

### Features

- Input Voltage Range: 2.4 V to 5.5 V
- Output Voltage Options:
  - Fixed Voltage: 1.2 V, 1.8 V, 2.5 V, 2.8 V, 3 V, 3.3 V
  - Adjustable Voltage: 0.8 V to 5 V
- High Output Accuracy:
  - $\pm 1\%$  Typical Under Room Temperature
  - $\pm 2\%$  Through Operating Conditions
- Maximum Output Current: 500 mA
- Low Dropout Voltage: 400 mV at 500 mA
- Low Quiescent Current and Shutdown Current
- Foldback Current Limit and Thermal Protection
- Stable with 2.2- $\mu$ F Ceramic Capacitor
- Inrush Input Current Limitation During Start-up
- Thermal Shutdown Protection
- Junction Temperature Range:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Package Options: SOT23-5, SOT89-3, DFN1 $\times$ 1-4

### Applications

- Handheld Devices with Battery Power Supply
- POS
- Video Surveillance
- Wireless and IoT modules

### Description

The TPL740 is a series of high-performance and low-dropout linear regulators. The TPL740 series supports a maximum 500-mA output current with low-quiescent current and high PSRR. The TPL740 series is stable with ceramic output capacitors from 2.2  $\mu$ F to 10  $\mu$ F.

The TPL740 series has a high PSRR with 60 dB at 1 kHz. This feature makes the TPL740 series very suitable for power-sensitive applications with high noise from the previous stage power supply. A quiescent current of as low as 49  $\mu$ A and only 20-nA shutdown current make the TPL740 series ideal for portable devices with battery power supplies. The current limit foldback and thermal overload protection circuits improves the reliability under heavy load conditions.

The TPL740 series provides several output voltage options including the fixed and adjustable versions with  $\pm 2\%$  output voltage accuracy over operating conditions. The TPL740 series is guaranteed over the junction temperature range from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .

### Typical Application Circuit

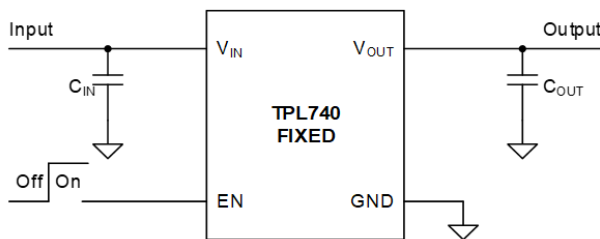


Figure 1. TPL740 Fixed Output Voltage

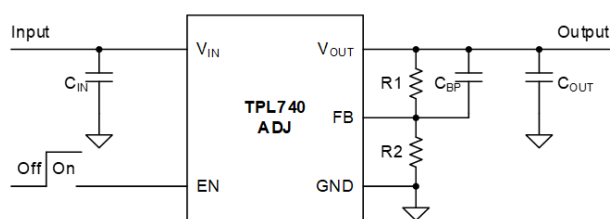


Figure 2. TPL740 Adjustable Output Voltage

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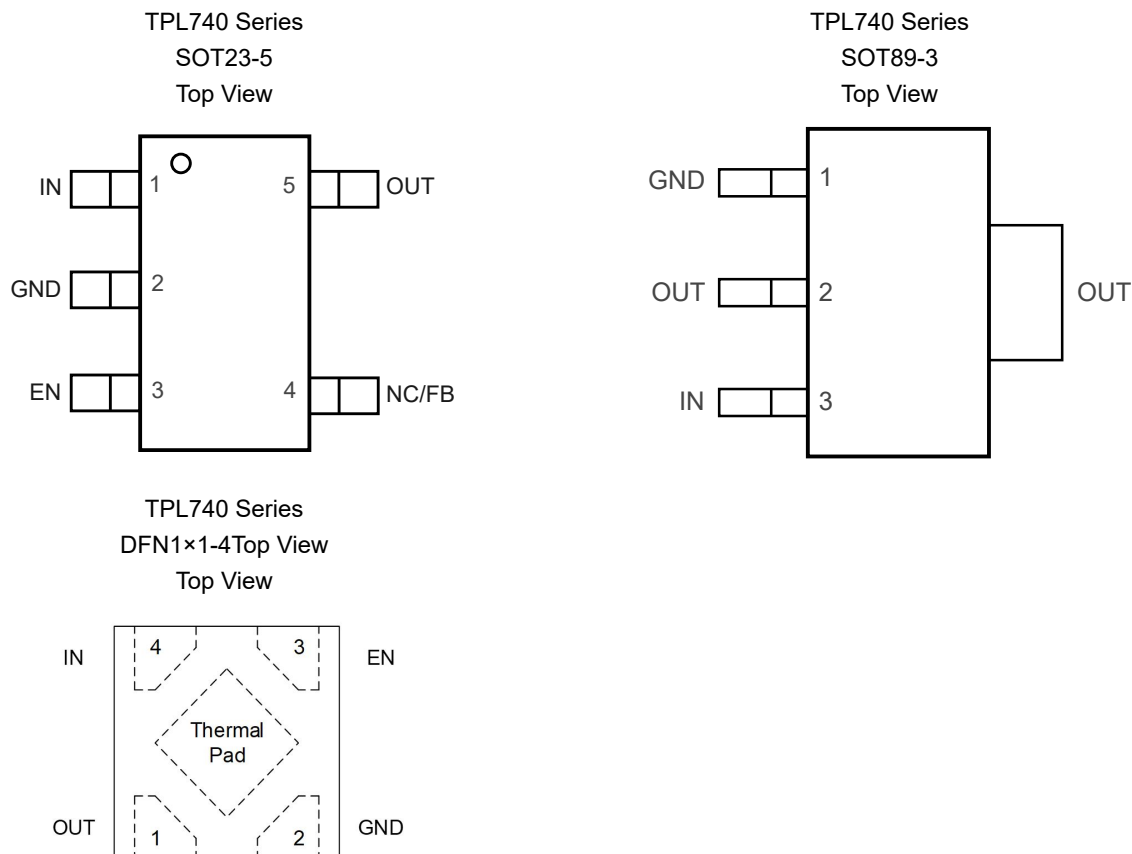
**Product Family Table**

| Order Number   | Output Voltage (V)       | Package  |
|----------------|--------------------------|----------|
| TPL740ADJ-5TR  | Adjustable (0.8 V ~ 5 V) | SOT23-5  |
| TPL740F12-5TR  | Fixed 1.2 V              | SOT23-5  |
| TPL740F18-5TR  | Fixed 1.8 V              | SOT23-5  |
| TPL740F25-5TR  | Fixed 2.5 V              | SOT23-5  |
| TPL740F28-5TR  | Fixed 2.8 V              | SOT23-5  |
| TPL740F30-5TR  | Fixed 3.0 V              | SOT23-5  |
| TPL740F33-5TR  | Fixed 3.3 V              | SOT23-5  |
| TPL740F33-89TR | Fixed 3.3 V              | SOT89-3  |
| TPL740F33-FR   | Fixed 3.3 V              | DFN1×1-4 |

