



SANYO Semiconductors

## DATA SHEET

# CPH3237

 — NPN Epitaxial Planar Silicon Transistor  

## DC / DC Converter Applications

### Applications

- Relay drivers, lamp drivers, motor drivers, flash.

### Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Narrow  $h_{FE}$  range.
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm).
- High allowable power dissipation.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		15	V
Collector-to-Emitter Voltage	$V_{CEO}$		15	V
Emitter-to-Base Voltage	$V_{EBO}$		6	V
Collector Current	$I_C$		6	A
Collector Current (Pulse)	$I_{CP}$		9	A
Base Current	$I_B$		1.2	A
Collector Dissipation	$P_C$	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm)	0.9	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB}=12\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=2\text{V}, I_C=500\text{mA}$	250		400	
Gain-Bandwidth Product	$f_T$	$V_{CE}=2\text{V}, I_C=500\text{mA}$		250		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$		46		pF

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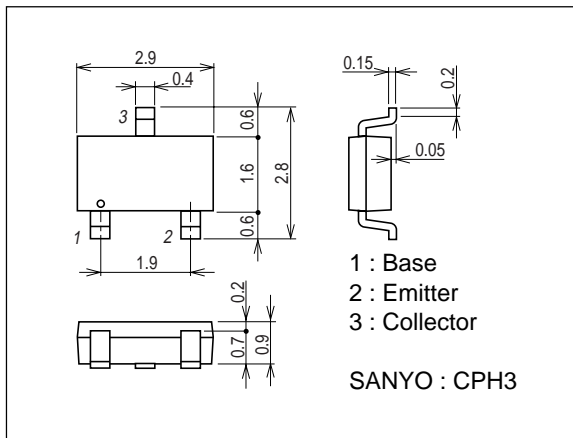
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3A, I_B=60mA$		80	120	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=3A, I_B=60mA$		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	15			V
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.		32		ns
Storage Time	$t_{stg}$	See specified test circuit.		250		ns
Fall Time	$t_f$	See specified test circuit.		10		ns

