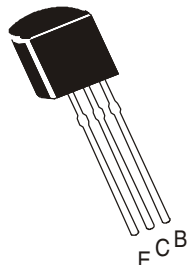


## NPN SILICON PLANAR EPITAXIAL TRANSISTORS

CLD667, CLD667A



TO-92  
Plastic Package

Low Frequency Power Amplifier  
Complementary CLB647/CLB647A

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

| DESCRIPTION                 | SYMBOL    | CLD667       | CLD667A | UNITS            |
|-----------------------------|-----------|--------------|---------|------------------|
| Collector Base Voltage      | $V_{CBO}$ | 120          | 120     | V                |
| Collector Emitter Voltage   | $V_{CEO}$ | 80           | 100     | V                |
| Emitter Base Voltage        | $V_{EBO}$ | 5.0          |         | V                |
| Collector Current           | $I_C$     | 1.0          |         | A                |
| Collector Current Peak      | $I_{CP}$  | 2.0          |         | A                |
| Collector Power Dissipation | $P_C$     | 0.9          |         | W                |
| Junction Temperature        | $T_j$     | 150          |         | $^\circ\text{C}$ |
| Storage Temperature         | $T_{stg}$ | - 55 to +150 |         | $^\circ\text{C}$ |

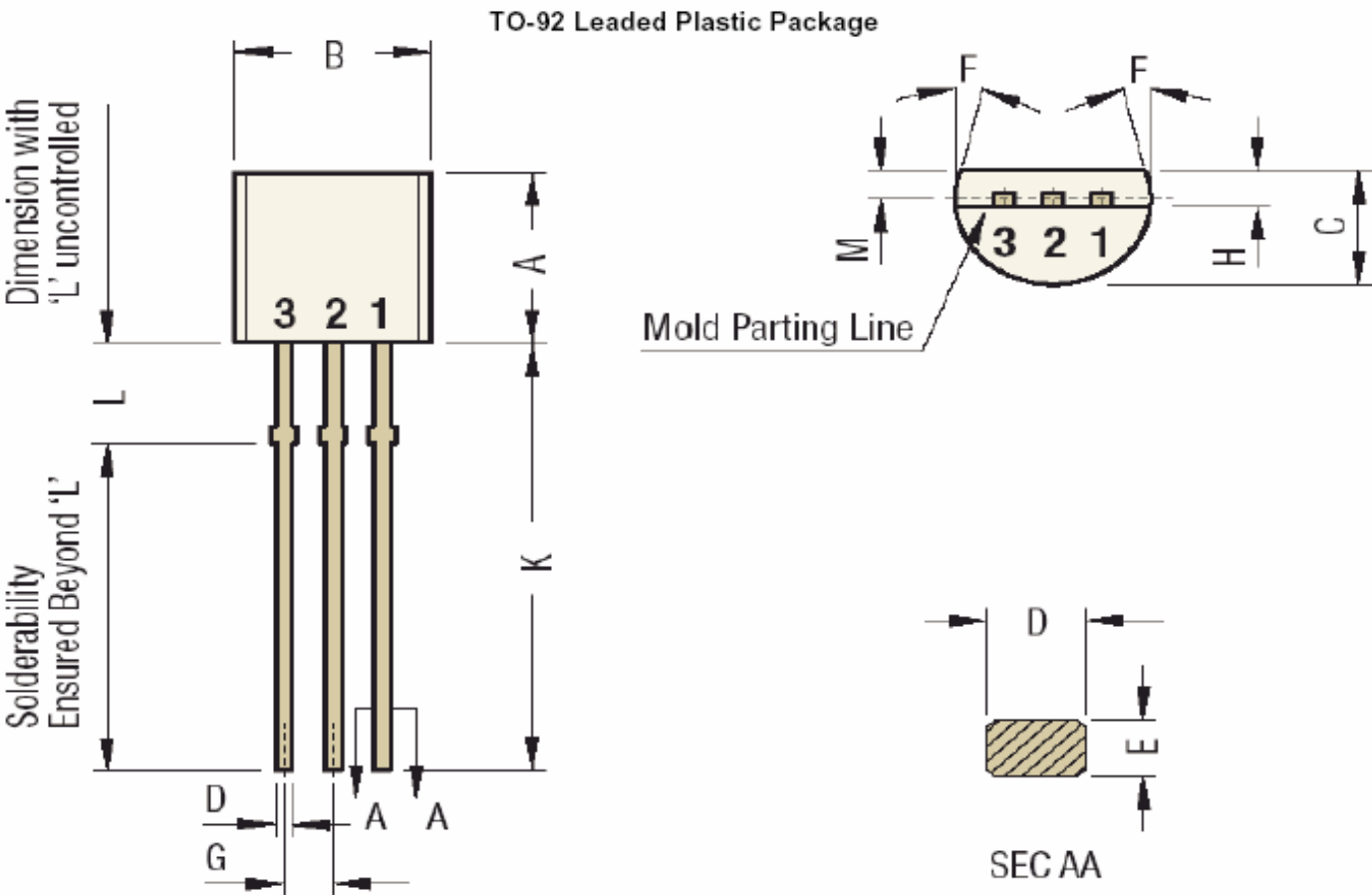
### ABSOLUTE MAXIMUM RATINGS( $T_a=25^\circ\text{C}$ unless specified otherwise)