## Revision History

| Date       | Revision  | Notes                                                                                                                                                                                                                    |
|------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2018-08-28 | Rev.Pre.0 | Preliminary version.                                                                                                                                                                                                     |
| 2018-11-26 | Rev.A.0   | Initial released version.                                                                                                                                                                                                |
| 2019-02-11 | Rev.A.1   | 1. Added voltage options of 1.5 V, 2.7 V, and 2.9 V.<br>2. Added the link to Figure 11 and Figure 12.                                                                                                                    |
| 2019-08-08 | Rev.A.2   | Added the max limit of the item: $I_{GND}$ , $I_{SHDN}$ , UVLO, Load regulation, and $V_{DO}$ .                                                                                                                          |
| 2020-08-15 | Rev.A.3   | 1. Changed the “Soft-start Limits Input Current Surge During Enable” to “Inrush Input Current Limitation During Start-up”.<br>2. Added the description of “Short-Circuit Protection”.                                    |
| 2021-03-09 | Rev.A.4   | 1. Corrected the typical value of the current limit in the Feature Description.<br>2. Added Tape and Reel Information.<br>3. Updated Junction Temperature Range.                                                         |
| 2022-05-15 | Rev.A.5   | Added Tape and Reel Information of the SC70-5 and DFN1×1-4 package.                                                                                                                                                      |
| 2024-10-25 | Rev.A.6   | 1. Updated to a new datasheet format.<br>2. Removed voltage options of 1.5 V, 2.7 V, and 2.9 V.<br>3. Removed voltage options of SC70-5 package.<br>4. Updated recommended $C_{BP}$ range for adjustable output version. |

### Pin Configuration and Functions



**Table 1. Pin Functions**

| Pin No. |         |          | Name | I/O | Description                                                                                                                                                                             |
|---------|---------|----------|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOT23-5 | SOT89-3 | DFN1×1-4 |      |     |                                                                                                                                                                                         |
| 1       | 3       | 4        | IN   | I   | The input voltage pin. Bypass IN to GND with a 1-μF or greater capacitor.                                                                                                               |
| 5       | 2       | 1        | OUT  | O   | The regulated output voltage pin. Bypass OUT to GND with a 2.2-μF or greater capacitor.                                                                                                 |
| 3       | -       | 3        | EN   | I   | The regulator enable pin. Drive EN high to turn on the regulator; drive EN low to turn off the regulator. For the automatic startup, connect EN to IN directly.                         |
| 2       | 1       | 2        | GND  | -   | The ground reference pin. Connect the GND pin to the PCB ground plane directly.                                                                                                         |
| 4       | -       | -        | NC   | -   | Not connected.                                                                                                                                                                          |
| 4       | -       | -        | FB   | I   | The output feedback pin (adjustable version only). Connect to a resistor divider to adjust the output voltage. And connect CBP with capacitance from 1 nF to 200 nF between FB and OUT. |

(1) The thermal pad must be connected to the PCB ground plane to maximize the thermal performance.

## 500-mA Output, High PSRR, Low-Dropout Linear Regulator

## Specifications

## Absolute Maximum Ratings

| Parameter                         |                                            | Min  | Max | Unit |
|-----------------------------------|--------------------------------------------|------|-----|------|
| V <sub>IN</sub> , V <sub>EN</sub> | Input Voltage                              | -0.3 | 6   | V    |
| V <sub>OUT</sub>                  | Output Voltage                             | -0.3 | 6   | V    |
| V <sub>FB</sub>                   | Feedback Voltage (Adjustable Version only) | -0.3 | 6   | V    |
| T <sub>J</sub>                    | Maximum Junction Temperature               | -40  | 150 | °C   |
| T <sub>STG</sub>                  | Storage Temperature Range                  | -65  | 150 | °C   |
| T <sub>L</sub>                    | Lead Temperature (Soldering, 10 sec)       |      | 260 | °C   |

(1) Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

(2) All voltage values are with respect to GND.

## ESD, Electrostatic Discharge Protection

| Symbol | Parameter                | Condition                             | Minimum Level | Unit |
|--------|--------------------------|---------------------------------------|---------------|------|
| HBM    | Human Body Model ESD     | ANSI/ESDA/JEDEC JS-001 <sup>(1)</sup> | ±8            | kV   |
| CDM    | Charged Device Model ESD | ANSI/ESDA/JEDEC JS-002 <sup>(2)</sup> | ±2            | kV   |

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

## Recommended Operating Conditions

| Parameter        |                                            | Min | Max              | Unit |
|------------------|--------------------------------------------|-----|------------------|------|
| V <sub>IN</sub>  | Input Voltage                              | 2.4 | 5.5              | V    |
| V <sub>EN</sub>  | Enable Voltage                             | 0   | V <sub>IN</sub>  | V    |
| V <sub>OUT</sub> | Output Voltage                             | 0   | 5                | V    |
| V <sub>FB</sub>  | Feedback Voltage (Adjustable Version Only) | 0   | V <sub>OUT</sub> | V    |
| I <sub>OUT</sub> | Output Current                             | 0   | 500              | mA   |
| C <sub>OUT</sub> | Output Capacitor                           | 2.2 | 10               | μF   |
| C <sub>BP</sub>  | Bypass Capacitor                           | 1   | 200              | nF   |
| T <sub>J</sub>   | Operating Junction Temperature Range       | -40 | 125              | °C   |

## Thermal Information

| Package Type | θ <sub>JA</sub> | θ <sub>JC</sub> | Unit |
|--------------|-----------------|-----------------|------|
| SOT23-5      | 280             | 62              | °C/W |
| SOT89-3      | 55              | 88              | °C/W |

## TPL740 Series

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### 500-mA Output, High PSRR, Low-Dropout Linear Regulator

| Package Type | $\theta_{JA}$ | $\theta_{JC}$ | Unit |
|--------------|---------------|---------------|------|
| DFN1×1-4     | 210           | 110           | °C/W |

500-mA Output, High PSRR, Low-Dropout Linear Regulator

Electrical Characteristics

All test conditions:  $V_{IN} = V_{OUT(NOM)} + 0.5\text{ V}$  or  $2.4\text{ V}$ , whichever is greater;  $C_{OUT} = 2.2\text{ }\mu\text{F}$ ,  $T_A = +25^\circ\text{C}$ , unless otherwise noted.

