



# ECH8102

## Bipolar Transistor -30V, -12A, Low VCE(sat), PNP Single ECH8

ON Semiconductor®

<http://onsemi.com>

### Applications

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

### Features

- Adoption of FBET, MBIT process
- Low collector-to-emitter saturation voltage
- High allowable power dissipation
- IECO is guaranteed for preventing reverse flow from the collector to the emitter
- High current capacitance
- High speed switching
- Halogen free compliance

### Specifications

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

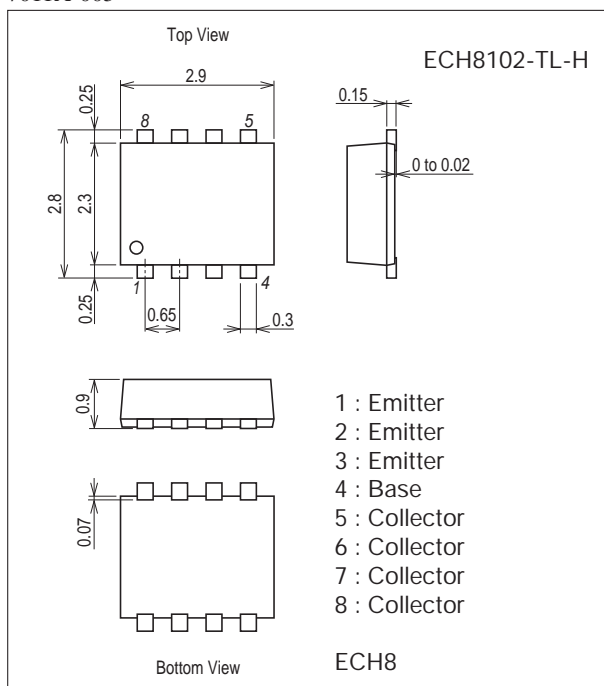
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		-30	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		-30	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		-30	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		-6	V
Collector Current	I <sub>C</sub>		-12	A
Collector Current (Pulse)	I <sub>CP</sub>		-24	A
Base Current	I <sub>B</sub>		-1.2	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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

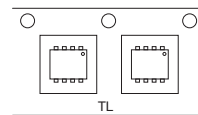
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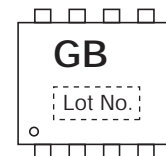
### Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

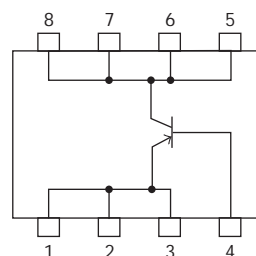
### Packing Type : TL



### Marking



### Electrical Connection

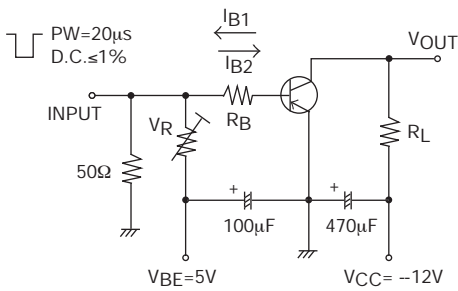


# ECH8102

## 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>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	150			
	h <sub>FE3</sub>	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	C <sub>ob</sub>	V <sub>CB</sub> = -10V, f = 1MHz		120		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> = -6A, I <sub>B</sub> = -300mA		-80	-135	mV
	V <sub>CE(sat)2</sub>	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>			125		ns
Fall Time	t <sub>f</sub>			17		ns

