

**1A LOW DROPOUT ADJUSTABLE AND FIXED-MODE REGULATOR WITH ENABLE**

## Description

The AP7361C is a 1A, adjustable and fixed output voltage, ultra-low dropout linear regulator with enable. The device includes pass element, error amplifier, band-gap reference, current limit and thermal shutdown circuitry. The device is turned on when EN pin is set to logic high level.

The characteristics of the low dropout voltage and low quiescent current make it suitable for low to medium power applications, for example, laptop computers, audio and video applications and battery powered devices. The typical quiescent current is approximately 60μA. Built-in current-limit and thermal-shutdown functions prevent IC from damage in fault conditions.

The AP7361C is available in U-DFN3030-8 (Type E), SOT89-5, SOT223, TO252 (DPAK) and SO-8EP packages.

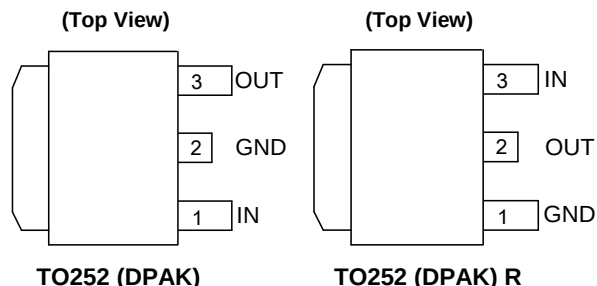
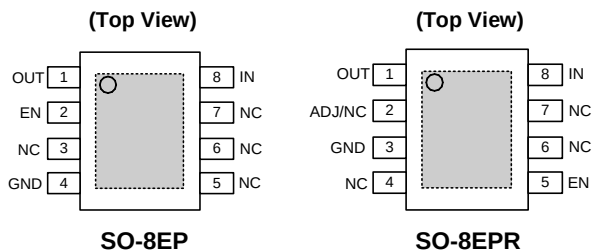
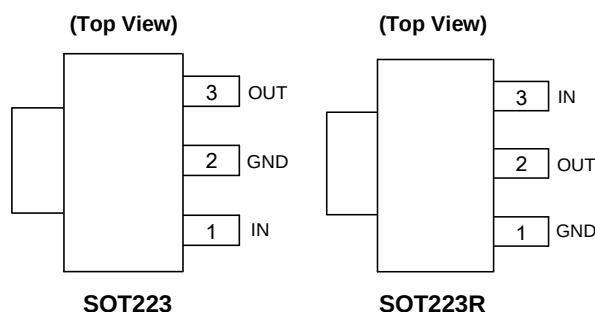
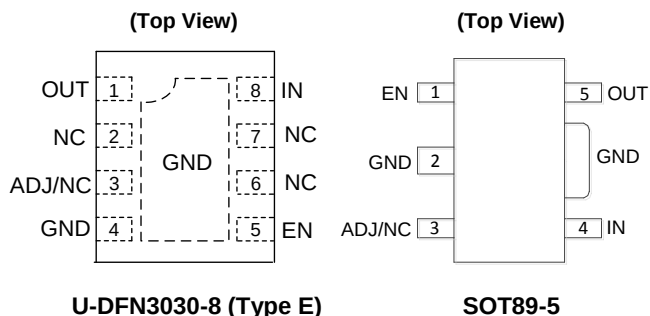
## Features

- Wide Input Voltage Range: 2.2V to 6.0V
- Output Voltage Accuracy:  $\pm 1\%$
- Very Low Dropout Voltage (3.3V): 360mV at 1A Typical
- Low Quiescent Current ( $I_Q$ ): 60μA Typical
- Adjustable Output Voltage Range: 0.8V to 5.0V
- Fixed Output Options: 1.0V, 1.2V, 1.5V, 1.8V, 2.5V, 2.8V and 3.3V
- High PSRR: 75dB @ 1kHz
- Current Limit: 1.5A
- Fold-Back Short Circuit Protection: 200mA
- Thermal Shutdown Protection
- Stable with MLCC, E-Cap, Tan-Cap or Solid Capacitor  $\geq 2.2\mu\text{F}$
- Ambient Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Available in "Green" Molding Compound (No Br, Sb)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Applications

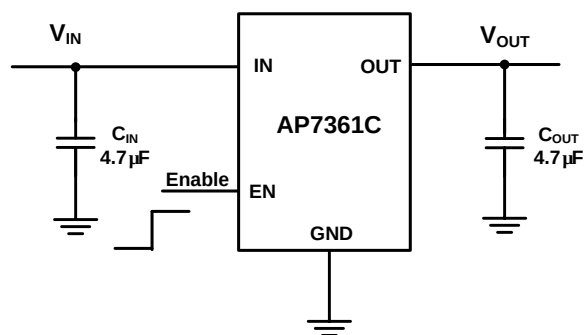
- LCD-TV, Monitor
- Set-Top-Box
- Home Electrical Appliances

## Pin Assignments

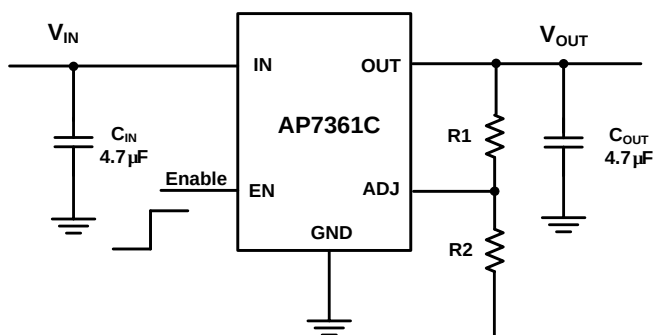


- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

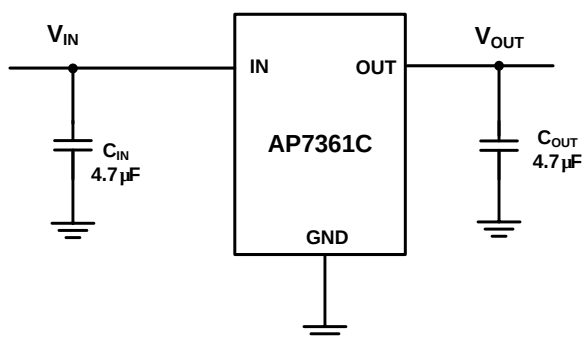
## Typical Applications Circuit



Fixed Version with EN



Adjustable Output

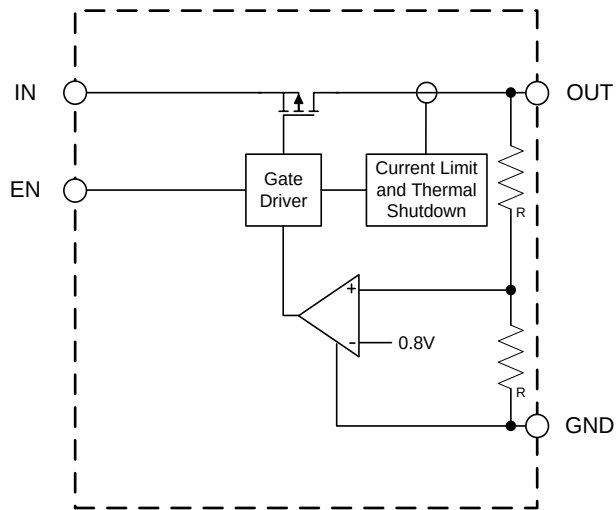


Fixed Version without EN

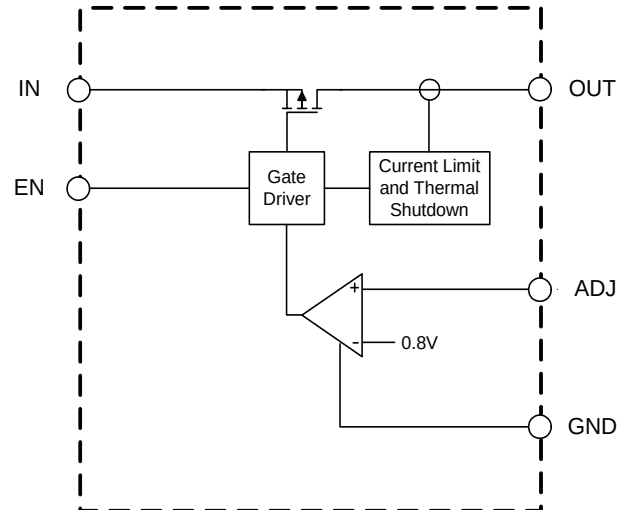
## Pin Descriptions

| Pin Number           |         |              |               |        |         |            |         | Pin Name | Function                                                                                                                                                 |
|----------------------|---------|--------------|---------------|--------|---------|------------|---------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| U-DFN3030-8 (Type E) | SOT89-5 | TO252 (DPAK) | TO252 (DPAK)R | SOT223 | SOT223R | SO-8EP     | SO-8EPR |          |                                                                                                                                                          |
| 8                    | 4       | 1            | 3             | 1      | 3       | 8          | 8       | IN       | The input of the regulator. Bypass to ground through at least 1μF ceramic capacitor.                                                                     |
| 1                    | 5       | 3            | 2             | 3      | 2       | 1          | 1       | OUT      | The output of the regulator. Bypass to ground through at least 2.2μF ceramic capacitor. For improved ac load response a larger capacitor is recommended. |
| 4                    | 2       | 2            | 1             | 2      | 1       | 4          | 3       | GND      | Ground                                                                                                                                                   |
| 3                    | 3       | –            | –             | –      | –       | –          | 2       | ADJ/NC   | Adjustable voltage version only – a resistor divider from this pin to the OUT pin and ground sets the output voltage.                                    |
| 5                    | 1       | –            | –             | –      | –       | 2          | 5       | EN       | Enable input, active high                                                                                                                                |
| 2, 6, 7              | –       | –            | –             | –      | –       | 3, 5, 6, 7 | 4, 6, 7 | NC       | No connection                                                                                                                                            |