| Symbol                               | Parameter                                    | Conditions                                                                                                             | Min   | Typ  | Max             | Unit |
|--------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------|------|-----------------|------|
| Supply Voltage and Current           |                                              |                                                                                                                        |       |      |                 |      |
| V <sub>IN</sub>                      | Input Voltage Range                          |                                                                                                                        | 2.4   |      | 5.5             | V    |
| I <sub>GND</sub>                     | Ground Pin Current                           | I <sub>OUT</sub> = 0 mA                                                                                                |       | 49   | 200             | μA   |
|                                      |                                              | I <sub>OUT</sub> = 100 mA                                                                                              |       | 200  | 2000            | μA   |
| I <sub>SHDN</sub>                    | Shutdown Current                             | EN = GND                                                                                                               |       | 0.02 | 2               | nA   |
| UVLO                                 | V <sub>IN</sub> Under-Voltage Lock-out       | V <sub>IN</sub> Rising                                                                                                 | 1.5   | 1.9  | 2.4             | V    |
|                                      |                                              | Hysteresis                                                                                                             |       | 200  |                 | mV   |
| Enable Input Voltage and Current     |                                              |                                                                                                                        |       |      |                 |      |
| V <sub>IH (EN)</sub>                 | EN Logic-Input High Level (Enable)           |                                                                                                                        | 1.2   |      | V <sub>IN</sub> | V    |
| V <sub>IL (EN)</sub>                 | EN Logic-Input Low Level (Disable)           |                                                                                                                        | 0     |      | 0.4             | V    |
| I <sub>EN</sub>                      | EN Pin Leakage Current                       | EN = 5 V                                                                                                               |       | 1    | 3               | μA   |
| Regulated Output Voltage and Current |                                              |                                                                                                                        |       |      |                 |      |
| V <sub>OUT</sub>                     | Output Voltage Accuracy                      | T <sub>J</sub> = +25°C                                                                                                 |       | 1%   |                 |      |
|                                      |                                              | −40°C ≤ T <sub>J</sub> ≤ +125°C                                                                                        | −2%   |      | 2%              |      |
| V <sub>FB</sub>                      | Feedback Pin Voltage                         | ADJ Version Only                                                                                                       | 0.784 | 0.8  | 0.816           | V    |
| ΔV <sub>OUT</sub>                    | Line Regulation                              | V <sub>IN</sub> = 2.4 V or V <sub>OUT (NOM)</sub> + 0.5 V to 5.5 V, or V <sub>IN</sub> ≥2.4 V, I <sub>OUT</sub> = 1 mA |       | 1    | 5               | mV   |
|                                      | Load Regulation                              | I <sub>OUT</sub> = 1 mA to 500 mA                                                                                      |       | 20   | 60              | mV   |
| V <sub>DO</sub> <sup>(1)</sup>       | Dropout Voltage                              | V <sub>IN</sub> = 0.98 × V <sub>OUT (NOM)</sub> ,<br>I <sub>OUT</sub> = 100 mA                                         |       | 75   | 100             | mV   |
|                                      |                                              | V <sub>IN</sub> = 0.98 × V <sub>OUT (NOM)</sub> ,<br>I <sub>OUT</sub> = 300 mA                                         |       | 200  | 250             | mV   |
|                                      |                                              | V <sub>IN</sub> = 0.98 × V <sub>OUT (NOM)</sub> ,<br>I <sub>OUT</sub> = 500 mA                                         |       | 300  | 400             | mV   |
| I <sub>OUT</sub>                     | Output Current                               | V <sub>OUT</sub> in Regulation                                                                                         | 0     |      | 500             | mA   |
| I <sub>CL</sub>                      | Output Current Limit                         | V <sub>OUT</sub> = 0.9 × V <sub>OUT (NOM)</sub>                                                                        | 550   | 1000 | 1400            | mA   |
| Regulated Output Voltage and Current |                                              |                                                                                                                        |       |      |                 |      |
| PSRR                                 | Power Supply Rejection Ratio (Fixed Version) | I <sub>OUT</sub> = 100 mA, f = 1 kHz                                                                                   |       | 60   |                 | dB   |
|                                      |                                              | I <sub>OUT</sub> = 100 mA, f = 100 kHz                                                                                 |       | 40   |                 | dB   |
|                                      |                                              | I <sub>OUT</sub> = 100 mA, f = 1 MHz                                                                                   |       | 40   |                 | dB   |
|                                      | Power Supply Rejection Ratio (ADJ Version)   | I <sub>OUT</sub> = 100 mA, f = 1 kHz,<br>C <sub>BP</sub> = 100 nF                                                      |       | 65   |                 | dB   |
|                                      |                                              | I <sub>OUT</sub> = 100 mA, f = 100 kHz,<br>C <sub>BP</sub> = 100 nF                                                    |       | 60   |                 | dB   |



500-mA Output, High PSRR, Low-Dropout Linear Regulator

| Symbol                   | Parameter                                  | Conditions                                                                                   | Min | Typ | Max | Unit                |
|--------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------|-----|-----|-----|---------------------|
| PSRR                     | Power Supply Rejection Ratio (ADJ Version) | $I_{OUT} = 100\text{ mA}$ , $f = 1\text{ MHz}$ , $C_{BP} = 100\text{ nF}$                    |     | 45  |     | dB                  |
| $V_N$                    | Output Noise Voltage (Fixed Version)       | $I_{OUT} = 100\text{ mA}$ , $BW = 100\text{ Hz to }80\text{ kHz}$                            |     | 130 |     | $\mu\text{V}_{RMS}$ |
|                          | Output Noise Voltage (ADJ Version)         | $I_{OUT} = 100\text{ mA}$ , $BW = 100\text{ Hz to }80\text{ kHz}$ , $C_{BP} = 100\text{ nF}$ |     | 40  |     | $\mu\text{V}_{RMS}$ |
| $T_{STR}^{(2)}$          | Start-up Time (Fixed Version)              | $I_{OUT} = 500\text{ mA}$ , $C_{OUT} = 2.2\text{ }\mu\text{F}$                               |     | 150 |     | $\mu\text{s}$       |
|                          | Start-up Time (ADJ Version)                | $I_{OUT} = 500\text{ mA}$ , $C_{OUT} = 2.2\text{ }\mu\text{F}$ , $C_{BP} = 100\text{ nF}$    |     | 15  |     | ms                  |
| <b>Temperature Range</b> |                                            |                                                                                              |     |     |     |                     |
| $T_{SD}$                 | Thermal Shutdown Temperature               |                                                                                              |     | 170 |     | $^{\circ}\text{C}$  |
|                          | Thermal Shutdown Hysteresis                |                                                                                              |     | 30  |     | $^{\circ}\text{C}$  |

(1) Dropout voltage is the minimum input-to-output voltage differential needed to maintain regulation at a specified output current. In dropout, the output voltage is equal to  $V_{IN} - V_{DROPOUT}$ .

(2) The start-up time from EN assertion to  $0.98 \times V_{OUT(NOM)}$ .

