

## SOT-23 Plastic-Encapsulate Three-terminal positive voltage regulator

### FEATURES

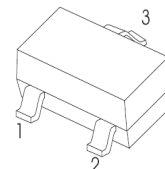
Maximum output current  $I_O$ : 0.1 A

Output voltage  $V_O$ : 5 V

Continuous total dissipation

$P_D$ : SOT-23 0.35 W ( $T_a = 25^\circ\text{C}$ )

### SOT-23



1. OUT
2. IN
3. GND

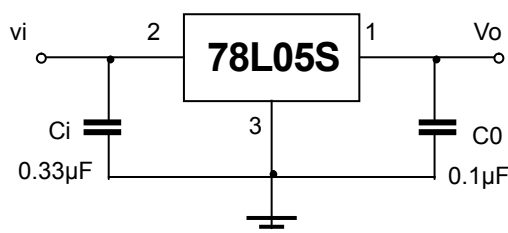
### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

| Parameter                            | Symbol    | Value    | Unit             |
|--------------------------------------|-----------|----------|------------------|
| Input Voltage                        | $V_I$     | 30       | V                |
| Operating Junction Temperature Range | $T_{OPR}$ | 0~+125   | $^\circ\text{C}$ |
| Storage Temperature Range            | $T_{STG}$ | -55~+150 | $^\circ\text{C}$ |

### ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ( $V_i=10\text{V}$ , $I_o=40\text{mA}$ , $C_i=0.33\mu\text{F}$ , $C_o=0.1\mu\text{F}$ , unless otherwise specified)

| Parameter                | mbol         | Test conditions                                                          | MIN  | TYP | MAX  | UNIT          |
|--------------------------|--------------|--------------------------------------------------------------------------|------|-----|------|---------------|
| Output voltage           | $V_O$        | $25^\circ\text{C}$                                                       | 4.8  | 5.0 | 5.2  | V             |
|                          |              | $7\text{V} \leq V_i \leq 20\text{V}$ , $I_o=1\text{mA} \sim 40\text{mA}$ | 4.75 | 5.0 | 5.25 | V             |
|                          |              | $I_o=1\text{mA} \sim 70\text{mA}$                                        | 4.75 | 5.0 | 5.25 | V             |
| Load Regulation          | $\Delta V_O$ | $I_o=1\text{mA} \sim 100\text{mA}$                                       |      | 15  | 60   | mV            |
|                          |              | $I_o=1\text{mA} \sim 40\text{mA}$                                        |      | 8   | 30   | mV            |
| Line regulation          | $\Delta V_O$ | $7\text{V} \leq V_i \leq 20\text{V}$                                     |      | 32  | 150  | mV            |
|                          |              | $8\text{V} \leq V_i \leq 20\text{V}$                                     |      | 26  | 100  | mV            |
| Quiescent Current        | $I_q$        | $25^\circ\text{C}$                                                       |      | 3.8 | 6    | mA            |
| Quiescent Current Change | $\Delta I_q$ | $8\text{V} \leq V_i \leq 20\text{V}$                                     |      |     | 1.5  | mA            |
|                          | $\Delta I_q$ | $1\text{mA} \leq V_i \leq 40\text{mA}$                                   |      |     | 0.1  | mA            |
| Output Noise Voltage     | $V_N$        | $10\text{Hz} \leq f \leq 100\text{KHz}$                                  |      | 42  |      | $\mu\text{V}$ |
| Ripple Rejection         | RR           | $8\text{V} \leq V_i \leq 20\text{V}$ , $f=120\text{Hz}$                  | 41   | 49  |      | dB            |
| Dropout Voltage          | $V_d$        | $25^\circ\text{C}$                                                       |      | 1.7 |      | V             |

