

# **Bipolar Transistor**

30 V, 0.7 A, Low V<sub>CE(sat)</sub>, NPN Single MCPH3

# 30C02MH

#### **Features**

- Large Current Capacity
- Low Collector–to–Emitter Saturation Voltage (Resistance):  $R_{CE \text{ (sat)}}$  typ. = 330 m $\Omega$  [I<sub>C</sub> = 0.7 A, I<sub>B</sub> = 35 mA]
- Ultrasmall Package Facilitates Miniaturization in End Products
- Small ON–Resistance (Ron)
- This is a Pb-Free Device

#### **Applications**

- Low-Frequency Amplifier
- High-Speed Switching
- Small Motor Drive

#### **Specifications**

#### **ABSOLUTE MAXIMUM RATINGS** (Ta = 25°C)

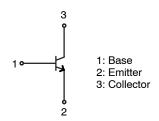
Symbol	Rating	Condition	Value	Unit
V <sub>CBO</sub>	Collector-to-Base Voltage		40	V
V <sub>CEO</sub>	Collector-to-Emitter Voltage		30	V
V <sub>EBO</sub>	Emitter-to-Base Voltage		5	V
I <sub>C</sub>	Collector Current		700	mA
I <sub>CP</sub>	Collector Current (Pulse)		1.4	Α
P <sub>C</sub>	Collector Dissipation	When mounted on ceramic substrate (600 mm <sup>2 x</sup> 0.8 mm)	600	mW
Tj	Junction Temperature		150	°C
Tstg	Storage Temperature		-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

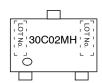


MCPH3 CASE 419AQ

#### **ELECTRICAL CONNECTION**



#### **MARKING DIAGRAM**



30C02MH

= Device Code

#### **ORDERING INFORMATION**

Device	Package	Shipping <sup>†</sup>
30C02MH-TL-E	МСРН3	3000 /
	(Pb-Free)	Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

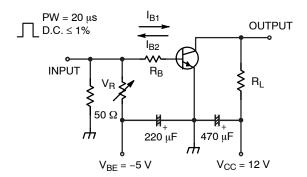
#### 30C02MH

### **ELECTRICAL CHARACTERISTICS** (Ta = 25°C)

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0 A	-	_	100	nA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 4 V, I <sub>C</sub> = 0 A	-	_	100	nA
h <sub>FE</sub>	DC Current Gain	$V_{CE} = 2 \text{ V}, I_{C} = 50 \text{ mA}$	300	-	800	
f <sub>T</sub>	Gain-Bandwidth Product	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 50 mA	-	540	-	MHz
Cob	Output Capacitance	V <sub>CB</sub> = 10 V, f = 1 MHz	-	3.3	-	pF
V <sub>CE</sub> (sat)	Collector-to-Emitter Saturation Voltage	I <sub>C</sub> = 200 mA, I <sub>B</sub> = 10 mA	-	85	190	mV
V <sub>BE</sub> (sat)	Base-to-Emitter Saturation Voltage	I <sub>C</sub> = 200 mA, I <sub>B</sub> = 10 mA	-	0.9	1.2	٧
V <sub>(BR)CBO</sub>	Collector-to-Base Breakdown Voltage	$I_C = 10 \mu A, I_E = 0 A$	40	-	-	٧
V <sub>(BR)CEO</sub>	Collector-to-Emitter Breakdown Voltage	$I_C = 1$ mA, $R_{BE} = \infty$	30	-	-	V
V <sub>(BR)EBO</sub>	Emitter-to-Base Breakdown Voltage	$I_E = 10 \mu A, I_C = 0 A$	5	-	-	٧
t <sub>on</sub>	Turn-On Time	See specified Test Circuit		35	-	ns
t <sub>stg</sub>	Storage Time			255	-	ns
t <sub>f</sub>	Fall Time			40	_	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## **Switching Time Test Circuit**