# 500-mA Output, High PSRR, Low-Dropout Linear Regulator

## Typical Performance Characteristics

All test conditions:  $V_{IN} = V_{OUT(NOM)} + 0.5\text{ V}$  or  $2.4\text{ V}$ , whichever is greater;  $C_{OUT} = 2.2\text{ }\mu\text{F}$ ,  $T_A = +25^\circ\text{C}$ , unless otherwise noted.

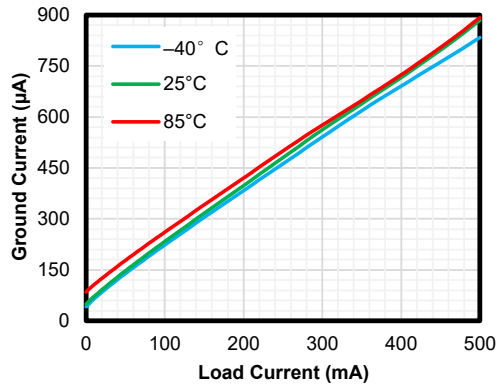


Figure 3. Quiescent Current vs. Output Current

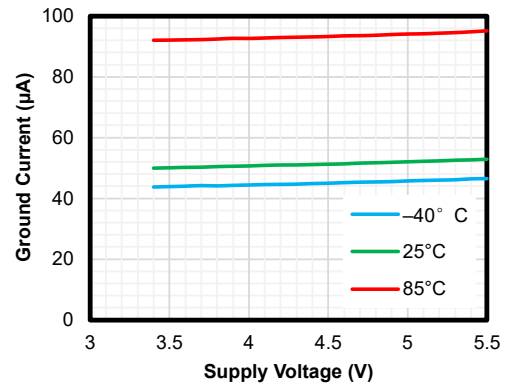


Figure 4. Quiescent Current vs. Input Voltage

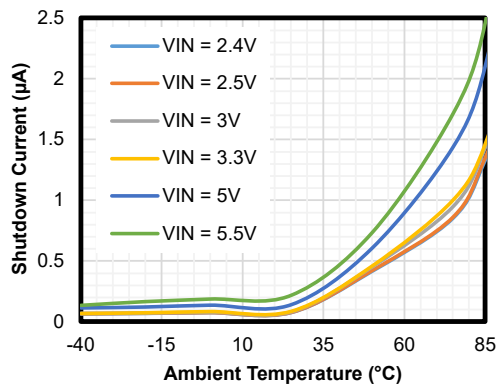


Figure 5. Shutdown Current vs. Ambient Temperature

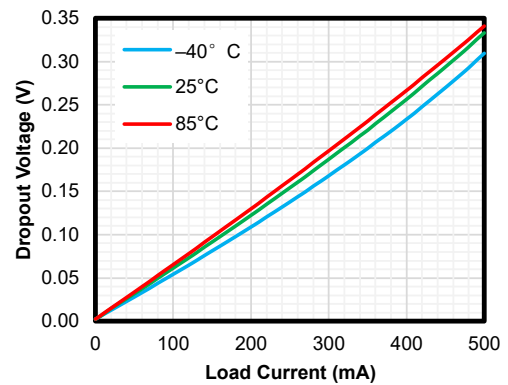


Figure 6. Dropout Voltage vs. Output Current

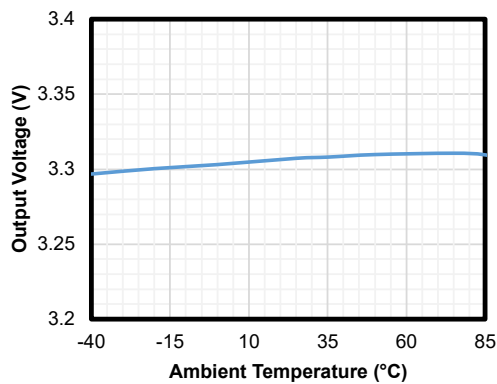


Figure 7. Output Accuracy vs. Ambient Temperature

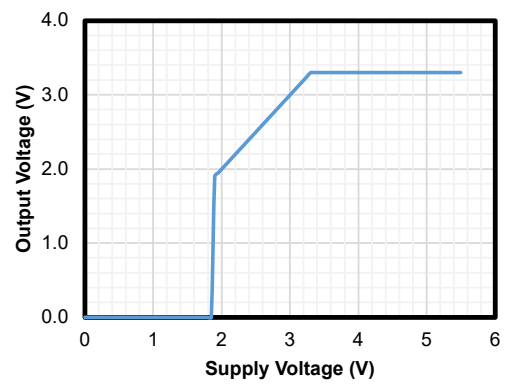


Figure 8. Output Voltage vs. Supply Voltage

500-mA Output, High PSRR, Low-Dropout Linear Regulator

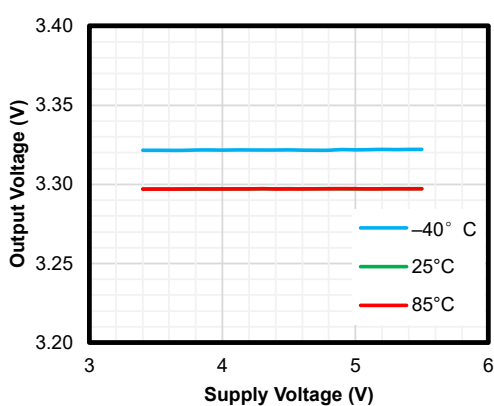


Figure 9. Line Regulation

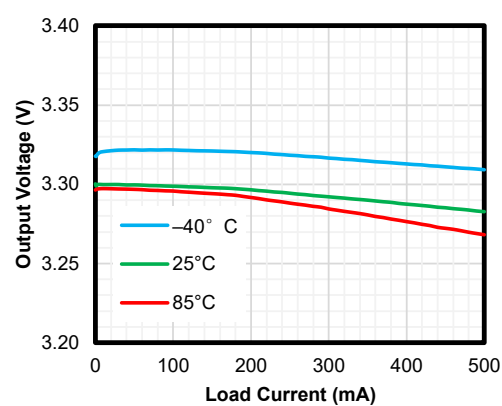


Figure 10. Load Regulation

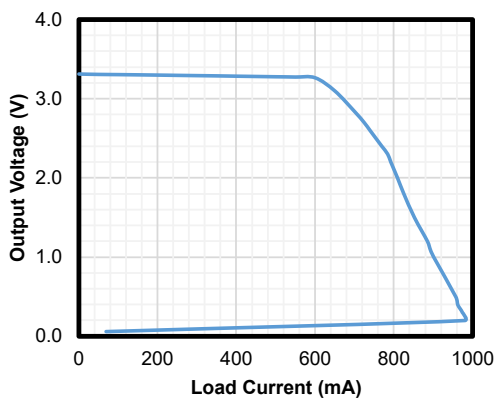


Figure 11. Foldback Current Limit

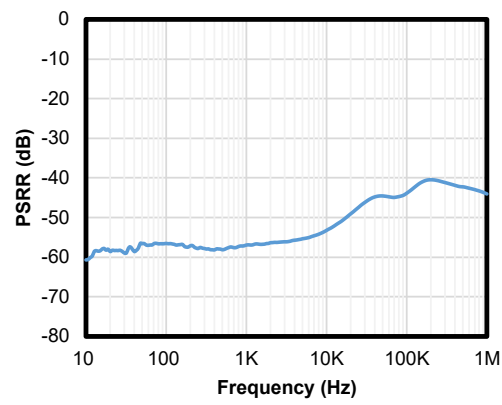


Figure 12. PSRR

### Detailed Description

#### Overview

The TPL740 is a series of 500-mA high PSRR, low-dropout linear regulators with a very low quiescent current. It operates from 2.4 V to 5.5 V and consumes a quiescent current of 49  $\mu\text{A}$  at no load and only 20 nA in shutdown mode.

