



# 30A02MH

## Bipolar Transistor -30V, -0.7A, Low $V_{CE(sat)}$ PNP Single MCPH3

ON Semiconductor®

<http://onsemi.com>

### Applications

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

### Features

- Large current capacity
- Low collector-to-emitter saturation voltage (resistance)  $R_{CE(sat)}$  typ=580m $\Omega$ [ $I_C=0.7A$ ,  $I_B=35mA$ ]
- Small ON-resistance ( $R_{on}$ )

### Specifications

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

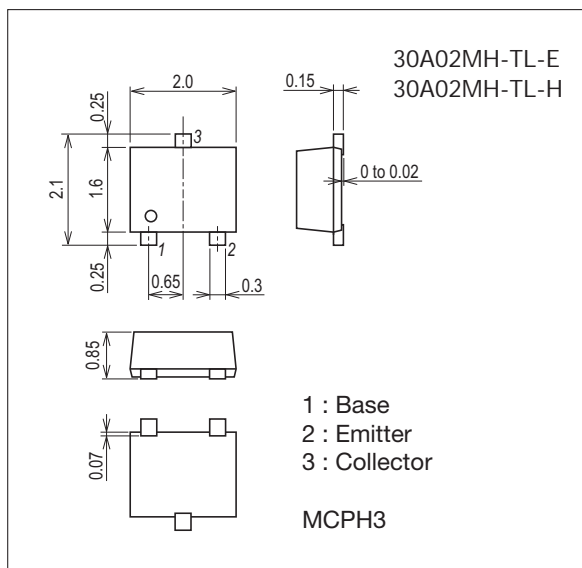
| Parameter                    | Symbol    | Conditions  | Ratings     | Unit |
|------------------------------|-----------|---|-------------|------|
| Collector-to-Base Voltage    | $V_{CBO}$ |   | -30         | V    |
| Collector-to-Emitter Voltage | $V_{CEO}$ |   | -30         | V    |
| Emitter-to-Base Voltage      | $V_{EBO}$ |   | -5          | V    |
| Collector Current            | $I_C$     |   | -700        | mA   |
| Collector Current (Pulse)    | $I_{CP}$  |   | -1.4        | A    |
| Collector Dissipation        | $P_C$     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 600         | 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)

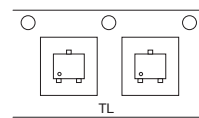
7019A-004



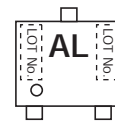
### Product & Package Information

- Package : MCPH3
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

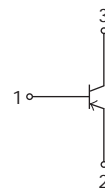
### Packing Type : TL



### Marking



### Electrical Connection

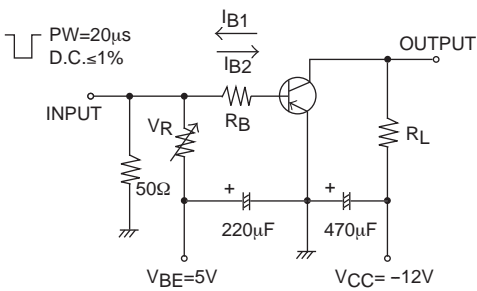


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## Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                                 | Ratings |      |      | Unit |
|---|---------------|--|---------|------|------|------|
|   |               |  | min     | typ  | max  |      |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB} = -30\text{V}, I_E = 0\text{A}$    |         |      | -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                  | $f_T$         | $V_{CE} = -10\text{V}, I_C = -50\text{mA}$ |         | 520  |      | MHz  |
| Output Capacitance                      | $C_{ob}$      | $V_{CB} = -10\text{V}, f = 1\text{MHz}$    |         | 4.7  |      | pF   |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -200\text{mA}, I_B = -10\text{mA}$  |         | -110 | -220 | mV   |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -200\text{mA}, I_B = -10\text{mA}$  |         | -0.9 | -1.2 | V    |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = -10\mu\text{A}, I_E = 0\text{A}$    | -30     |      |      | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = -1\text{mA}, R_{BE} = \infty$       | -30     |      |      | 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.                |         | 35   |      | ns   |
| Storage Time                            | $t_{stg}$     |  |         | 125  |      | ns   |
| Fall Time                               | $t_f$         |  |         | 25   |      | ns   |

