



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## ECH8201 — NPN Epitaxial Planar Silicon Transistor High-Current Switching Applications

### Applications

- High-power IGBT/MOSFET gate drivers, DC / DC converters, lamp drivers, motor drivers.

### Features

- Adoption of FBET, MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High speed switching.
- High allowable power dissipation.
- Halogen free compliance.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		100	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		100	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		6	V
Collector Current	I <sub>C</sub>		10	A
Collector Current (Pulse)	I <sub>CP</sub>		20	A
Base Current	I <sub>B</sub>		1	A
Collector Dissipation	P <sub>C</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.6	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Marking : HA

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# ECH8201

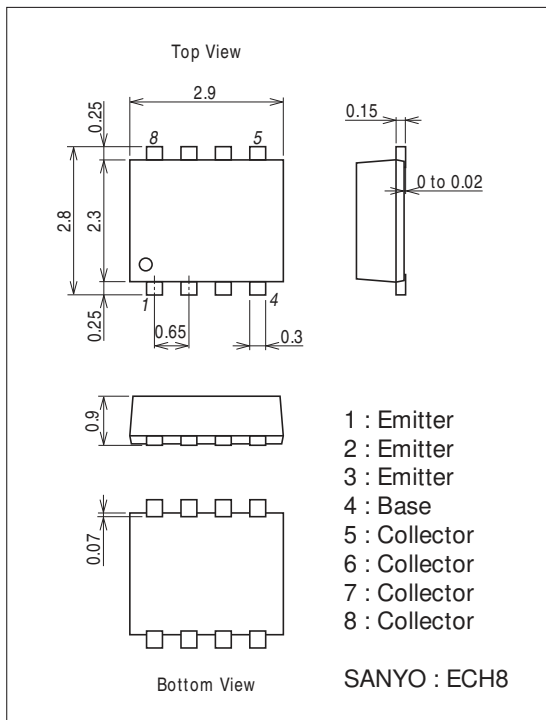
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> =40V, I <sub>E</sub> =0A			0.1	μA
Emitter Cutoff Current	IEBO	V <sub>EB</sub> =4V, I <sub>C</sub> =0A			0.1	μA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =500mA	200		560	
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =4A	160			
	h <sub>FE3</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =10A	110			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =1A		230		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> =6A, I <sub>B</sub> =300mA		65	100	mV
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =2A, I <sub>B</sub> =40mA		40	75	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =5A, I <sub>B</sub> =250mA		0.85	1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =10μA, I <sub>E</sub> =0A	100			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	I <sub>C</sub> =100μA, R <sub>BE</sub> =0Ω	100			V
	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	50			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0A	6			V
Turn-On Time	t <sub>on</sub>	See specified Test Circuit.		60		ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		305		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		17		ns

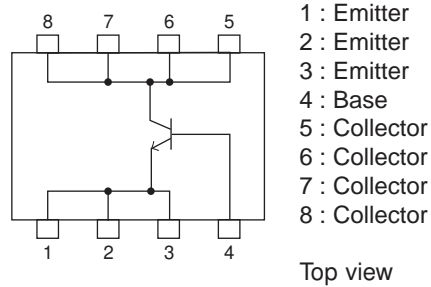
## Package Dimensions

unit : mm (typ)

