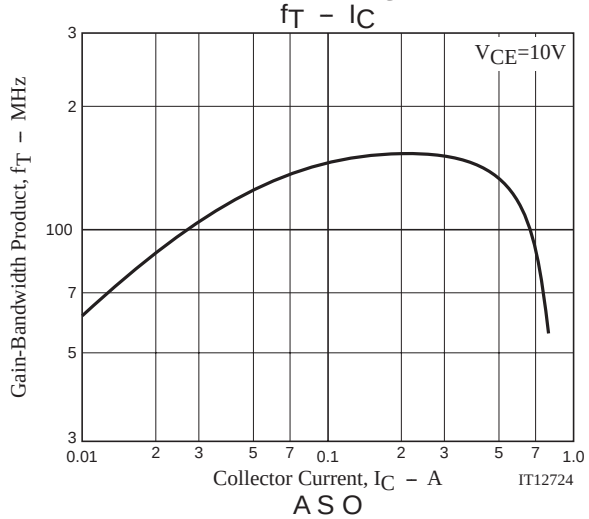


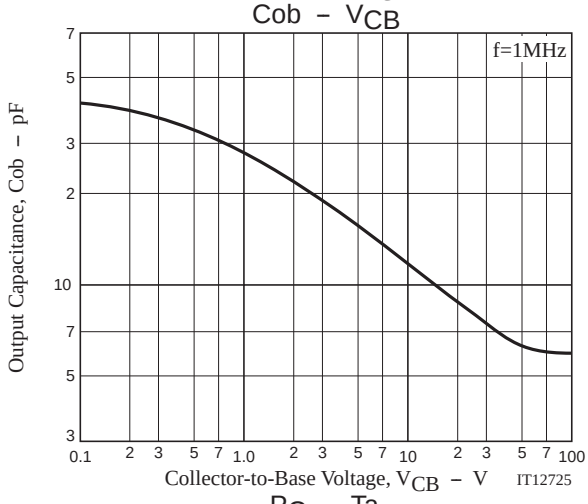

IC – VBE
VCE=5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT12720

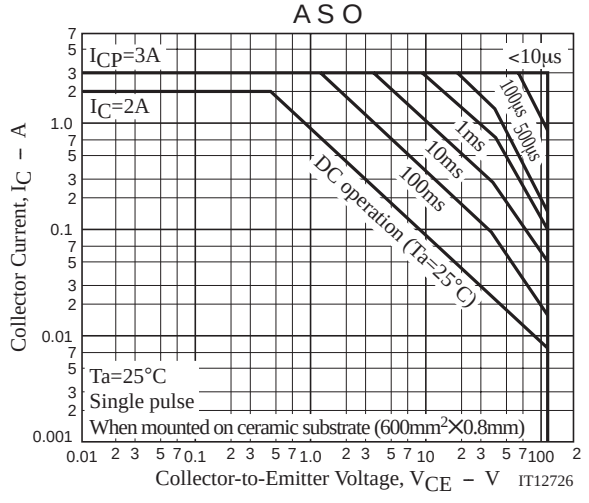

hFE – IC
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT12721

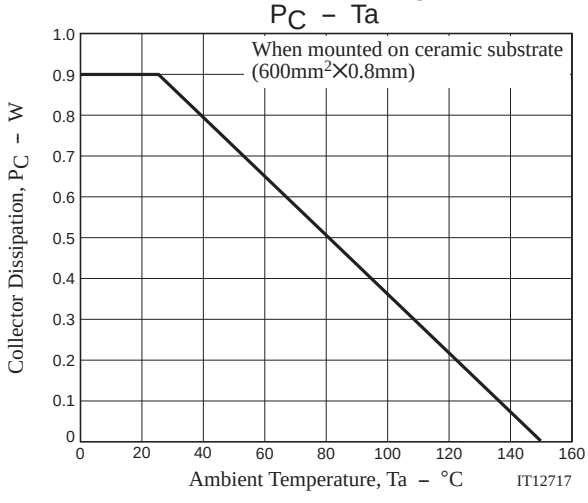

VCE(sat) – IC
IC / IB=10
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT12722


VBE(sat) – IC
IC / IB=10
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT12723


fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT12724


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT12725


ASO
ICP=3A
IC=2A
<10μs
100μs
500μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Ta=25°C
Single pulse
When mounted on ceramic substrate (600mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT12726


PC – Ta
When mounted on ceramic substrate
(600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT12717