



CPH6102/CPH6202

## High-Current Switching Applications

### Applications

- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes.

### Features

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

( ) : CPH6102

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-60)	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-50)	V
Emitter-to-Base Voltage	$V_{EBO}$		(-5)	V
Collector Current	$I_C$		(-1.0)	A
Collector Current (Pulse)	$I_{CP}$		(-2)	A
Collector Dissipation	$P_C$	Mounted on a ceramic board (600mm $\times$ 0.8mm)	1.3	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	$I_{CBO}$	$V_{CB}=(-)50\text{V}$ , $I_E=0$			(-100)	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4\text{V}$ , $I_C=0$			(-100)	nA
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)2\text{V}$ , $I_C=(-)100\text{mA}$	200		560	
	$h_{FE2}$	$V_{CE}=(-)2\text{V}$ , $I_C=(-)1\text{A}$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10\text{V}$ , $I_C=(-)50\text{mA}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10\text{V}$ , $f=1\text{MHz}$		(12)8.5		pF

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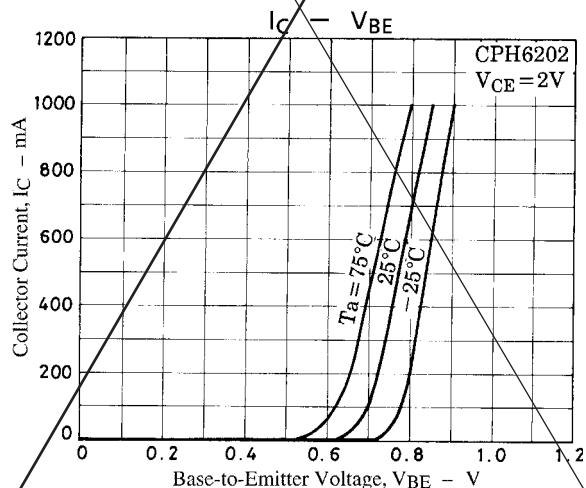
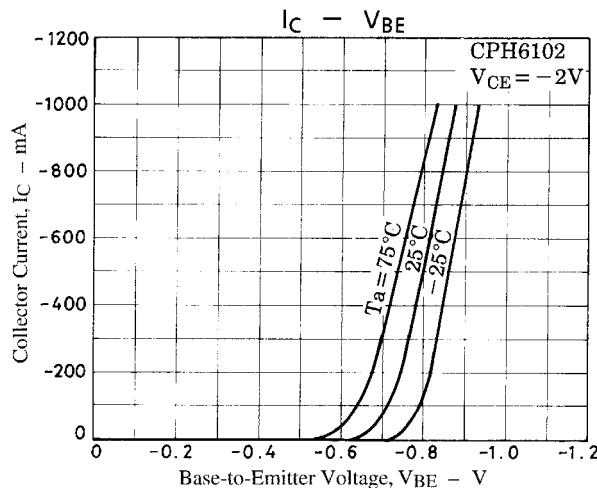
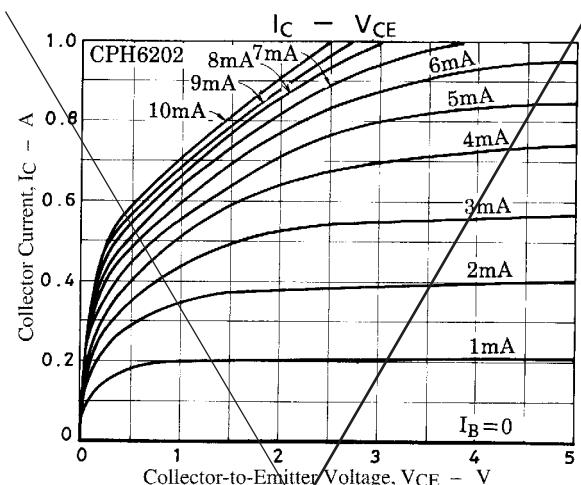
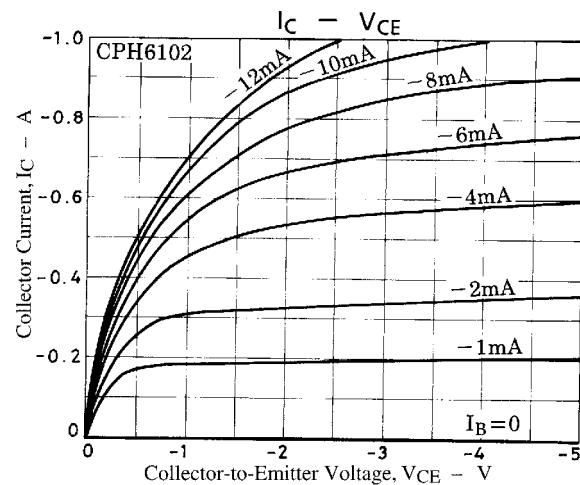
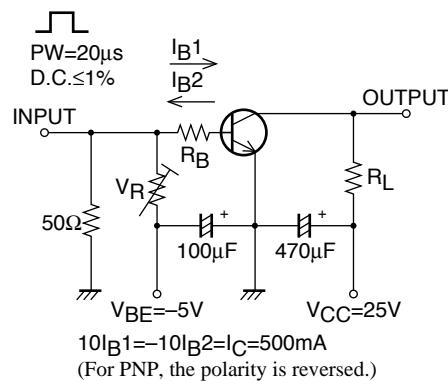
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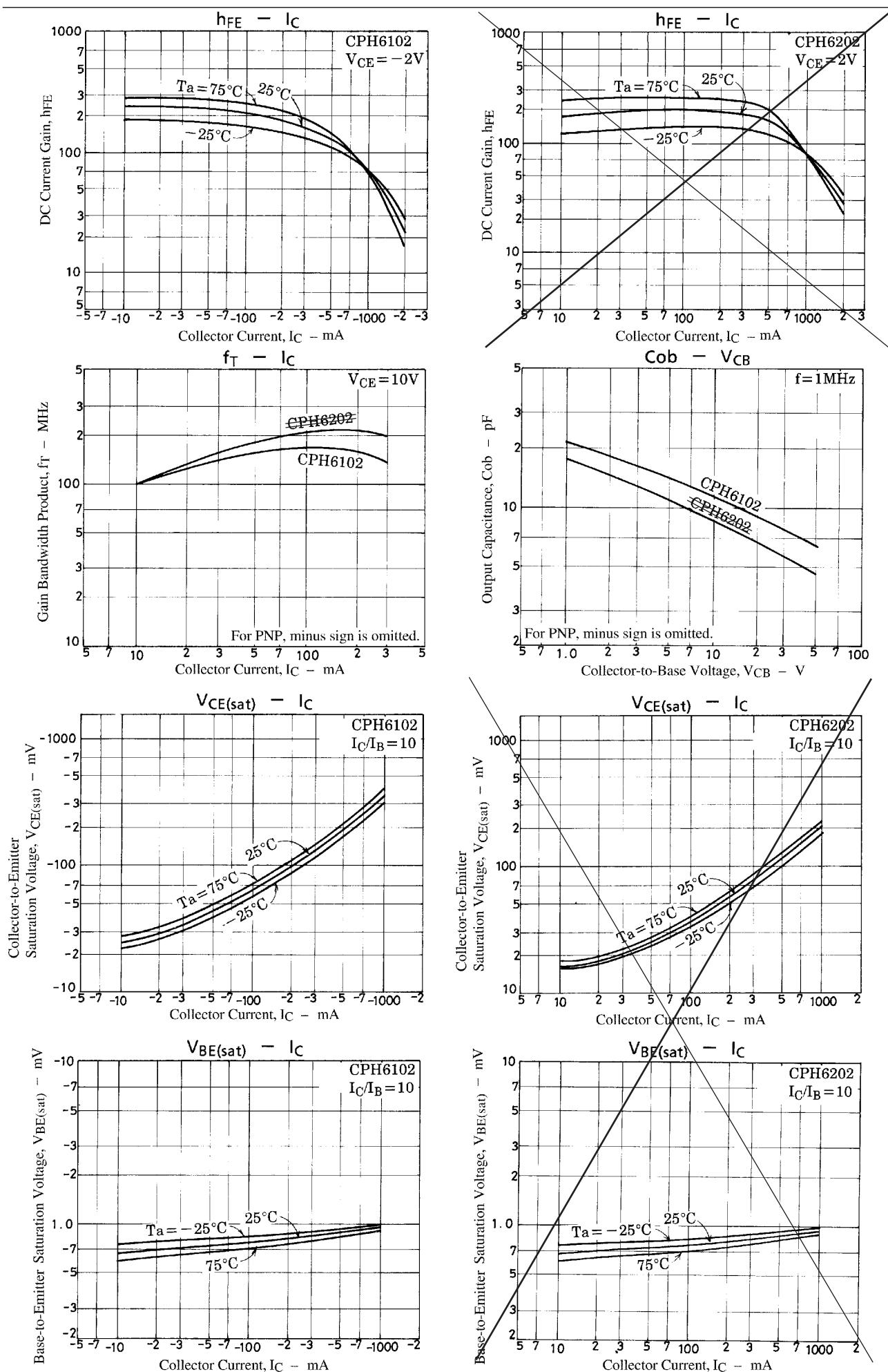