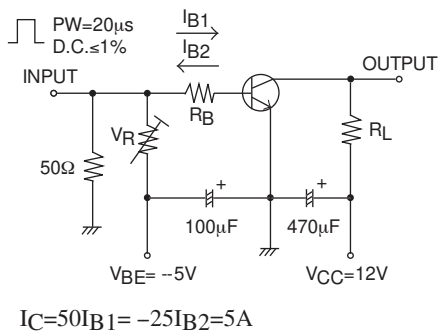
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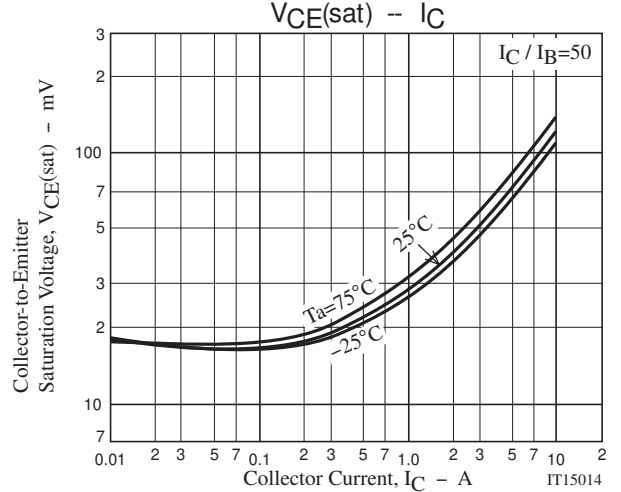
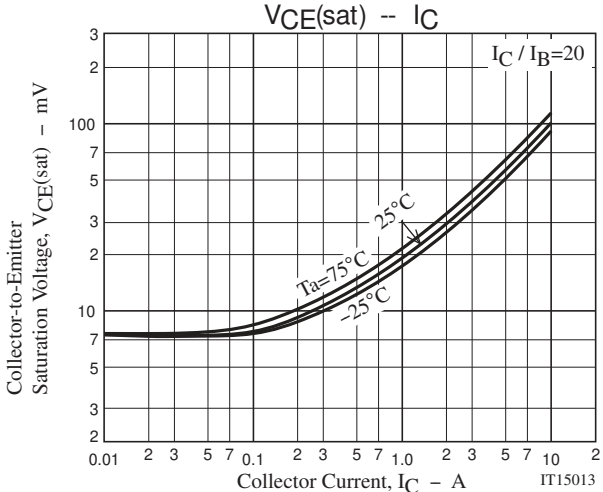
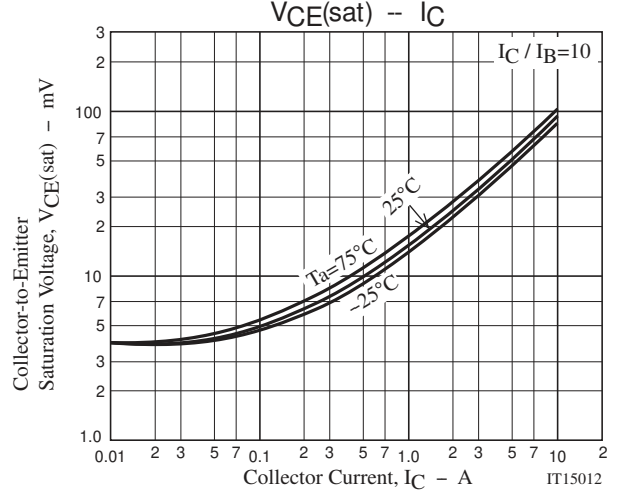
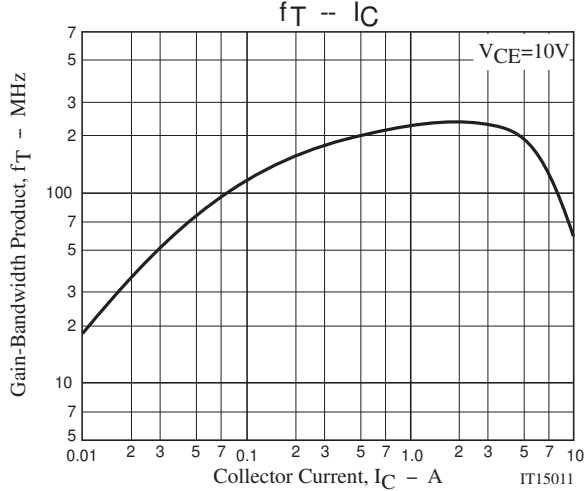
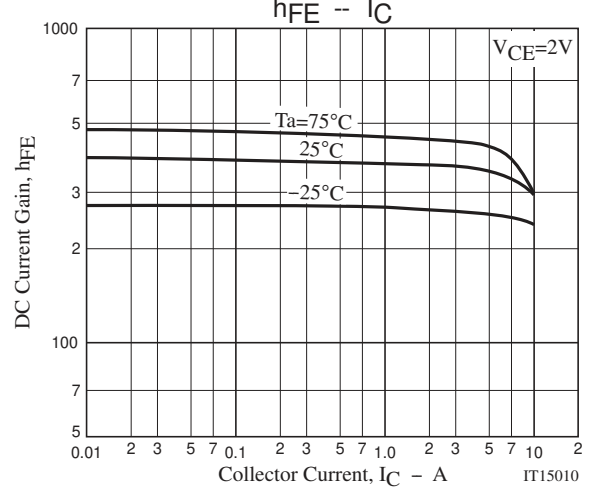
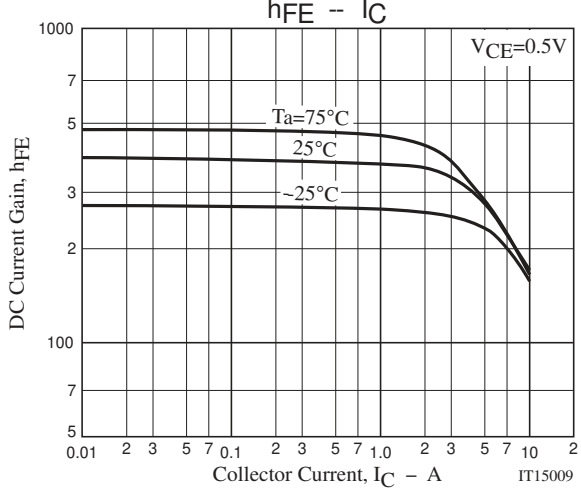
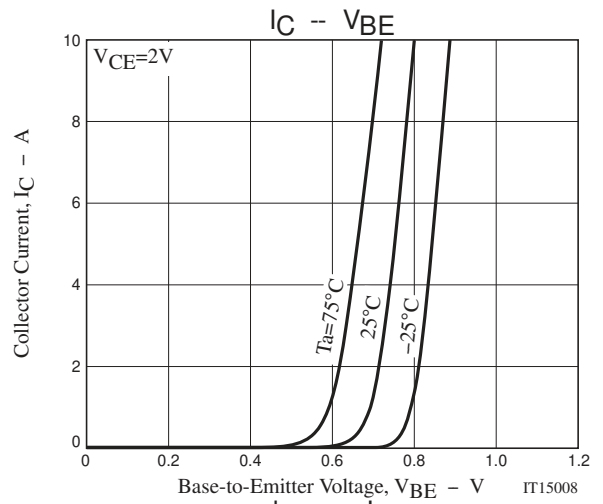
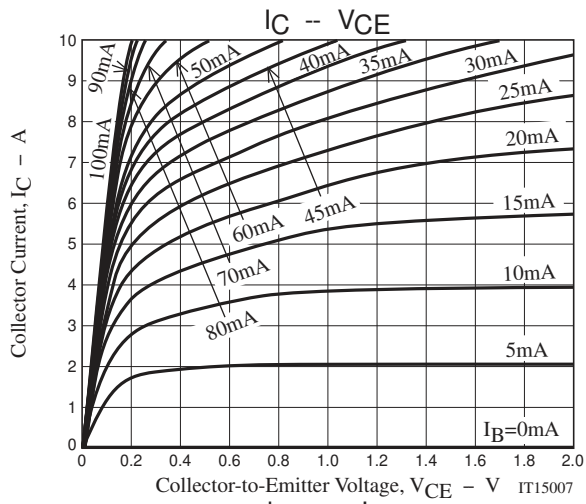


