

# Bipolar Transistor

**15 V, 0.7 A, Low  $V_{CE(sat)}$   
NPN Single MCP**

**15C01M**

## Features

- Large Current Capacity
- Low Collector-to-Emitter Saturation Voltage (resistance)  $R_{CE(sat)}$   
typ.=0.58  $\Omega$  [ $I_C = 0.7$  A,  $I_B = 35$  mA]
- Ultrasmall Package Facilitates Miniaturization in end products
- Small ON-resistance ( $R_{on}$ )
- These Devices are Pb-Free and Halide Free

## Applications

- Low-frequency Amplifier, muting circuit

## Specifications

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

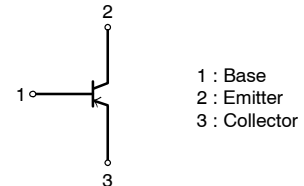
| Symbol    | Parameter                    | Conditions                                      | Ratings     | Unit             |
|-----------|------------------------------|-------------------------------------------------|-------------|------------------|
| $V_{CBO}$ | Collector-to-Base Voltage    |                                                 | 20          | V                |
| $V_{CEO}$ | Collector-to-Emitter Voltage |                                                 | 15          | V                |
| $V_{EBO}$ | Emitter-to-Base Voltage      |                                                 | 5           | V                |
| $I_C$     | Collector Current            |                                                 | 700         | mA               |
| $I_{CP}$  | Collector Current (Pulse)    |                                                 | 1.4         | A                |
| $P_C$     | Collector Dissipation        | Mounted on glass epoxy board (20 x 30 x 1.6 mm) | 300         | mW               |
| $T_J$     | Junction Temperature         |                                                 | 150         | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature          |                                                 | -55 to +150 | $^\circ\text{C}$ |

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.

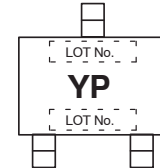


SC-70-3  
CASE 419AJ

## ELECTRICAL CONNECTION



## MARKING DIAGRAM



## ORDERING INFORMATION

| Device      | Package                    | Shipping <sup>†</sup> |
|-------------|----------------------------|-----------------------|
| 15C01M-TL-E | SC-70<br>MCP3<br>(Pb-Free) | 3000 /<br>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](#).

# 15C01M

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

| Symbol        | Parameter                               | Conditions                                      | Ratings |     |     | Unit          |
|---------------|-----------------------------------------|-------------------------------------------------|---------|-----|-----|---------------|
|               |                                         |                                                 | Min     | Typ | Max |               |
| $I_{CBO}$     | Collector Cutoff Current                | $V_{CB} = 15\text{ V}, I_E = 0\text{ A}$        | –       | –   | 0.1 | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cutoff Current                  | $V_{EB} = 4\text{ V}, I_C = 0\text{ A}$         | –       | –   | 0.1 | $\mu\text{A}$ |
| $h_{FE}$      | DC Current Gain                         | $V_{CE} = 2\text{ V}, I_C = 10\text{ mA}$       | 300     | –   | 800 | –             |
| $f_T$         | Gain–Bandwidth Product                  | $V_{CE} = 2\text{ V}, I_C = 50\text{ mA}$       | –       | 330 | –   | MHz           |
| $C_{ob}$      | Output Capacitance                      | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$        | –       | 3.2 | –   | pF            |
| $V_{CE(sat)}$ | Collector–to–Emitter Saturation Voltage | $I_C = 200\text{ mA}, I_B = 10\text{ mA}$       | –       | 150 | 300 | mV            |
| $V_{BE(sat)}$ | Base–to–Emitter Saturation Voltage      | $I_C = 200\text{ mA}, I_B = 10\text{ mA}$       | –       | 0.9 | 1.2 | V             |
| $V_{(BR)CBO}$ | Collector–to–Base Breakdown Voltage     | $I_C = 10\text{ }\mu\text{A}, I_E = 0\text{ A}$ | 20      | –   | –   | V             |
| $V_{(BR)CEO}$ | Collector–to–Emitter Breakdown Voltage  | $I_C = 1\text{ mA}, R_{BE} = \infty$            | 15      | –   | –   | V             |
| $V_{(BR)EBO}$ | Emitter–to–Base Breakdown Voltage       | $I_E = 10\text{ }\mu\text{A}, I_C = 0\text{ A}$ | 5       | –   | –   | V             |
| $t_{on}$      | Turn–On Time                            | See specified Test Circuit.                     | –       | 30  | –   | ns            |
| $t_{stg}$     | Storage Time                            |                                                 | –       | 77  | –   | ns            |
| $t_f$         | 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.

