

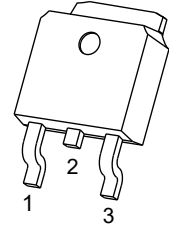
## TO-252-2L Plastic-Encapsulate Regulators

### CJ78D05 Three-terminal positive voltage regulator

#### FEATURES

- Maximum output current  
 $I_{OM}$ : 1 A
- Output voltage  
 $V_O$ : 5V
- Continuous total dissipation  
 $P_D$ : 1.25 W

#### TO-252-2L



1.IN

2.GND

3.OUT

#### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

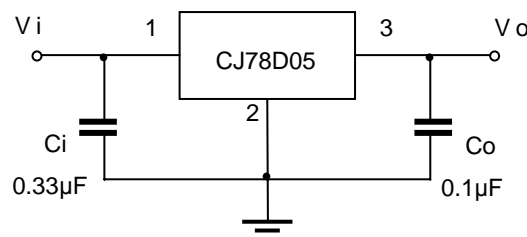
| Parameter                                   | Symbol          | Value    | Unit                        |
|---|-----------------|----------|-----------------------------|
| Input Voltage                               | $V_i$           | 35       | V                           |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 100      | $^{\circ}\text{C}/\text{W}$ |
| Operating Junction Temperature              | $T_J$           | 150      | $^{\circ}\text{C}$          |
| Operating Temperature                       | $T_{OPR}$       | -40~+125 | $^{\circ}\text{C}$          |
| Storage Temperature Range                   | $T_{STG}$       | -65~+150 | $^{\circ}\text{C}$          |

#### ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ( $V_i=10\text{V}, I_o=500\text{mA}, C_i=0.33\mu\text{F}, C_o=0.1\mu\text{F}$ , unless otherwise specified)

| Parameter                | Symbol                | Test conditions   | Min  | Typ  | Max  | Unit                         |
|--------------------------|-----------------------|---|------|------|------|------------------------------|
| Output voltage           | $V_o$                 | $T_J=25^{\circ}\text{C}$                                      | 4.85 | 5.0  | 5.15 | V                            |
|                          |                       | $8\text{V}\leq V_i\leq 20\text{V}, I_o=5\text{mA}-1\text{A}$  | 4.75 | 5.0  | 5.25 | V                            |
| Line regulation          | $\Delta V_o$          | $7.5\text{V}\leq V_i\leq 25\text{V}, T_J=25^{\circ}\text{C}$  |      |      | 50   | mV                           |
|                          |                       | $8\text{V}\leq V_i\leq 12\text{V}, T_J=25^{\circ}\text{C}$    |      |      | 50   | mV                           |
| Load Regulation          | $\Delta V_o$          | $I_o=5\text{mA}-1\text{A}, T_J=25^{\circ}\text{C}$            |      |      | 100  | mV                           |
|                          |                       | $I_o=250\text{mA}-750\text{mA}, T_J=25^{\circ}\text{C}$       |      |      | 50   | mV                           |
| Quiescent Current        | $I_q$                 | $T_J=25^{\circ}\text{C}$                                      |      | 3.5  | 8    | mA                           |
| Quiescent Current Change | $\Delta I_q$          | $8\text{V}\leq V_i\leq 25\text{V}$                            |      |      | 1.3  | mA                           |
|                          |                       | $5\text{mA}\leq I_o\leq 1\text{A}$                            |      |      | 0.5  | mA                           |
| Output Noise Voltage     | $V_N$                 | $10\text{Hz}\leq f\leq 100\text{KHz}, T_J=25^{\circ}\text{C}$ |      | 10   |      | $\mu\text{V}/V_o$            |
| Output voltage drift     | $\Delta V_o/\Delta T$ | $I_o=5\text{mA}$  |      | -0.3 |      | $\text{mV}/^{\circ}\text{C}$ |
| Ripple Rejection         | RR                    | $8\text{V}\leq V_i\leq 18\text{V}, f=120\text{Hz}$            |      | 68   |      | dB                           |
| Dropout Voltage          | $V_d$                 | $I_o=1\text{A}, T_J=25^{\circ}\text{C}$                       |      | 2    |      | V                            |
| Short Circuit Current    | $I_{sc}$              | $T_J=25^{\circ}\text{C}$                                      |      | 200  |      | mA                           |

