



# 50A02CH

## Bipolar Transistor -50V, -0.5A, Low VCE(sat) PNP Single CPH3

ON Semiconductor®

<http://onsemi.com>

### Applications

- Low-frequency Amplifier, high-speed switching, small motor drive, muting circuit

### Features

- High collector current capability
- Low collector-to-emitter saturation voltage (resistance) :  $R_{CE(sat)}$  typ=210m $\Omega$  [ $I_C=0.5A$ ,  $I_B=50mA$ ]
- Low ON-resistance ( $R_{on}$ )
- Halogen free compliance

### Specifications

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

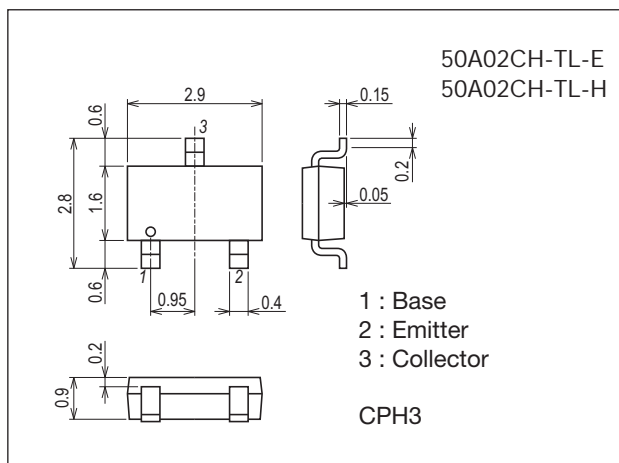
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		-50	V
Collector-to-Emitter Voltage	$V_{CEO}$		-50	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-500	mA
Collector Current (Pulse)	$I_{CP}$		-1.0	A
Collector Dissipation	$P_C$	When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm)	700	mW
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-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)

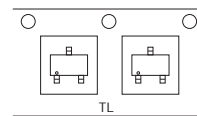
7015A-003



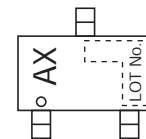
### Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

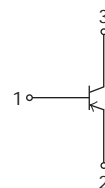
### Packing Type: TL



### Marking



### Electrical Connection

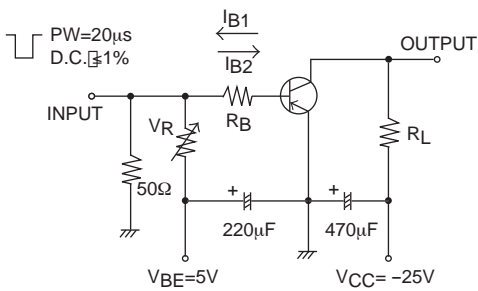


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## Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -40\text{V}, I_E = 0\text{A}$			-100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -4\text{V}, I_C = 0\text{A}$			-100	nA
DC Current Gain	$h_{FE}$	$V_{CE} = -2\text{V}, I_C = -10\text{mA}$	200		500	
Gain-Bandwidth Product	$f_T$	$V_{CE} = -10\text{V}, I_C = -50\text{mA}$		690		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, f = 1\text{MHz}$		3.8		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -100\text{mA}, I_B = -10\text{mA}$		-60	-120	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -100\text{mA}, I_B = -10\text{mA}$		-0.9	-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0\text{A}$	-50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, R_{BE} = \infty$	-50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0\text{A}$	-5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$			170		ns
Fall Time	$t_f$			30		ns