TYPICAL CHARACTERISTICS

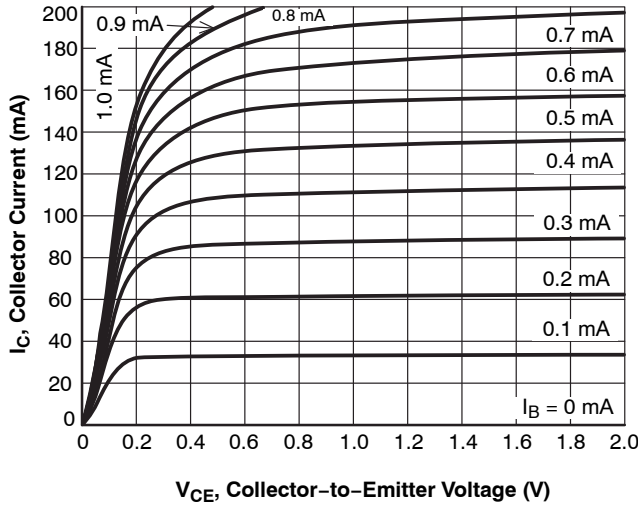


Figure 1.  $I_C - V_{CE}$

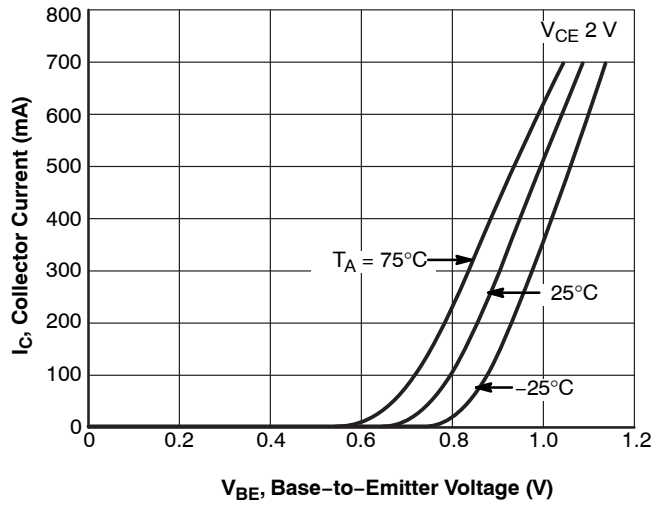


Figure 2.  $I_C - V_{BE}$

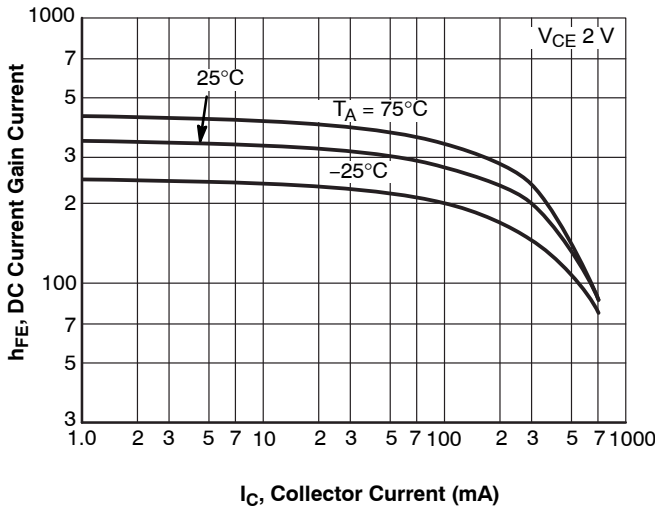