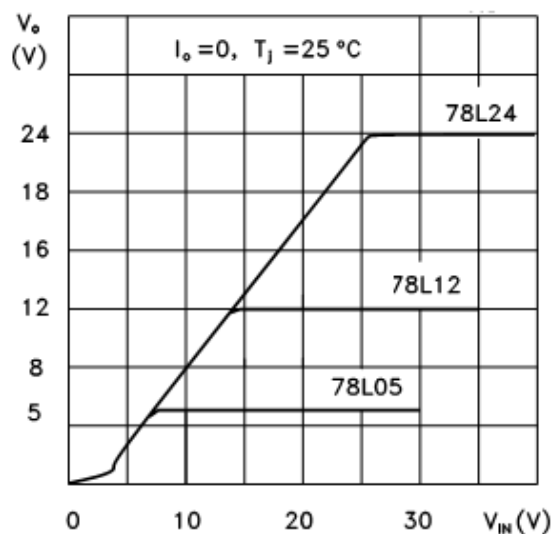
### TYPICAL APPLICATION



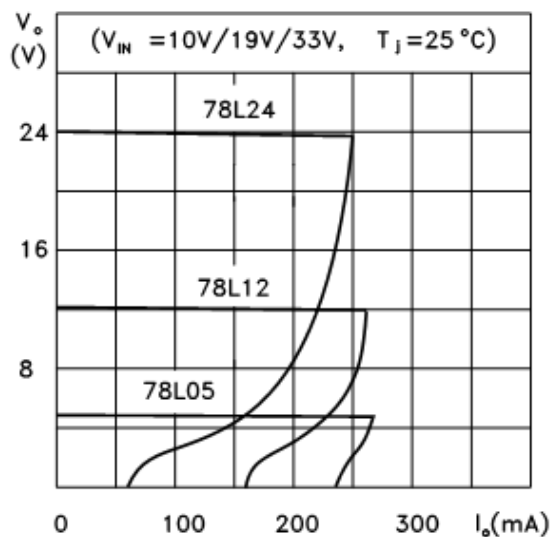
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.