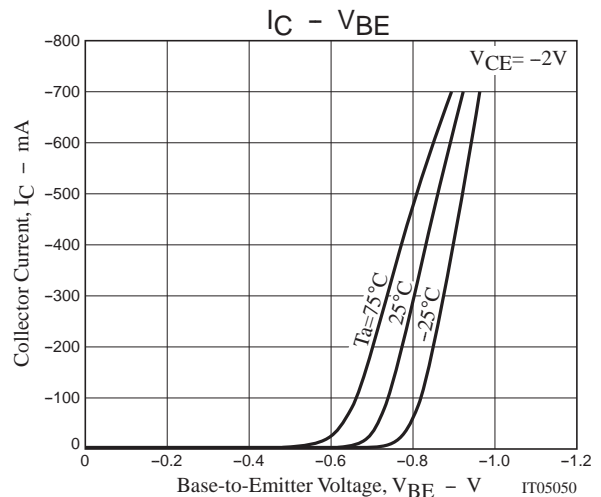
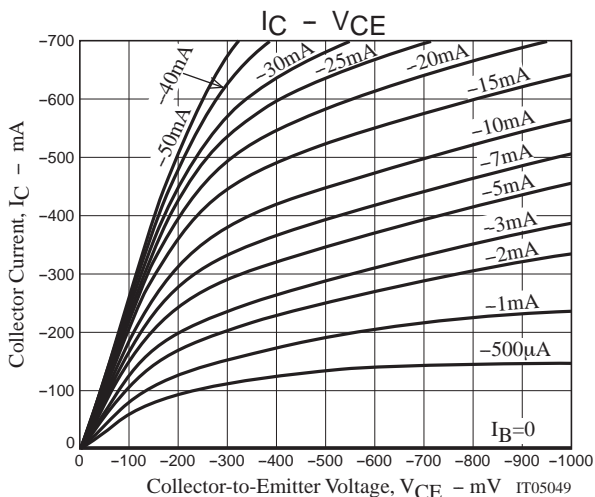
## Switching Time Test Circuit