## Switching Time Test Circuit

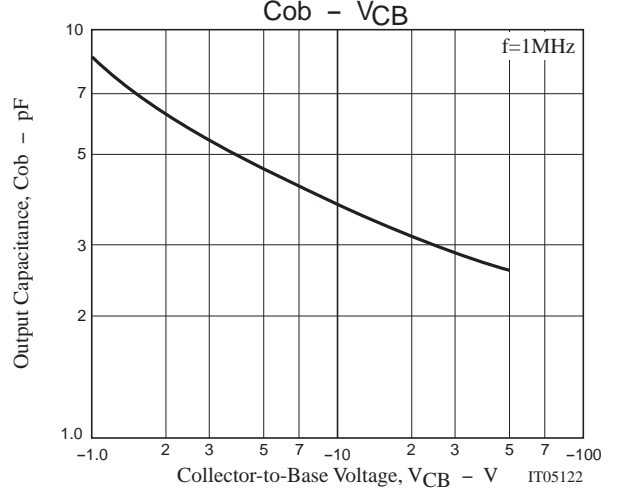
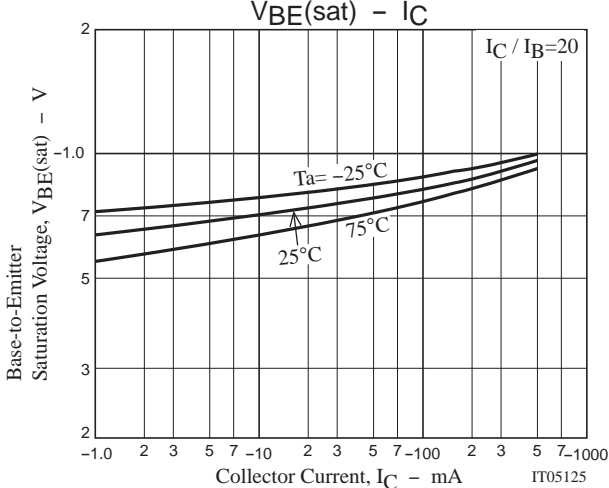
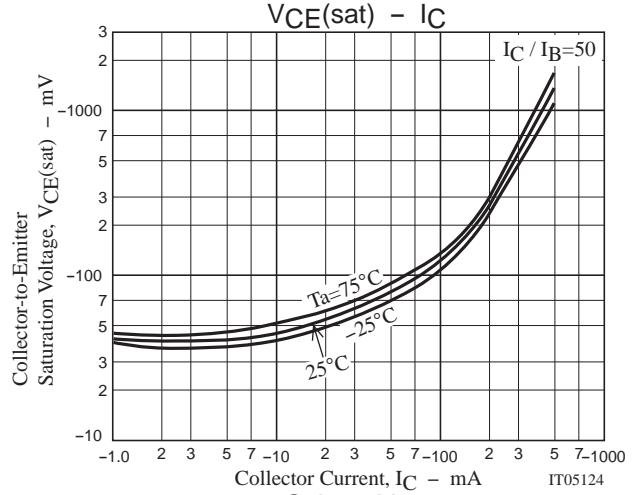
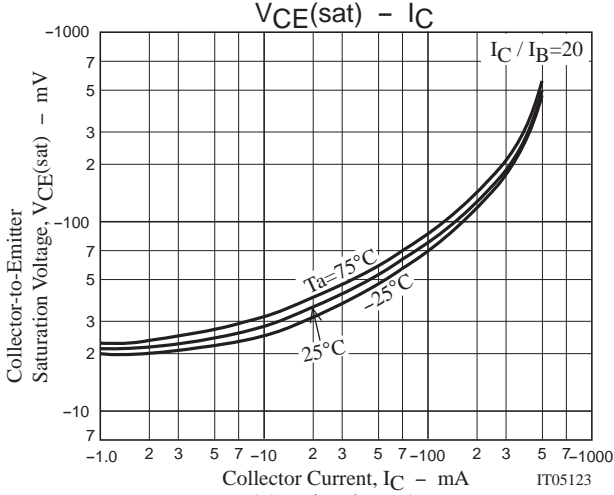
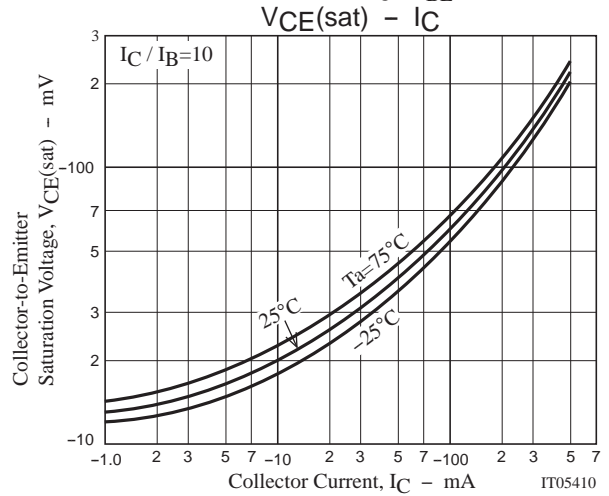
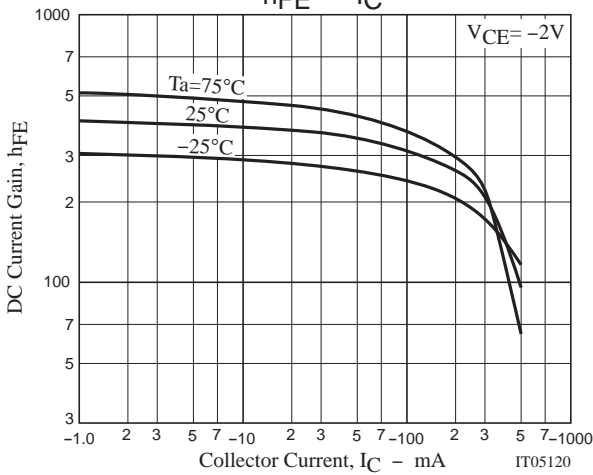
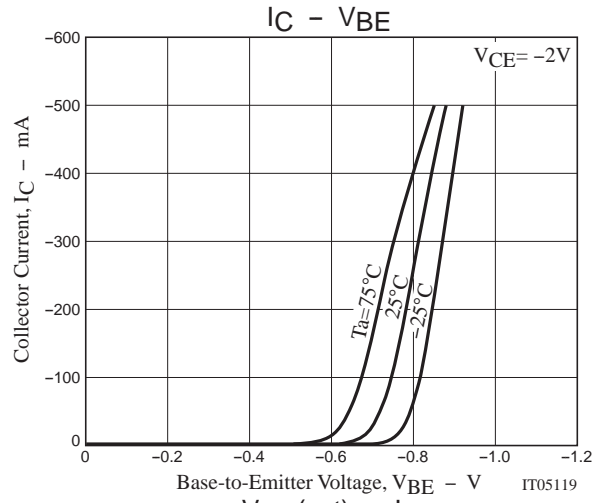
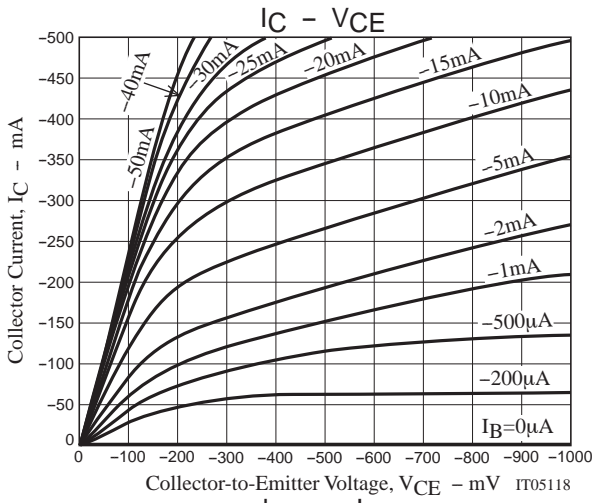


