

# Bipolar Transistor

–30 V, –0.7 A, Low  $V_{CE(sat)}$  PNP Single  
CPH3

**30A02CH**

## Features

- Large Current Capacitance
- Low Collector-to-Emitter Saturation Voltage (Resistance)  
 $R_{CE(sat)}$  Typ. = 580 m $\Omega$  ( $I_C = 0.7$  A,  $I_B = 35$  mA)
- Small ON-resistance ( $R_{on}$ )

## Applications

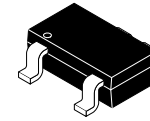
- Low-frequency Amplifier, High-speed Switching, Small Motor Drive

## Specifications

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

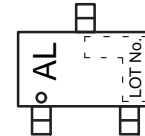
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		–30	V
Collector-to-Emitter Voltage	$V_{CEO}$		–30	V
Emitter-to-Base Voltage	$V_{EBO}$		–5	V
Collector Current	$I_C$		–700	mA
Collector Current (Pulse)	$I_{CP}$		–1.4	A
Collector Dissipation	$P_C$	Mounted on a ceramic board (600 mm <sup>2</sup> x 0.8 mm)	700	mW
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		–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.

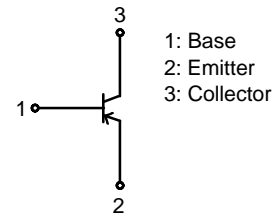


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## MARKING DIAGRAM



## ELECTRICAL CONNECTION



## ORDERING INFORMATION

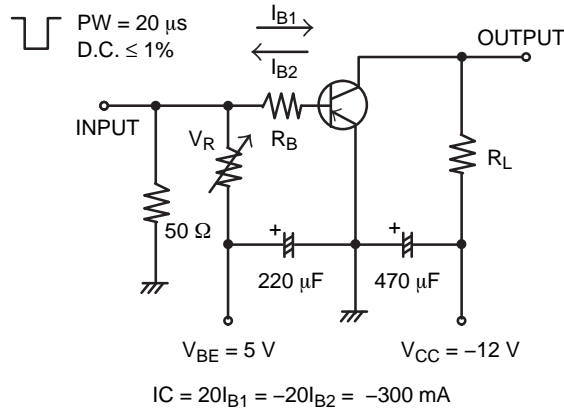
See detailed ordering and shipping information on page 4 of this data sheet.

**ELECTRICAL CHARACTERISTICS** ( $T_a = 25^\circ\text{C}$ )

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	$V_{(BR)CBO}$	$I_C = -10\text{ }\mu\text{A}, I_E = 0\text{ A}$	–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	$V_{(BR)EBO}$	$I_E = -10\text{ }\mu\text{A}, I_C = 0\text{ A}$	–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