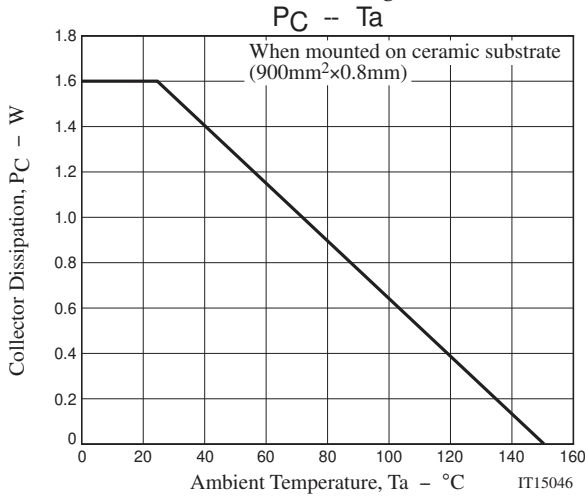
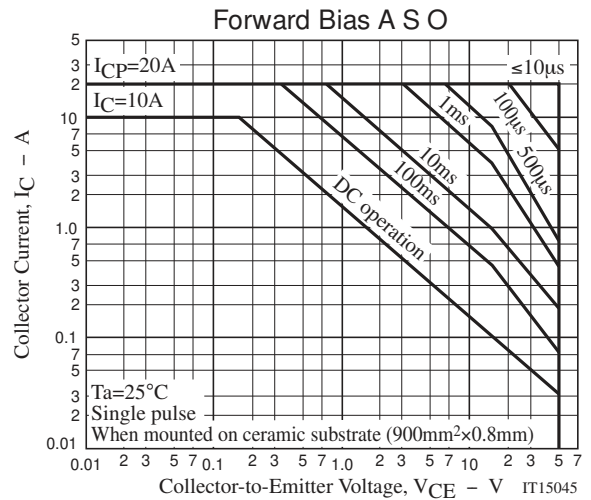
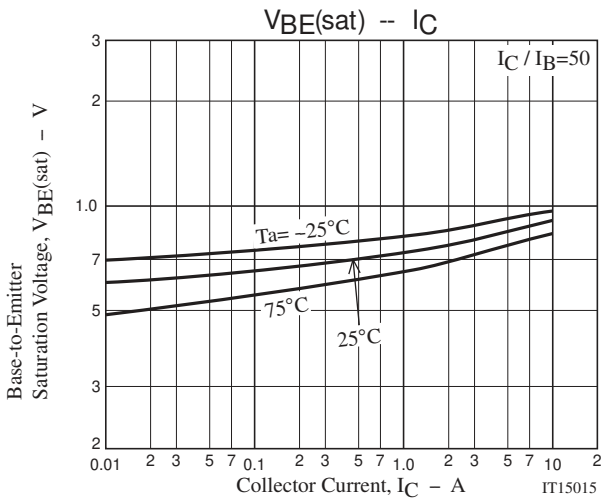
## Electrical Connection



## Switching Time Test Circuit







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