



SANYO Semiconductors

## DATA SHEET

# ECH8102 — PNP 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.
- IECO is guaranteed for preventing reverse flow from the collector to the emitter.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		-30	V
Collector-to-Emitter Voltage	VCES		-30	V
Collector-to-Emitter Voltage	VCEO		-30	V
Emitter-to-Base Voltage	VEBO		-6	V
Collector Current	IC		-12	A
Collector Current (Pulse)	ICP		-24	A
Base Current	IB		-1.2	A
Collector Dissipation	PC	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.6	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking : GB

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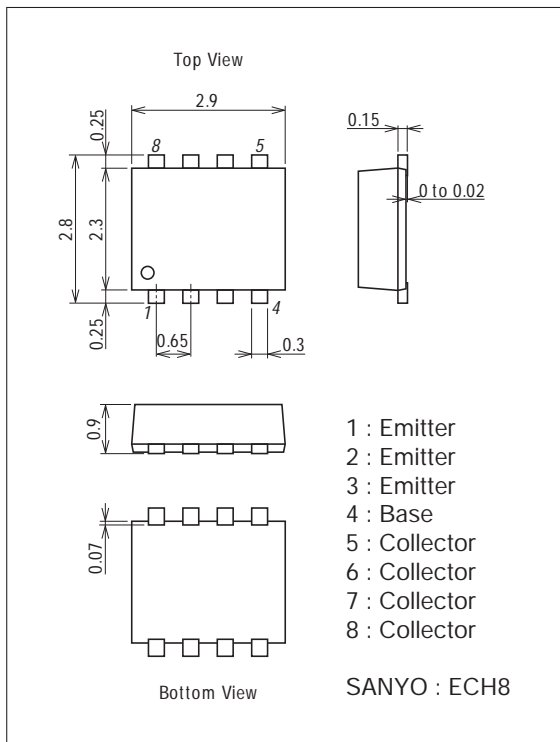
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> = -30V, 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
Emitter Cutoff Current	IECO	V <sub>EC</sub> = -4.5V, I <sub>C</sub> =0A			-1	μA
DC Current Gain	h <sub>FE</sub> 1	V <sub>CE</sub> = -2V, I <sub>C</sub> = -500mA	200		560	
	h <sub>FE</sub> 2	V <sub>CE</sub> = -2V, I <sub>C</sub> = -4A	150			
	h <sub>FE</sub> 3	V <sub>CE</sub> = -2V, I <sub>C</sub> = -10A	100			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -500mA		140		MHz
Output Capacitance	Cob	V <sub>CB</sub> = -10V, f=1MHz		120		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub> 1	I <sub>C</sub> = -6A, I <sub>B</sub> = -300mA		-80	-135	mV
	V <sub>CE(sat)</sub> 2	I <sub>C</sub> = -2A, I <sub>B</sub> = -40mA		-50	-85	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -2A, I <sub>B</sub> = -40mA		-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	-30			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	I <sub>C</sub> = -100μA, R <sub>BE</sub> =0Ω	-30			V
	V <sub>(BR)CEO</sub>	I <sub>C</sub> = -1mA, R <sub>BE</sub> =∞	-30			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.		91		ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		125		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		17		ns

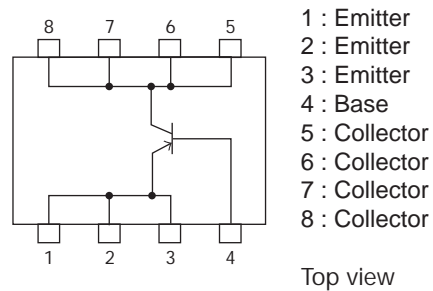
## Package Dimensions

unit : mm (typ)