| DESCRIPTION                          | SYMBOL        | TEST CONDITION                                  | CLD667   | CLD667A  | UNITS         |
|--------------------------------------|---------------|-------------------------------------------------|----------|----------|---------------|
| Collector Base Voltage               | $V_{CBO}$     | $I_C=10\mu\text{A}$ , $I_E=0$                   | >120     | >120     | V             |
| Collector Emitter Voltage            | $V_{CEO}$     | $I_C=1\text{mA}$ , $I_B=0$                      | >80      | >100     | V             |
| Emitter Base Voltage                 | $V_{EBO}$     | $I_E=10\mu\text{A}$ , $I_C=0$                   | >5.0     | >5.0     | V             |
| Collector Cut Off Current            | $I_{CBO}$     | $V_{CB}=100\text{V}$ , $I_E = 0$                | <10      | <10      | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE}$      | $**V_{CE}=5\text{V}$ , $I_C=150\text{mA}$       | 60 - 320 | 60 - 200 |               |
|                                      |               | $**V_{CE}=5\text{V}$ , $I_C=500\text{mA}$       | >30      | >30      |               |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}$ | $**I_C=500\text{mA}$ , $I_B=50\text{mA}$        | <1.0     | <1.0     | V             |
| Base Emitter on Voltage              | $V_{BE(on)}$  | $**V_{CE}=5\text{V}$ , $I_C=150\text{mA}$       | <1.5     | <1.5     | V             |
| Transition Frequency                 | $f_T$         | $**V_{CE}=5\text{V}$ , $I_C=150\text{mA}$       | Typ 140  | Typ 140  | MHz           |
| Collector Output Capacitance         | $C_{Ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$ | Typ 12   | Typ 12   | pF            |

|                          |         |              |               |               |
|--------------------------|---------|--------------|---------------|---------------|
| $h_{FE}$ Classifications | CLD667  | B : 60 - 120 | C : 100 - 200 | D : 160 - 320 |
|                          | CLD667A | B : 60 - 120 | C : 100 - 200 |               |

**\*\*Pulse Test**

CLD667, CLD667A  
TO-92  
Plastic Package

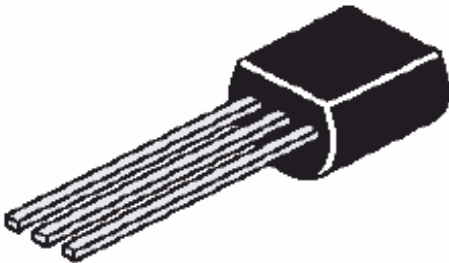


| DIM | Min  | Max  |
|-----|------|------|
| A   | 4.32 | 5.33 |
| B   | 4.45 | 5.20 |
| C   | 3.18 | 4.19 |
| D   | 0.41 | 0.55 |
| E   | 0.35 | 0.55 |
| F   | 5°   |      |

All Dimensions are in mm

| DIM | Min   | Max   |
|-----|-------|-------|
| G   | 1.14  | 1.40  |
| H   | 1.20  | 1.80  |
| K   | 12.5  |       |
| L   | 1.982 | 2.082 |
| M   | 1.03  | 1.53  |

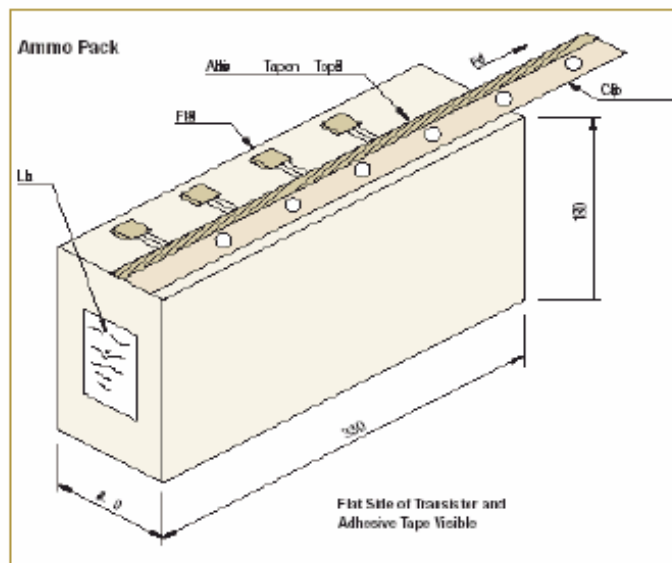
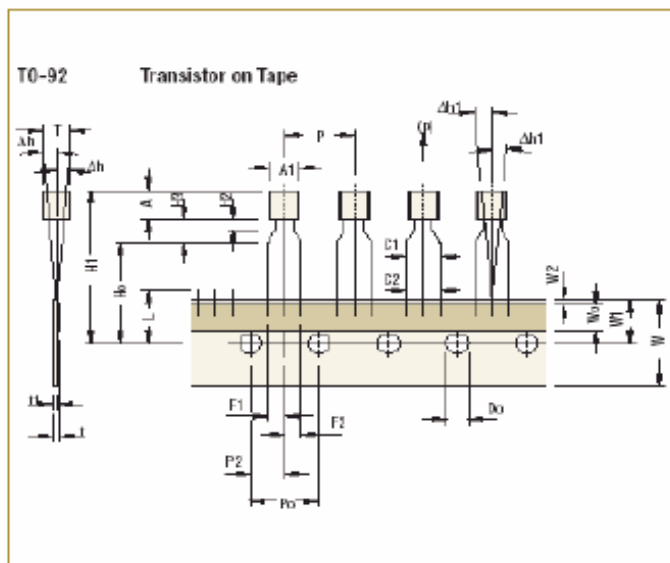
- Pin 1     Base  
Pin 2     Collector  
Pin 3     Emitter