The TPL740 series is available in fixed voltage versions of 1.2 V, 1.8 V, 2.5 V, 2.8 V, 3 V, and 3.3 V, and adjustable voltage versions of 0.8 V to 5 V with  $\pm 2\%$  output voltage accuracy over operating conditions.

#### Functional Block Diagram

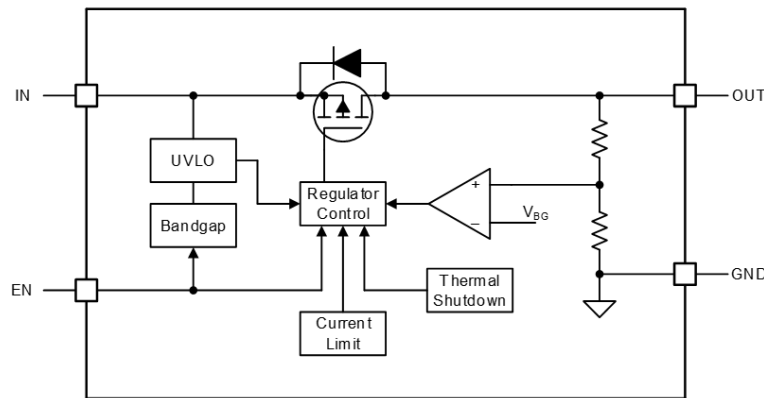


Figure 13. TPL740 Series Fixed Output Version

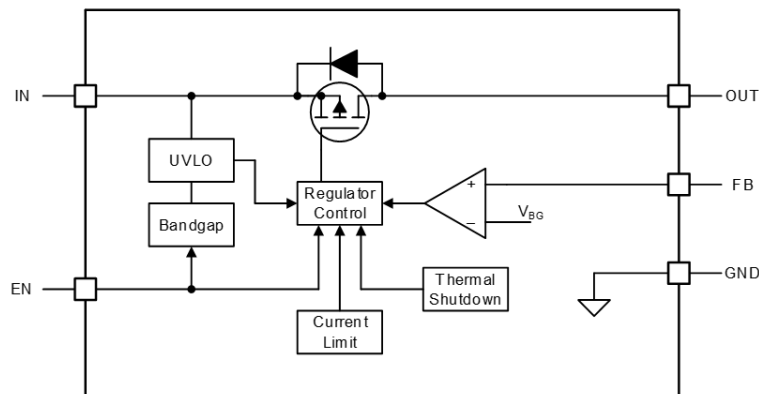


Figure 14. TPL740 Series Adjustable Output Version

#### Feature Description

##### Enable

The enable pin (EN) is active high. Connect this pin to the GPIO of an external processor or digital logic control circuit to enable and disable the device. Or connect this pin to the IN pin for self-bias applications.

## 500-mA Output, High PSRR, Low-Dropout Linear Regulator

### Under-Voltage Lockout (UVLO)

The TPL740 series uses an under-voltage lockout circuit (UVLO = 1.9 V) to keep the output shut off until the internal circuitry operates properly.

### Regulated Output Voltage

The TPL740 series is available in fixed voltage versions of 1.2 V, 1.8 V, 2.5 V, 2.8 V, 3 V, and 3.3 V. When the input voltage is higher than  $V_{OUT(NOM)} + V_{DO}$  or 2.4 V, the output pin is the regulated output based on the selected voltage version. When the input voltage falls below  $V_{OUT(NOM)} + V_{DO}$  or 2.4 V, the output pin tracks the input voltage minus the dropout voltage based on the load current. When the input voltage drops below the UVLO threshold, the output keeps shut off.

### Adjustable Output Voltage

The TPL740 series is also available in adjustable voltage versions of 0.8 V to 5 V by selecting suitable external resistor dividers. Use [Equation 1](#) to calculate the output voltage ( $V_{FB} = 0.8$  V). Suggest selecting the resistor value of ( $R1 + R2$ ) between 10 k $\Omega$  and 100 k $\Omega$ .

$$V_{OUT} = V_{FB} \times \left(1 + \frac{R1}{R2}\right) \quad (1)$$

### Current Limit

The TPL740 series integrates an internal foldback current limit that helps to protect the regulator during fault conditions. When the output is shorted, the LDO supplies a typical current of 1000 mA. The output voltage is not regulated when the device is in current limit and is  $V_{OUT} = I_{CL} \times R_{LOAD}$ .

### Short-Circuit Protection

The TPL740 series integrates the short-circuit protection. When the output pin is shorted to ground or forced to a voltage below 0.2 V, the output current of the TPL740 series is limited to a typical value of 150 mA.

### Thermal Shutdown

During normal operation, the LDO junction temperature should not exceed 125°C. When the junction temperature exceeds the thermal shutdown threshold, the LDO shuts down the output immediately. When the junction temperature falls below the thermal shutdown threshold minus thermal shutdown hysteresis, the output turns on again.

# TPL740 Series

## 500-mA Output, High PSRR, Low-Dropout Linear Regulator

### Application and Implementation

#### Note

Information in the following application sections is not part of the 3PEAK's component specification and 3PEAK does not warrant its accuracy or completeness. 3PEAK's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

### Application Information

The TPL740 is a series of 500-mA high PSRR, low-dropout linear regulators with a low quiescent current. The following application schematic shows a typical usage of the TPL740 series.

### Typical Application

Figure 15 and Figure 16 show the typical application schematic of the TPL740 series.