Figure 3.  $h_{FE} - I_C$

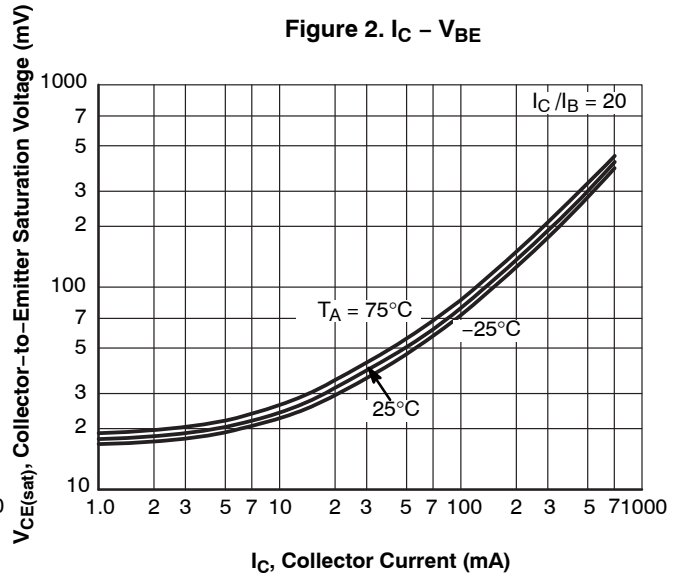


Figure 4.  $I_C - V_{CE(sat)}$

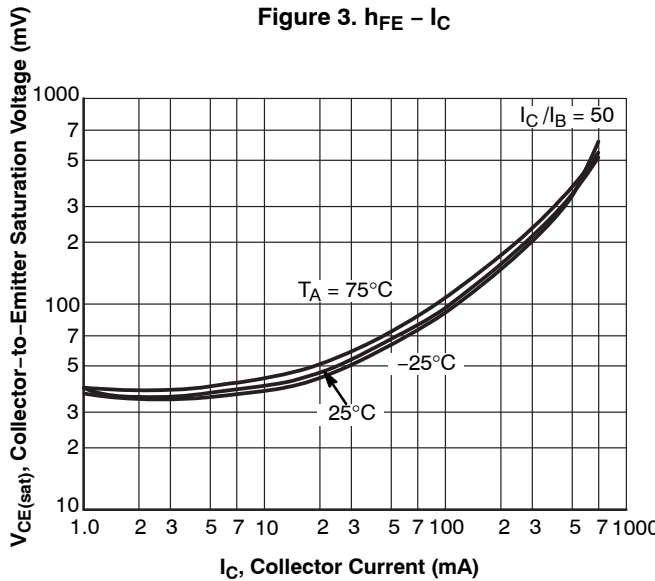


Figure 5.  $V_{CE(sat)} - I_C$

