



# 30C02MH

## Bipolar Transistor 30V, 0.7A, Low VCE(sat) NPN 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)) :  $R_{CE}(\text{sat}) \text{ typ}=330\text{m}\Omega$  [ $I_C=0.7\text{A}$ ,  $I_B=35\text{mA}$ ]
- Ultrasmall package facilitates miniaturization in end products
- Small ON-resistance ( $R_{ON}$ )
- Halogen free compliance

### Specifications

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

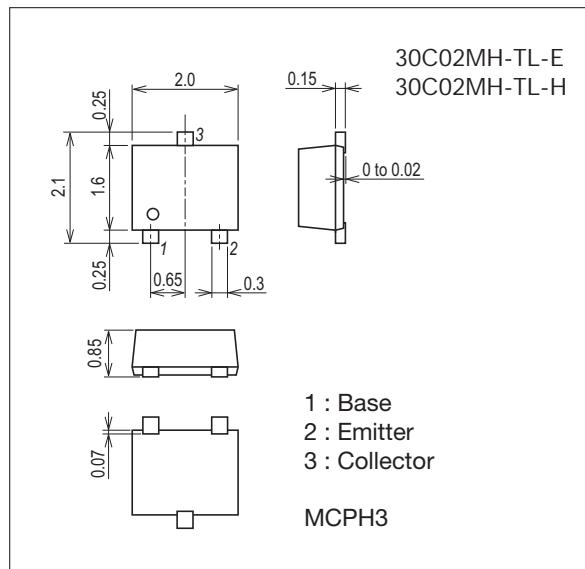
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		40	V
Collector-to-Emitter Voltage	$V_{CEO}$		30	V
Emitter-to-Base Voltage	$V_{EBO}$		5	V
Collector Current	$I_C$		700	mA
Collector Current (Pulse)	$I_{CP}$		1.4	A
Collector Dissipation	$P_C$	When mounted on ceramic substrate (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)

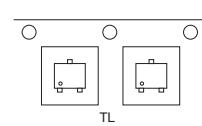
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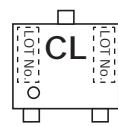
### Product & Package Information

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

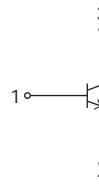
### Packing Type : TL



### Marking



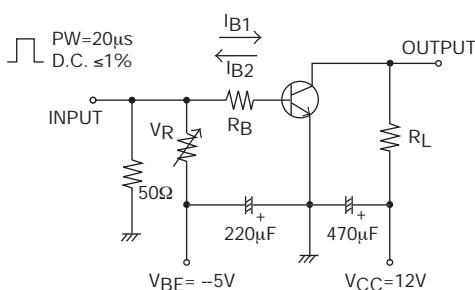
### Electrical Connection



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	$\text{h}_{FE}$	$V_{CE}=2\text{V}, I_C=50\text{mA}$	300		800	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=50\text{mA}$		540		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$		3.3		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(\text{sat})}$	$I_C=200\text{mA}, I_B=10\text{mA}$		85	190	mV
Base-to-Emitter Saturation Voltage	$V_{BE(\text{sat})}$	$I_C=200\text{mA}, I_B=10\text{mA}$		0.9	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0\text{A}$	40			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	$t_{stg}$			255		ns
Fall Time	$t_f$			40		ns

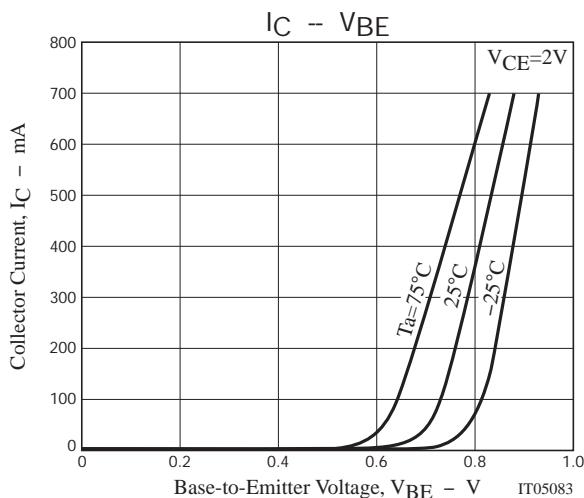
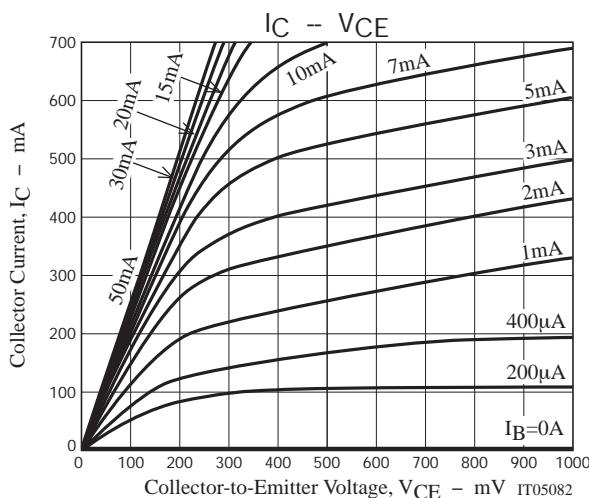
## Switching Time Test Circuit