## TO-92

### Plastic Package

#### TO-92 Tape and Ammo Packaging



All Dimensions are in mm

#### Tape Specifications

|                                                    |        | TO-92 |      |      |           |
|----------------------------------------------------|--------|-------|------|------|-----------|
| Item description                                   | Symbol | Min   | Nom  | Max  | Tol       |
| Body width                                         | A1     | 4.45  |      | 5.20 |           |
| Body height                                        | A      | 4.32  |      | 5.33 |           |
| Body thickness                                     | T      | 3.18  |      | 4.19 |           |
| Pitch of component <sup>§1</sup>                   | P      |       | 12.7 |      | ±1.0      |
| Feed hole pitch <sup>§1</sup>                      | Po     |       | 12.7 |      | ±0.3      |
| Feed hole center to component centre <sup>§2</sup> | P2     |       | 6.35 |      | ±0.4      |
| Comp. alignment, Side view <sup>§3</sup>           | Dh     |       | 0    | 1.0  |           |
| Comp. alignment, Front view <sup>§3</sup>          | Dh1    |       | 0    | 1.3  |           |
| Tape width <sup>Cr</sup>                           | W      |       | 18   |      | ±0.5      |
| Hold down tape width <sup>Cr</sup>                 | Wo     |       | 6    |      | ±0.2      |
| Hole position                                      | W1     |       | 9    |      | +0.7 -0.5 |
| Hold-down tape position                            | W2     | 0.0   |      | 0.7  |           |
| Lead wire clinch height                            | Ho     |       | 16   |      | ±0.5      |
| Component height                                   | H1     |       |      | 24.0 |           |
| Length of snapped leads                            | L      |       |      | 11.0 |           |
| Feed hole diameter <sup>Cr</sup>                   | Do     |       | 4    |      | ±0.2      |
| Total tape thickness <sup>§4</sup>                 | t      |       |      | 1.2  |           |
| Lead-to-lead distance <sup>Cr</sup>                | F1, F2 | 2.4   |      | 2.7  |           |
| Stand off                                          | H2     | 0.45  |      | 1.45 |           |
| Clinch height                                      | H3     |       |      | 3.0  |           |
| Lead parallelism <sup>Cr</sup>                     | C1-C2  |       |      | 0.22 |           |
| Pull-out force                                     | (p)    | 6N    |      |      |           |

#### Taping Specification

- Maximum alignment deviation between leads not to be greater than 0.20 mm.
- Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
- Hold down tape not to exceed beyond the edge(s) carrier tape and there shall be no exposure of adhesive.
- No more than 3 consecutive missing components is permitted.
- A tape trailer, having at least three feed holes is required after the last component.
- Splices shall not interfere with the sprocket feed holes.

§1 Cumulative pitch error 1.0 mm/20 pitch.

§2 To be measured at bottom of clinch.

§3 At top of body.

§4 t1 = 0.3 – 0.6 mm

Cr Critical Dimension.

All Dimensions are in mm

## Packaging Information

T & A: Tape and Ammo Pack; T & R: Tape and Red; Bulk: Loose in Poly bags; Tube: Tube and Ammo Pack; k: 1.000

| Package/Case Type | Packaging Type | Std. Packing |     | Inner Carton   |              | Outer Carton |                |              |
|-------------------|----------------|--------------|-----|----------------|--------------|--------------|----------------|--------------|
|                   |                | Qty          | Qty | Size L x W x H | Gross Weight | Qty          | Size L x W x H | Gross Weight |
|                   |                |              |     | (cm)           | (Kg)         |              | (cm)           | (Kg)         |
| TO-92             | Bulk           | 1,000        | 5K  | 19x19x8        | 1.10         | 80K          | 43x40x35       | 20.0         |
|                   | T&A            | 2,000        | 2K  | 32x4.5x20      | 0.70         | 40K          | 43x40x35       | 15.20        |

## Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

## Disclaimer

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