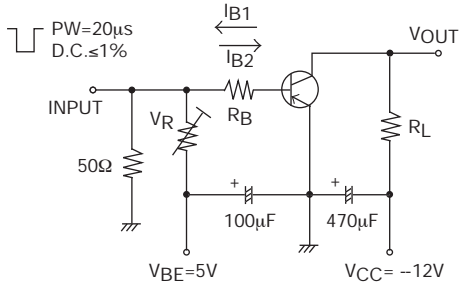
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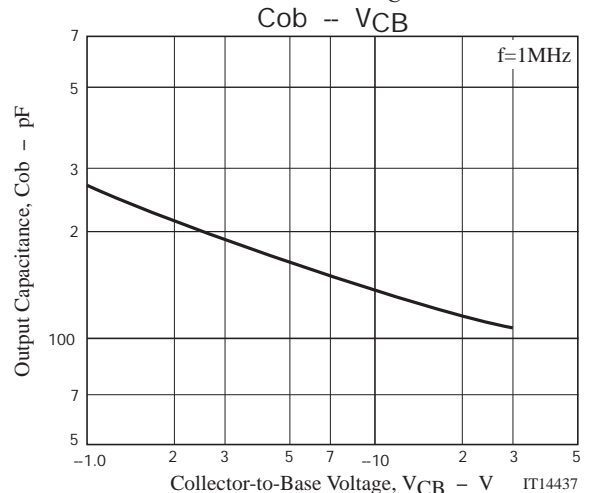
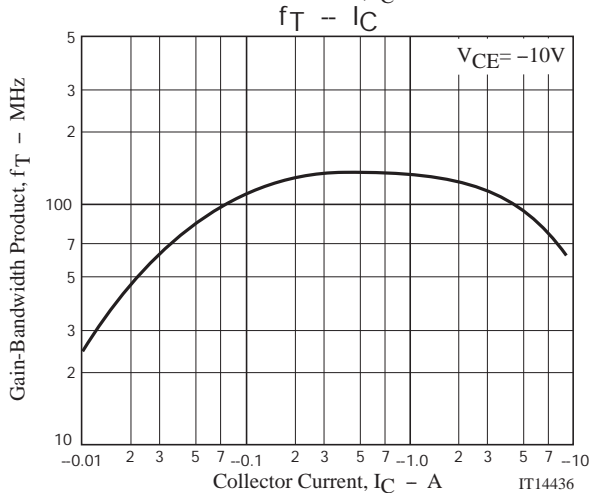