Marking : DH

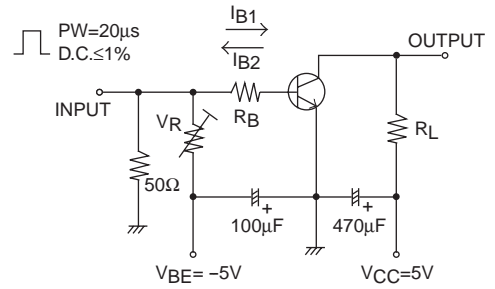
## Package Dimensions

unit : mm

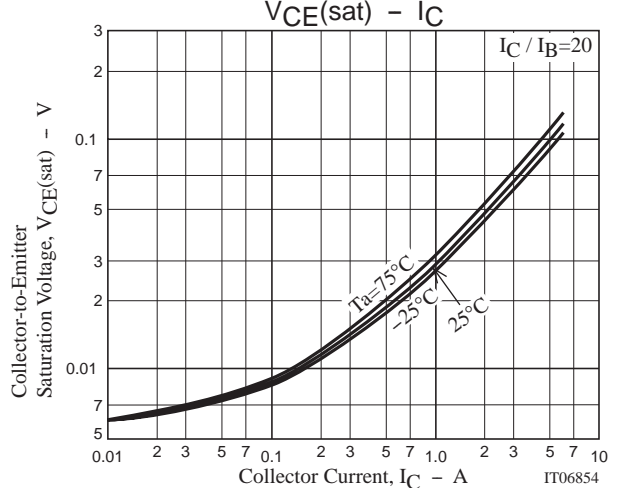
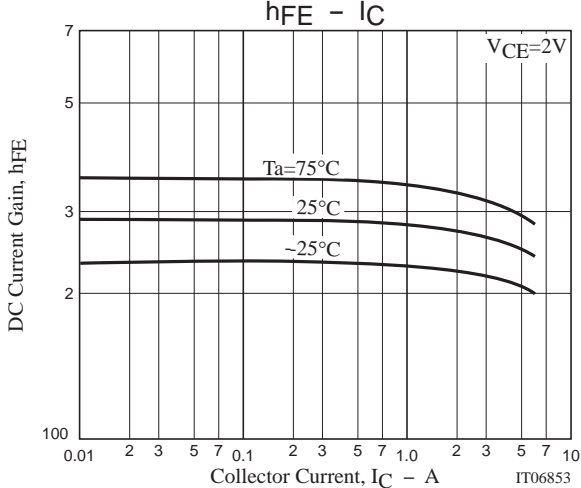
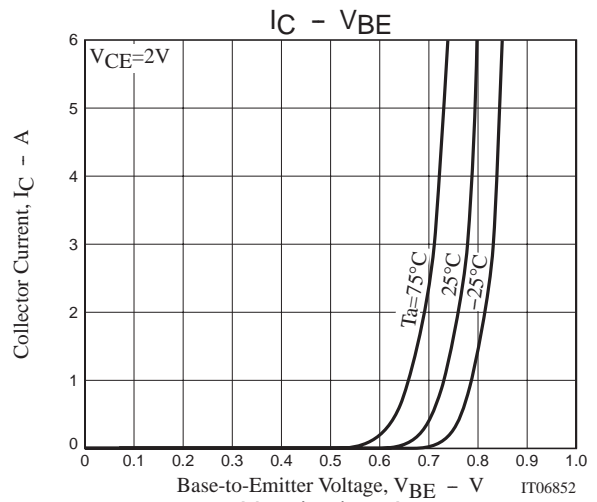
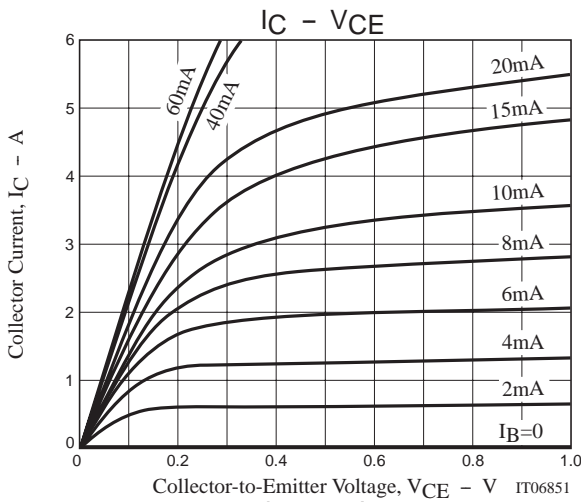
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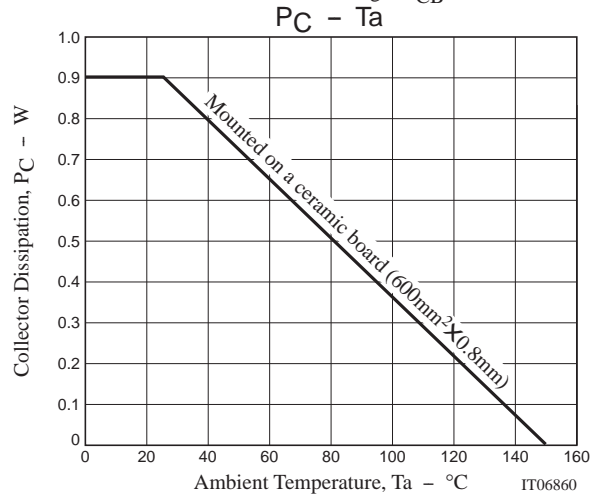