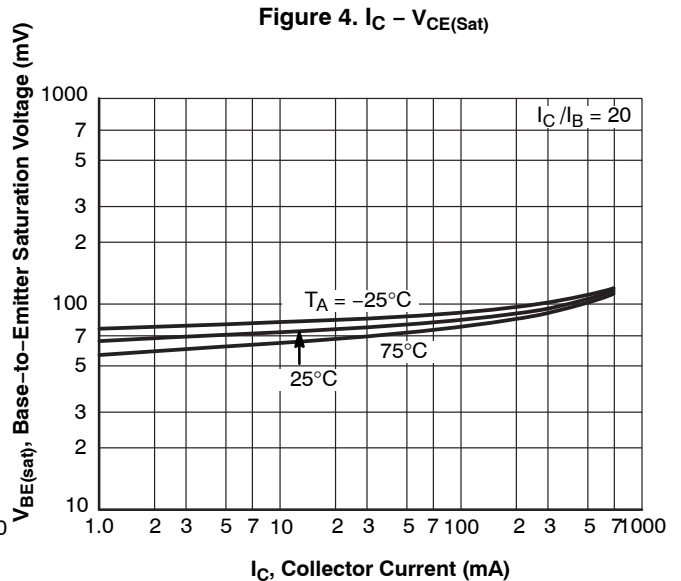
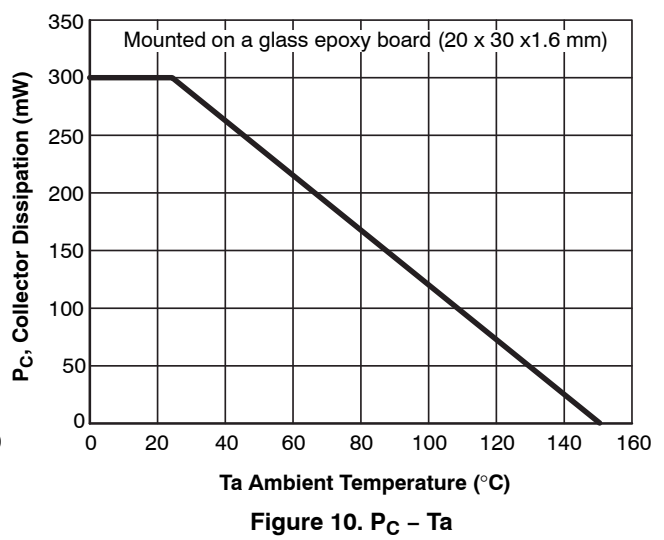
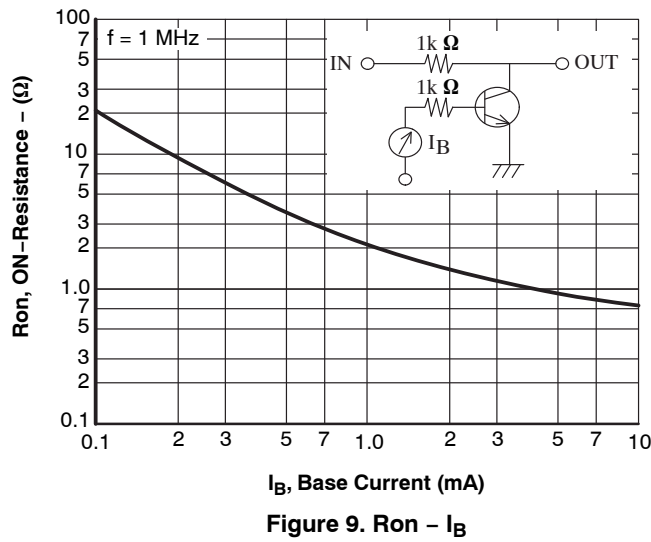
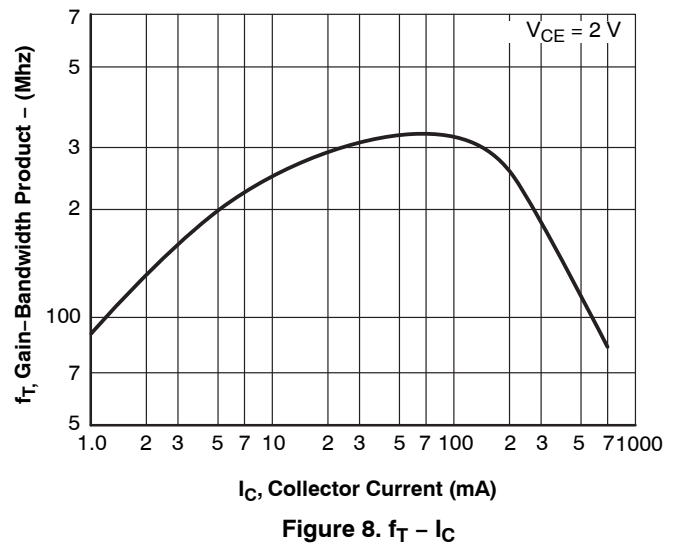
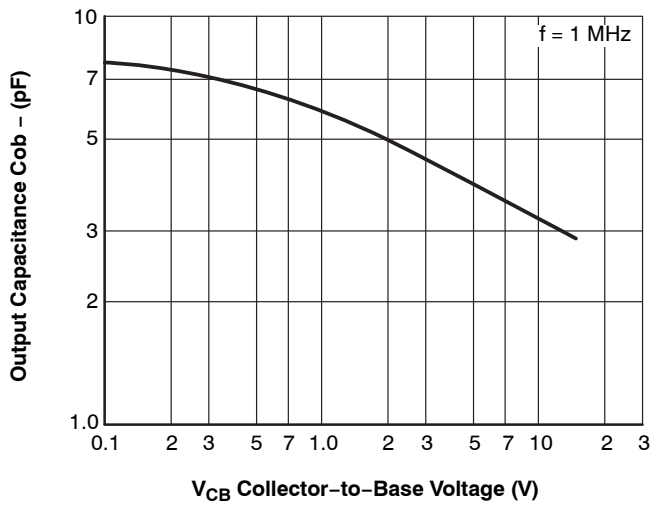