## Typical Characteristics

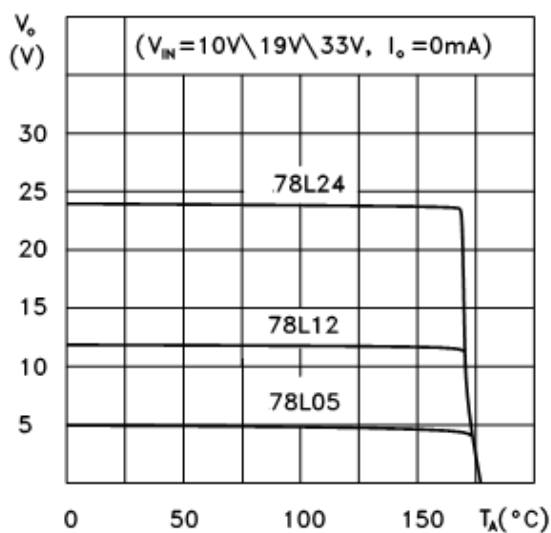
78L05/12/24 Output Characteristics



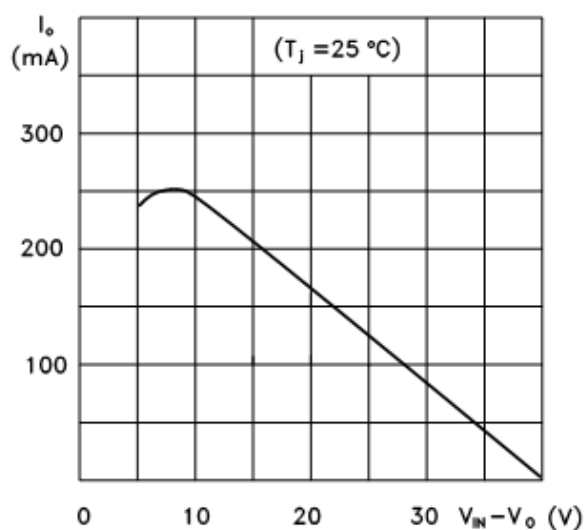
78L05/12/24 Load Characteristics



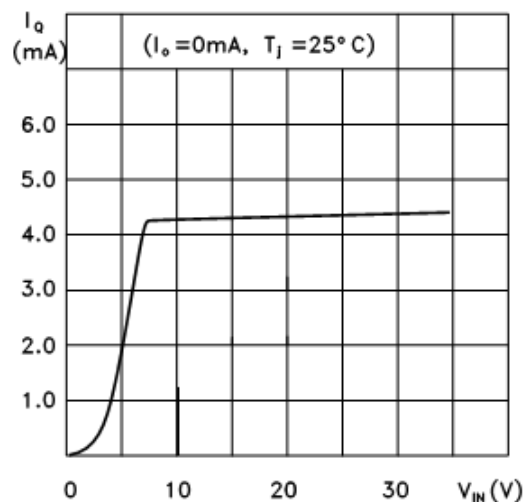
78L05/12/24 Thermal Shutdown



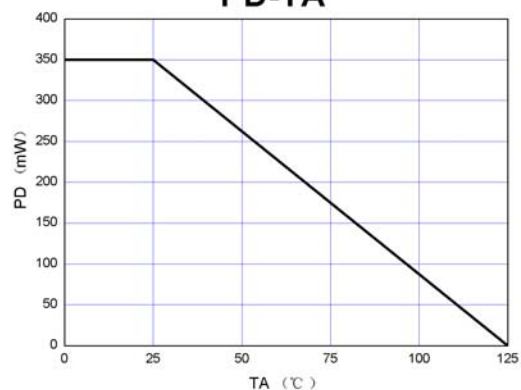
78L00 Series Short Circuit Output Current



78L05 Quiescent Current vs Input Voltage

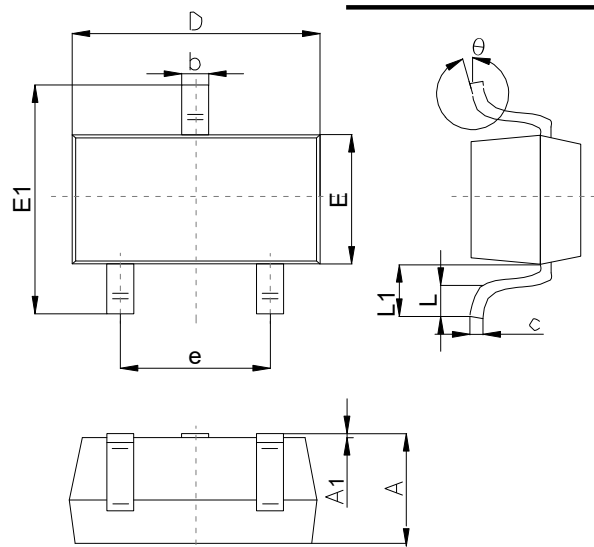


PD-TA



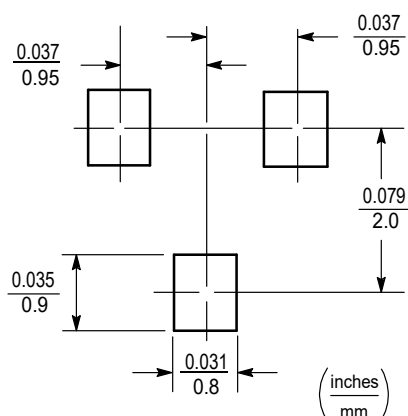
## Outlitne Drawing

### SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |     |      |
|--------|---------------------------|-----|------|
|        | Min                       | Typ | Max  |
| A      | 0.65                      |     | 1.40 |
| A1     | 0.00                      |     | 0.20 |
| b      | 0.30                      |     | 0.55 |
| c      | 0.08                      |     | 0.20 |
| D      | 2.70                      |     | 3.10 |
| E      | 1.15                      |     | 1.65 |
| E1     | 2.10                      |     | 2.80 |
| e      | 1.70                      |     | 2.10 |
| L      | 0.15                      |     | 0.50 |
| L1     | 0.35                      |     | 0.70 |
| θ      | 0°                        |     | 12°  |

### 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.

## Important Notice and Disclaimer

Microdiode Electronics (Jiangsu) reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design,purchase or use.