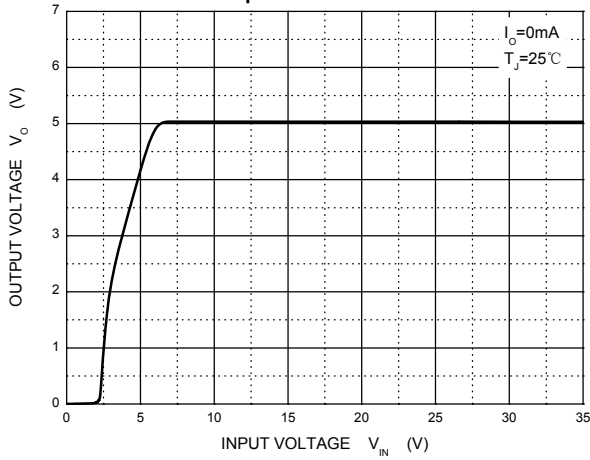
\* Pulse test.

#### TYPICAL APPLICATION

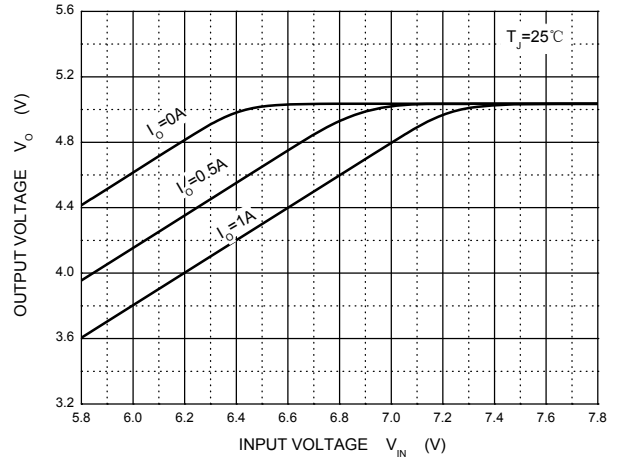


# Typical Characteristics

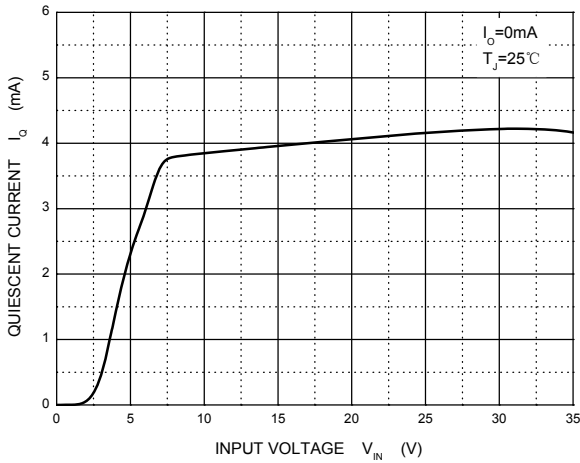
**Output Characteristics**



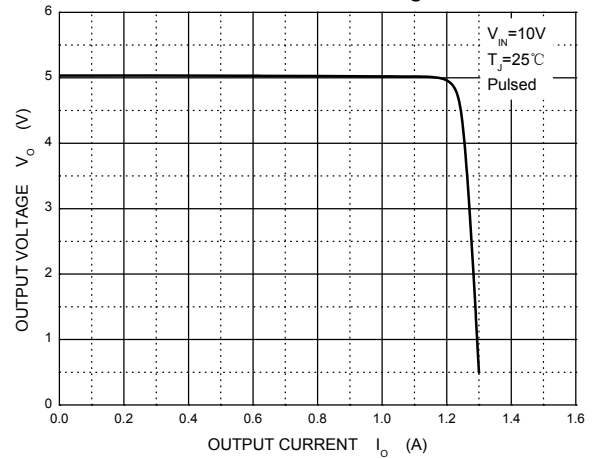
**Dropout Characteristics**



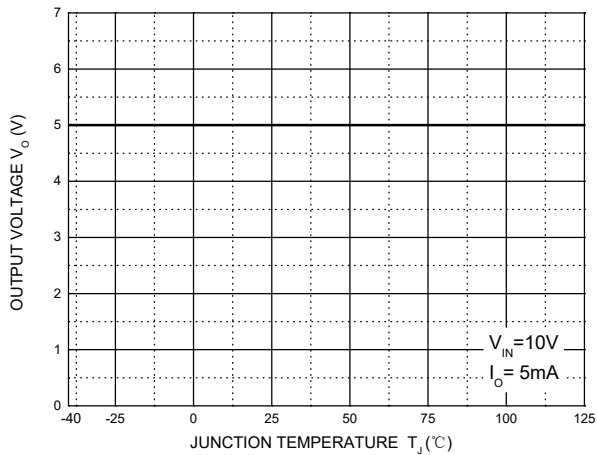
**Quiescent Current**



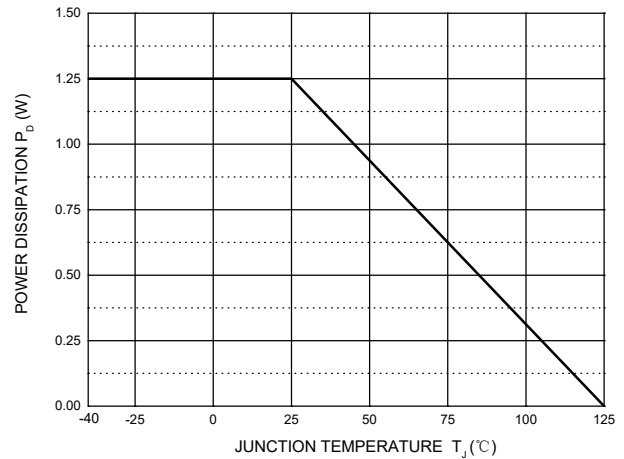
**Current Cut-off Grid Voltage**



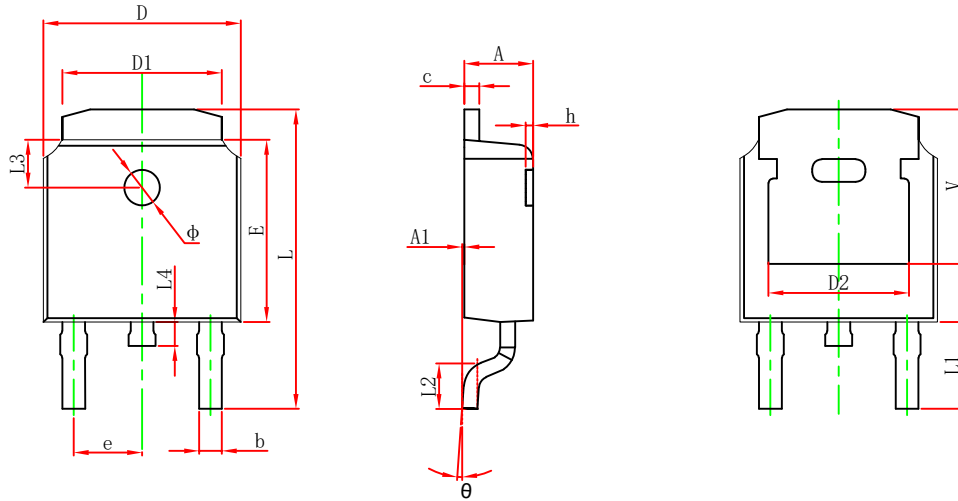
**Output Voltage vs Junction Temperature**



**Power Derating Curve**

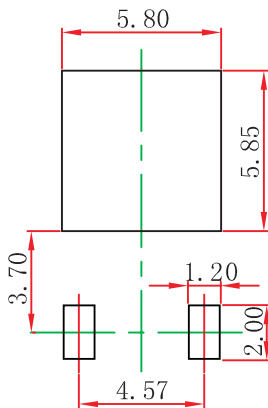


## TO-252-2L Package Outline Dimensions



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 2.200                     | 2.400  | 0.087                | 0.094 |
| A1     | 0.000                     | 0.127  | 0.000                | 0.005 |
| b      | 0.635                     | 0.770  | 0.025                | 0.030 |
| c      | 0.460                     | 0.580  | 0.018                | 0.023 |
| D      | 6.500                     | 6.700  | 0.256                | 0.264 |
| D1     | 5.100                     | 5.460  | 0.201                | 0.215 |
| D2     | 4.830 REF.                |        | 0.190 REF.           |       |
| E      | 6.000                     | 6.200  | 0.236                | 0.244 |
| e      | 2.186                     | 2.386  | 0.086                | 0.094 |
| L      | 9.712                     | 10.312 | 0.382                | 0.406 |
| L1     | 2.900 REF.                |        | 0.114 REF.           |       |
| L2     | 1.400                     | 1.700  | 0.055                | 0.067 |
| L3     | 1.600 REF.                |        | 0.063 REF.           |       |
| L4     | 0.600                     | 1.000  | 0.024                | 0.039 |
| Φ      | 1.100                     | 1.300  | 0.043                | 0.051 |
| θ      | 0°                        | 8°     | 0°                   | 8°    |
| h      | 0.000                     | 0.300  | 0.000                | 0.012 |
| V      | 5.250 REF.                |        | 0.207 REF.           |       |