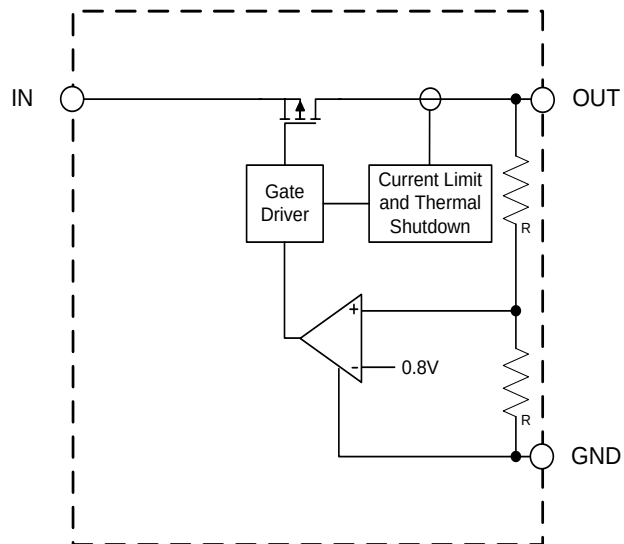
## Functional Block Diagram



Fixed Version with EN



Adjustable Version



Fixed Version without EN

## Absolute Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.) (Note 4)

| Symbol           | Parameter                             |                      | Rating                                                       | Unit |
|------------------|---------------------------------------|----------------------|--------------------------------------------------------------|------|
| V <sub>IN</sub>  | Input Voltage                         |                      | 6.5                                                          | V    |
| –                | OUT, ADJ, EN Voltage                  |                      | V <sub>IN</sub> +0.3                                         | V    |
| T <sub>J</sub>   | Operating Junction Temperature Range  |                      | -40 to +150                                                  | °C   |
| T <sub>STG</sub> | Storage Temperature Range             |                      | -65 to +150                                                  | °C   |
| P <sub>D</sub>   | Power Dissipation                     |                      | Internally limited by maximum junction temperature of +150°C |      |
| P <sub>D</sub>   | Power Dissipation                     | U-DFN3030-8 (Type E) | 1700                                                         | mW   |
|                  |                                       | TO252 (DPAK)         | 1250                                                         |      |
|                  |                                       | SOT223               | 1100                                                         |      |
|                  |                                       | SOT89-5              | 800                                                          |      |
|                  |                                       | SO-8EP               | 1190                                                         |      |
| ESD HBM          | Human Body Model ESD Protection       |                      | > 2                                                          | KV   |
| ESD MM           | Machine Model ESD Protection (Note 5) |                      | > 200                                                        | V    |

- Notes:
- Stresses greater than the 'Absolute Maximum Ratings' specified above may cause permanent damage to the device. These are stress ratings only; functional operation of the device at these or any other conditions exceeding those indicated in this specification is not implied. Device reliability may be affected by exposure to absolute maximum rating conditions for extended periods of time.
  - ESD MM rating at 150V for EN pin in SOT89-5 package.

## Recommended Operating Conditions (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Symbol           | Parameter                     | Min | Max | Unit |
|------------------|-------------------------------|-----|-----|------|
| V <sub>IN</sub>  | Input Voltage                 | 2.2 | 6.0 | V    |
| V <sub>OUT</sub> | Output Voltage                | 0.8 | 5.0 | V    |
| I <sub>OUT</sub> | Output Current (Note 6)       | 0   | 1.0 | A    |
| T <sub>A</sub>   | Operating Ambient Temperature | -40 | +85 | °C   |

- Note:
- The device maintains a stable, regulated output voltage without a load current. When the output current is large, attention should be given to the limitation of the package power dissipation.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, V<sub>IN</sub> = V<sub>OUT</sub> +1V, C<sub>IN</sub> = 4.7μF, C<sub>OUT</sub> = 4.7μF, V<sub>EN</sub> = V<sub>IN</sub>, unless otherwise specified.)

| Symbol                                                | Parameter                              | Test Conditions                                                               | Min                            | Typ                          | Max                  | Unit   |
|-------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------|--------------------------------|------------------------------|----------------------|--------|
| V <sub>REF</sub>                                      | FB Reference Voltage, ADJ pin          | I <sub>OUT</sub> = 10mA, T <sub>A</sub> = +25°C                               | 0.792                          | 0.8                          | 0.808                | V      |
| I <sub>ADJ</sub>                                      | ADJ Pin Leakage Current                | –                                                                             | –                              | 0.1                          | 0.5                  | μA     |
| I <sub>Q</sub>                                        | Input Quiescent Current                | Enabled, I <sub>OUT</sub> = 0A                                                | –                              | 60                           | 80                   | μA     |
| I <sub>SHDN</sub>                                     | Input Shutdown Current                 | V <sub>EN</sub> = 0V, I <sub>OUT</sub> = 0A                                   | -1                             | 0.05                         | 1                    | μA     |
| V <sub>OUT</sub>                                      | Output Voltage Accuracy                | I <sub>OUT</sub> = 100mA,<br>T <sub>A</sub> = +25°C                           | 1.0V ≤ V <sub>OUT</sub> < 1.5V | V <sub>OUT</sub> (s) - 0.015 | V <sub>OUT</sub> (s) | V      |
|                                                       |                                        |                                                                               | 1.5V ≤ V <sub>OUT</sub> ≤ 3.3V | V <sub>OUT</sub> (s)* 0.99   | V <sub>OUT</sub> (s) |        |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation                        | V <sub>IN</sub> = V <sub>OUT</sub> +1V to 5.5V,<br>I <sub>OUT</sub> = 100mA   | T <sub>A</sub> = +25°C         | –                            | 0.01                 | % / V  |
|                                                       |                                        |                                                                               | -40°C ≤ T <sub>A</sub> ≤ +85°C | –                            | 0.2                  |        |
| ΔV <sub>OUT</sub> / V <sub>OUT</sub>                  | Load Regulation                        | I <sub>OUT</sub> from 1.0mA to 1A                                             | 1.2V < V <sub>OUT</sub> ≤ 3.3V | -1.0                         | –                    | %      |
|                                                       |                                        |                                                                               | 1.0V ≤ V <sub>OUT</sub> ≤ 1.2V | -1.5                         | –                    |        |
| V <sub>DROPOUT</sub>                                  | Dropout Voltage (Note 7)               | I <sub>OUT</sub> = 300mA                                                      | 1.0V ≤ V <sub>OUT</sub> < 1.1V | –                            | 710                  | mV     |
|                                                       |                                        |                                                                               | 1.1V ≤ V <sub>OUT</sub> < 1.2V | –                            | 600                  |        |
|                                                       |                                        |                                                                               | 1.2V ≤ V <sub>OUT</sub> < 1.3V | –                            | 500                  |        |
|                                                       |                                        |                                                                               | 1.3V ≤ V <sub>OUT</sub> < 1.4V | –                            | 400                  |        |
|                                                       |                                        |                                                                               | 1.4V ≤ V <sub>OUT</sub> < 1.5V | –                            | 300                  |        |
|                                                       |                                        |                                                                               | 1.5V ≤ V <sub>OUT</sub> < 2.6V | –                            | 200                  |        |
|                                                       |                                        |                                                                               | 2.6V ≤ V <sub>OUT</sub> ≤ 3.3V | –                            | 90                   |        |
|                                                       |                                        | I <sub>OUT</sub> = 1A                                                         | 1.0V ≤ V <sub>OUT</sub> < 1.1V | –                            | 840                  |        |
|                                                       |                                        |                                                                               | 1.1V ≤ V <sub>OUT</sub> < 1.2V | –                            | 780                  |        |
|                                                       |                                        |                                                                               | 1.2V ≤ V <sub>OUT</sub> < 1.3V | –                            | 710                  |        |
|                                                       |                                        |                                                                               | 1.3V ≤ V <sub>OUT</sub> < 1.4V | –                            | 660                  |        |
|                                                       |                                        |                                                                               | 1.4V ≤ V <sub>OUT</sub> < 1.5V | –                            | 610                  |        |
|                                                       |                                        |                                                                               | 1.5V ≤ V <sub>OUT</sub> < 2.0V | –                            | 570                  |        |
|                                                       |                                        |                                                                               | 2.0V ≤ V <sub>OUT</sub> < 2.6V | –                            | 440                  |        |
|                                                       |                                        |                                                                               | 2.6V ≤ V <sub>OUT</sub> ≤ 3.3V | –                            | 340                  |        |
| V <sub>IL</sub>                                       | EN Input Logic Low Voltage             | –                                                                             | 0                              | –                            | 0.3                  | V      |
| V <sub>IH</sub>                                       | EN Input Logic High Voltage            | –                                                                             | 1.0                            | –                            | V <sub>IN</sub>      | V      |
| R <sub>ENPD</sub>                                     | EN Pull-Down Resistor                  | –                                                                             | –                              | 3.0                          | –                    | MΩ     |
| I <sub>EN</sub>                                       | EN Input Leakage Current               | V <sub>IN</sub> = 5.5V, V <sub>EN</sub> = 0V                                  | -0.1                           | –                            | 0.1                  | μA     |
| R <sub>PD</sub>                                       | Output Discharge Resistor              | V <sub>OL</sub> = 1V                                                          | –                              | 100                          | –                    | Ω      |
| I <sub>OUT</sub>                                      | Maximum Output Current                 | V <sub>IN</sub> = V <sub>OUT</sub> +1V                                        | 1.0                            | –                            | –                    | A      |
| I <sub>LIMIT</sub>                                    | Current Limit                          | V <sub>IN</sub> = V <sub>OUT</sub> +1V (V <sub>IN</sub> MIN = 2.2V)           | 1.1                            | 1.5                          | –                    | A      |
| I <sub>SHORT</sub>                                    | Short-Circuit Current                  | V <sub>IN</sub> = V <sub>OUT</sub> +1V, Output Voltage < 15% V <sub>OUT</sub> | –                              | 400                          | –                    | mA     |
| PSRR                                                  | Power Supply Rejection Ratio (Note 8)  | f = 1kHz, I <sub>OUT</sub> = 100mA                                            | –                              | 75                           | –                    | dB     |
|                                                       |                                        | f = 10kHz, I <sub>OUT</sub> = 100mA                                           | –                              | 55                           | –                    |        |
| t <sub>ST</sub>                                       | Start-Up Time                          | V <sub>OUT</sub> = 3V, C <sub>OUT</sub> = 2.2μF, R <sub>L</sub> = 30Ω         | –                              | 150                          | –                    | μs     |
| $\frac{\Delta V_{OUT}}{\Delta T_A \times V_{OUT}}$    | Output Voltage Temperature Coefficient | I <sub>OUT</sub> = 100mA, -40°C ≤ T <sub>A</sub> ≤ +85°C                      | –                              | ±100                         | –                    | ppm/°C |
| T <sub>SHDN</sub>                                     | Thermal Shutdown Threshold             | –                                                                             | –                              | 150                          | –                    | °C     |
| T <sub>HYS</sub>                                      | Thermal Shutdown Hysteresis            | –                                                                             | –                              | 20                           | –                    | °C     |

Notes: 7. Dropout voltage is the voltage difference between the input and the output at which the output voltage drops 2% below its nominal value. This parameter only applies to output voltages above 1.2V since minimum V<sub>IN</sub> = 2.2V.  
8. For V<sub>IN</sub> ≥ 2.5V and V<sub>IN</sub> = V<sub>OUT</sub> +1V. For V<sub>IN</sub> < 2.5V, the PSRR performance may be reduced.