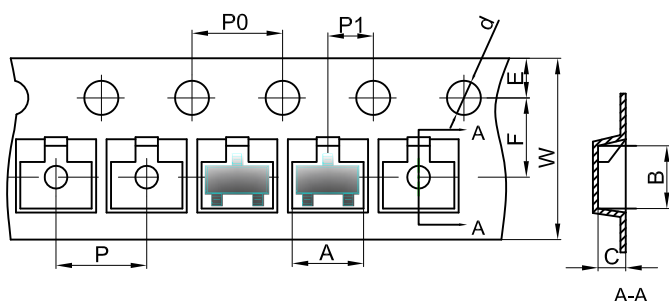
Microdiode Electronics (Jiangsu) makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does Microdiode Electronics (Jiangsu) assume any liability for application assistance or customer product design. Microdiode Electronics (Jiangsu) does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of Microdiode Electronics (Jiangsu).

Microdiode Electronics (Jiangsu) products are not authorized for use as critical components in life support devices or systems without express written approval of Microdiode Electronics (Jiangsu).

## SOT-23 Tape and Reel

### SOT-23 Embossed Carrier Tape

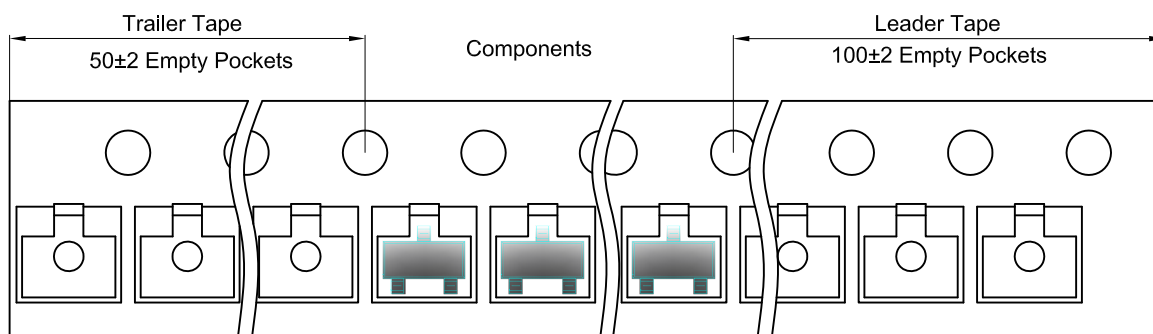


#### Packaging Description:

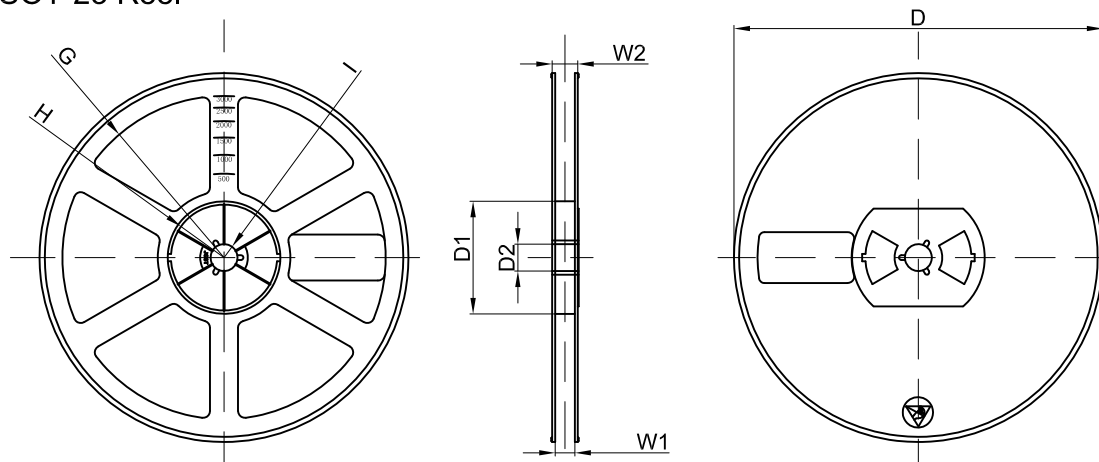
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and are made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-23                       | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

### SOT-23 Tape Leader and Trailer



### SOT-23 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 Inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |