

## / Descriptions

TO-92      NPN      Silicon NPN transistor in a TO-92 Plastic Package.

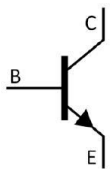
## / Features

High  $h_{FE}$ , low  $V_{CE(sat)}$ .

## / Applications

General purpose amplifier.

## / Equivalent Circuit



## / Pinning



PIN1 Base      PIN 2 Collector      PIN 3 Emitter

## / $h_{FE}$ Classifications & Marking

| $h_{FE}$ Classifications<br>Symbol | Q       | R       | S       |
|------------------------------------|---------|---------|---------|
| $h_{FE}$ Range                     | 160~260 | 200~340 | 290~460 |

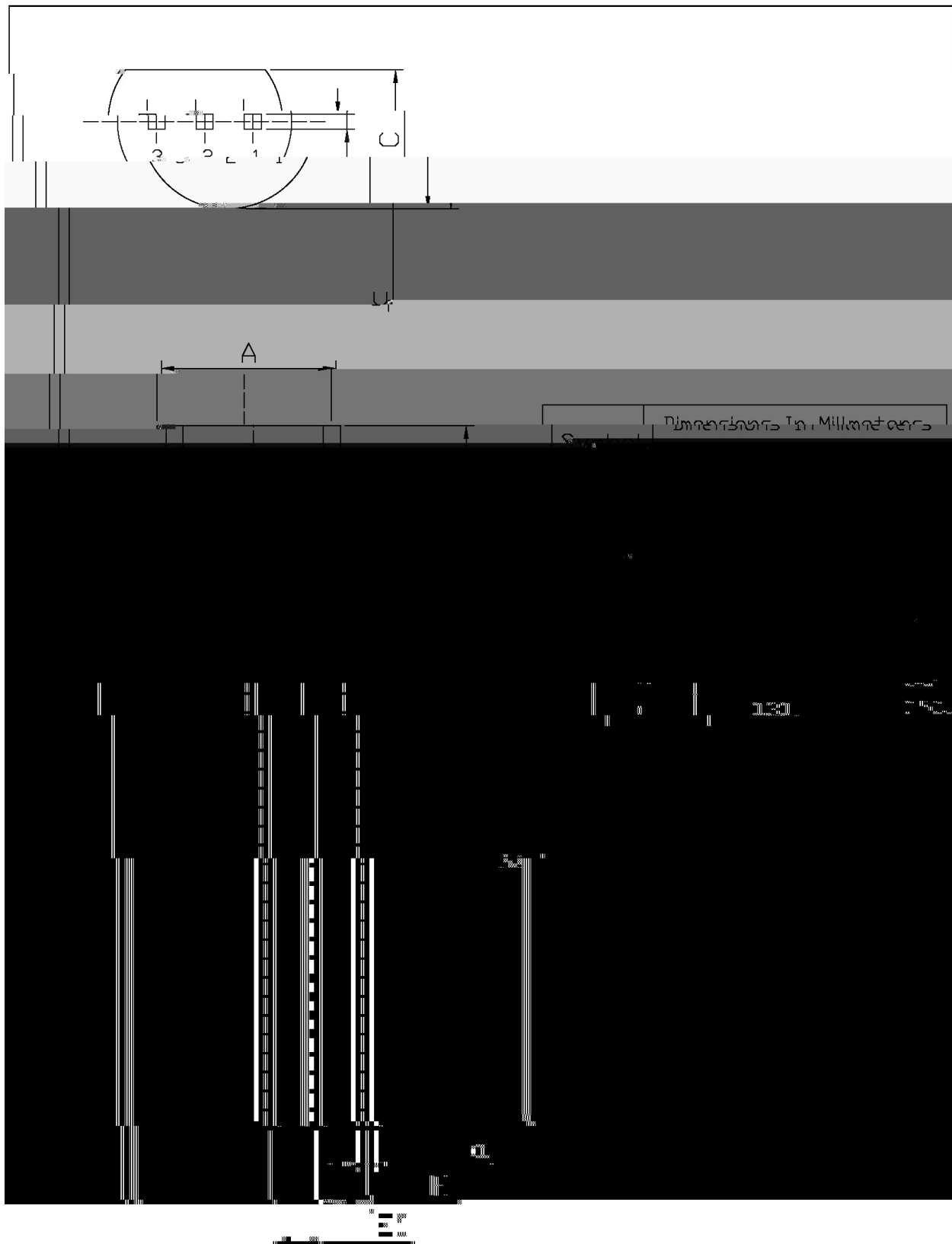
| Parameter                             | Symbol    | Rating  | Unit |
|---------------------------------------|-----------|---------|------|
| Collector to Base Voltage             | $V_{CBO}$ | 30      | V    |
| Collector to Emitter Voltage          | $V_{CEO}$ | 25      | V    |
| Emitter to Base Voltage               | $V_{EBO}$ | 7.0     | V    |
| Collector Current - Continuous        | $I_C$     | 100     | mA   |
| Collector Current – Continuous(Pulse) | $I_{CP}$  | 200     | mA   |
| Collector Power Dissipation           | $P_C$     | 400     | mW   |
| Junction Temperature                  | $T_j$     | 150     |      |
| Storage Temperature Range             | $T_{stg}$ | -55 150 |      |

| Parameter                              | Symbol    | Test Conditions            | Min | Typ | Max | Unit |
|----------------------------------------|-----------|----------------------------|-----|-----|-----|------|
| Collector to Base Breakdown Voltage    | $V_{CBO}$ | $I_C=10\text{ A}$ $I_E=0$  | 30  |     |     | V    |
| Collector to Emitter Breakdown Voltage | $V_{CEO}$ | $I_C=2.0\text{mA}$ $I_B=0$ | 25  |     |     | V    |
| Emitter to Base Breakdown Voltage      | $V_{EBO}$ | $I_E=10\text{ A}$ $I_C=0$  | 7.0 |     |     | V    |