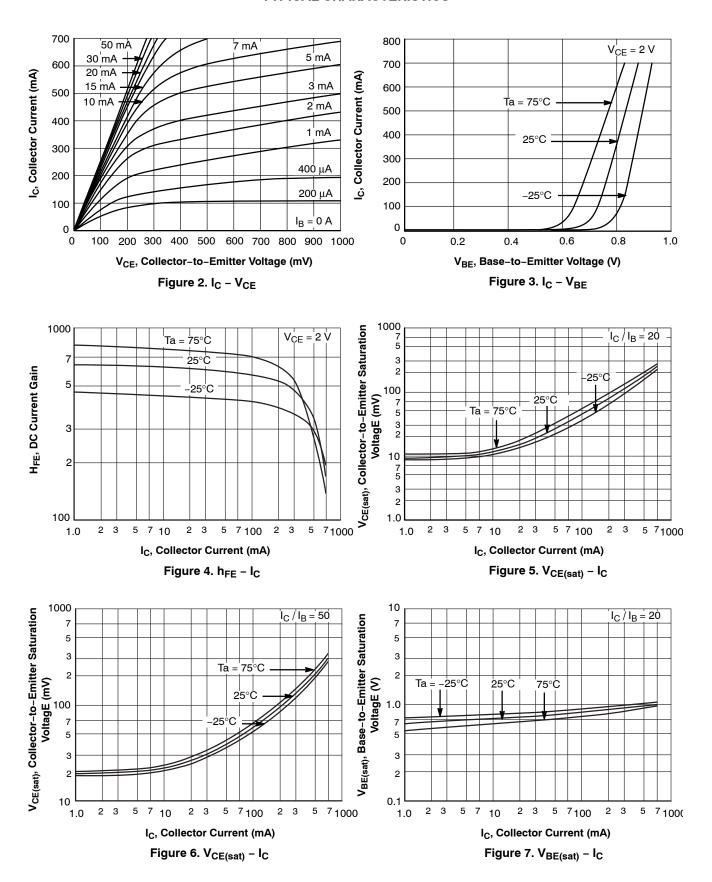


 $I_C = 20I_{B1} = -20I_{B2} = 300 \text{ mA}$ 

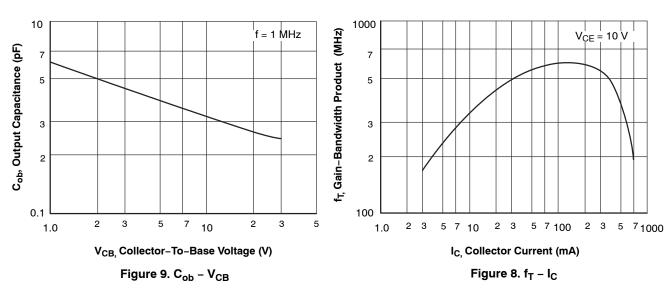
Figure 1. Switching Time Test Circuit

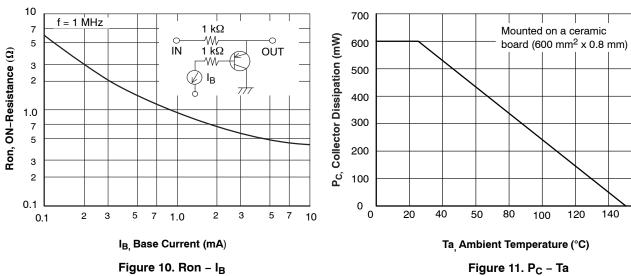
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#### **TYPICAL CHARACTERISTICS**



### 30C02MH





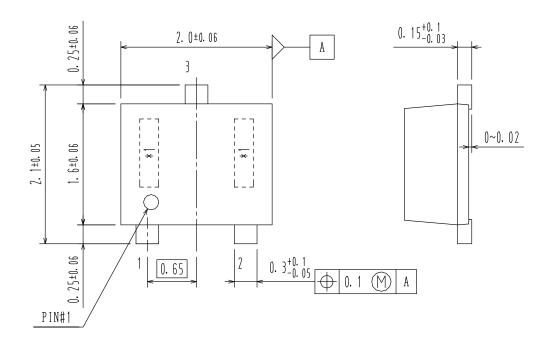
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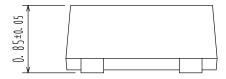
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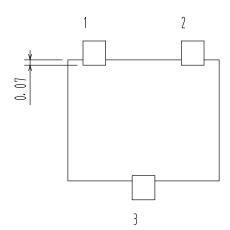


#### SC-70FL / MCPH3 CASE 419AQ ISSUE O

**DATE 30 DEC 2011** 







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DESCRIPTION:	SC-70FL / MCPH3		PAGE 1 OF 1	

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