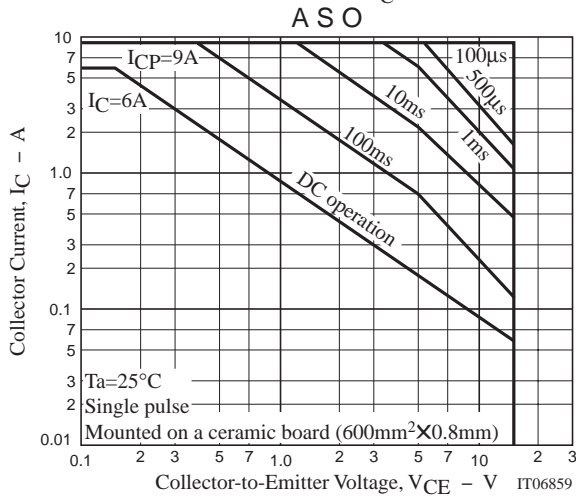
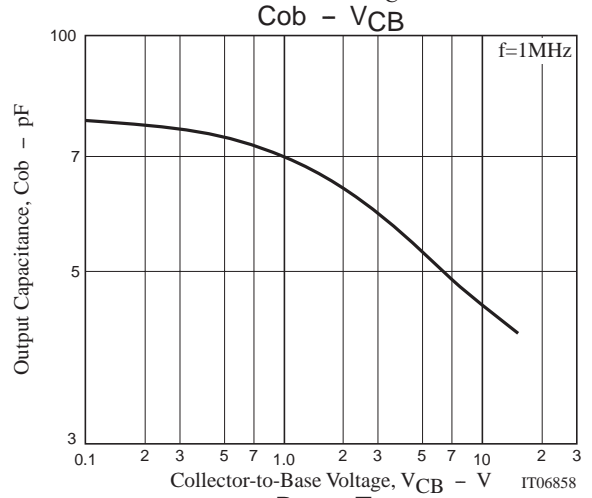
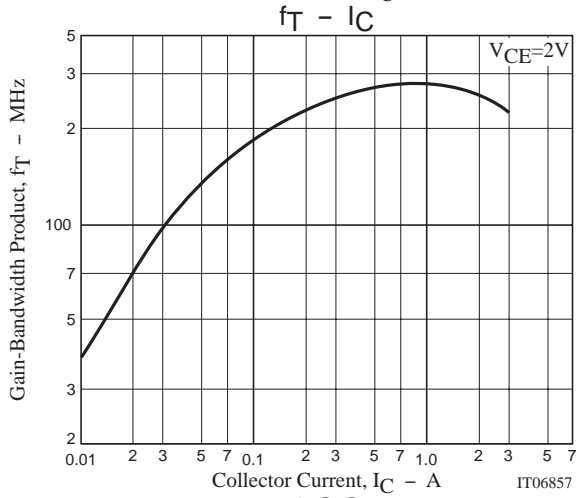
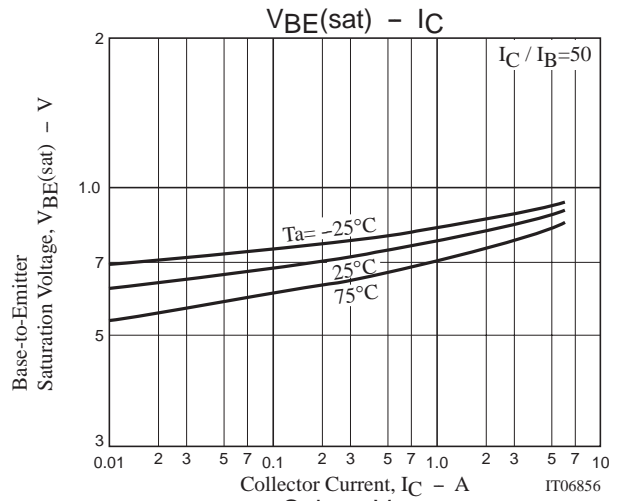
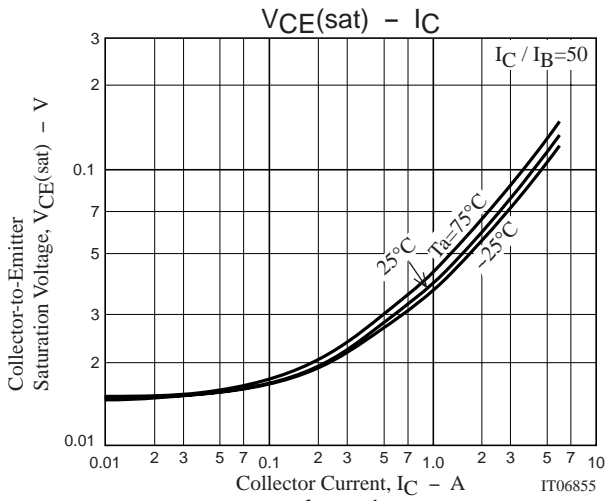


## Switching Time Test Circuit



$$I_C = 20I_{B1} = -20I_{B2} = 3A$$





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