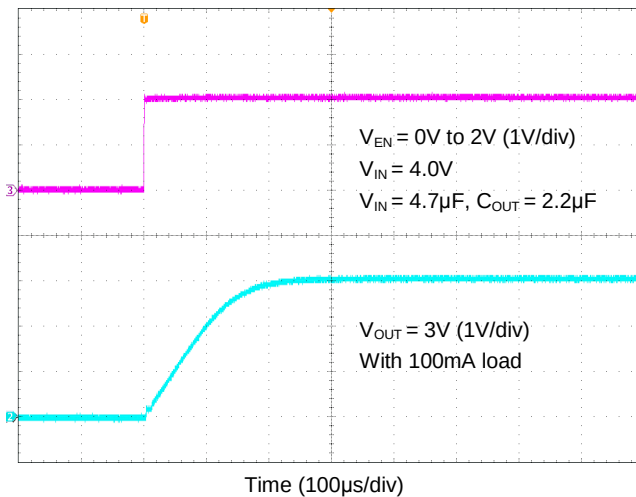
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, V<sub>IN</sub> = V<sub>OUT</sub> + 1V, C<sub>IN</sub> = 4.7μF, C<sub>OUT</sub> = 4.7μF, V<sub>EN</sub> = V<sub>IN</sub>, unless otherwise specified.) (cont.)

| Symbol          | Parameter                              | Test Conditions               | Min | Typ | Max | Unit |
|-----------------|----------------------------------------|-------------------------------|-----|-----|-----|------|
| θ <sub>JA</sub> | Thermal Resistance Junction-to-Ambient | U-DFN3030-8 (Type E) (Note 9) | —   | 70  | —   | °C/W |
|                 |                                        | TO252 (DPAK) (Note 9)         | —   | 95  | —   |      |
|                 |                                        | SOT223 (Note 9)               | —   | 110 | —   |      |
|                 |                                        | SOT89-5 (Note 9)              | —   | 150 | —   |      |
|                 |                                        | SO-8EP (Note 9)               | —   | 100 | —   |      |

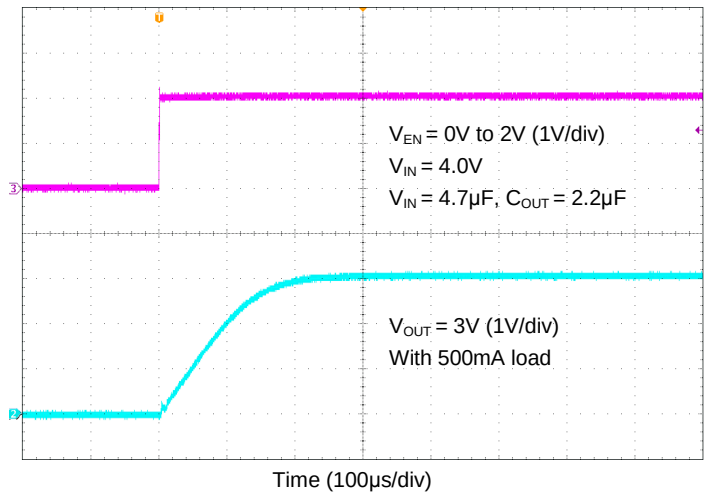
Note: 9. Test condition: U-DFN3030-8 (Type E), SO-8EP devices are mounted on 2"x2", FR-4 substrate PCB, with minimum recommended pad on top layer and thermal vias to bottom layer ground plane. TO252(DPAK) devices are mounted on 2"x2" FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout. For SOT223, the device is mounted on FR-4 substrate PC board, with minimum recommended pad layout. SOT89-5 devices are mounted on 1"x1" FR-4 substrate PC board, with minimum recommended pad layout.

