

**DC / DC Converter Applications****Applications**

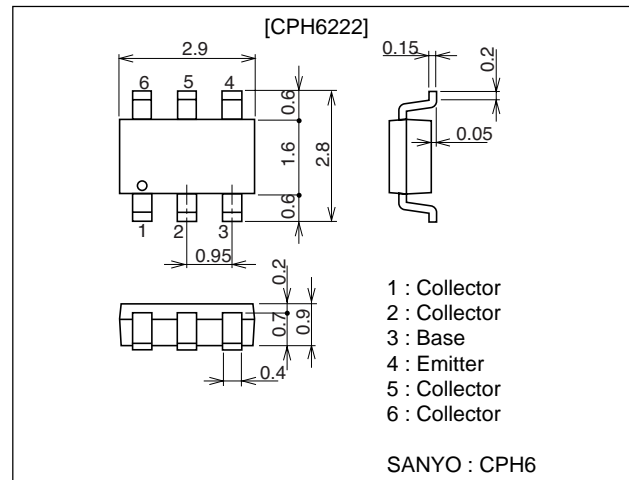
- Relay drivers, lamp drivers, motor drivers, strobe.

**Features**

- Adoption of MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm).
- High allowable power dissipation.

**Package Dimensions**

unit : mm  
2146A

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		40	V
Collector-to-Emitter Voltage	$V_{CEO}$		30	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 <sup>2</sup> ×0.8mm)	1.3	W
Junction Temperature	$T_J$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=30\text{V}, I_E=0$			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	$h_{FE}$	$V_{CE}=2\text{V}, I_C=500\text{mA}$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=500\text{mA}$		420		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$		20		pF