$$I_C = 20I_{B1} = -20I_{B2} = -200\text{mA}$$

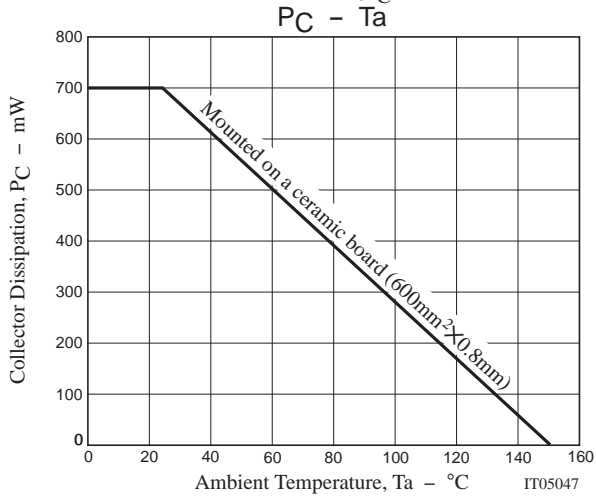
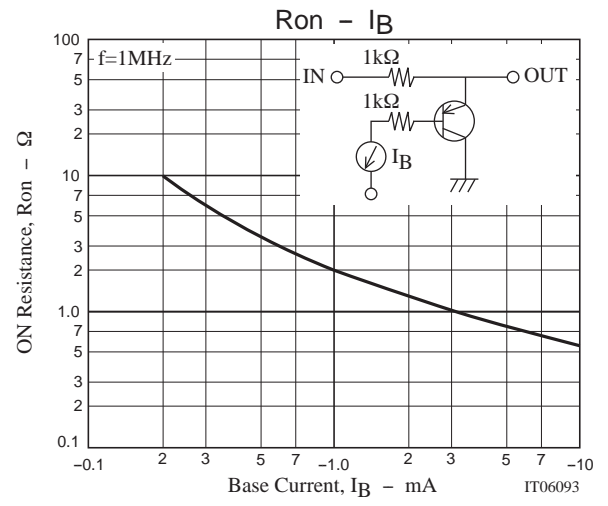
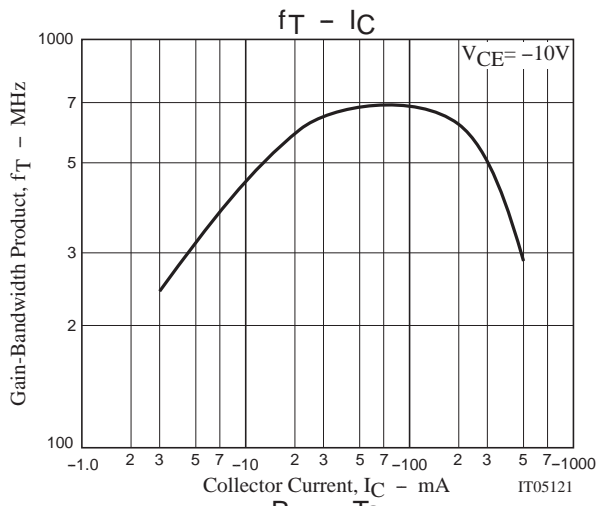
## Ordering Information

