



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# 30C02MH — Low-Frequency General-Purpose Amplifier Applications

NPN Epitaxial Planar Silicon Transistor

## 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=330m $\Omega$  [ $I_C=0.7A$ ,  $I_B=35mA$ ]
- Ultrasmall package facilitates miniaturization in end products
- Small ON-resistance ( $R_{on}$ )
- Halogen free compliance

## Specifications

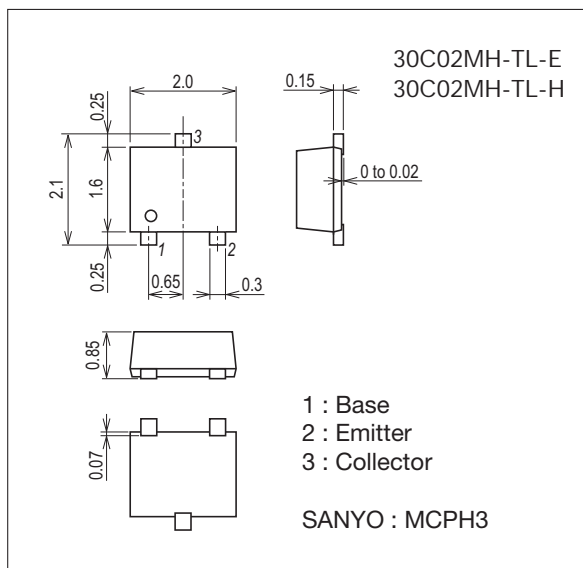
Absolute Maximum Ratings at  $T_a=25^\circ C$ 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		40	V
Collector-to-Emitter Voltage	$V_{CE0}$		30	V
Emitter-to-Base Voltage	$V_{EB0}$		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> x0.8mm)	600	mW
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

## Package Dimensions

unit : mm (typ)

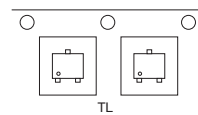
7019A-004



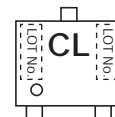
## Product & Package Information

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

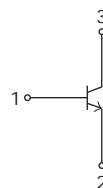
## Packing Type : TL



## Marking



## Electrical Connection



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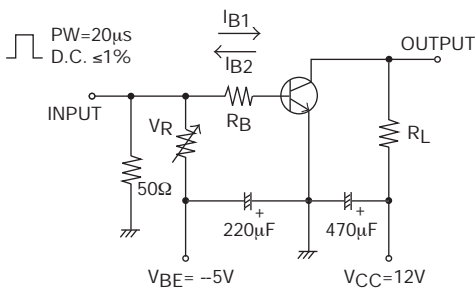
<http://semicon.sanyo.com/en/network>

# 30C02MH

## 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	$h_{FE}$	$V_{CE}=2\text{V}, I_C=50\text{mA}$	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	$V_{CE(sat)}$	$I_C=200\text{mA}, I_B=10\text{mA}$		85	190	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	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0\text{A}$	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

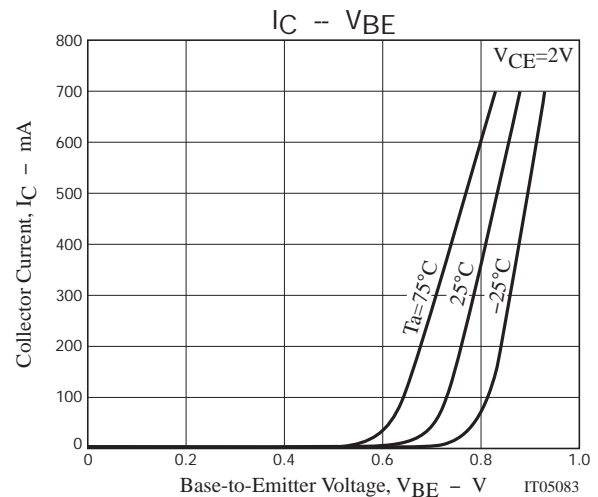
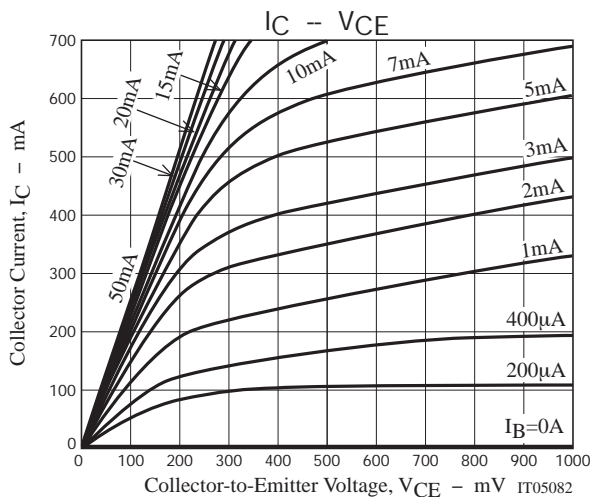
## Switching Time Test Circuit