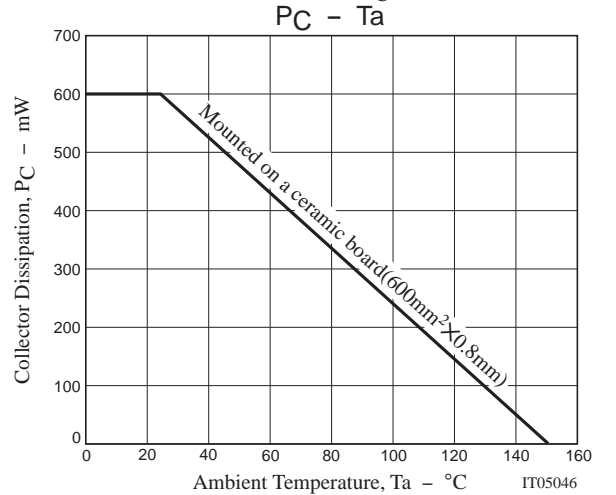
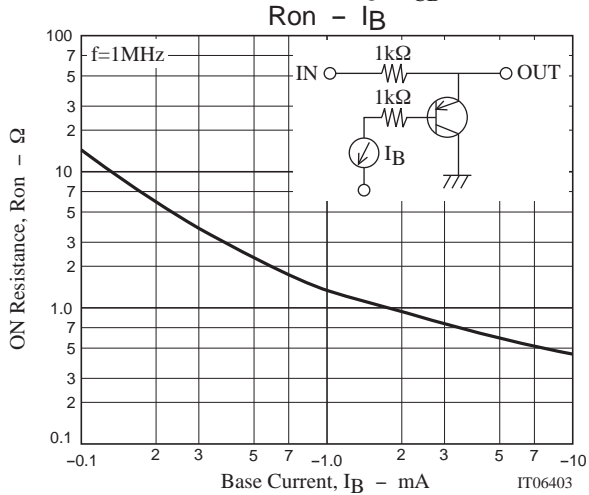
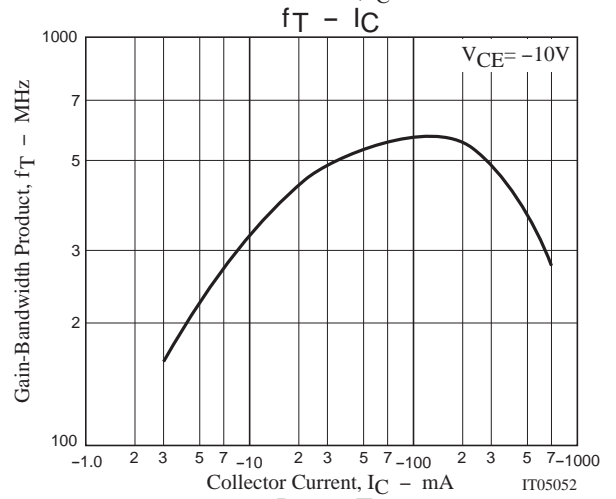
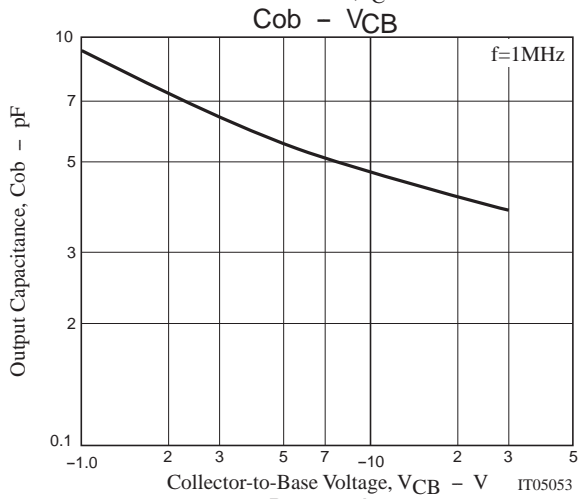
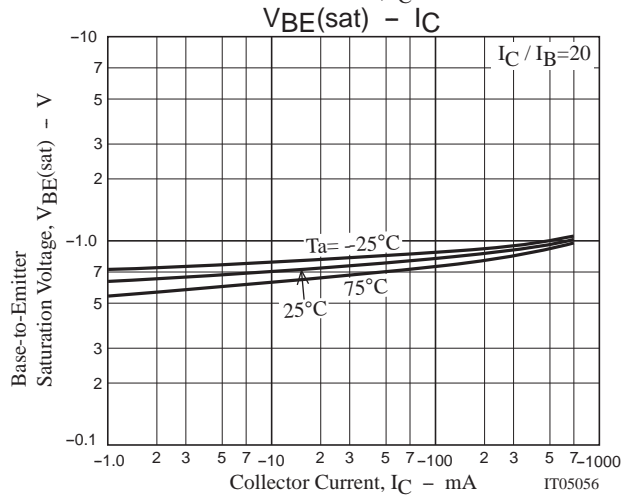
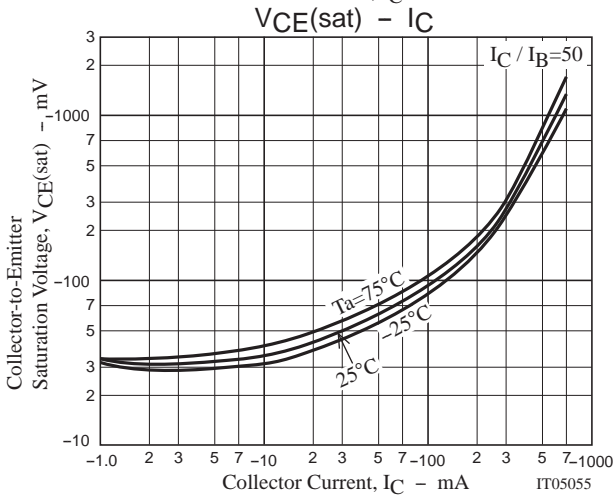
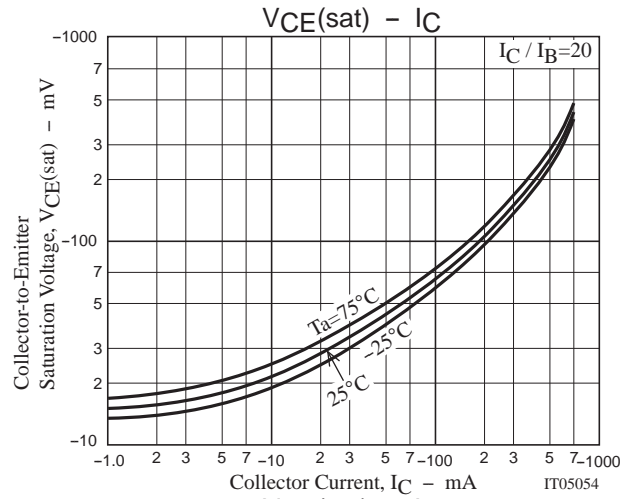
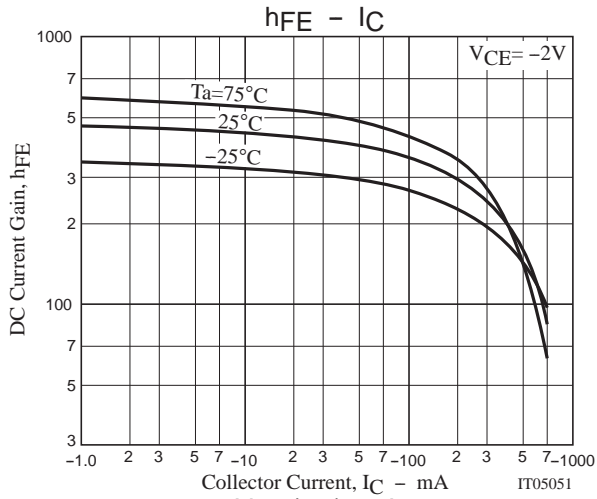
$$I_C = 20I_{B1} = -20I_{B2} = -300\text{mA}$$