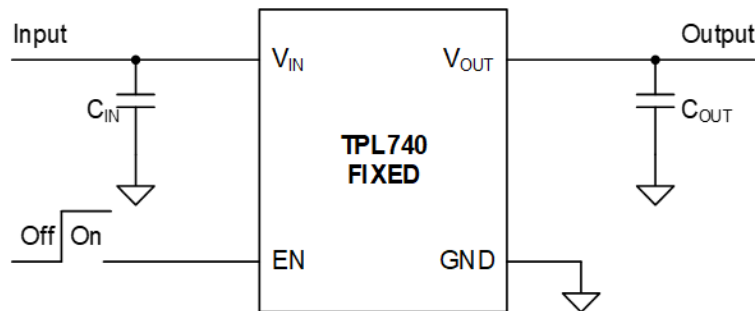


Figure 15. TPL740 Fixed Output Voltage

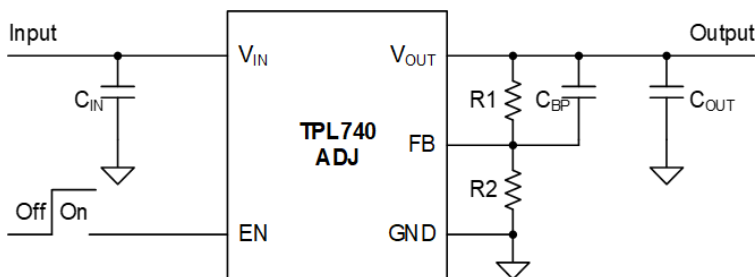


Figure 16. TPL740 Adjustable Output Voltage

#### Input Capacitor and Output Capacitor

3PEAK recommends adding a 1- $\mu$ F or greater capacitor with a 0.1- $\mu$ F bypass capacitor in parallel at the IN pin to keep the input voltage stable. The voltage rating of the capacitors must be greater than the maximum input voltage.

To ensure loop stability, the TPL740 series requires an output capacitor with a minimum effective capacitance value of 2.2  $\mu$ F. 3PEAK recommends selecting an X5R- or X7R-type ceramic capacitor with low ESR over temperature.

The TPL740 adjustable output version requires a bypass capacitor  $C_{BP}$  with a capacitance value from 1 nF to 200 nF to ensure loop stability.

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### 500-mA Output, High PSRR, Low-Dropout Linear Regulator

Both input capacitors and output capacitors must be placed as close to the pins of the device as possible.

#### Power Dissipation

During normal operation, the LDO junction temperature should not exceed 125°C. Use the below equations to calculate the power dissipation and estimate the junction temperature.

The power dissipation can be calculated using [Equation 2](#).

$$P_D = (V_{IN} - V_{OUT}) \times I_{OUT} + V_{IN} \times I_{GND} \quad (2)$$

The junction temperature can be estimated using [Equation 3](#).  $\theta_{JA}$  is the junction-to-ambient thermal resistance (See [Thermal Information](#)).

$$T_J = T_A + P_D \times \theta_{JA} \quad (3)$$

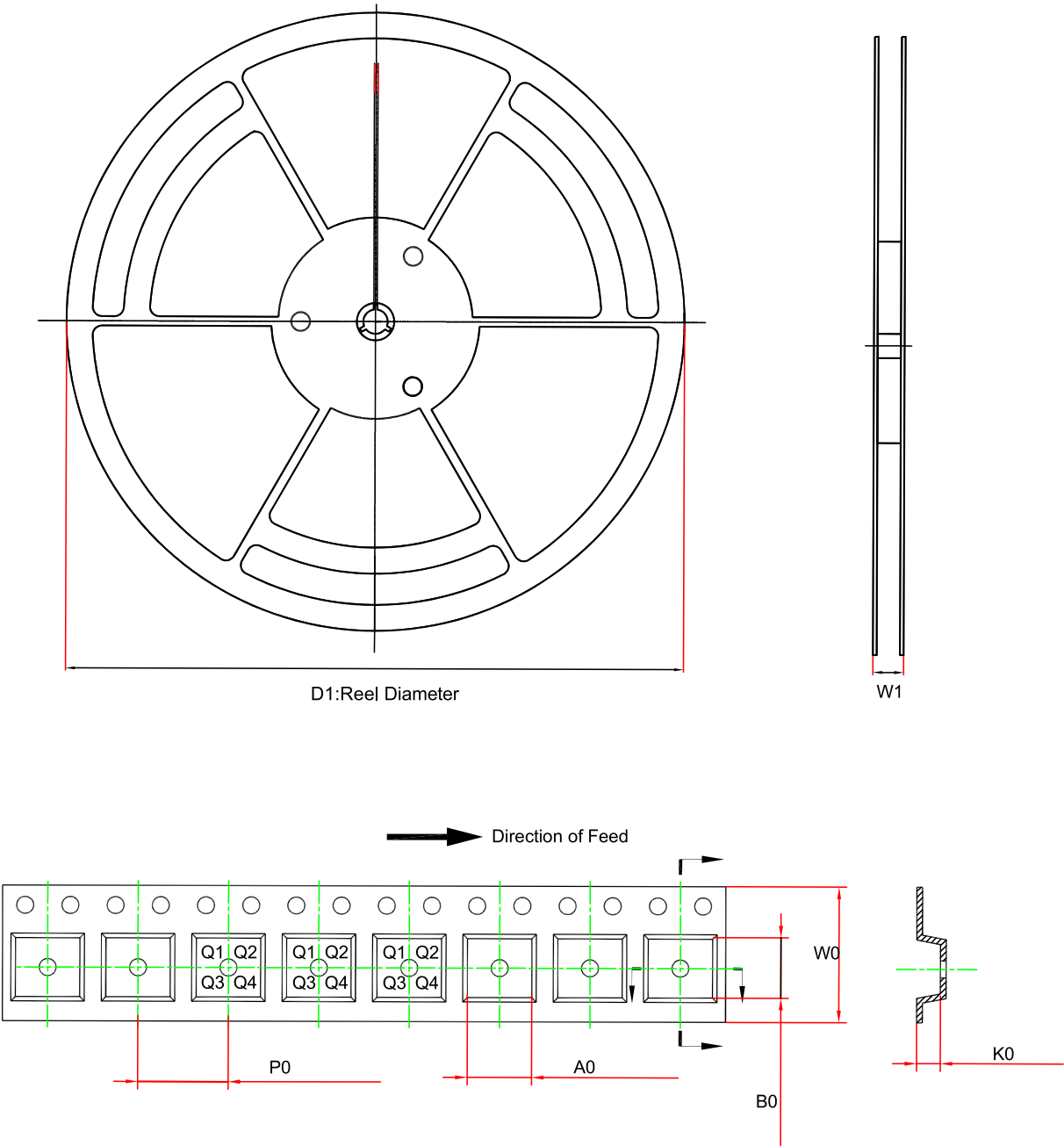
## Layout

### Layout Guideline

- Both input capacitors and output capacitors must be placed as close to the pins of the device as possible.
- It is recommended to bypass the input pin to ground with a 0.1- $\mu$ F bypass capacitor. The loop area formed by the bypass capacitor connection, the IN pin, and the GND pin of the system must be as small as possible.
- It is recommended to use wide trace lengths or thick copper weight to minimize  $I \times R$  drop and heat dissipation.