**Performance Characteristics**

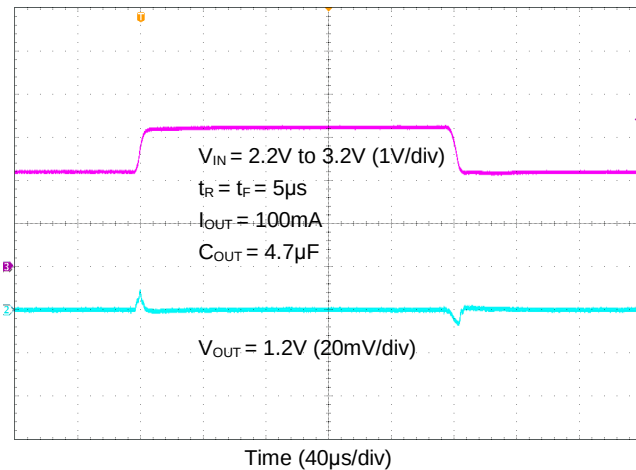
Start-up Time



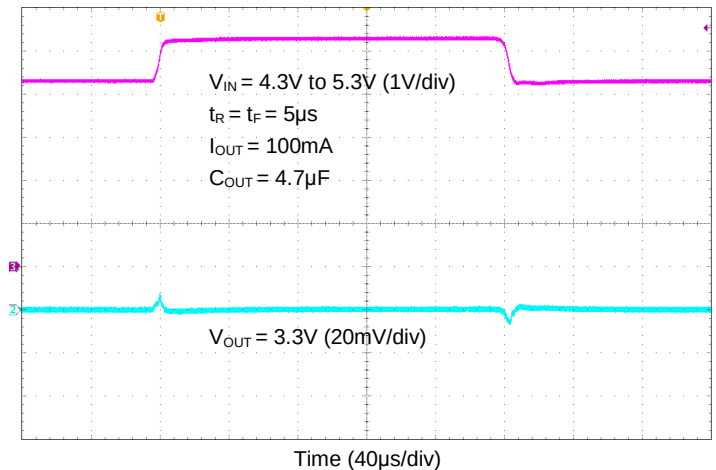
Start-up Time



Line Transient Response

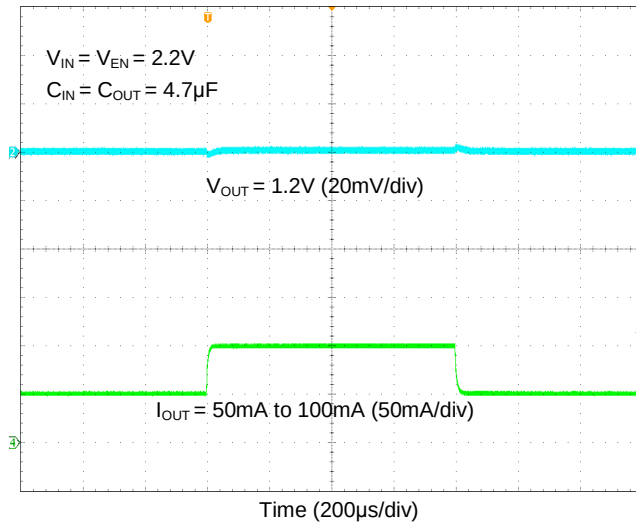


Line Transient Response

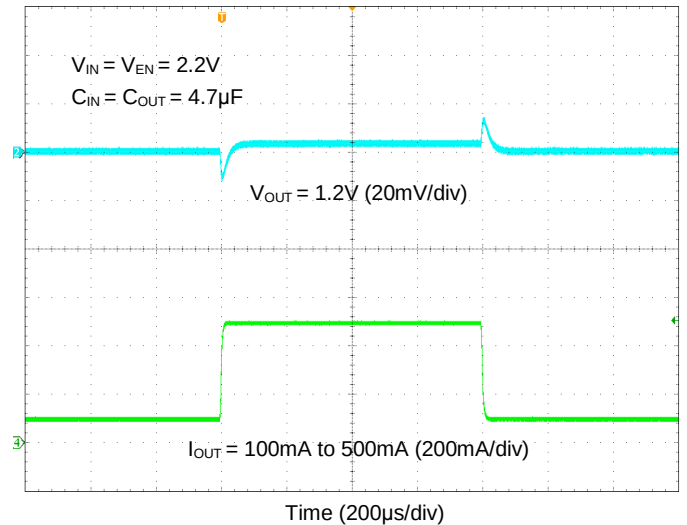


**Performance Characteristics** (cont.)

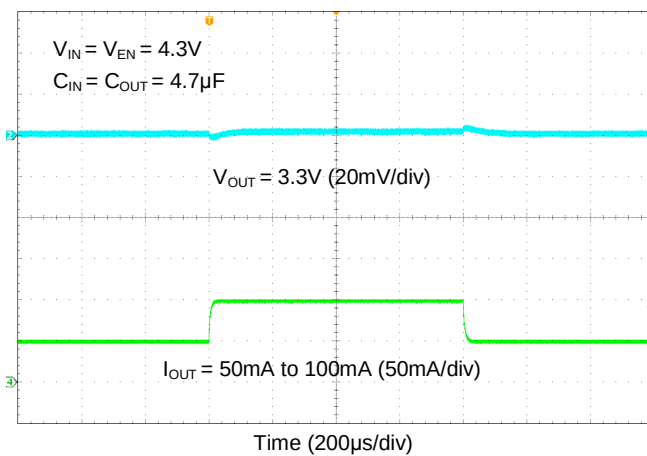
**Load Transient Response**



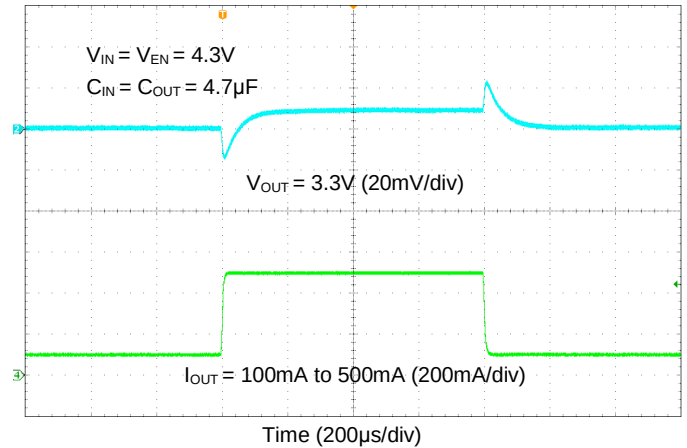
**Load Transient Response**



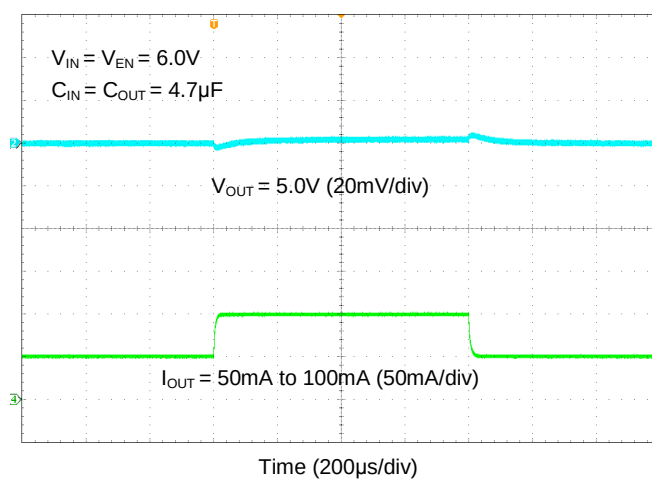
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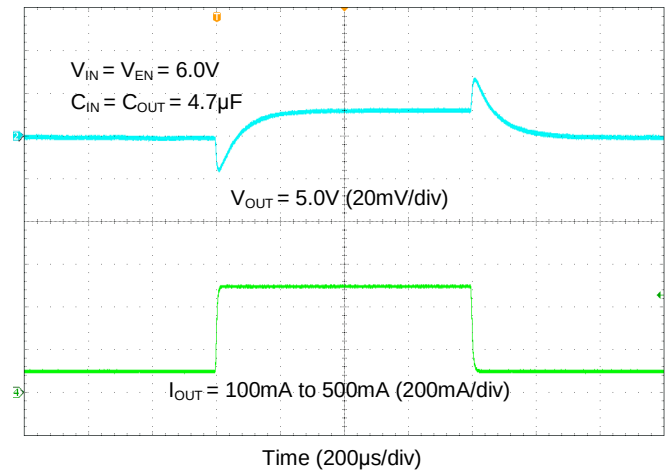
**Load Transient Response**



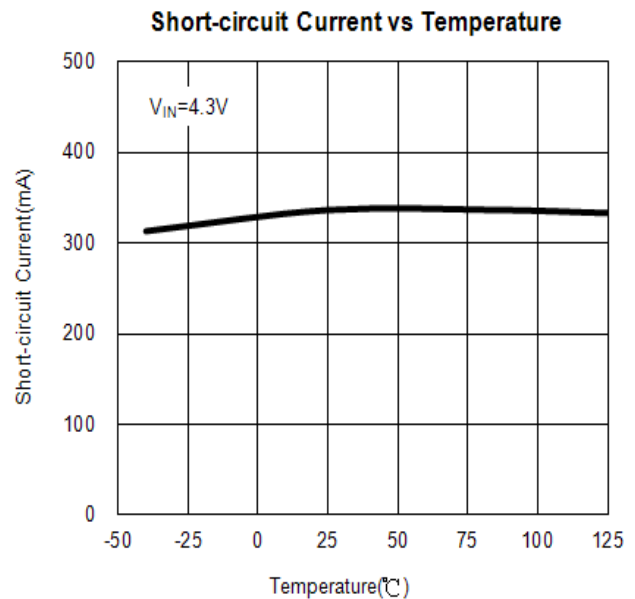
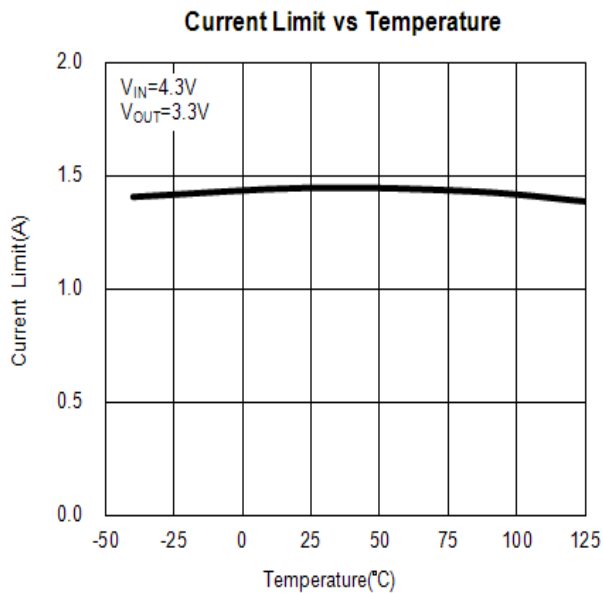
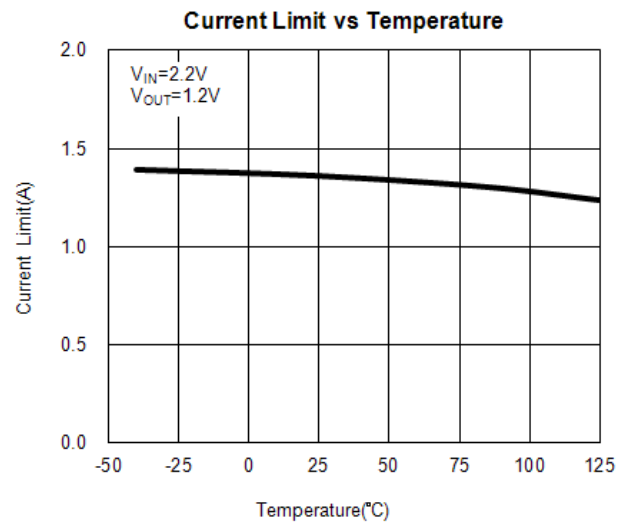
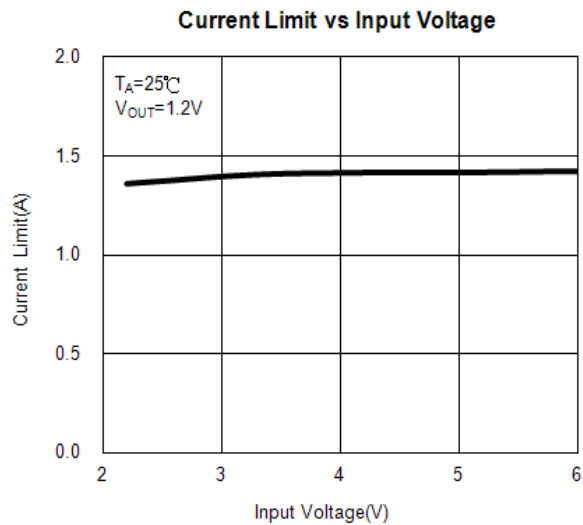
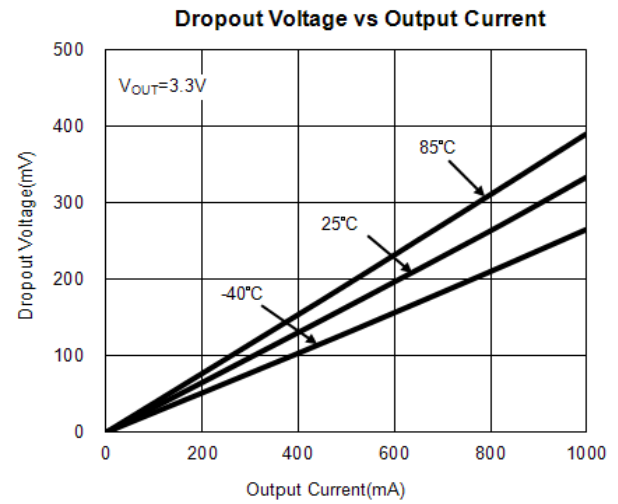
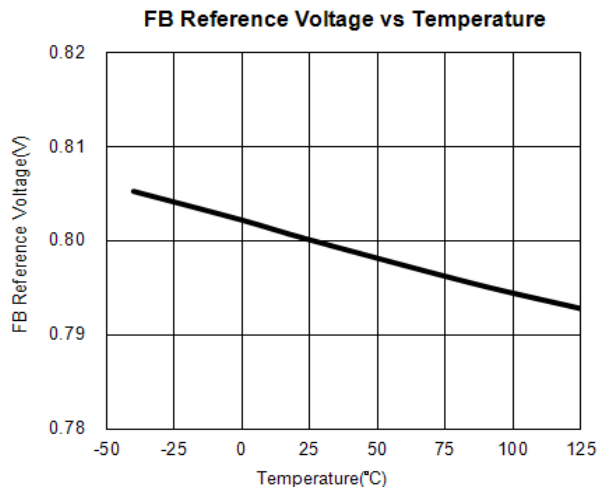
**Load Transient Response**



