



TRANSISTOR (NPN)

#### FEATURES

- **Pb-Free package is available**  
RoHS product for packing code suffix "G"  
Halogen free product for packing code suffix "H"
- Small Flat Package
- High Speed Switching Time
- Low Collector-emitter saturation voltage
- **Moisture Sensitivity Level 1**

#### APPLICATIONS

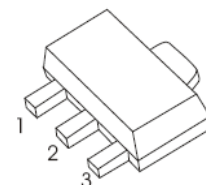
- Power Amplifier

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

| Symbol          | Parameter                                   | Value    | Unit                        |
|-----------------|---------------------------------------------|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | 50       | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 50       | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | 5        | V                           |
| $I_C$           | Collector Current                           | 2        | A                           |
| $P_C$           | Collector Power Dissipation                 | 500      | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 250      | $^{\circ}\text{C}/\text{W}$ |
| $T_J$           | Junction Temperature                        | 150      | $^{\circ}\text{C}$          |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^{\circ}\text{C}$          |

#### SOT-89

1. BASE
2. COLLECTOR
3. EMITTER



#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                      | Min | Typ | Max | Unit          |
|--------------------------------------|---------------|------------------------------------------------------|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}, I_E=0$                          | 50  |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$                              | 50  |     |     | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=100\mu\text{A}, I_C=0$                          | 5   |     |     | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=50\text{V}, I_E=0$                           |     |     | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5\text{V}, I_C=0$                            |     |     | 0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=2\text{V}, I_C=0.5\text{A}$                  | 70  |     | 240 |               |
|                                      | $h_{FE(2)}^*$ | $V_{CE}=2\text{V}, I_C=2\text{A}$                    | 20  |     |     |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=1\text{A}, I_B=50\text{mA}$                     |     |     | 0.5 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=1\text{A}, I_B=50\text{mA}$                     |     |     | 1.2 | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=2\text{V}, I_C=0.5\text{A}, f=100\text{MHz}$ |     | 120 |     | MHz           |

#### CLASSIFICATION OF $h_{FE(1)}$

| RANK    | P        | Q         | Y         |
|---------|----------|-----------|-----------|
| RANGE   | 82 - 180 | 120 - 270 | 180 - 390 |
| MARKING | P1766    | Q1766     | Y1766     |

\*Pulse test: pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .



# WILLAS

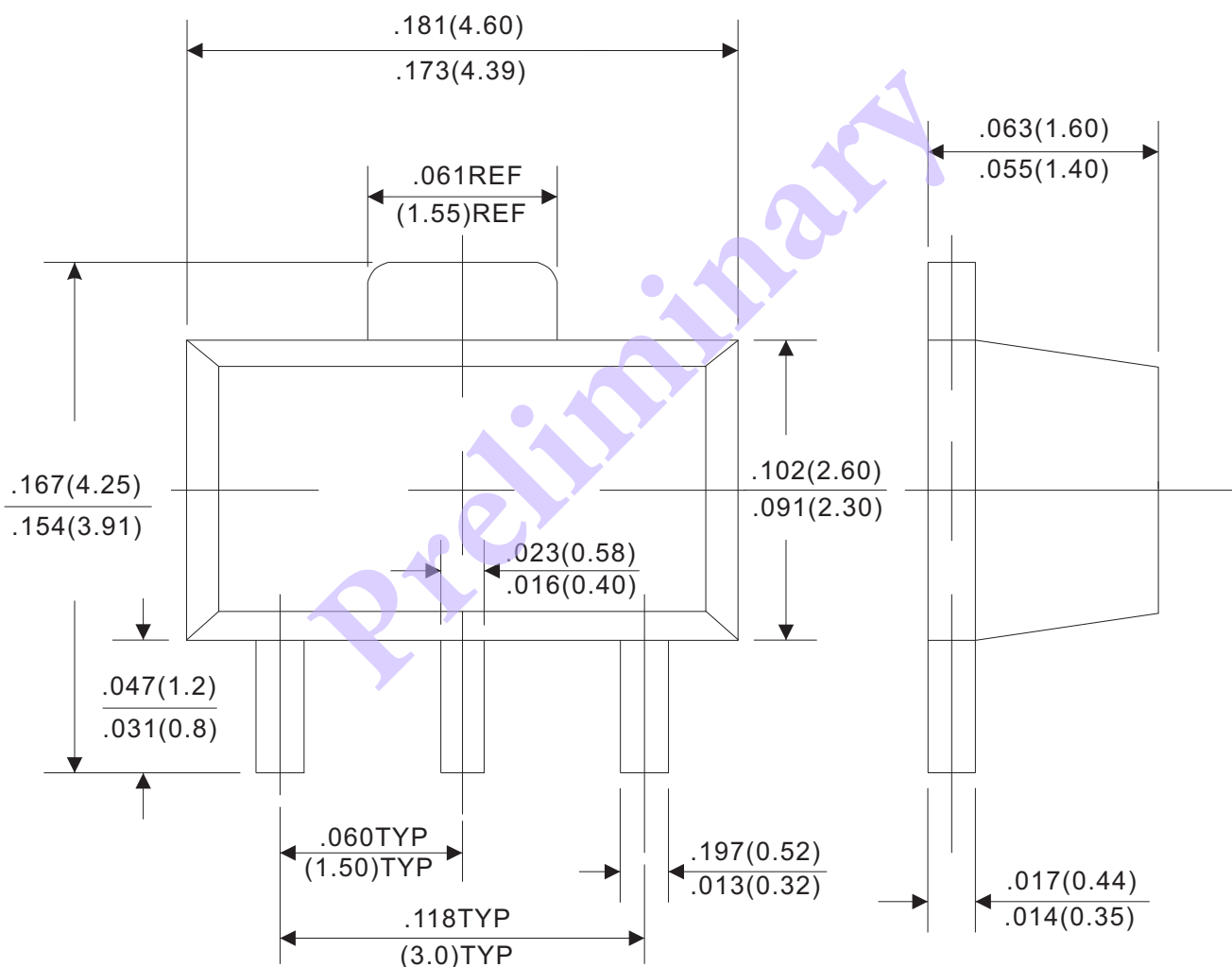


## SOT-89 Plastic-Encapsulate Transistors

### 2SC1766

# Outline Drawing

# SOT-89



Dimensions in inches and (millimeters)

Rev.C

### Ordering Information:

| Device PN                                                           | Packing                 |
|---------------------------------------------------------------------|-------------------------|
| 2SC1766 x <sup>(3)</sup> -SOT89 <sup>(1)</sup> G <sup>(2)</sup> -WS | Tape& Reel: 1 Kpcs/Reel |

Note: (1) CASE:SOT-89

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

(3) CLASSIFICATION OF hFE RANK

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