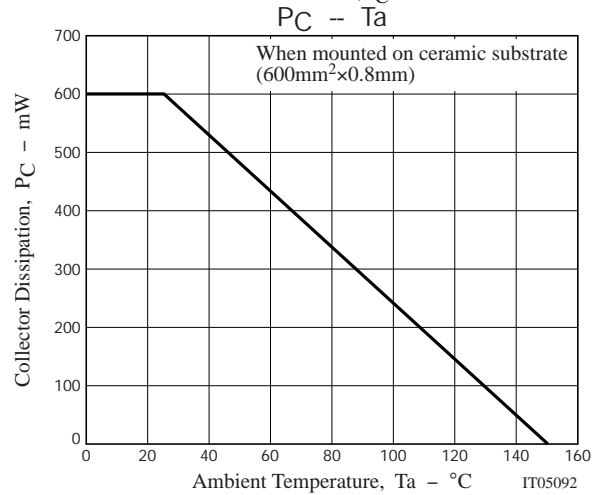
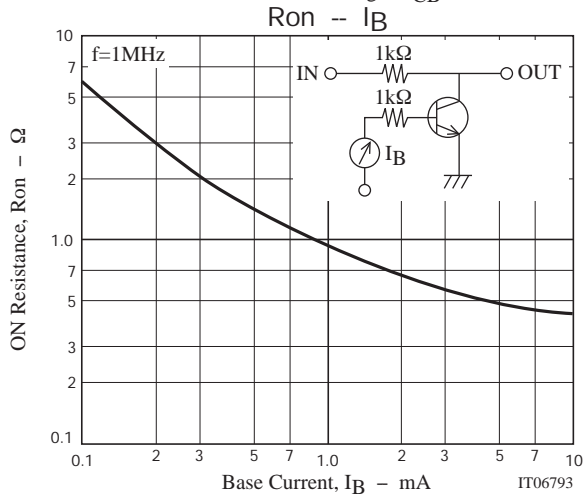
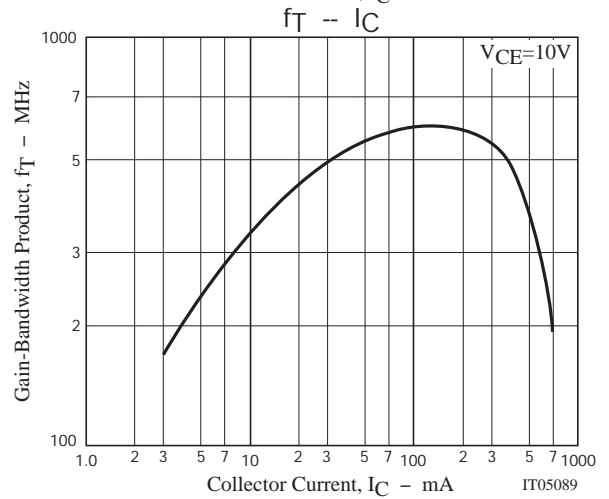
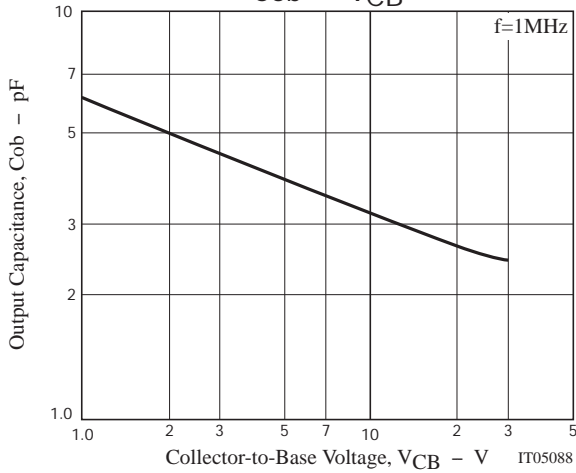
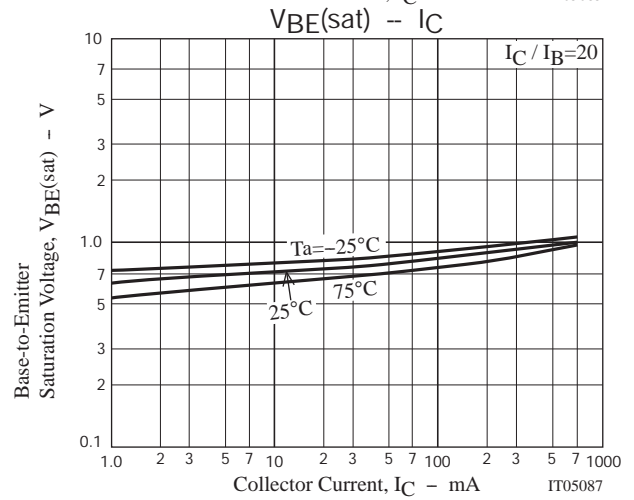