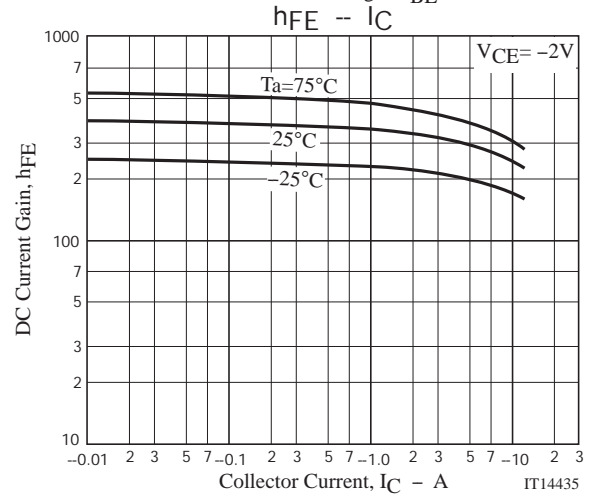
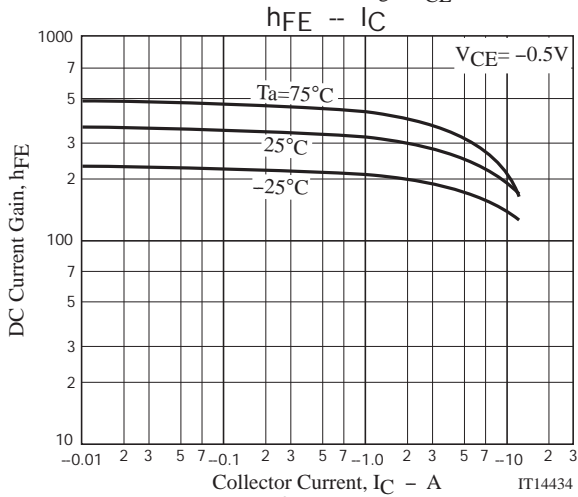
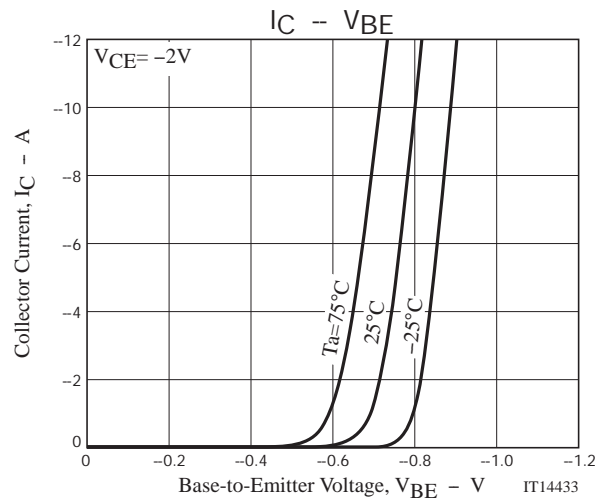
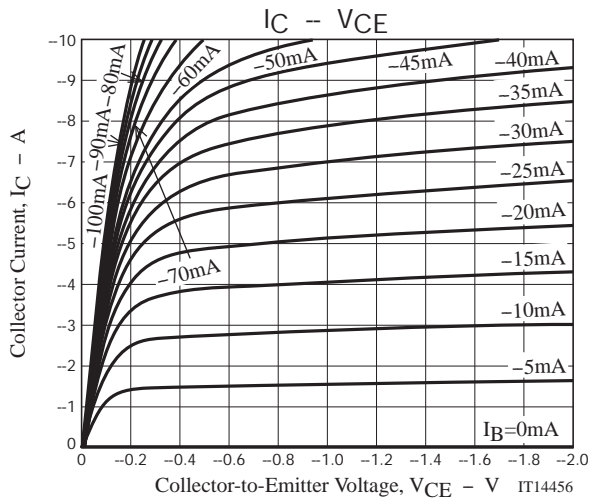
## Electrical Connection