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**



**Figure 1. Switching Time Test Circuit**

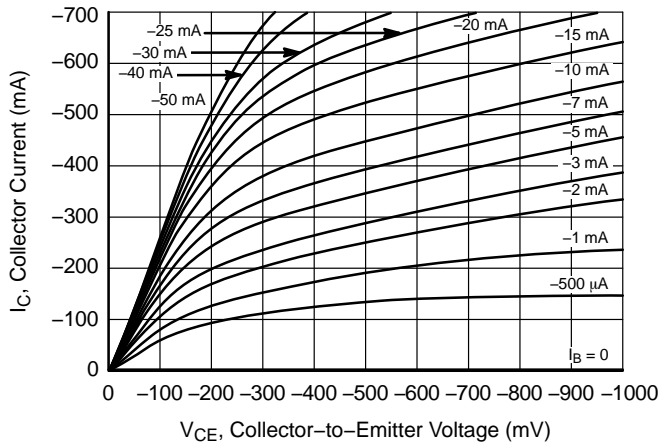


Figure 2.  $I_C - V_{CE}$

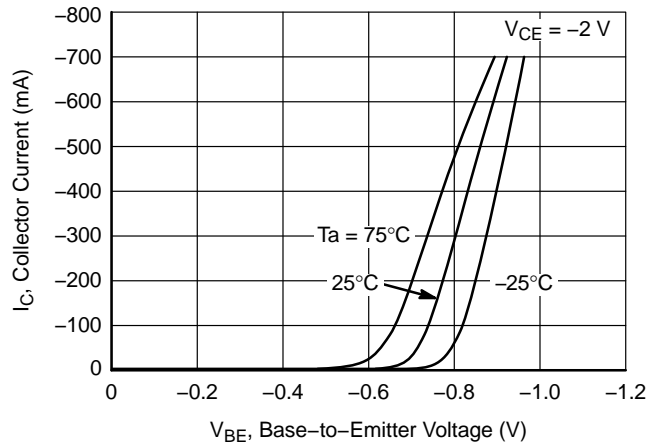


Figure 3.  $I_C - V_{BE}$

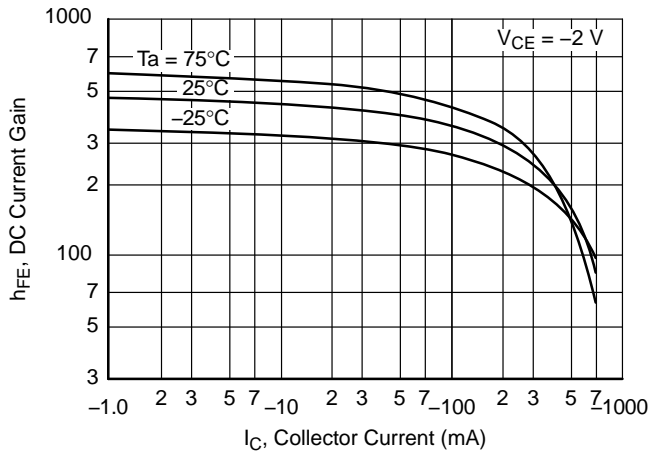


Figure 4.  $h_{FE} - I_C$