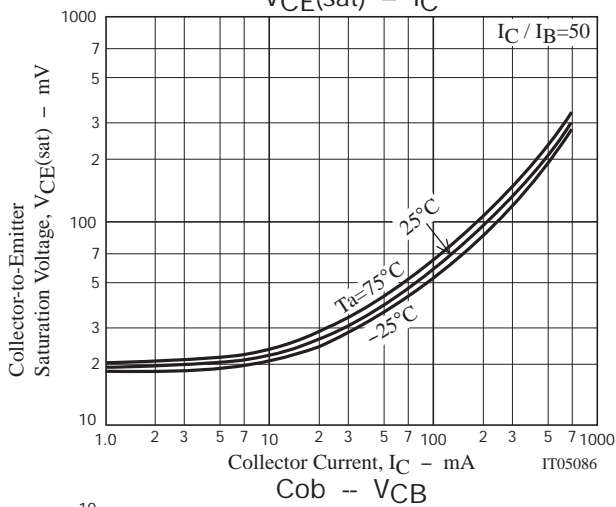
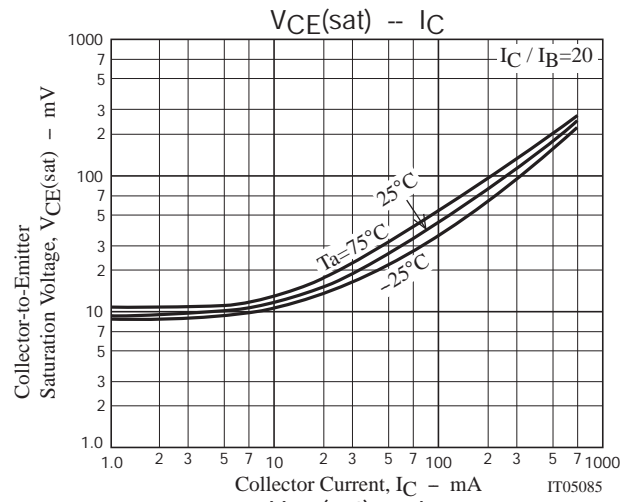
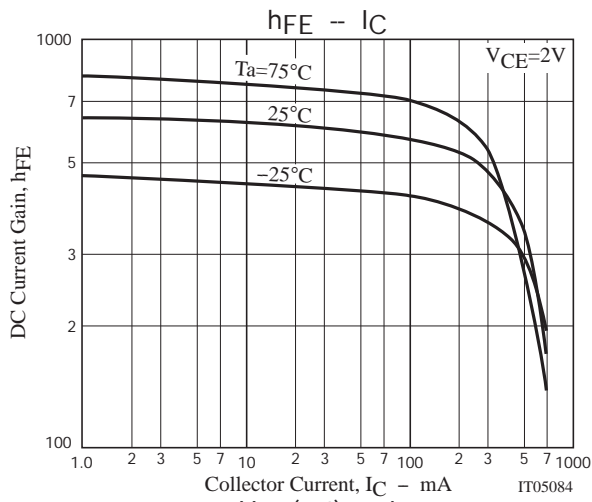
$$I_C = 20I_{B1} = -20I_{B2} = 300\text{mA}$$