Tape and Reel Information



| Order Number    | Package | D1 (mm) | W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | W0 (mm) | Pin1 Quadrant |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------------|
| TPL740ADJ-5 TR  | SOT23-5 | 180.0   | 13.1    | 3.2     | 3.2     | 1.4     | 4.0     | 8.0     | Q3            |
| TPL740Fxx-5T R  | SOT23-5 | 180.0   | 13.1    | 3.2     | 3.2     | 1.4     | 4.0     | 8.0     | Q3            |
| TPL740F33-89 TR | SOT89-3 | 330     | 17.6    | 4.8     | 4.4     | 1.8     | 8.0     | 12.0    | Q3            |

## TPL740 Series

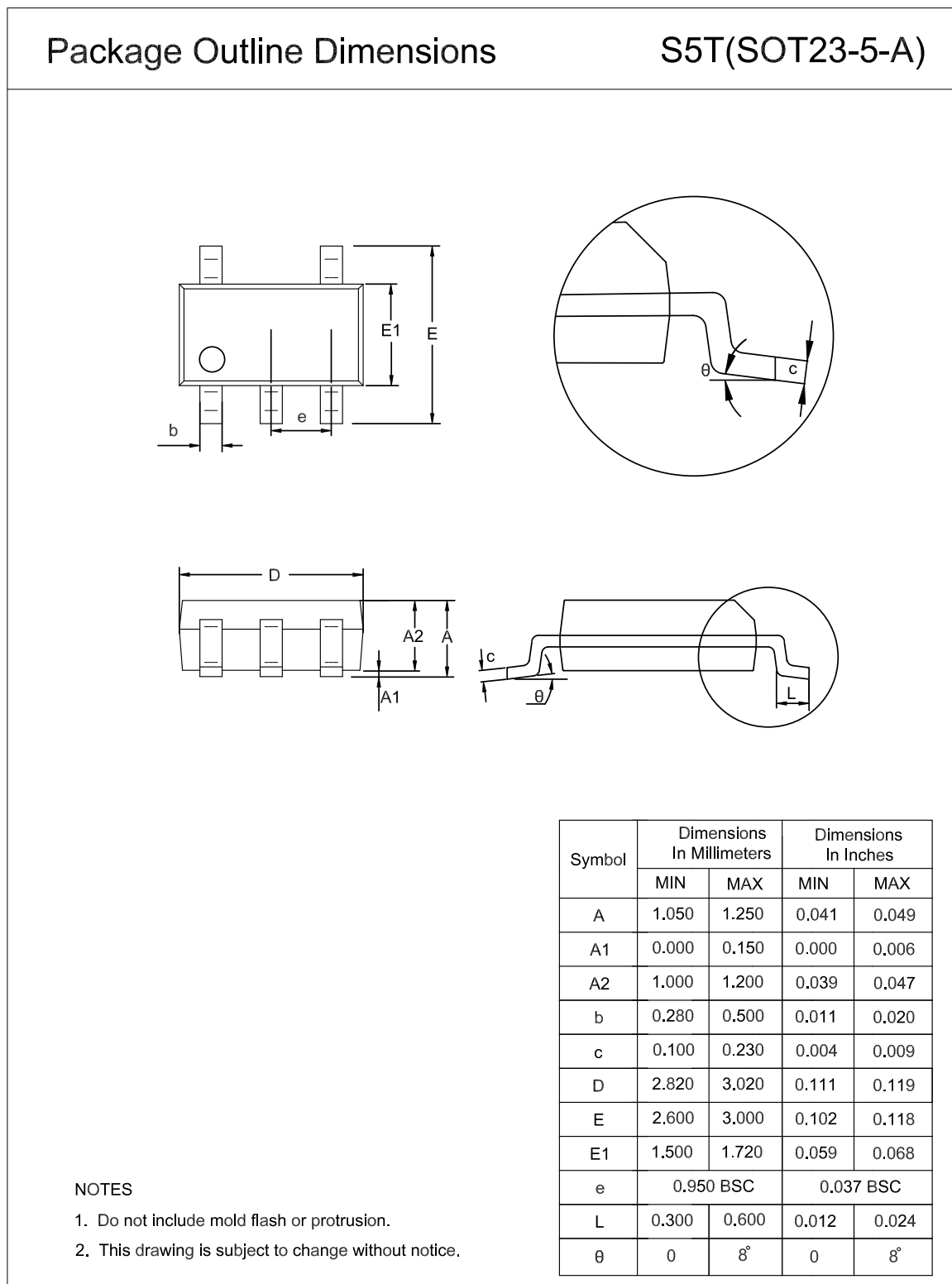
### 500-mA Output, High PSRR, Low-Dropout Linear Regulator

| Order Number     | Package  | D1 (mm) | W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | W0 (mm) | Pin1<br>Quadrant |
|------------------|----------|---------|---------|---------|---------|---------|---------|---------|------------------|
| TPL740F33-<br>FR | DFN1×1-4 | 180.0   | 10.0    | 1.16    | 1.16    | 0.5     | 2.0     | 8.0     | Q1               |

(1) The output voltage value, xx = 12 to 33, e.g., 33 means 3.3-V output voltage.

# Package Outline Dimensions

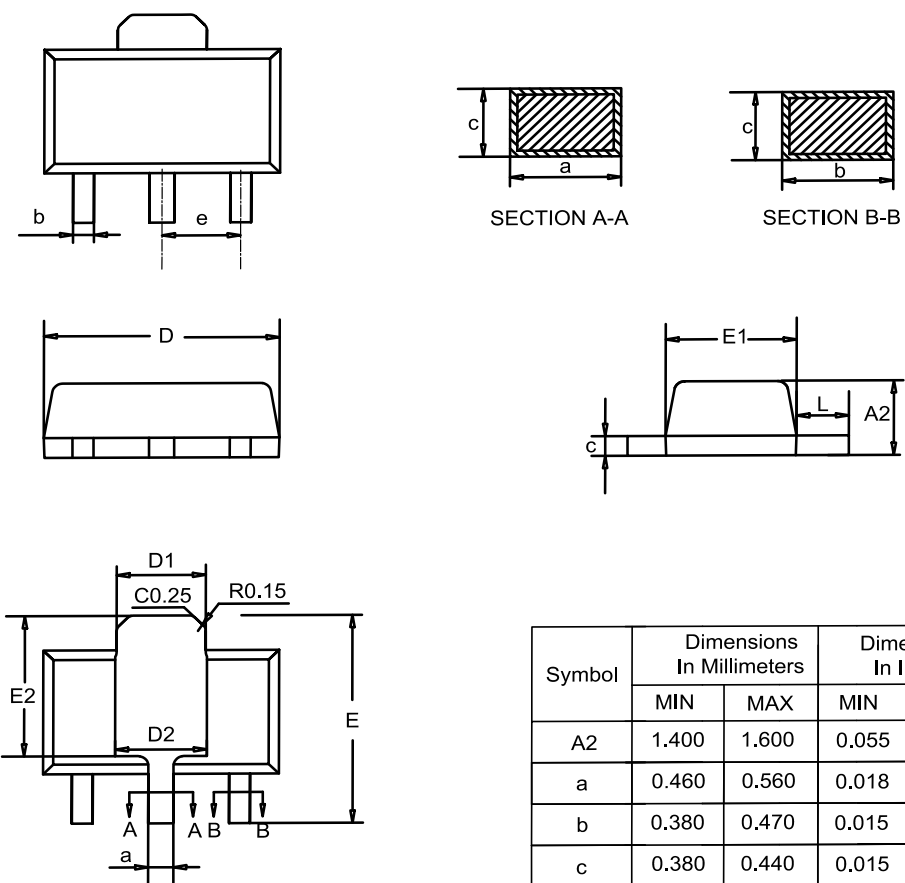
## SOT23-5



SOT89-3

Package Outline Dimensions

89T(SOT89-3-A)