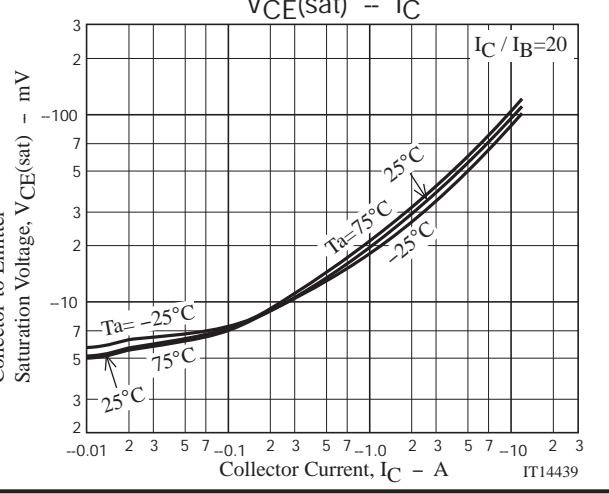
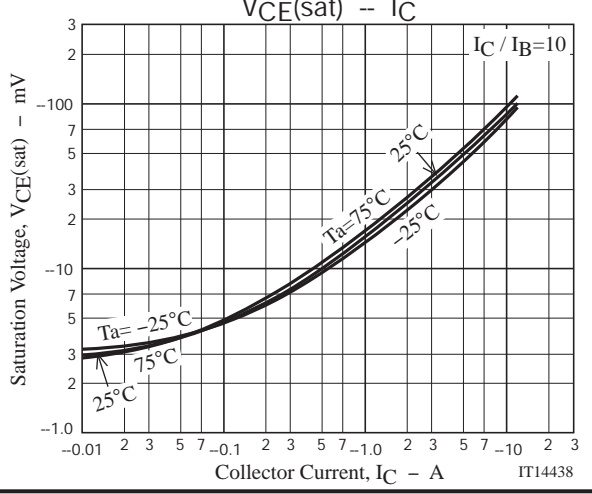
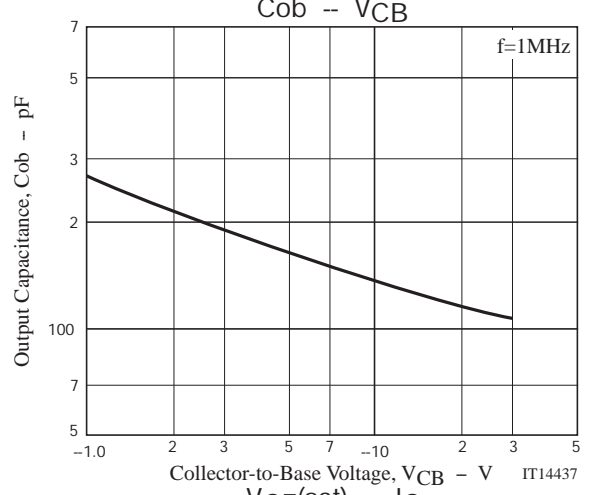
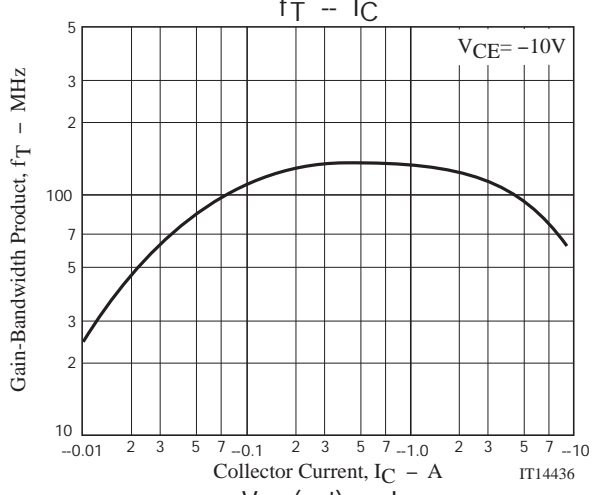