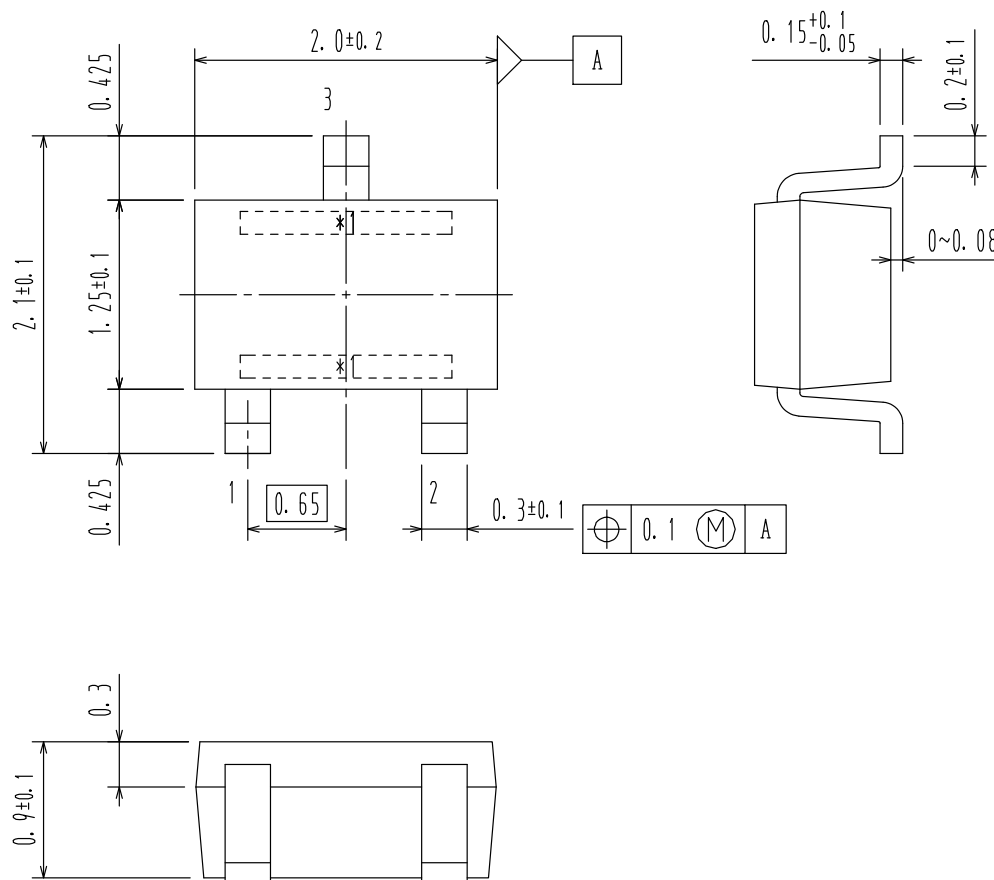
Figure 6.  $V_{BE(sat)} - I_C$

TYPICAL CHARACTERISTICS (CONTINUED)



**SC-70 / MCP3**  
**CASE 419AJ**  
**ISSUE O**

DATE 30 NOV 2011



|                         |                     |                                                                                                                                                                                     |
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