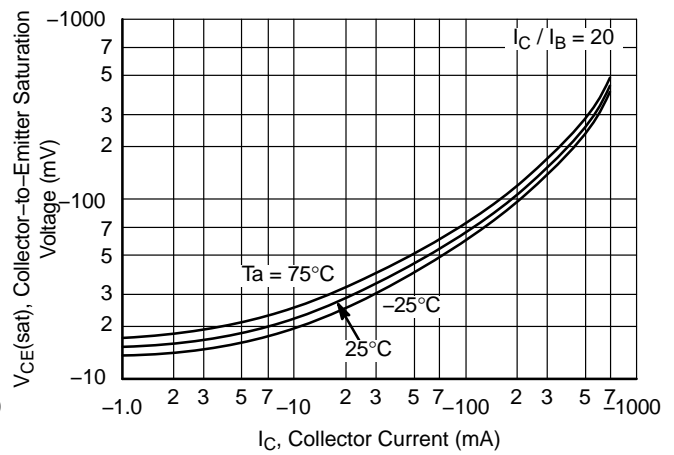


Figure 5.  $V_{CE(sat)} - I_C$

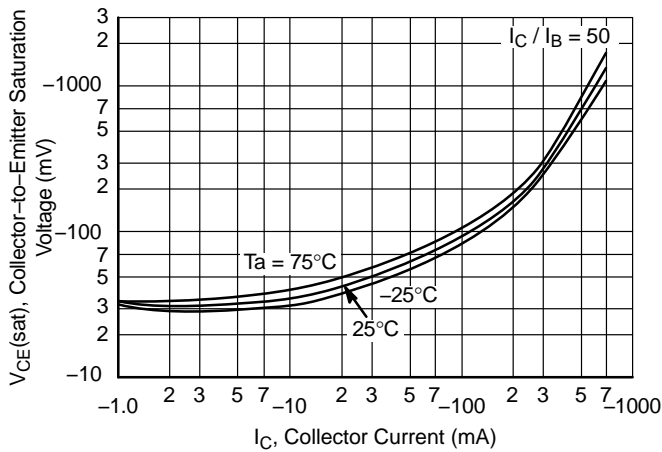


Figure 6.  $V_{CE(sat)} - I_C$

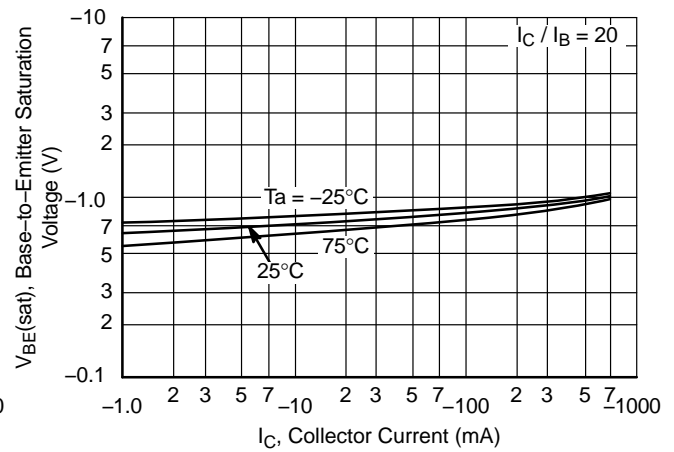


Figure 7.  $V_{BE(sat)} - I_C$

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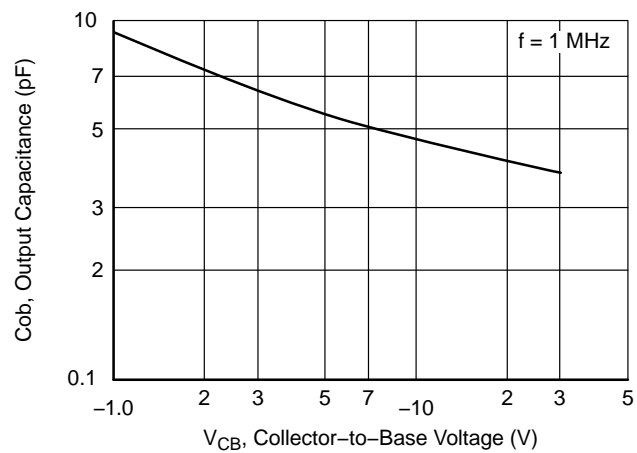