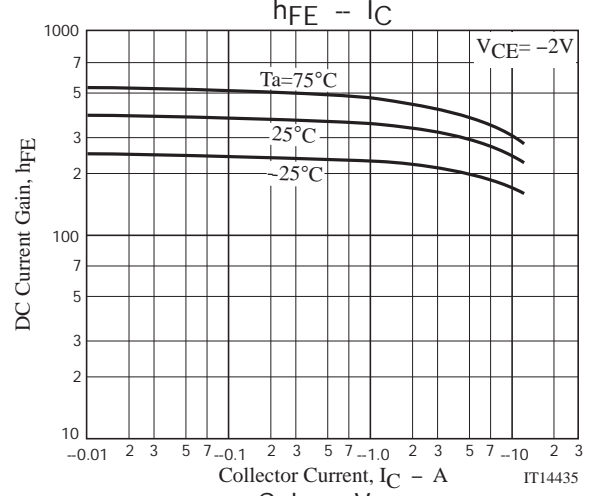
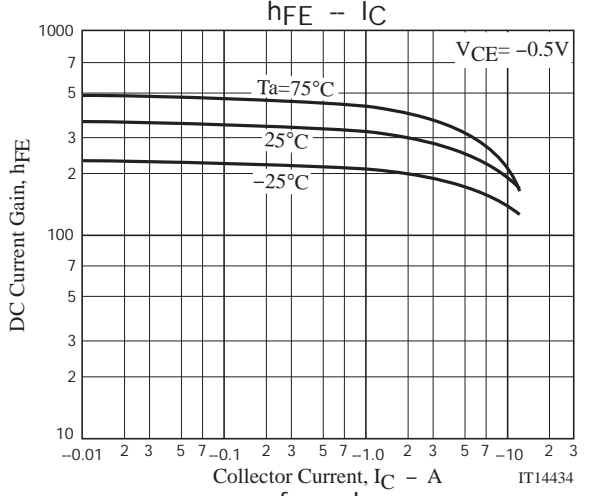
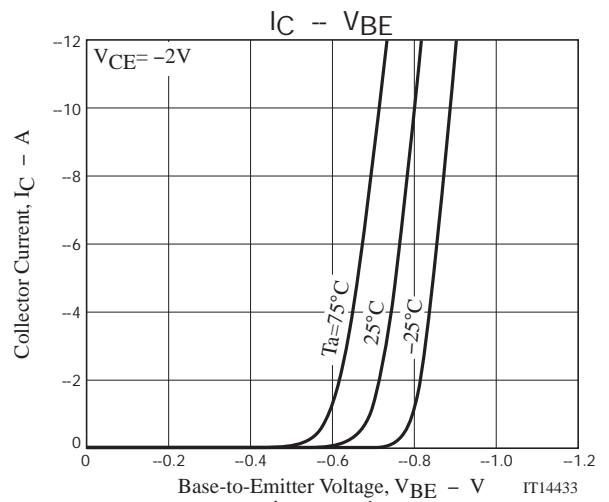
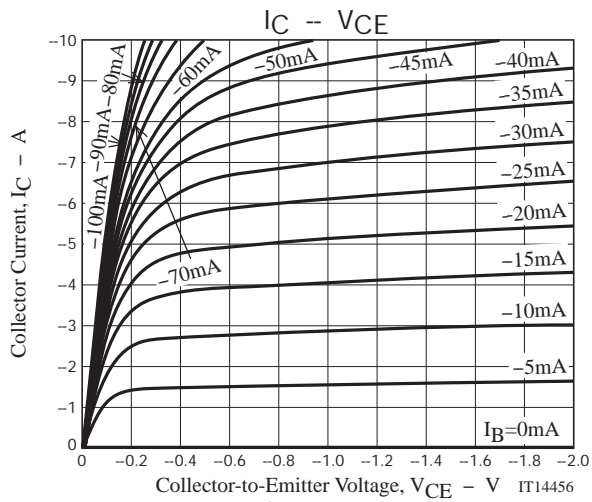
## Switching Time Test Circuit