Marking : CW

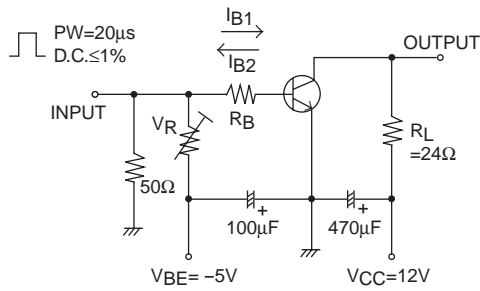
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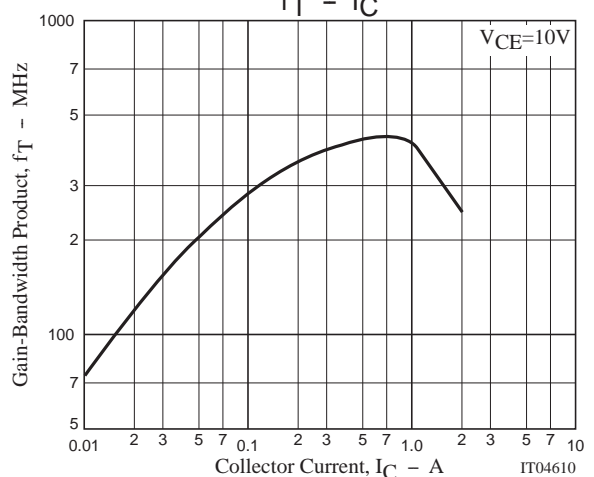
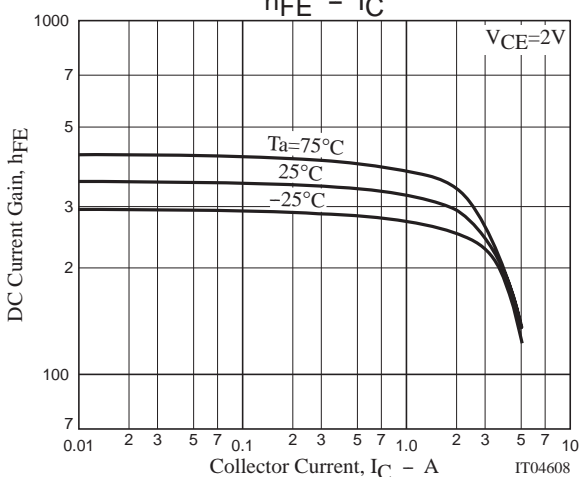
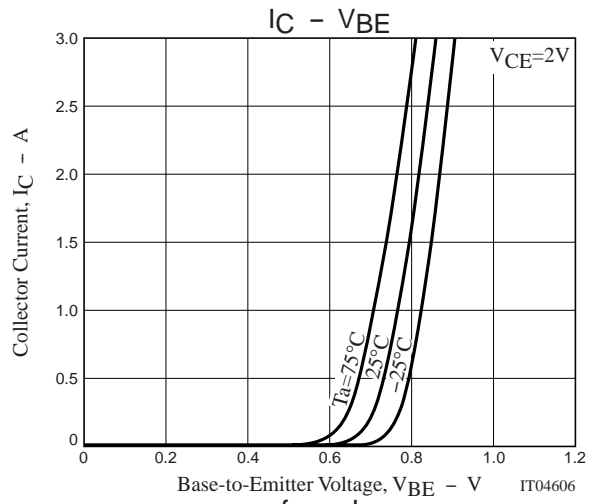
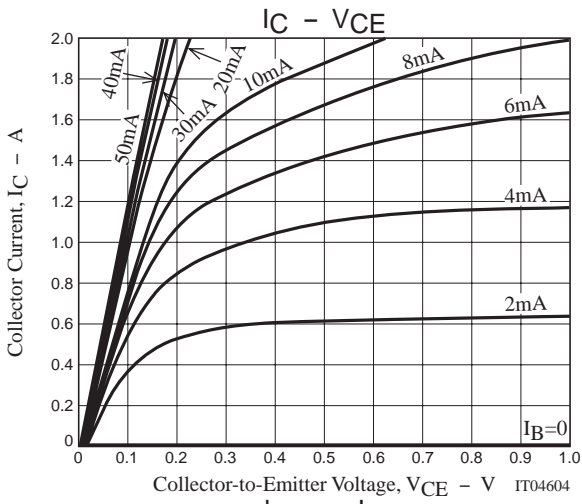
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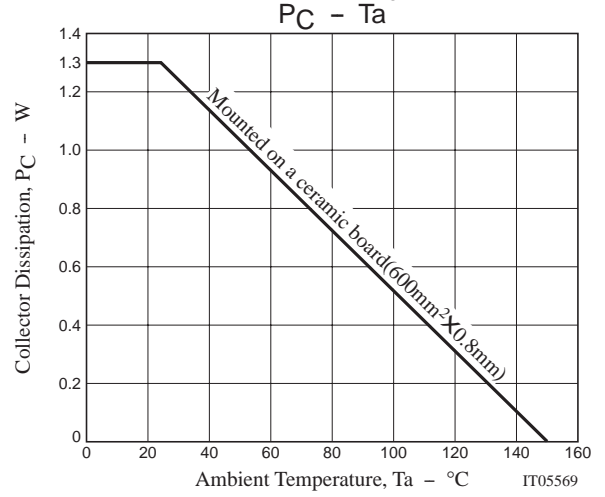
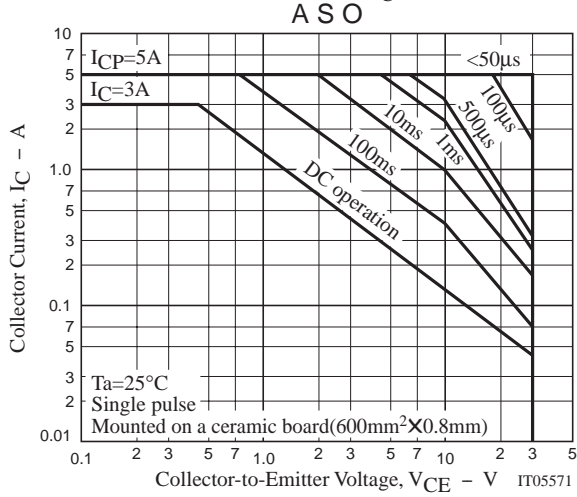
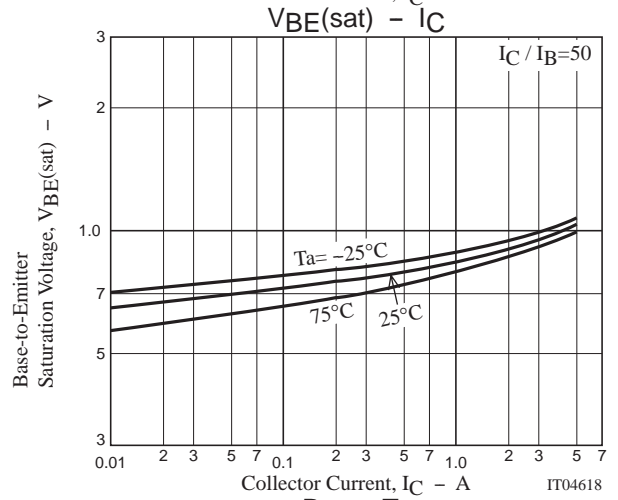
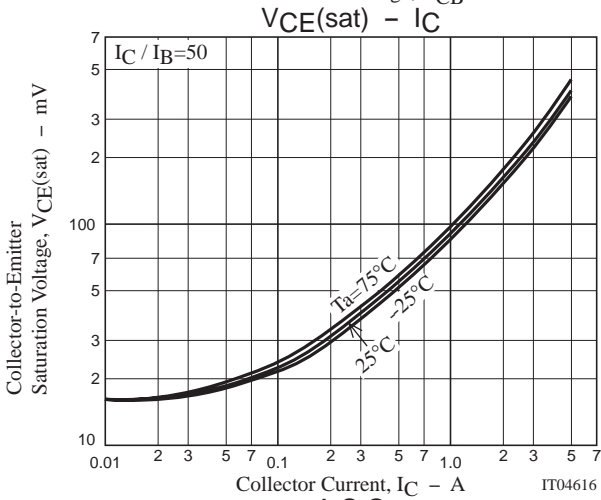
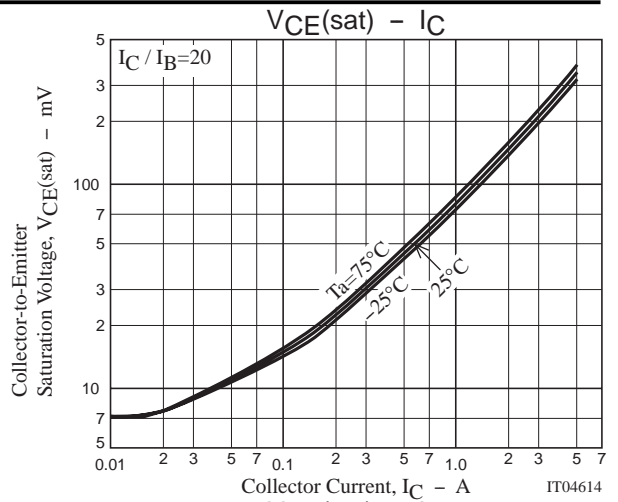