**Load Transient Response**



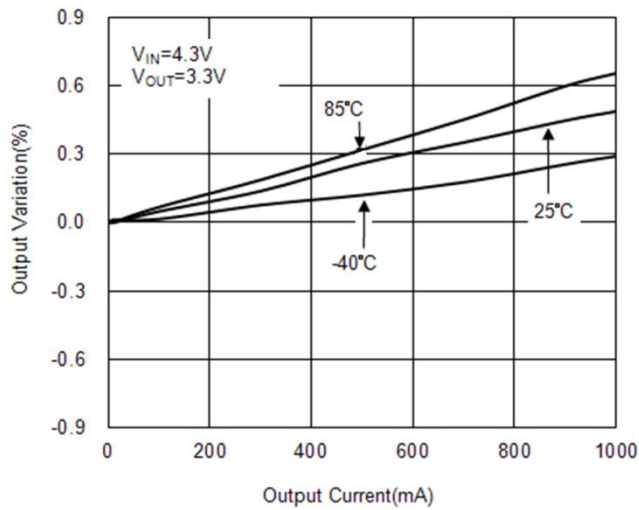
**Performance Characteristics (Cont.)**



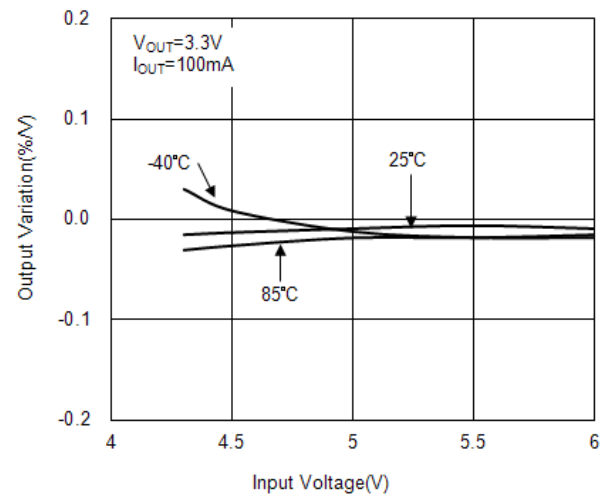


## Performance Characteristics (Cont.)

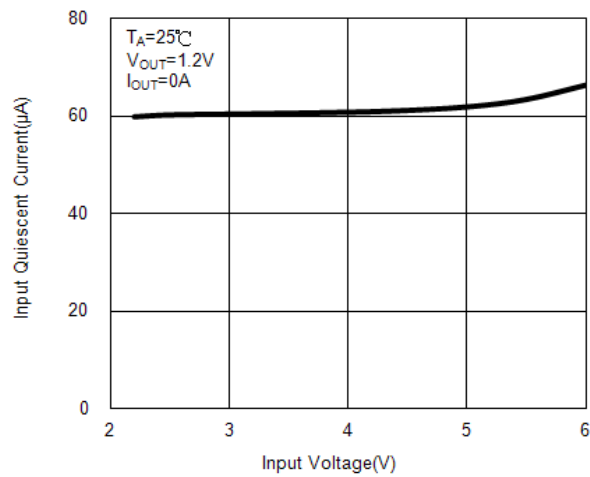
**Load Regulation**



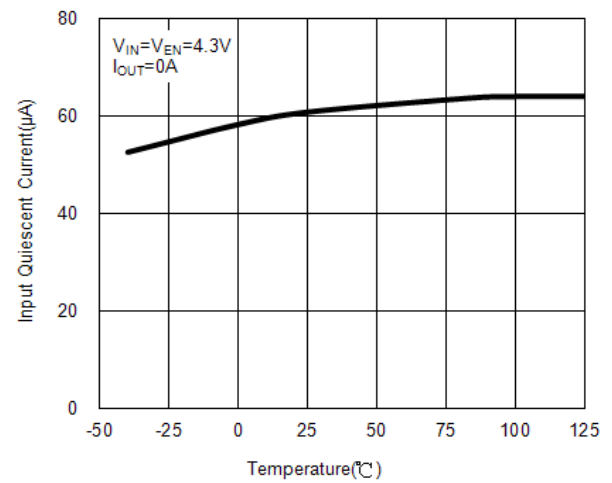
**Line Regulation**

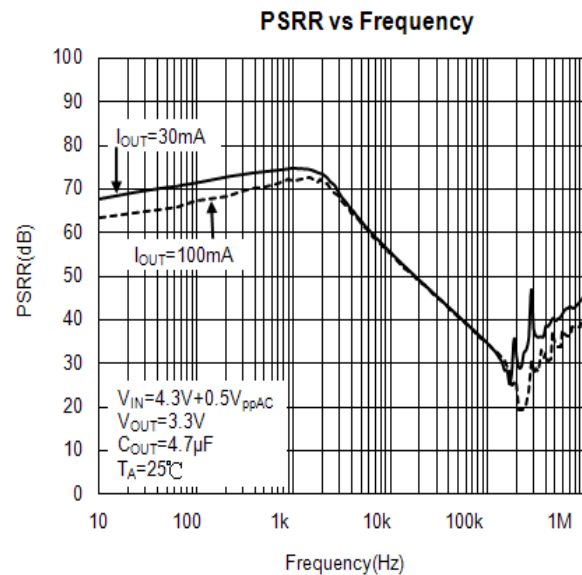
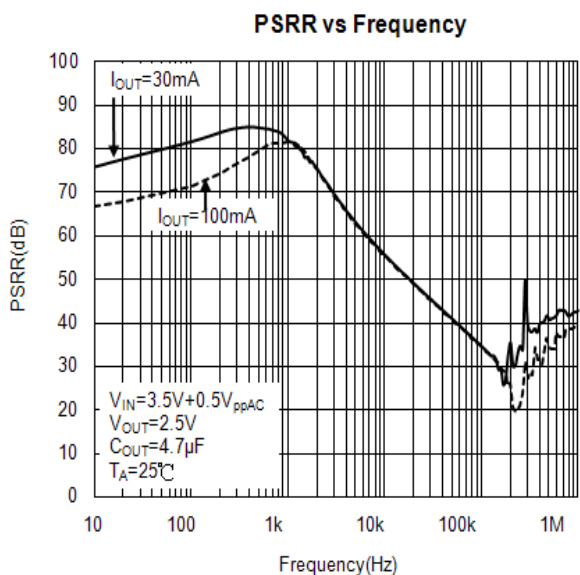
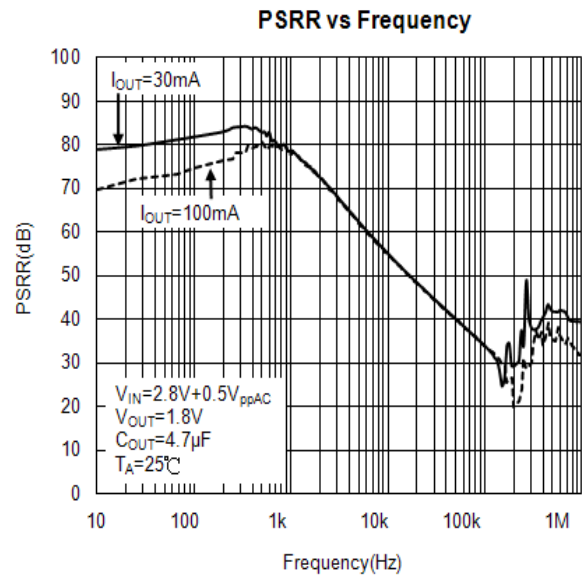
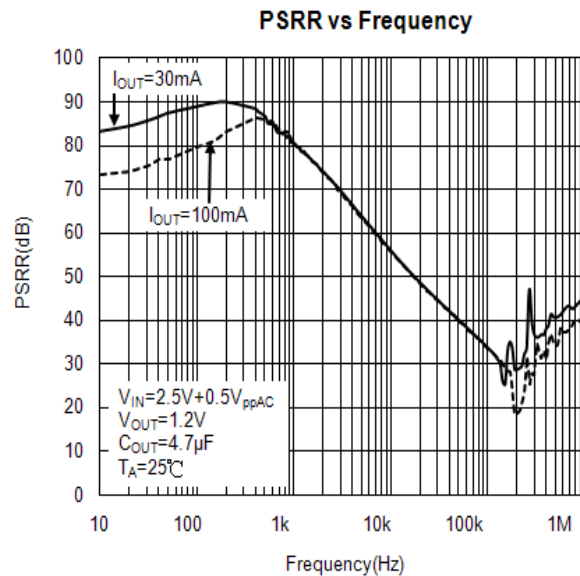


**Input Quiescent Current vs Input Voltage**



**Input Quiescent Current vs Temperature**



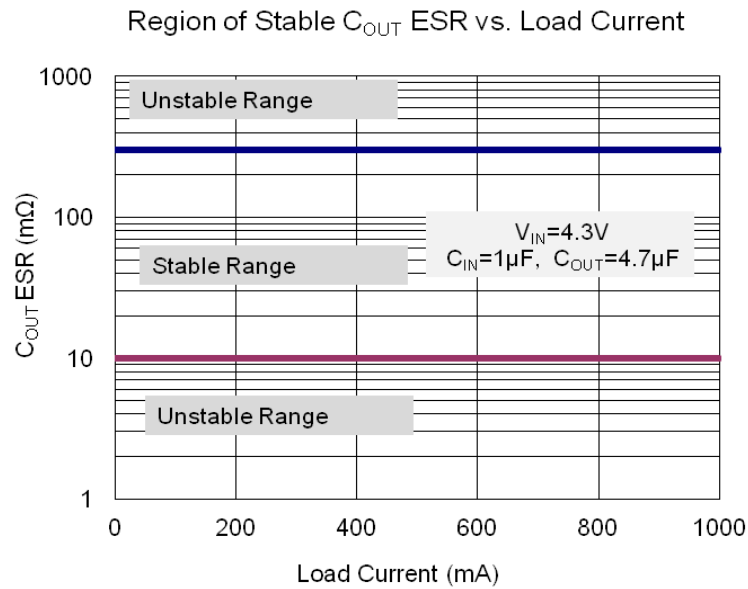
**Performance Characteristics (Cont.)**

**Application Information**
**Input Capacitor**

A  $1\mu F$  ceramic capacitor is recommended between IN and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and reduce noise. For PCB layout, a wide copper trace is required for both IN and GND pins. A lower ESR capacitor type allows the use of less capacitance, while higher ESR type requires more capacitance.