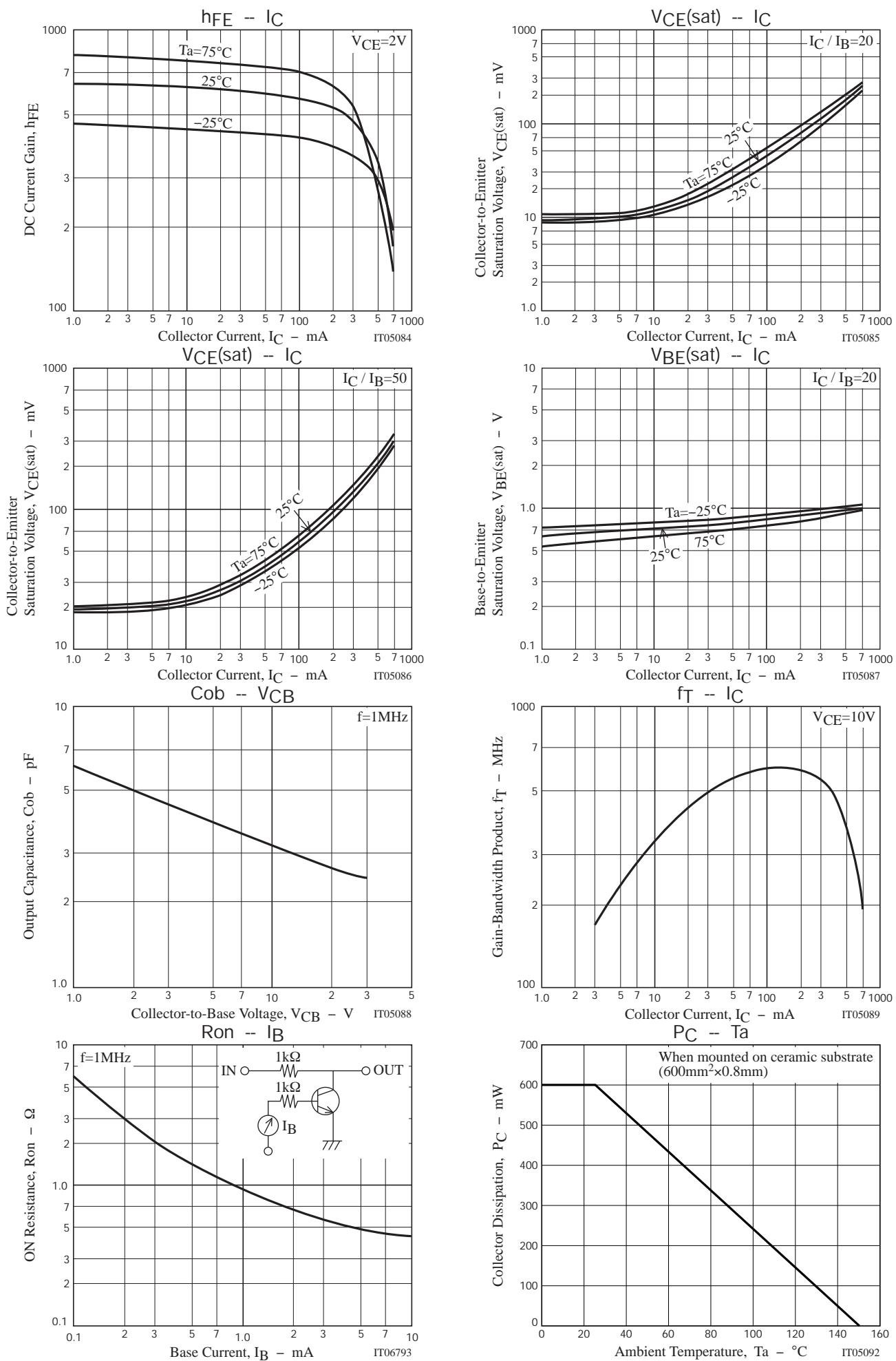
$$I_C = 20I_{B1} = -20I_{B2} = 300\text{mA}$$

## Ordering Information

Device	Package	Shipping	memo
30C02MH-TL-E	MCPH3	3,000pcs./reel	Pb Free
30C02MH-TL-H	MCPH3	3,000pcs./reel	Pb Free and Halogen Free



# 30C02MH

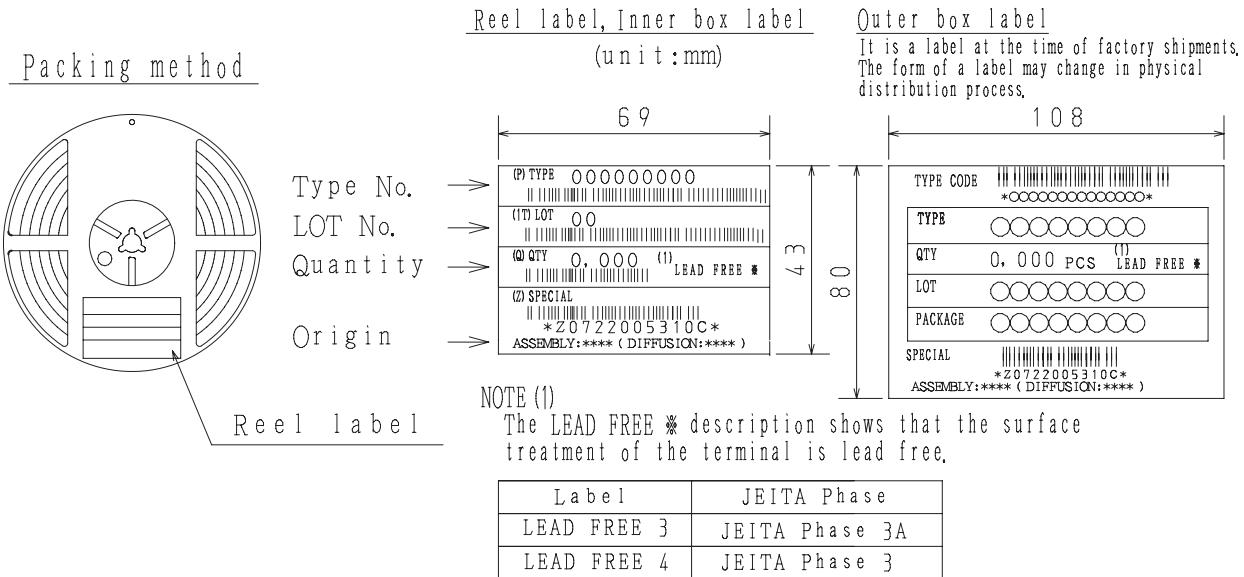
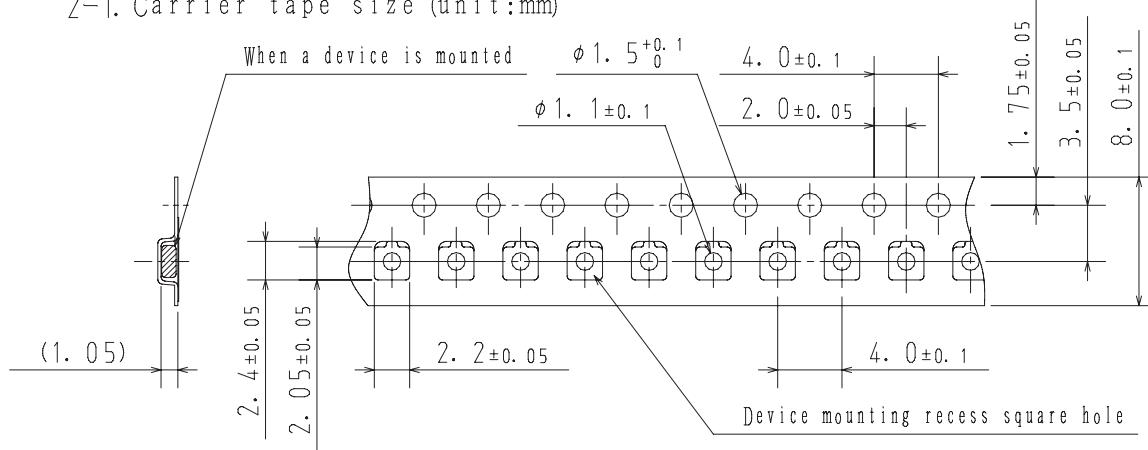
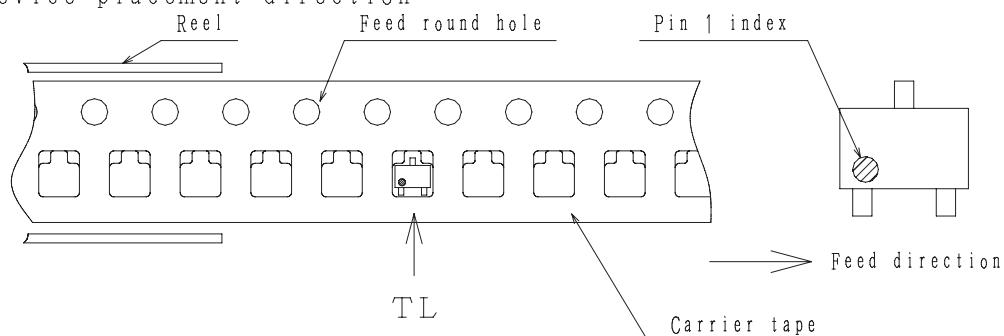