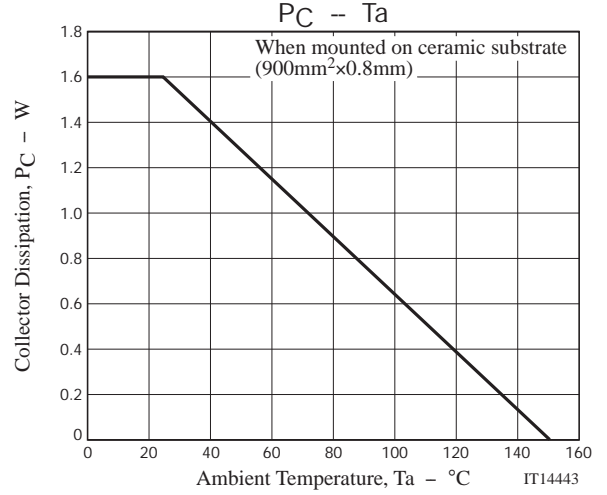
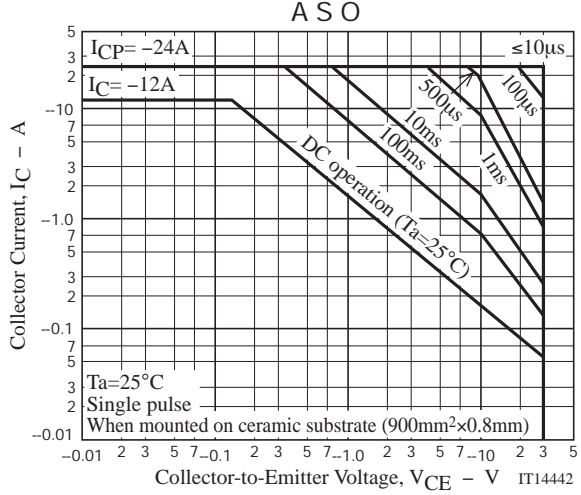
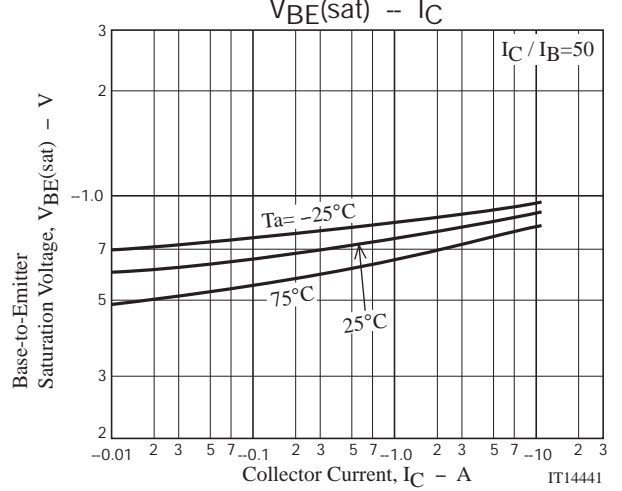
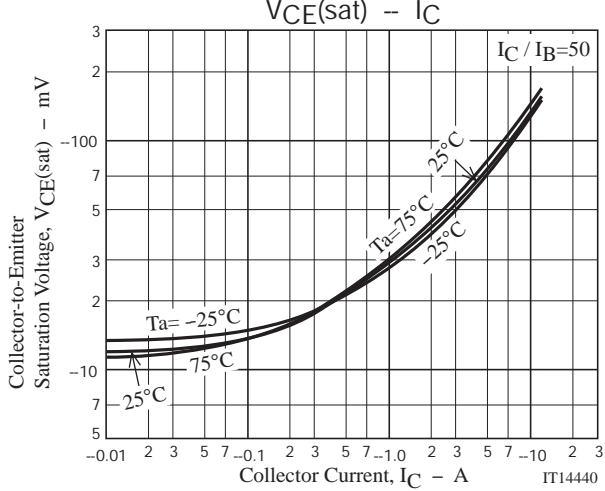
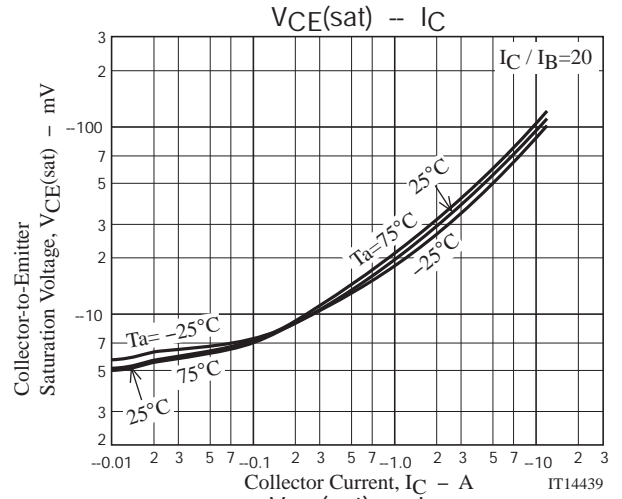
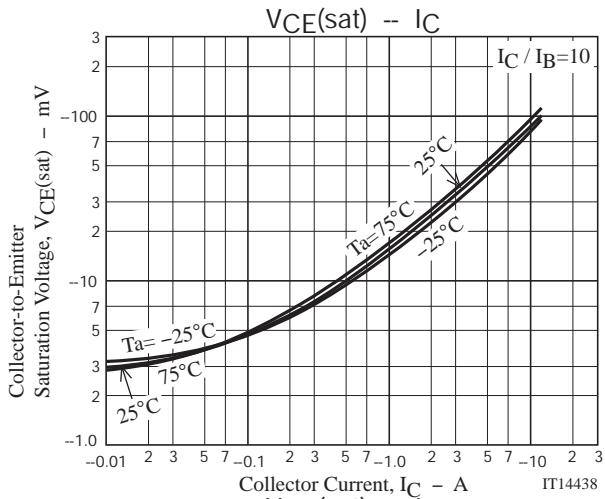


# Switching Time Test Circuit



$$I_C = -50I_{B1} = 25I_{B2} = -5A$$





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