**Output Capacitor**

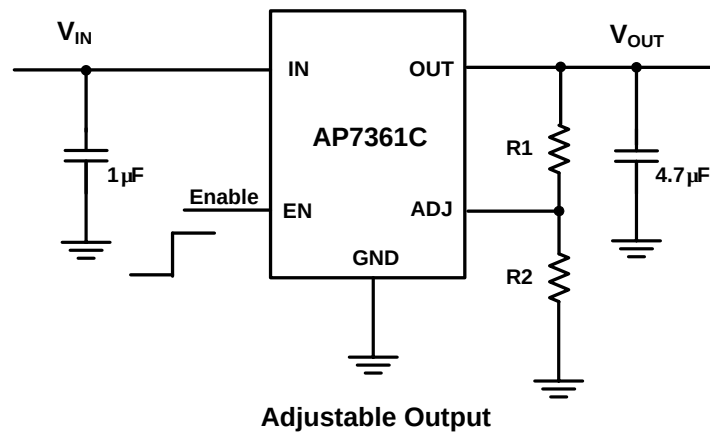
The output capacitor is required to stabilize and improve the transient response of the LDO. The AP7361C is stable with very small ceramic output capacitors. Using a ceramic capacitor value that is at least  $2.2\mu F$  with  $10m\Omega \leq ESR \leq 300m\Omega$  on the output ensures stability. Higher capacitance values help to improve line and load transient response. The output capacitance may be increased to keep low undershoot and overshoot. Output capacitor must be placed as close as possible to OUT and GND pins.

## Application Information (Cont.)



### Adjustable Operation

The AP7361C provides output voltage from 0.8V to 5.0V through external resistor divider as shown below.



The output voltage is calculated by:

$$V_{OUT} = V_{REF} \left( 1 + \frac{R_1}{R_2} \right)$$

Where  $V_{REF} = 0.8V$  (the internal reference voltage)

Rearranging the equation will give the following that is used for adjusting the output to a particular voltage:

$$R_1 = R_2 \left( \frac{V_{OUT}}{V_{REF}} - 1 \right)$$

To maintain the stability of the internal reference voltage,  $R_2$  needs to be kept smaller than  $80k\Omega$ .

## Application Information (Cont.)

### No Load Stability

Other than external resistor divider, no minimum load is required to keep the device stable. The device will remain stable and regulated in no load condition.

### ON/OFF Input Operation

The ON/OFF feature is not available in the SOT223 and TO252 (DPAK) packages.

The AP7361C is turned on by setting the EN pin high, and is turned off by pulling it low. If this feature is not used, the EN pin should be tied to IN pin to keep the regulator output on at all time. To ensure proper operation, the signal source used to drive the EN pin must be able to swing above and below the specified turn-on/off voltage thresholds listed in the Electrical Characteristics section under  $V_{IL}$  and  $V_{IH}$ .

### Current Limit Protection

When output current at OUT pin is higher than current limit threshold, the current limit protection will be triggered and clamp the output current to prevent over-current and to protect the regulator from damage due to overheating.

### Short Circuit Protection

When OUT pin is short-circuit to GND, short circuit protection will be triggered and clamp the output current to approximately 200mA. Full current is restored when the output voltage exceeds 15% of  $V_{OUT}$ . This feature protects the regulator from over-current and damage due to overheating.

### Thermal Shutdown Protection

Thermal protection disables the output when the junction temperature rises to approximately +150°C, allowing the device to cool down. When the junction temperature reduces to approximately +130°C the output circuitry is enabled again. Depending on power dissipation, thermal resistance, and ambient temperature, the thermal protection circuit may cycle on and off. This cycling limits the heat dissipation of the regulator, protecting it from damage due to overheating.

### Ultra Fast Start-up

After enabled, the AP7361C is able to provide full power in as little as tens of microseconds, typically 200μs, without sacrificing low ground current. This feature will help load circuitry move in and out of standby mode in real time, eventually extend battery life for mobile phones and other portable devices.

### Low Quiescent Current

The AP7361C, consuming only around 60μA for all input range, provides great power saving in portable and low power applications.

### Power Dissipation

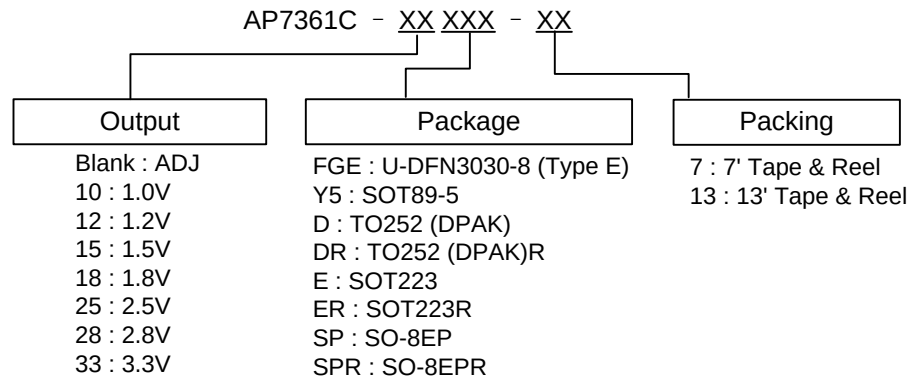
The device power dissipation and proper sizing of the thermal plane that is connected to the thermal pad is critical to avoid thermal shutdown and ensure reliable operation. Power dissipation of the device depends on input voltage and load conditions and can be calculated by:

$$P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$$

The maximum power dissipation, handled by the device, depends on the maximum junction to ambient thermal resistance, maximum ambient temperature, and maximum device junction temperature, which can be calculated by the equation in the following:

$$P_D(\max@T_A) = \frac{(+150^{\circ}\text{C} - T_A)}{R_{\theta JA}}$$

## Ordering Information

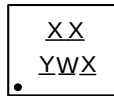


| Part Number      | Package Code | Packaging            | 7"/13" Tape and Reel |                    |
|------------------|--------------|----------------------|----------------------|--------------------|
|                  |              |                      | Quantity             | Part Number Suffix |
| AP7361C-XXFGE-7  | FGE          | U-DFN3030-8 (Type E) | 3000/Tape & Reel     | -7                 |
| AP7361C-XXY5-13  | Y5           | SOT89-5              | 2500/Tape & Reel     | -13                |
| AP7361C-XXD-13   | D            | TO252 (DPAK)         | 2500/Tape & Reel     | -13                |
| AP7361C-XXDR-13  | DR           | TO252 (DPAK)R        | 2500/Tape & Reel     | -13                |
| AP7361C-XXE-13   | E            | SOT223               | 2500/Tape & Reel     | -13                |
| AP7361C-XXER-13  | ER           | SOT223R              | 2500/Tape & Reel     | -13                |
| AP7361C-XXSP-13  | SP           | SO-8EP               | 2500/Tape & Reel     | -13                |
| AP7361C-XXSPR-13 | SPR          | SO-8EPR              | 2500/Tape & Reel     | -13                |

## Marking Information

### (1) U-DFN3030-8 (Type E)

#### ( Top View )

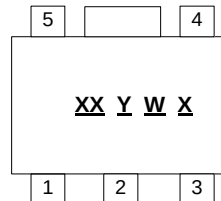


XX : Identification Code  
Y : Year : 0~9  
W : Week : A~Z : 1~26 week;  
       a~z : 27~52 week; z represents  
       52 and 53 week  
X : Internal Code

| Device      | Package              | Identification Code |
|-------------|----------------------|---------------------|
| AP7361C-ADJ | U-DFN3030-8 (Type E) | SH                  |
| AP7361C-10  | U-DFN3030-8 (Type E) | SJ                  |
| AP7361C-12  | U-DFN3030-8 (Type E) | SK                  |
| AP7361C-15  | U-DFN3030-8 (Type E) | SV                  |
| AP7361C-18  | U-DFN3030-8 (Type E) | SW                  |
| AP7361C-25  | U-DFN3030-8 (Type E) | SX                  |
| AP7361C-28  | U-DFN3030-8 (Type E) | SY                  |
| AP7361C-33  | U-DFN3030-8 (Type E) | SZ                  |

### (2) SOT89-5

#### (Top View)



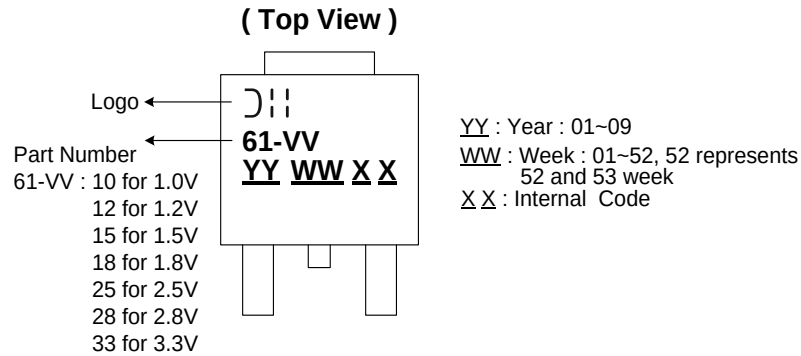
XX : Identification Code  
Y : Year : 0~9  
W : Week : A~Z : 1~26 week;  
       a~z : 27~52 week;  
       z represents 52 and 53 week  
X : Internal Code

| Device      | Package | Identification Code |
|-------------|---------|---------------------|
| AP7361C-ADJ | SOT89-5 | KR                  |
| AP7361C-10  | SOT89-5 | KS                  |
| AP7361C-12  | SOT89-5 | KT                  |
| AP7361C-15  | SOT89-5 | KU                  |
| AP7361C-18  | SOT89-5 | KV                  |
| AP7361C-25  | SOT89-5 | KW                  |
| AP7361C-28  | SOT89-5 | KX                  |
| AP7361C-33  | SOT89-5 | KZ                  |