## TO-252-2L Suggested Pad Layout

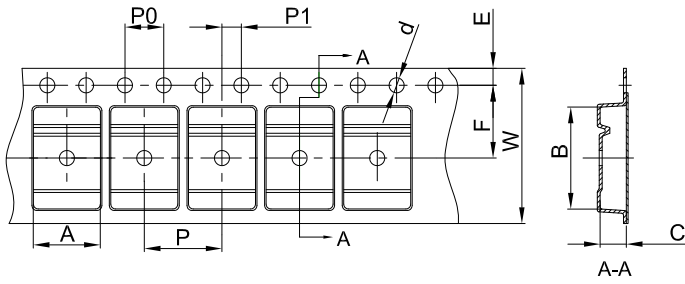


**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

# TO-252-2L Tape and Reel

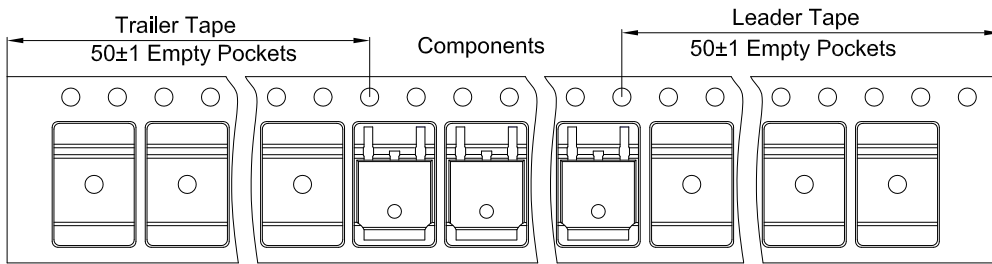
## TO-252 Embossed Carrier Tape



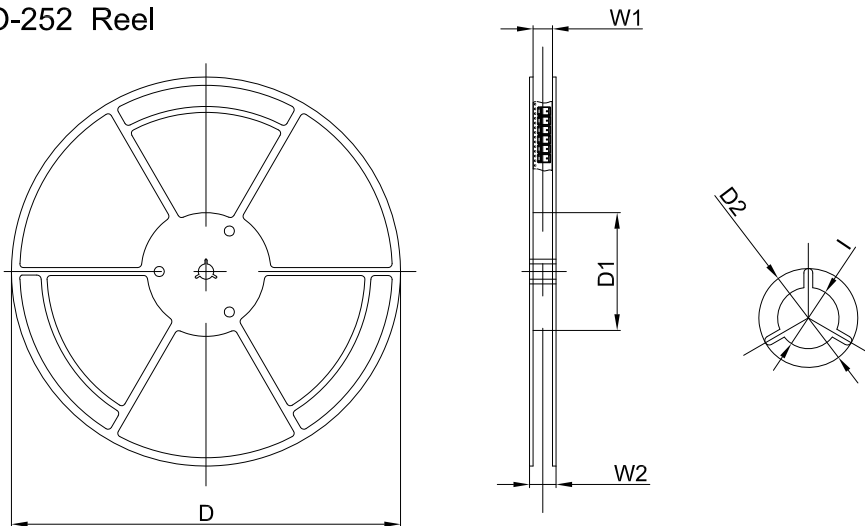
**Packaging Description:**  
 TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |       |      |       |      |      |      |      |      |       |
|------------------------------|------|-------|------|-------|------|------|------|------|------|-------|
| Pkg type                     | A    | B     | C    | d     | E    | F    | P0   | P    | P1   | W     |
| TO-252                       | 6.90 | 10.50 | 2.70 | Ø1.55 | 1.75 | 7.50 | 4.00 | 8.00 | 2.00 | 16.00 |

## TO-252 Tape Leader and Trailer



## TO-252 Reel

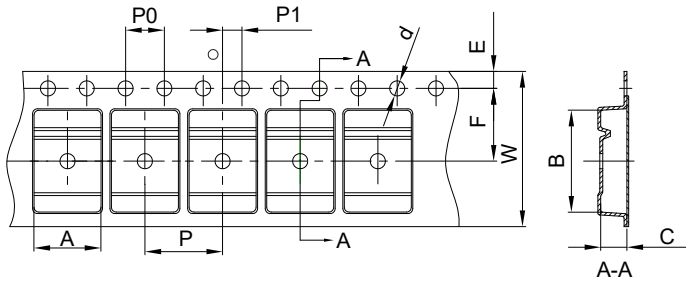


| Dimensions are in millimeter |        |        |        |       |       |        |
|------------------------------|--------|--------|--------|-------|-------|--------|
| Reel Option                  | D      | D1     | D2     | W1    | W2    | I      |
| 13" Dia                      | 330.00 | 100.00 | Ø21.00 | 16.40 | 21.00 | Ø13.00 |

| REEL      | Reel Size | Box       | Box Size(mm) | Carton     | Carton Size(mm) | G.W.(kg) |
|-----------|-----------|-----------|--------------|------------|-----------------|----------|
| 2,500 pcs | 13inch    | 2,500 pcs | 340×336×29   | 25,000 pcs | 353×346×365     |          |