Figure 8.  $C_{ob} - V_{CB}$

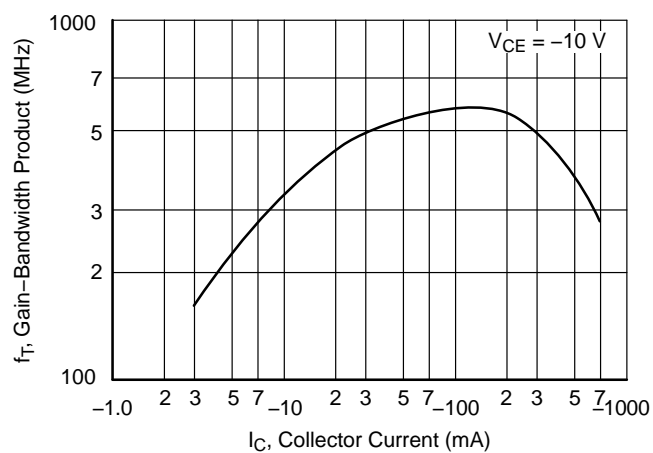


Figure 9.  $f_T - I_C$

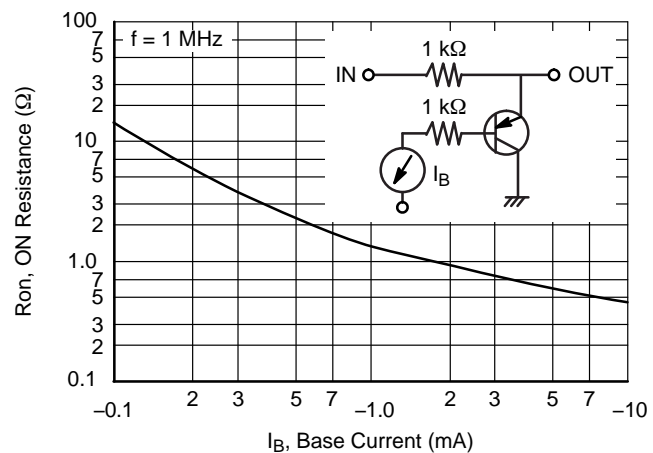


Figure 10.  $R_{on} - I_B$

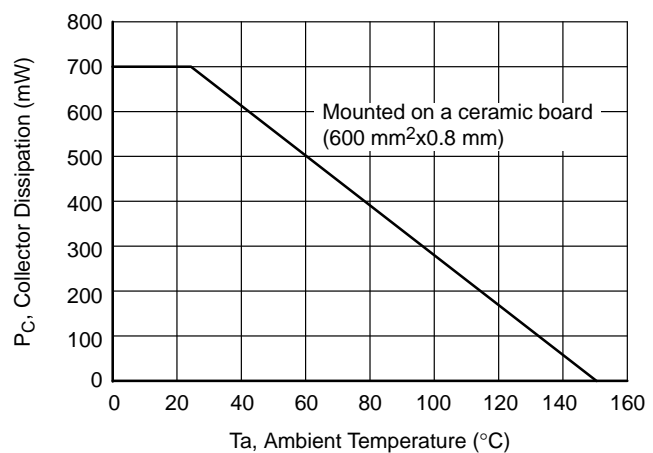


Figure 11.  $P_C - T_a$

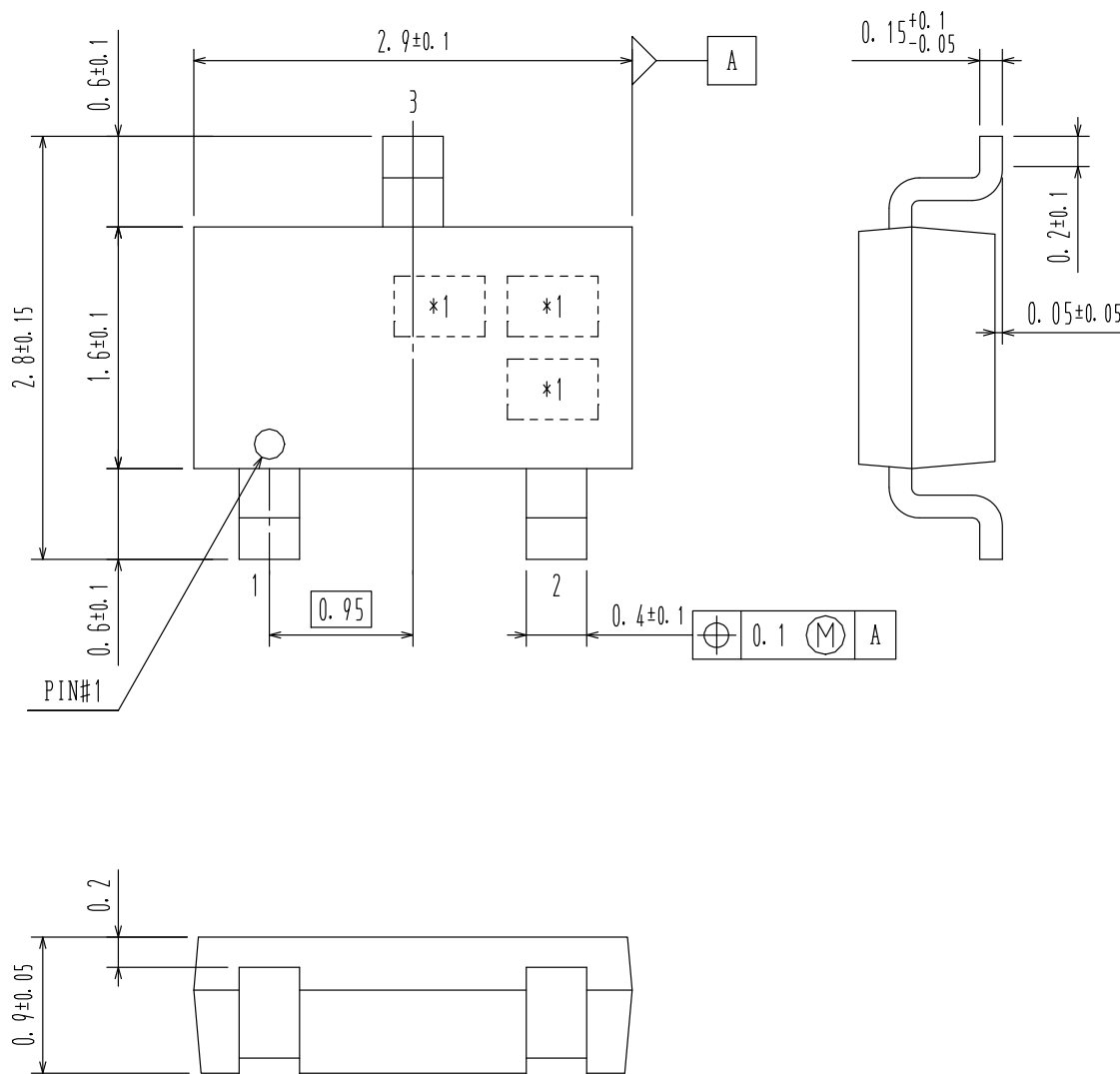
ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
30A02CH-TL-E	CPH3 (Pb-Free)	3,000 / Tape & Reel

<sup>†</sup>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.

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**ISSUE O**

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