## Marking Information (Cont.)

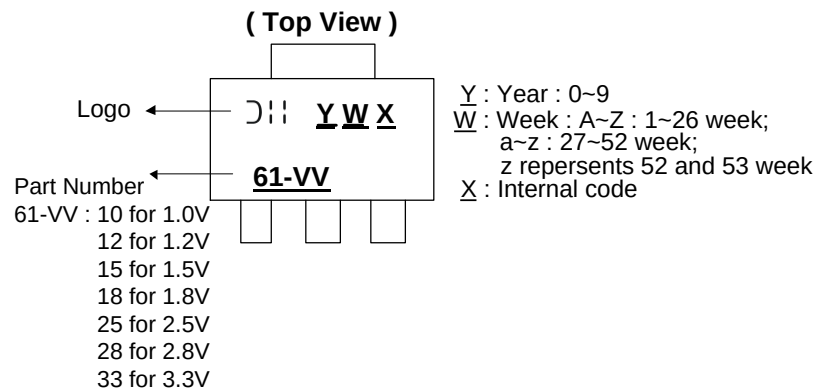
### (3) TO252 (DPAK)

Pin 1: IN, Pin 2: GND, Pin 3: OUT



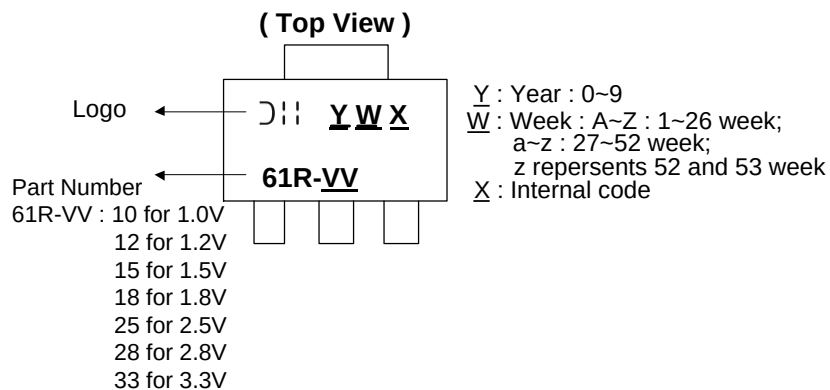
### (4) SOT223

Pin 1: IN, Pin 2: GND, Pin 3: OUT



### (5) SOT223R

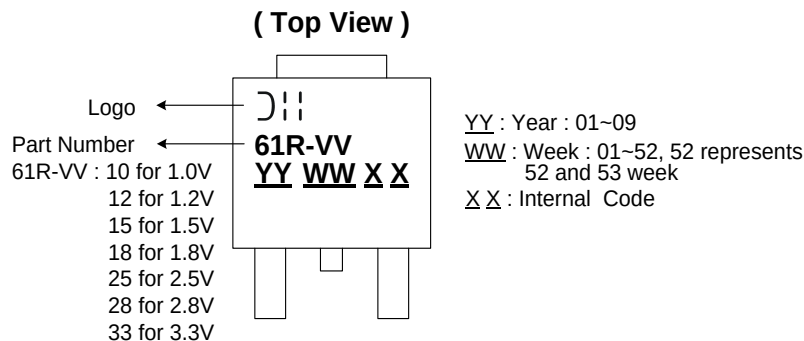
Pin 1: GND, Pin 2: OUT, Pin 3: IN



## Marking Information (Cont.)

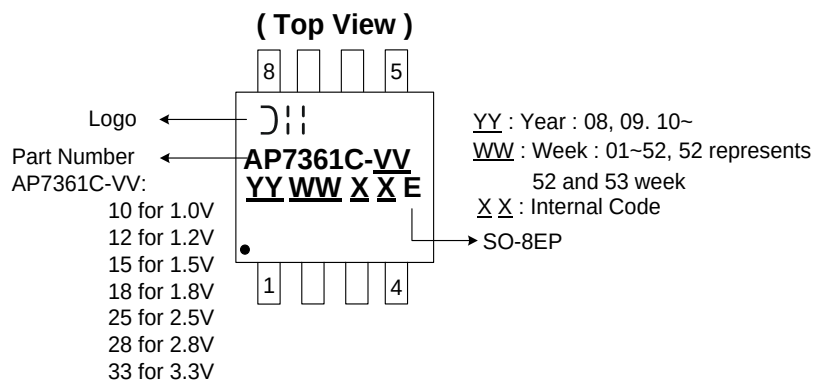
### (6) TO252 (DPAK)R

Pin 1: GND, Pin 2: OUT, Pin 3: IN



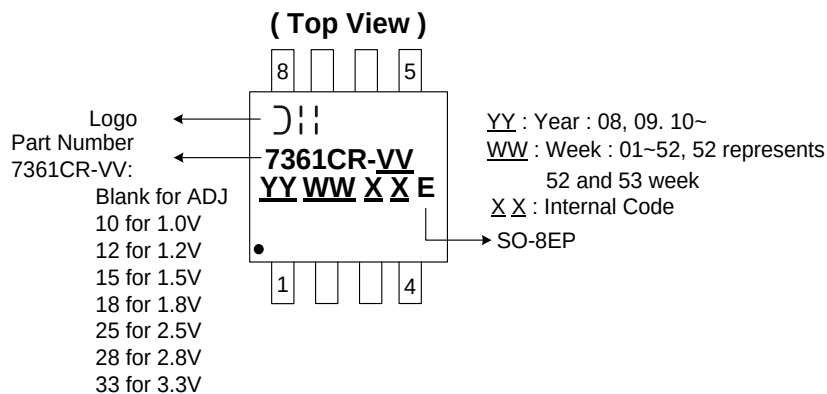
### (7) SO-8EP

Pin 1: OUT, Pin 2: EN, Pins 3, 5, 6 and 7: NC, Pin 4: GND, Pin 8: IN



### (8) SO-8EPR

Pin 1: OUT, Pin 2: ADJ/NC, Pin 3: GND, Pins 4, 6 and 7: NC, Pin 5: EN, Pin 8: IN

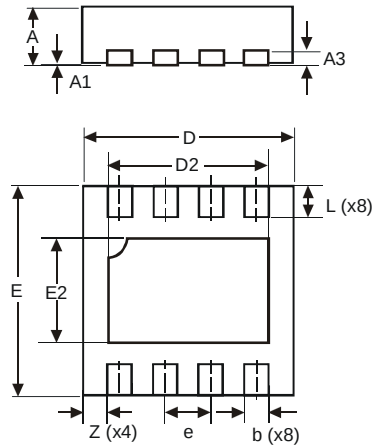




## Package Outline Dimensions (All dimensions in mm.)

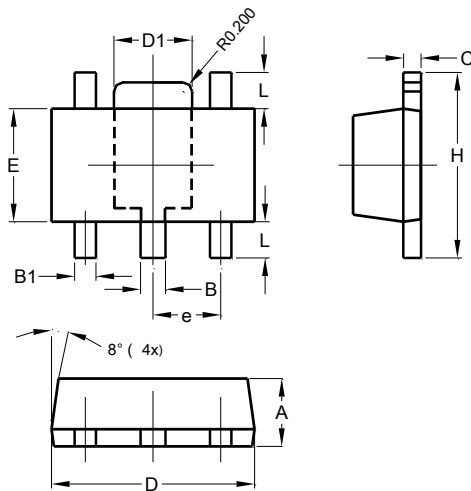
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (1) Package Type: U-DFN3030-8 (Type E)



| U-DFN3030-8<br>Type E |      |      |      |
|-----------------------|------|------|------|
| Dim                   | Min  | Max  | Typ  |
| A                     | 0.57 | 0.63 | 0.60 |
| A1                    | 0    | 0.05 | 0.02 |
| A3                    | —    | —    | 0.15 |
| b                     | 0.20 | 0.30 | 0.25 |
| D                     | 2.95 | 3.05 | 3.00 |
| D2                    | 2.15 | 2.35 | 2.25 |
| E                     | 2.95 | 3.05 | 3.00 |
| e                     | —    | —    | 0.65 |
| E2                    | 1.40 | 1.60 | 1.50 |
| L                     | 0.30 | 0.60 | 0.45 |
| Z                     | —    | —    | 0.40 |
| All Dimensions in mm  |      |      |      |

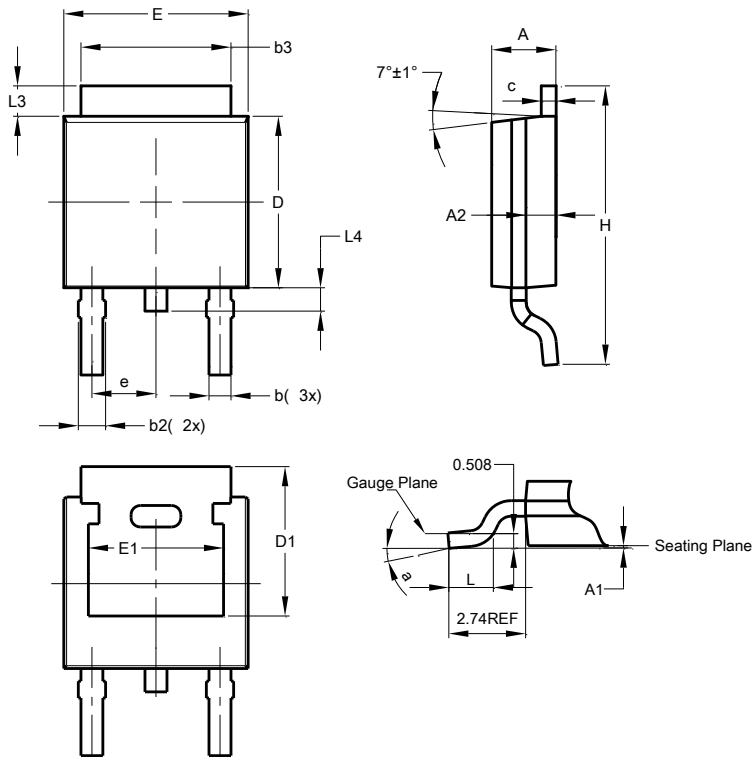
### (2) Package Type: SOT89-5



| SOT89-5              |      |      |       |
|----------------------|------|------|-------|
| Dim                  | Min  | Max  | Typ   |
| A                    | 1.40 | 1.60 | 1.50  |
| B                    | 0.50 | 0.62 | 0.56  |
| B1                   | 0.44 | 0.54 | 0.48  |
| C                    | 0.35 | 0.43 | 0.38  |
| D                    | 4.40 | 4.60 | 4.50  |
| D1                   | 1.62 | 1.83 | 1.733 |
| E                    | 2.40 | 2.60 | 2.50  |
| e                    | —    | —    | 1.50  |
| H                    | 3.95 | 4.25 | 4.10  |
| L                    | 0.65 | 0.95 | 0.80  |
| All Dimensions in mm |      |      |       |

**Package Outline Dimensions** (Cont.) (All dimensions in mm.)

 Please see <http://www.diodes.com/package-outlines.html> for the latest version.