# TO-252-2L Tape and Reel

## TO-252-2L Embossed Carrier Tape

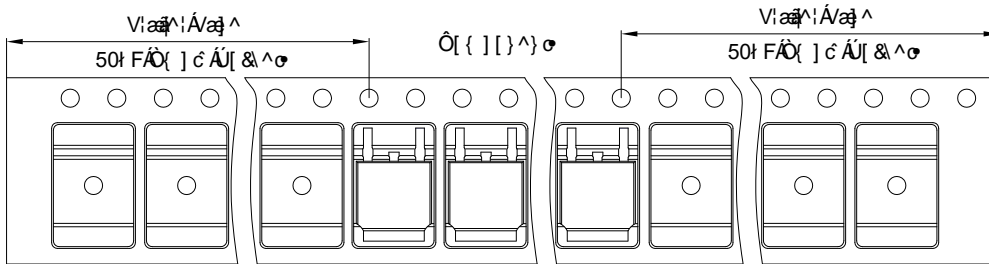


### Packaging Description:

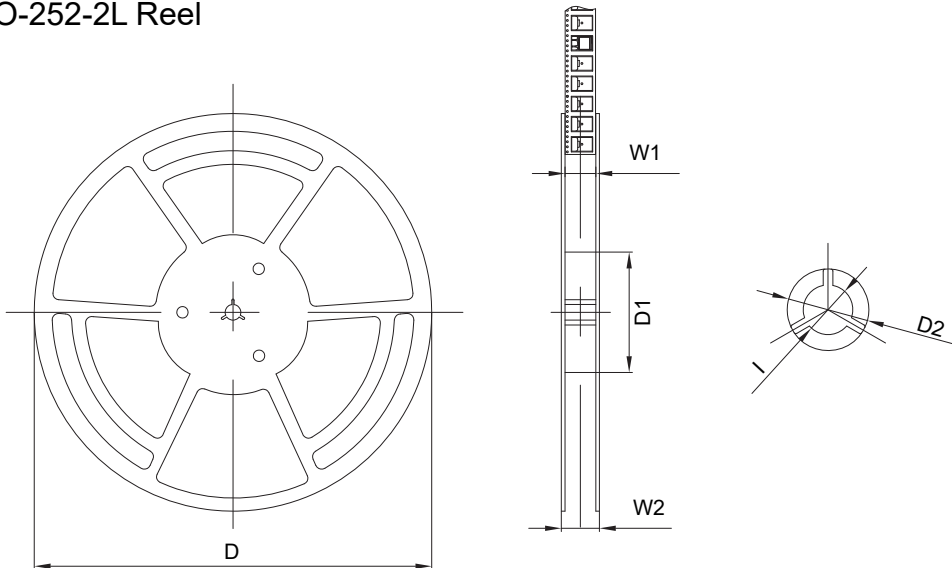
TO-252-2L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Hear Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2500 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |       |      |       |      |      |      |      |      |       |
|------------------------------|------|-------|------|-------|------|------|------|------|------|-------|
| Pkg type                     | A    | B     | C    | d     | E    | F    | P0   | P    | P1   | W     |
| TO-252                       | 6.90 | 10.50 | 2.70 | Φ1.55 | 1.75 | 7.50 | 4.00 | 8.00 | 2.00 | 16.00 |

## TO-252-2L Tape Leader and Trailer



## TO-252-2L Reel



| Dimensions are in millimeter |        |        |        |       |       |        |
|------------------------------|--------|--------|--------|-------|-------|--------|
| Reel                         | D      | D1     | D2     | W1    | W2    | l      |
| 13" Dia                      | 330.00 | 100.00 | Φ21.00 | 16.40 | 21.40 | Φ13.00 |

| Reel     | Reel Size | Box      | Box Size(mm) | Carton    | Carton Size(mm) |
|----------|-----------|----------|--------------|-----------|-----------------|
| 2500 pcs | 13 inch   | 5000 pcs | 360×360×65   | 25000 pcs | 378×358×382     |