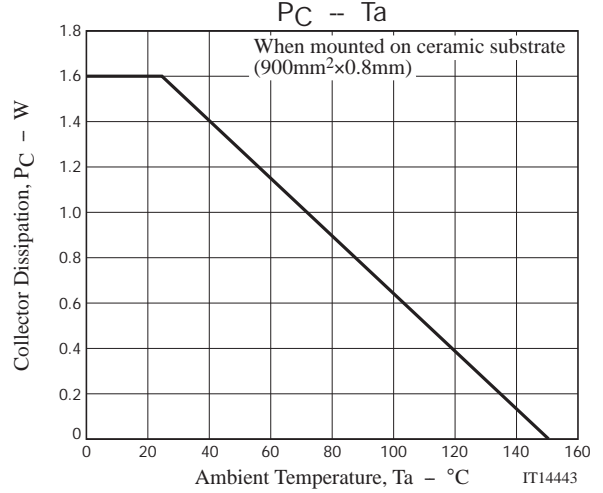
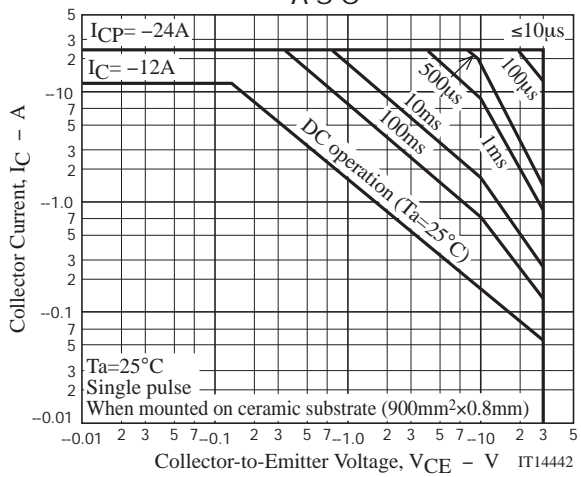
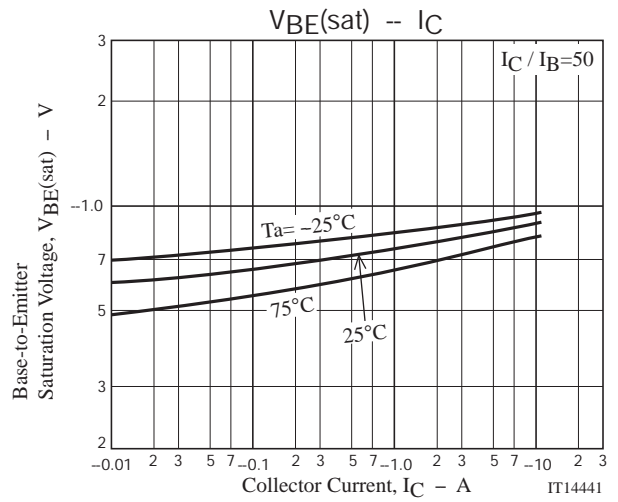
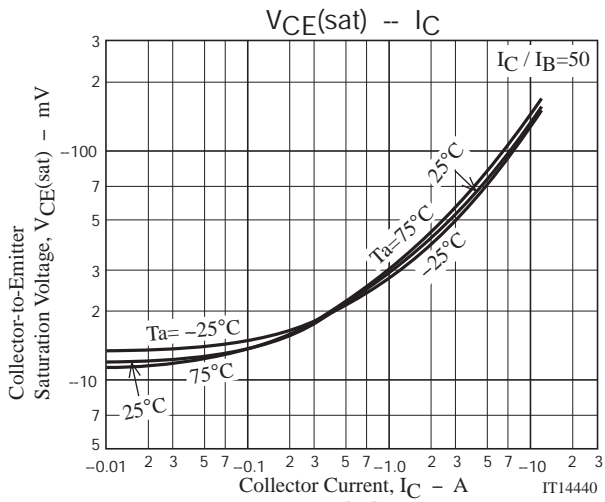