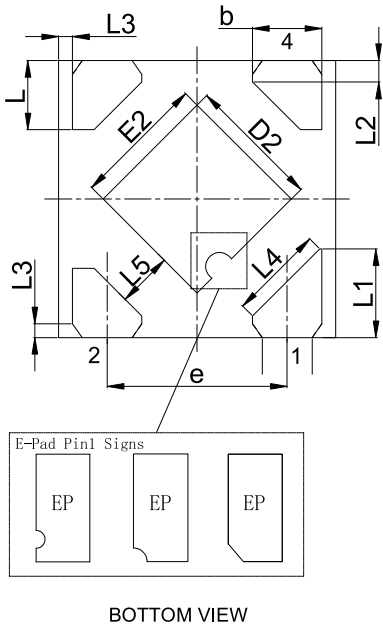
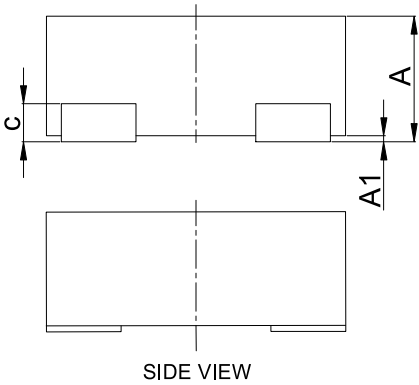
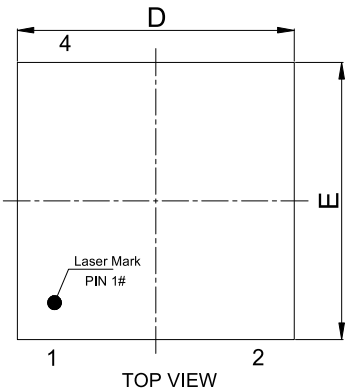
| Symbol | Dimensions<br>In Millimeters |       | Dimensions<br>In Inches |       |
|--------|------------------------------|-------|-------------------------|-------|
|        | MIN                          | MAX   | MIN                     | MAX   |
| A2     | 1.400                        | 1.600 | 0.055                   | 0.063 |
| a      | 0.460                        | 0.560 | 0.018                   | 0.022 |
| b      | 0.380                        | 0.470 | 0.015                   | 0.019 |
| c      | 0.380                        | 0.440 | 0.015                   | 0.017 |
| D      | 4.400                        | 4.600 | 0.173                   | 0.181 |
| D1     | 1.600                        | 1.830 | 0.063                   | 0.072 |
| E      | 3.950                        | 4.250 | 0.156                   | 0.167 |
| E1     | 2.400                        | 2.600 | 0.094                   | 0.102 |
| e      | 1.500 BSC                    |       | 0.059 BSC               |       |
| D2     | 1.600                        | 1.900 | 0.063                   | 0.075 |
| E2     | 2.700                        | 3.100 | 0.106                   | 0.122 |
| L      | 0.890                        | 1.200 | 0.035                   | 0.047 |

- NOTES
1. Do not include mold flash or protrusion.
  2. This drawing is subject to change without notice.

DFN1×1-4

Package Outline Dimensions

DF1(DFN1X1-4-A)



| Symbol | Dimensions<br>In Millimeters |       | Dimensions<br>In Inches |       |
|--------|------------------------------|-------|-------------------------|-------|
|        | MIN                          | MAX   | MIN                     | MAX   |
| A      | 0.350                        | 0.400 | 0.014                   | 0.016 |
| A1     | 0.000                        | 0.050 | 0.000                   | 0.002 |
| b      | 0.200                        | 0.300 | 0.008                   | 0.012 |
| c      | 0.070                        | 0.170 | 0.003                   | 0.007 |
| D      | 0.950                        | 1.050 | 0.037                   | 0.041 |
| D2     | 0.430                        | 0.530 | 0.017                   | 0.021 |
| E      | 0.950                        | 1.050 | 0.037                   | 0.041 |
| E2     | 0.430                        | 0.530 | 0.017                   | 0.021 |
| e      | 0.650 BSC                    |       | 0.026 BSC               |       |
| L      | 0.200                        | 0.300 | 0.008                   | 0.012 |
| L1     | 0.270                        | 0.370 | 0.011                   | 0.015 |
| L2     | 0.077 BSC                    |       | 0.003 BSC               |       |
| L3     | 0.050 BSC                    |       | 0.002 BSC               |       |
| L4     | 0.340 BSC                    |       | 0.013 BSC               |       |
| L5     | 0.200 BSC                    |       | 0.008 BSC               |       |

- NOTES
1. Do not include mold flash or protrusion.
  2. This drawing is subject to change without notice.
  3. The many types of E-pad Pin1 signs may appear in the product.

### Order Information

| Order Number   | Operating Temperature Range | Package  | Marking Information | MSL | Transport Media, Quantity | Eco Plan |
|----------------|-----------------------------|----------|---------------------|-----|---------------------------|----------|
| TPL740ADJ-5TR  | -40 to 125°C                | SOT23-5  | L2A                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F12-5TR  | -40 to 125°C                | SOT23-5  | L2D                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F18-5TR  | -40 to 125°C                | SOT23-5  | L2F                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F25-5TR  | -40 to 125°C                | SOT23-5  | L2G                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F28-5TR  | -40 to 125°C                | SOT23-5  | L2H                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F30-5TR  | -40 to 125°C                | SOT23-5  | L2I                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F33-5TR  | -40 to 125°C                | SOT23-5  | L2J                 | 3   | Tape and Reel, 3,000      | Green    |
| TPL740F33-89TR | -40 to 125°C                | SOT89-3  | L2J                 | 3   | Tape and Reel, 4,000      | Green    |
| TPL740F33-FR   | -40 to 125°C                | DFN1×1-4 | L2J                 | 3   | Tape and Reel, 12,000     | Green    |

**Green:** 3PEAK defines "Green" to mean RoHS compatible and free of halogen substances.

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