**Embossed Taping Specification**

30C02MH-TL-E, 30C02MH-TL-H

**1. Packing Format**

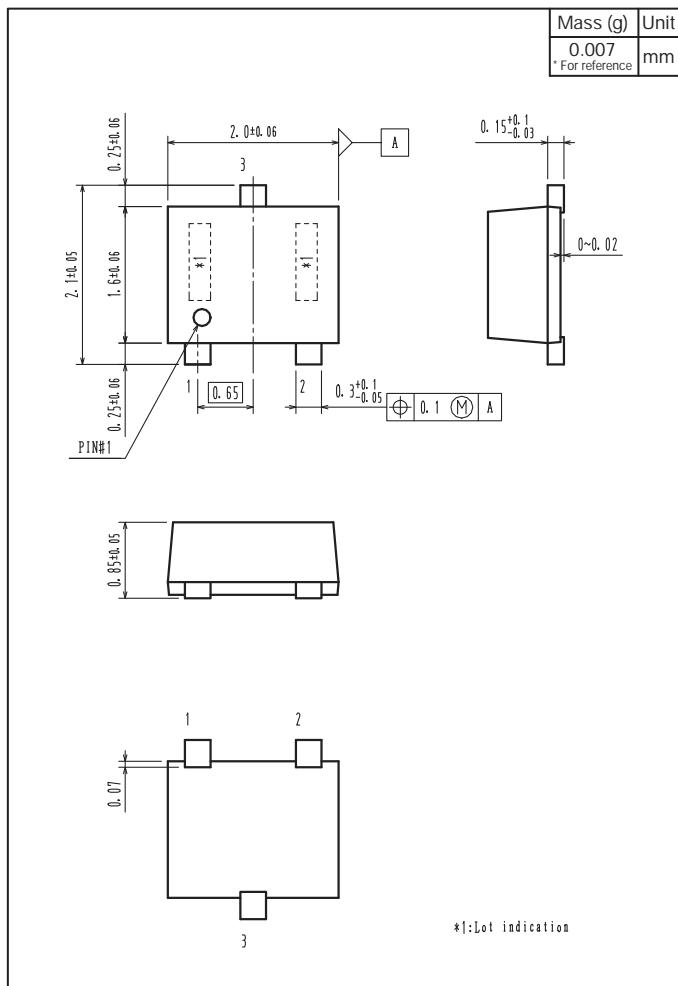
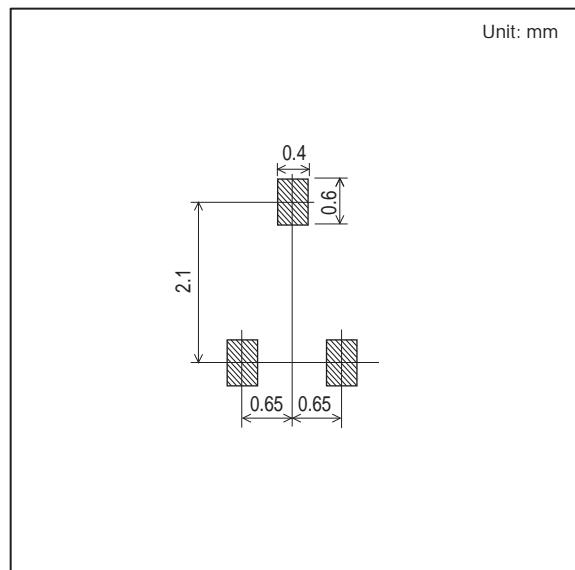
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCPH3	MCPH3	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) $183 \times 72 \times 185$	6 inner boxes contained Dimensions:mm (external) $440 \times 195 \times 210$

**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

**Outline Drawing**

30C02MH-TL-E, 30C02MH-TL-H

**Land Pattern Example**

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