## Ordering Information

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| 30A02MH-TL-E | MCPH3   | 3,000pcs./reel | Pb Free                  |
| 30A02MH-TL-H | MCPH3   | 3,000pcs./reel | Pb Free and Halogen Free |



# 30A02MH



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## Embossed Taping Specification

30A02MH-TL-E, 30A02MH-TL-H

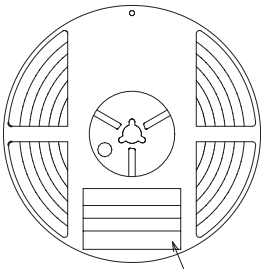
### 1. Packing Format

| 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)  |
| MCPH3        | MCPH3             | 3,000                                     | 15,000    | 90,000    | 5 reels contained<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

Reel label, Inner box label  
(unit: mm)

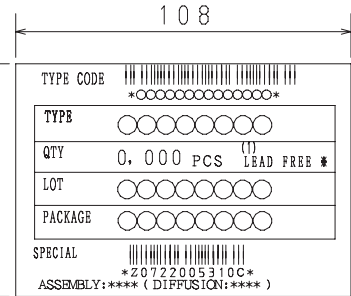
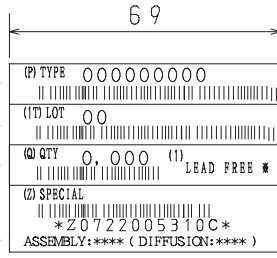
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

#### Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



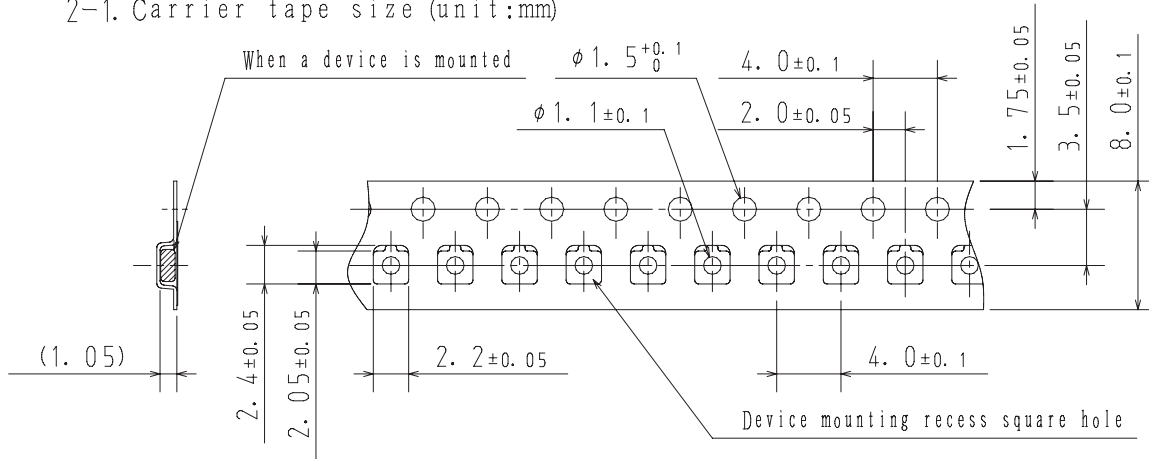
#### NOTE (1)