Device	Package	Shipping	memo
50A02CH-TL-E	CPH3	3,000pcs./reel	Pb Free
50A02CH-TL-H	CPH3	3,000pcs./reel	Pb Free and Halogen Free

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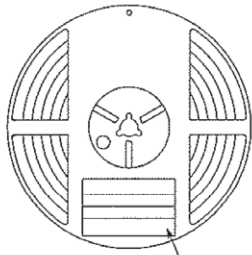


Embossed Taping Specification  
50A02CH-TL-E, 50A02CH-TL-H

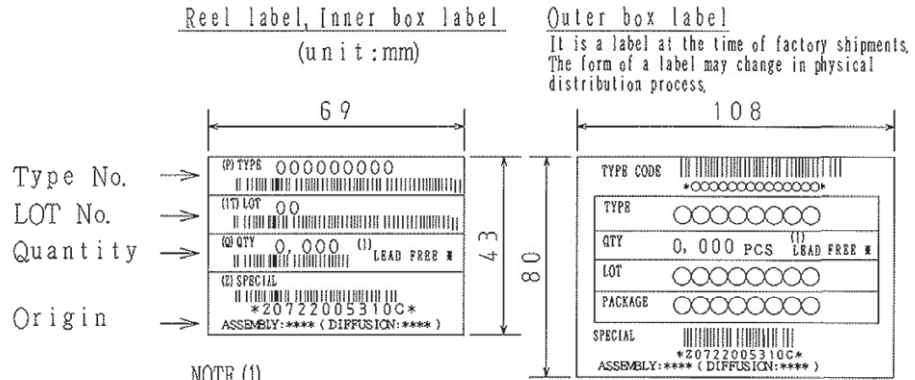
1. Packing Format

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)
CPH3	CPH3	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

Packing method



Reel label



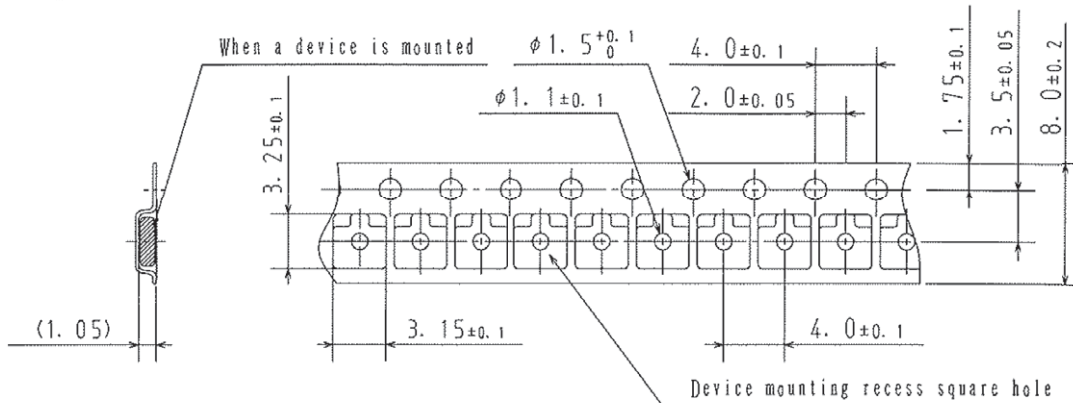
NOTE (1)