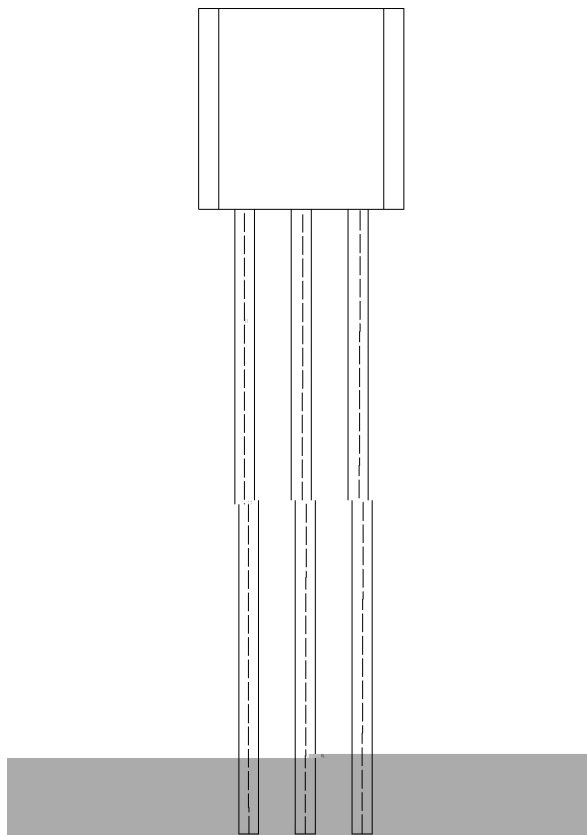
/ Package Dimensions

TO-92

Unit: mm



/ Marking Instructions



BR:

C1684

Q:  $h_{FE}$

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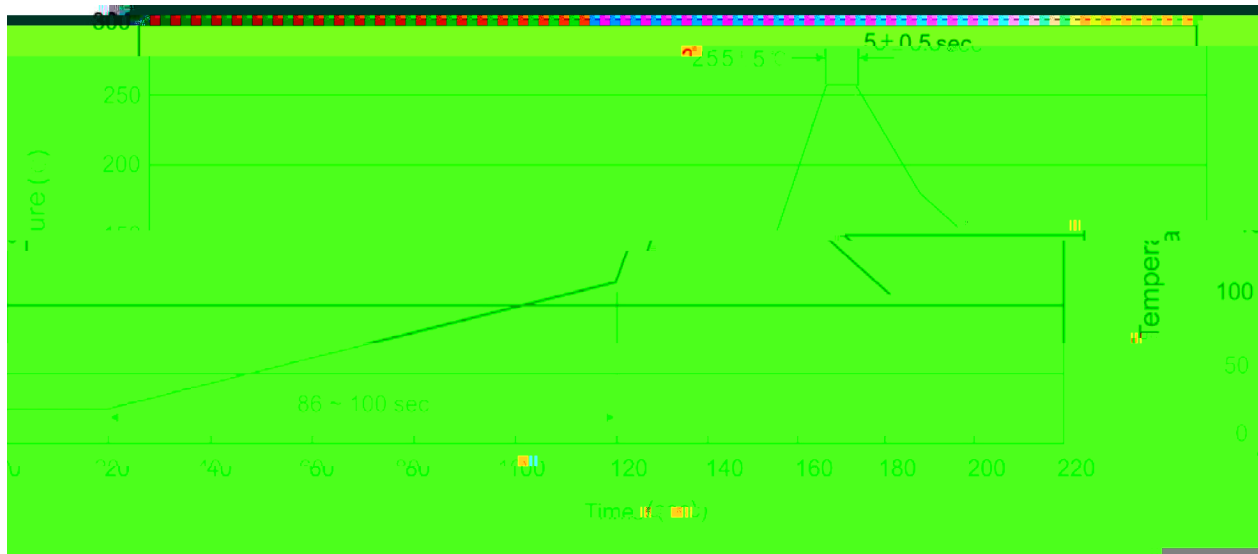
Note:

BR: Company Code.

C1684: Product Type.

Q:  $h_{FE}$  Classifications Symbol

( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |          |             |                                         |
|---|----------|-------------|-----------------------------------------|
| 1 | 25 ~ 150 | 60 ~ 90sec; | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255±5    | 5±0.5sec;   | 2.Peak Temp.:255±5 , Duration:5±0.5sec. |
| 3 | 2 ~ 10   | /sec.       | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270±5      10±1 sec.      Temp:270±5      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type | Units |  |  |  |  | Dimension |  | (unit mm3) |
|--------------|-------|--|--|--|--|-----------|--|------------|
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |

/ AMMO

| Package Type | Units |  |  |  |  | Dimension |  | (unit mm3) |
|--------------|-------|--|--|--|--|-----------|--|------------|
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |

/ Notices