## 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

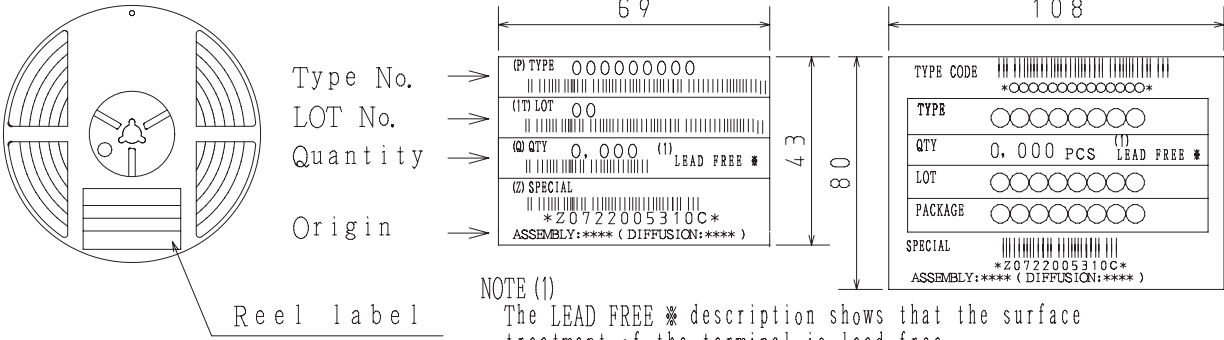
1. Packing Format

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) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method

Reel label, Inner box label (unit:mm)      Outer box label

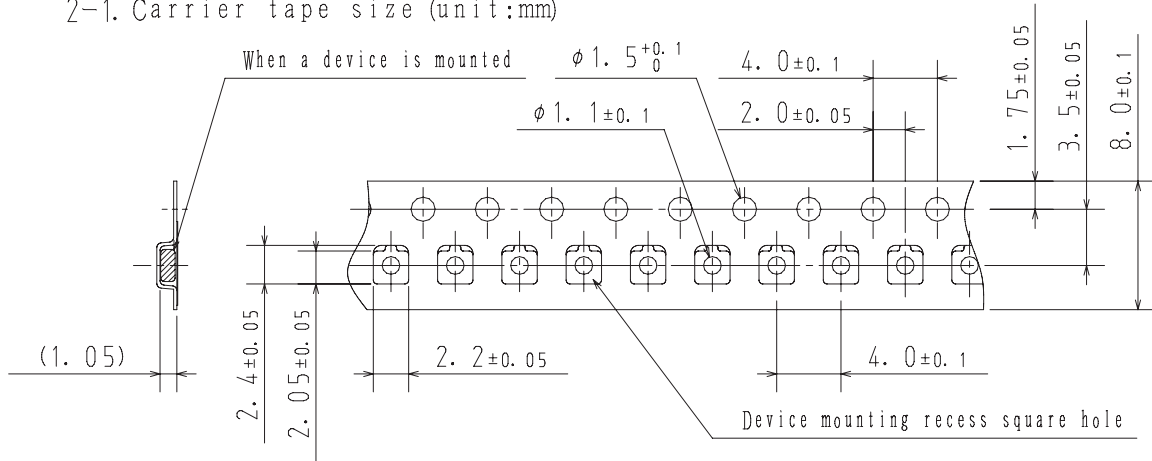
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.



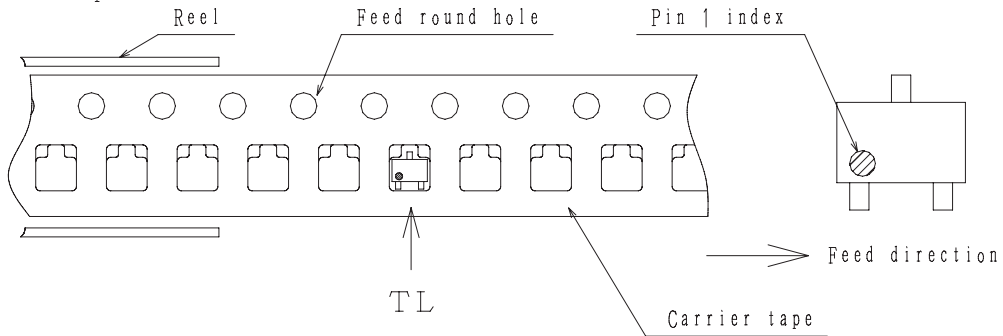
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

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

# 30C02MH

## Outline Drawing

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



## Land Pattern Example



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