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

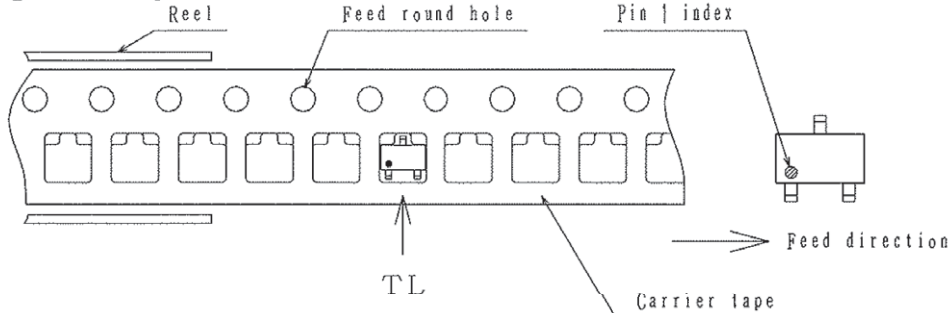
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

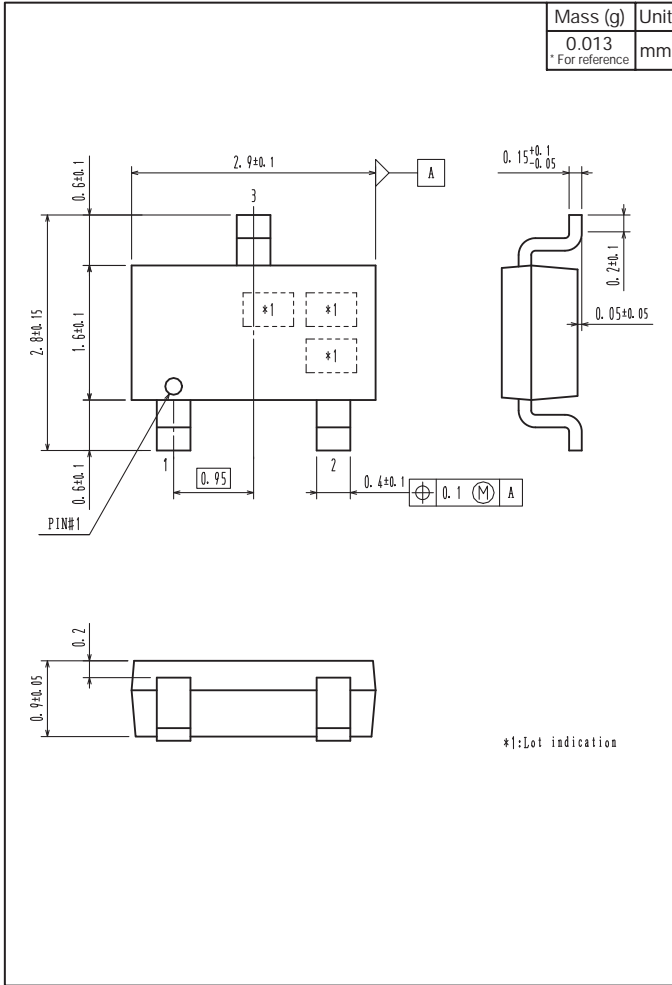


Those with one electrode terminal on the feed hole side.....TL

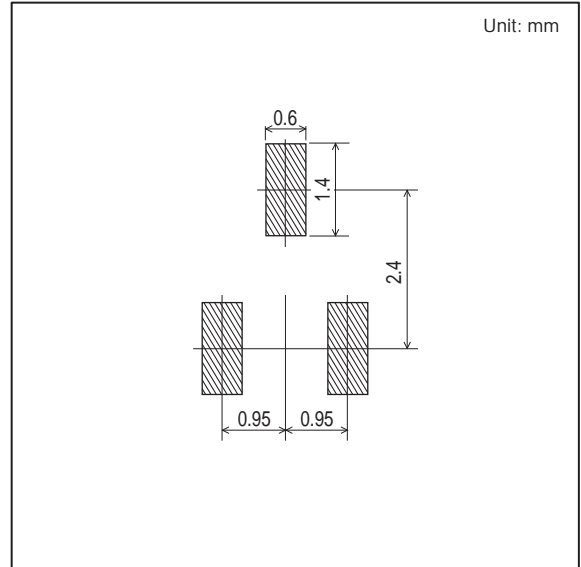
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## Outline Drawing

50A02CH-TL-E, 50A02CH-TL-H



## Land Pattern Example



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