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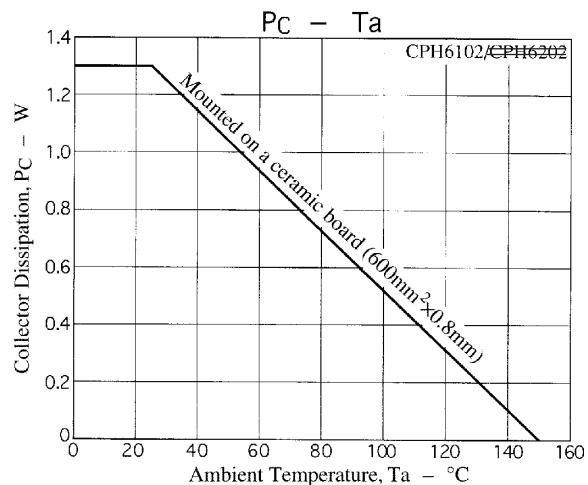
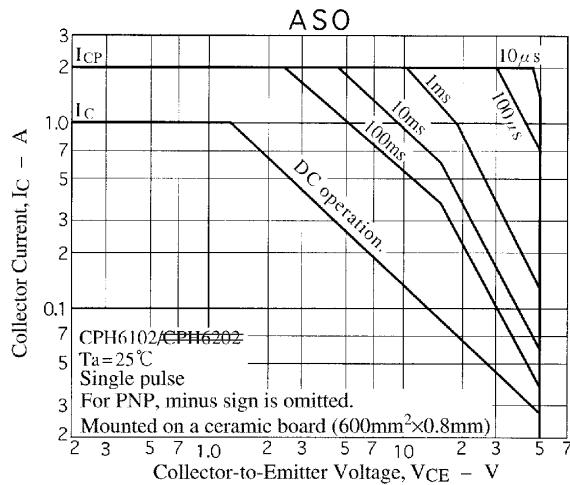
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)500\text{mA}$ , $I_B = (-)50\text{mA}$		(-180)	(-500)	mV
				+20	-300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)500\text{mA}$ , $I_B = (-)50\text{mA}$		(-0.9)	(-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	$V_{(BR)EBO}$	$I_E = (-)10\mu\text{A}$ , $I_C = 0$	(-5)			V
Turn-ON Time	$t_{on}$	See specified test circuit.		40(40)		ns
Storage Time	$t_{stg}$	See specified test circuit.		350		ns
Fall Time	$t_f$	See specified test circuit.		(300)		ns
				30(30)		ns

### Switching Time Test Circuit



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