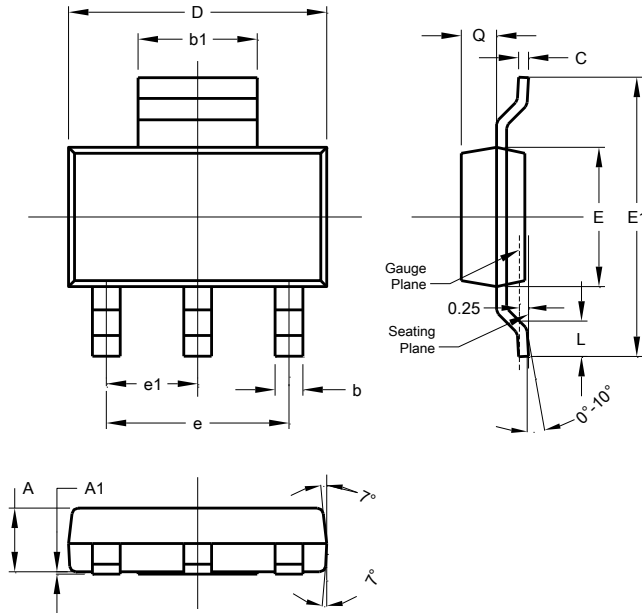
**(3) Package Type: TO252 (DPAK)**


| TO252 (DPAK)         |      |       |       |
|----------------------|------|-------|-------|
| Dim                  | Min  | Max   | Typ   |
| A                    | 2.19 | 2.39  | 2.29  |
| A1                   | 0.00 | 0.13  | 0.08  |
| A2                   | 0.97 | 1.17  | 1.07  |
| b                    | 0.64 | 0.88  | 0.783 |
| b2                   | 0.76 | 1.14  | 0.95  |
| b3                   | 5.21 | 5.46  | 5.33  |
| c                    | 0.45 | 0.58  | 0.531 |
| D                    | 6.00 | 6.20  | 6.10  |
| D1                   | 5.21 | -     | -     |
| e                    | -    | -     | 2.286 |
| E                    | 6.45 | 6.70  | 6.58  |
| E1                   | 4.32 | -     | -     |
| H                    | 9.40 | 10.41 | 9.91  |
| L                    | 1.40 | 1.78  | 1.59  |
| L3                   | 0.88 | 1.27  | 1.08  |
| L4                   | 0.64 | 1.02  | 0.83  |
| a                    | 0°   | 10°   | -     |
| All Dimensions in mm |      |       |       |

# Package Outline Dimensions (Cont.) (All dimensions in mm.)

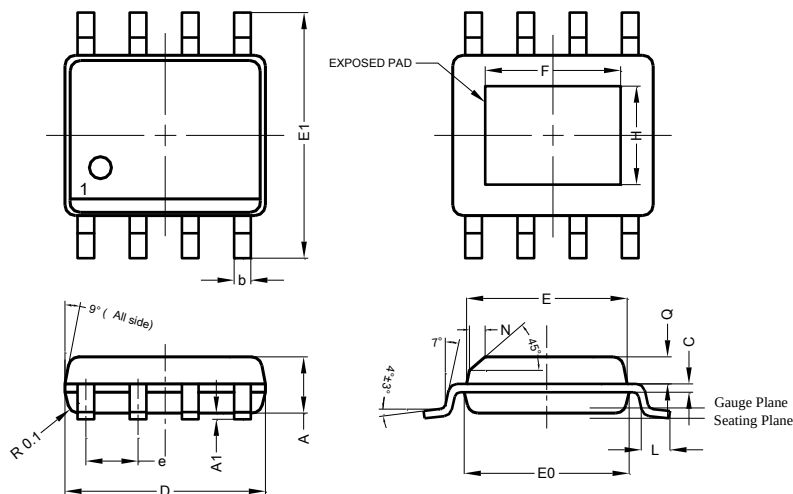
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

## (4) Package Type: SOT223



| SOT223               |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 1.55  | 1.65 | 1.60 |
| A1                   | 0.010 | 0.15 | 0.05 |
| b                    | 0.60  | 0.80 | 0.70 |
| b1                   | 2.90  | 3.10 | 3.00 |
| C                    | 0.20  | 0.30 | 0.25 |
| D                    | 6.45  | 6.55 | 6.50 |
| E                    | 3.45  | 3.55 | 3.50 |
| E1                   | 6.90  | 7.10 | 7.00 |
| e                    | -     | -    | 4.60 |
| e1                   | -     | -    | 2.30 |
| L                    | 0.85  | 1.05 | 0.95 |
| Q                    | 0.84  | 0.94 | 0.89 |
| All Dimensions in mm |       |      |      |

## (5) Package Type: SO-8EP

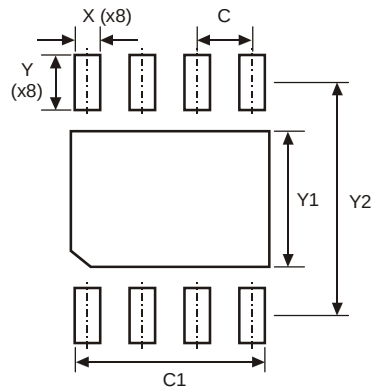


| SO-8EP               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.40 | 1.50 | 1.45 |
| A1                   | 0.00 | 0.13 | -    |
| b                    | 0.30 | 0.50 | 0.40 |
| C                    | 0.15 | 0.25 | 0.20 |
| D                    | 4.85 | 4.95 | 4.90 |
| E                    | 3.80 | 3.90 | 3.85 |
| E0                   | 3.85 | 3.95 | 3.90 |
| E1                   | 5.90 | 6.10 | 6.00 |
| e                    | -    | -    | 1.27 |
| F                    | 2.75 | 3.35 | 3.05 |
| H                    | 2.11 | 2.71 | 2.41 |
| L                    | 0.62 | 0.82 | 0.72 |
| N                    | -    | -    | 0.35 |
| Q                    | 0.60 | 0.70 | 0.65 |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

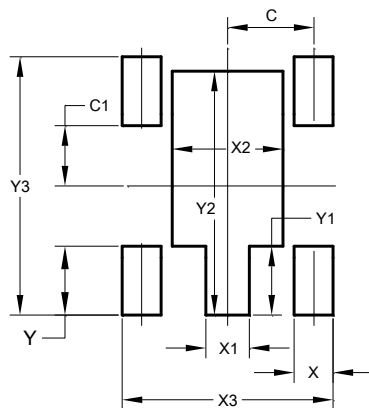
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (1) Package Type: U-DFN3030-8 (Type E)



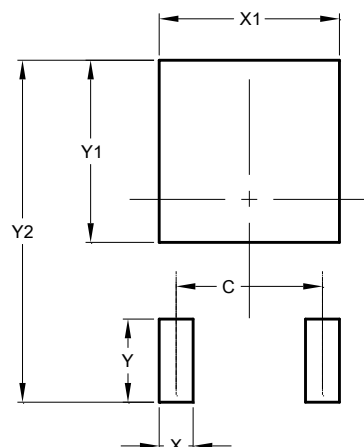
| Dimensions | Value (in mm) |
|------------|---------------|
| <b>C</b>   | 0.65          |
| <b>C1</b>  | 2.35          |
| <b>X</b>   | 0.30          |
| <b>Y</b>   | 0.65          |
| <b>Y1</b>  | 1.60          |
| <b>Y2</b>  | 2.75          |

### (2) Package Type: SOT89-5



| Dimensions | Value (in mm) |
|------------|---------------|
| <b>C</b>   | 1.500         |
| <b>C1</b>  | 1.050         |
| <b>X</b>   | 0.680         |
| <b>X1</b>  | 0.760         |
| <b>X2</b>  | 1.930         |
| <b>X3</b>  | 3.680         |
| <b>Y</b>   | 1.200         |
| <b>Y1</b>  | 1.200         |
| <b>Y2</b>  | 4.250         |
| <b>Y3</b>  | 4.500         |

### (3) Package Type: TO252 (DPAK)

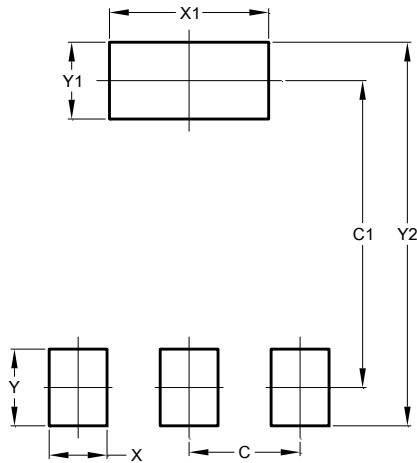


| Dimensions | Value (in mm) |
|------------|---------------|
| <b>C</b>   | 4.572         |
| <b>X</b>   | 1.060         |
| <b>X1</b>  | 5.632         |
| <b>Y</b>   | 2.600         |
| <b>Y1</b>  | 5.700         |
| <b>Y2</b>  | 10.700        |

## Suggested Pad Layout (Cont.)

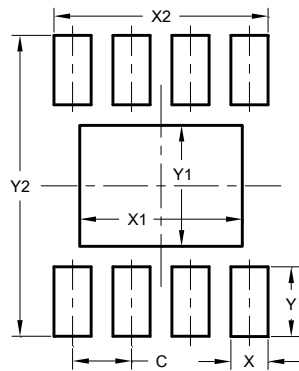
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (4) Package Type: SOT223



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.30          |
| C1         | 6.40          |
| X          | 1.20          |
| X1         | 3.30          |
| Y          | 1.60          |
| Y1         | 1.60          |
| Y2         | 8.00          |

### (5) Package Type: SO-8EP



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 1.270         |
| X          | 0.802         |
| X1         | 3.502         |
| X2         | 4.612         |
| Y          | 1.505         |
| Y1         | 2.613         |
| Y2         | 6.500         |

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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.