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

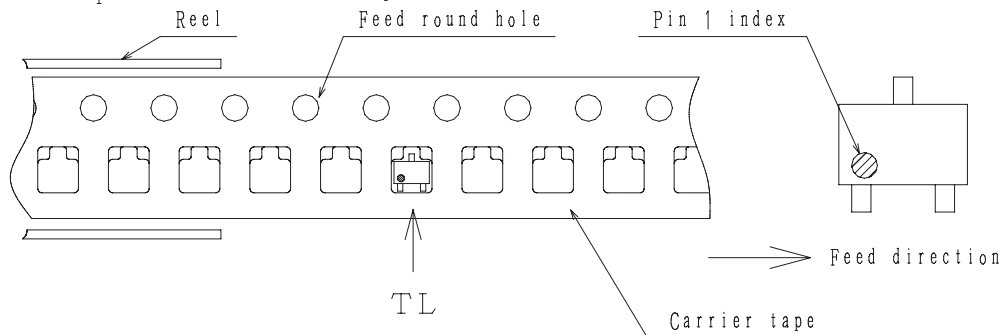
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

### 2. Taping configuration

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



#### 2-2. Device placement direction

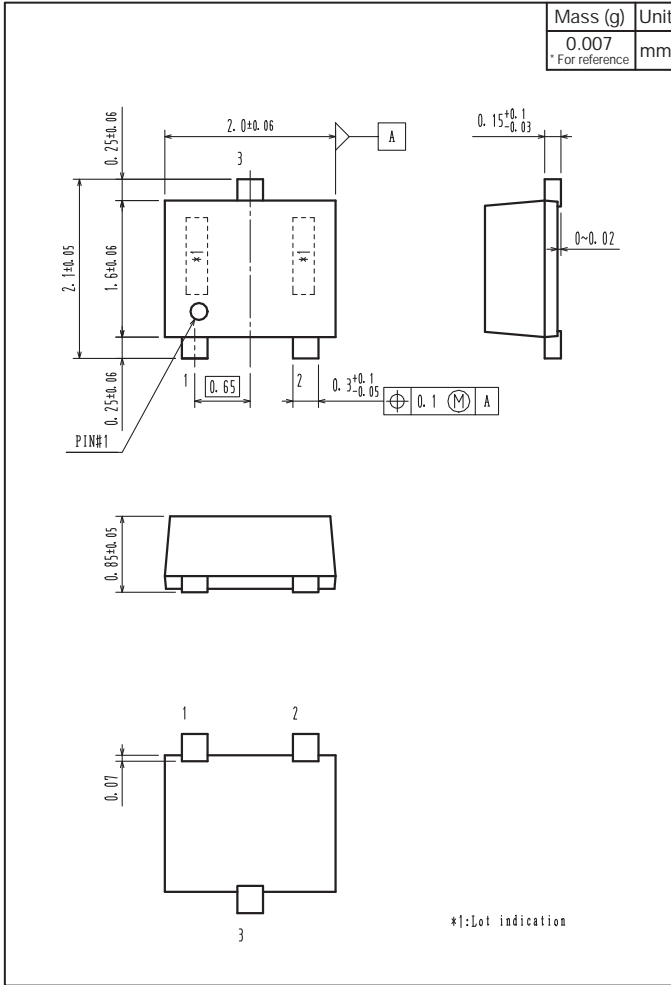


Those with pin 1 index on the feed hole side.....TL

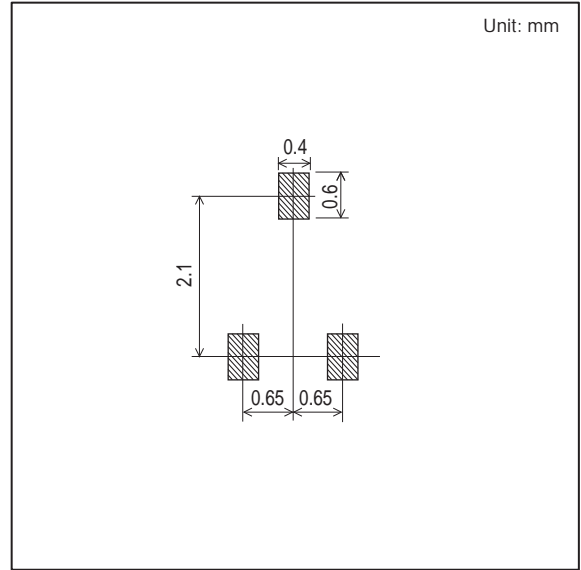
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## Outline Drawing

30A02MH-TL-E, 30A02MH-TL-H



## Land Pattern Example



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