$$I_C = -50I_{B1} = 25I_{B2} = -5A$$

## Ordering Information

Device	Package	Shipping	memo
ECH8102-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free





Embossed Taping Specification

ECH8102-TL-H

1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit :mm)

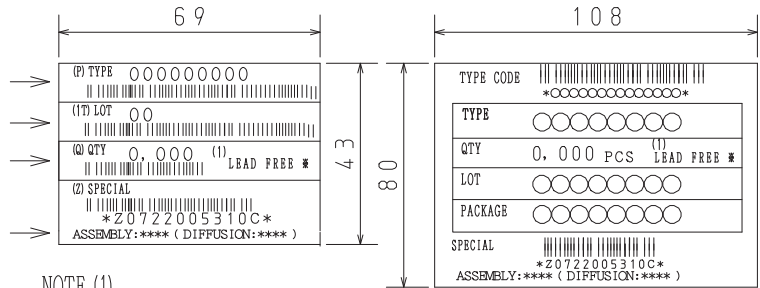
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



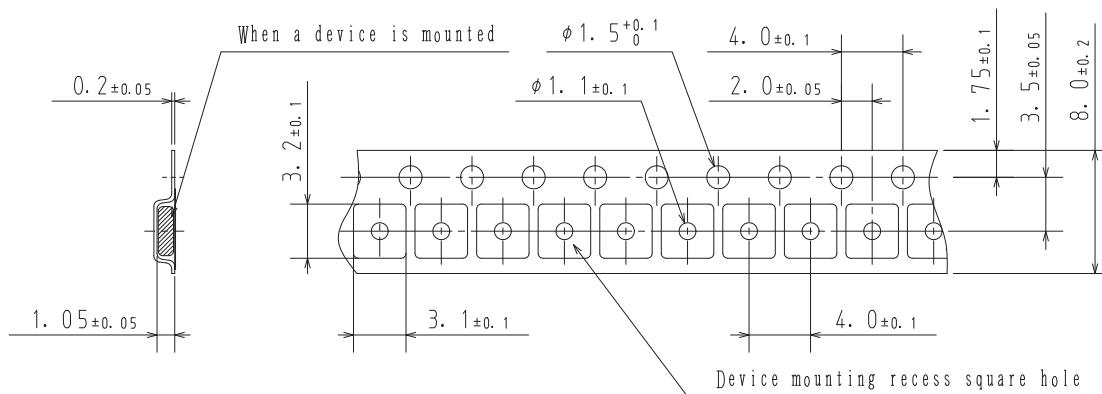
NOTE (1)

The LEAD FREE ⌘ description shows that the surface treatment of the terminal is lead free.

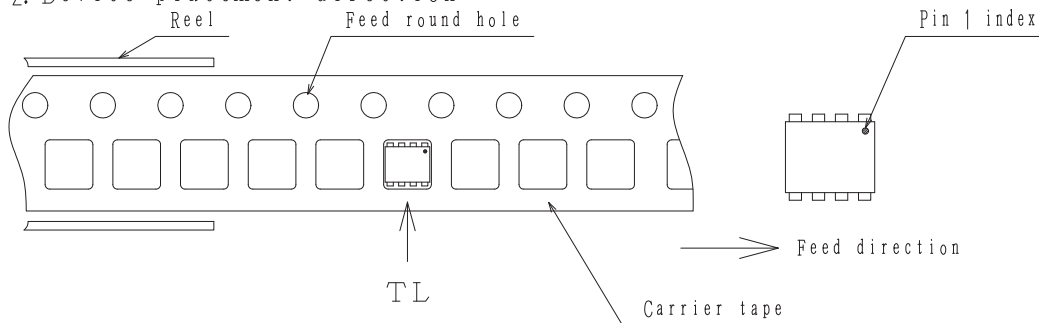
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



2-2. Device placement direction



Those with pin 1 index on the feed hole side.....TL

# ECH8102

## Outline Drawing ECH8102-TL-H



## Land Pattern Example



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