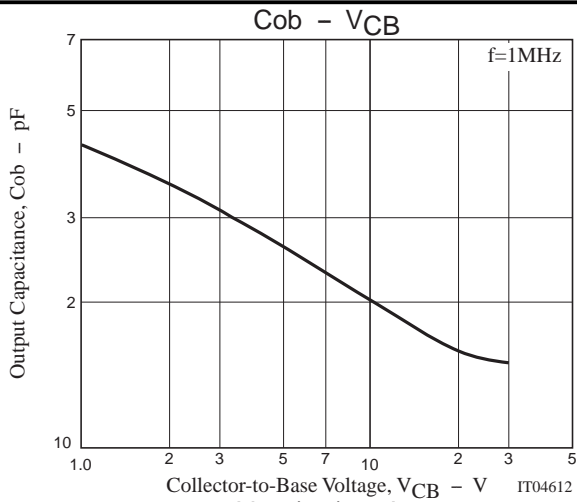
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=1.5A, I_B=30mA$		130	195	mV
	$V_{CE(sat)2}$	$I_C=1.5A, I_B=75mA$		120	180	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5A, I_B=30mA$		0.83	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	30			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.		300		ns
Fall Time	$t_f$	See specified Test Circuit.		25		ns

**Switching Time Test Circuit**



$I_C=20I_{B1} = -20I_{B2}=500mA$





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