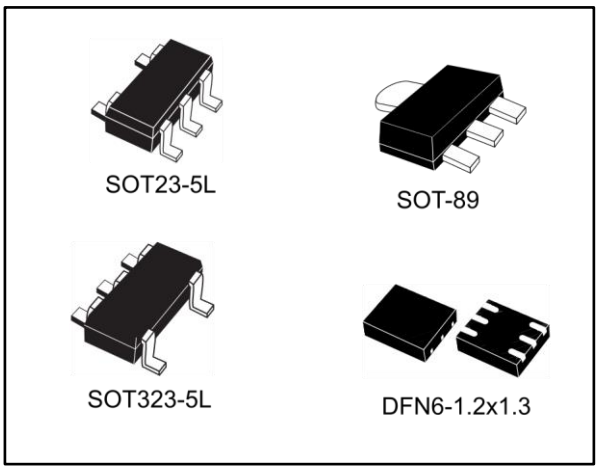
# LDK220

## 200 mA low quiescent current and low noise LDO

Datasheet - production data




## Features

- Input voltage from 2.5 to 13.2 V
- Very low-dropout voltage (100 mV typ. @ 100 mA load)
- Low quiescent current (typ. 55 µA, 1 µA in off mode)
- Low noise
- Output voltage tolerance: ± 2.0% @ 25 °C
- 200 mA guaranteed output current
- Wide range of output voltages available on request: fixed from 1.2 V to 12 V with 100 mV step and adjustable
- Logic-controlled electronic shutdown
- Compatible with ceramic capacitor $C_{OUT}$ = 1 µF
- Internal current and thermal limit
- Available in SOT23-5L, SOT323-5L, SOT-89 and DFN6-1.2x1.3 packages
- Temperature range: -40 °C to 125 °C

## Applications

- Battery-powered equipment
- TV
- Set-top box
- PC and laptop
- Industrial

## Description

The LDK220 is a low drop voltage regulator, which provides a maximum output current of 200 mA from an input voltage in the range of 2.5 V to 13.2 V, with a typical dropout voltage of 100 mV.

A ceramic capacitor stabilizes it on the output.

The very low drop voltage, low quiescent current and low noise make it suitable for battery-powered applications.

The enable logic control function puts the LDK220 in shutdown mode allowing a total current consumption lower than 1 µA.

The device also includes a short-circuit constant current limiting and thermal protection.



This is information on a product in full production.

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# 1 Diagram

**Figure 1: Block diagram (fixed version)**

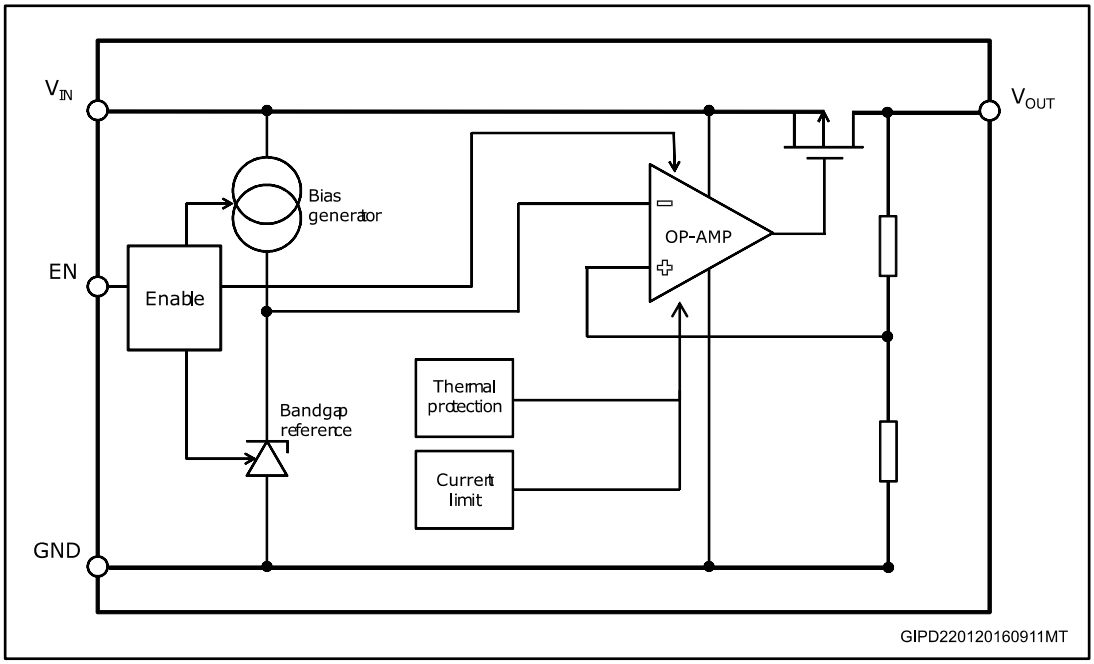
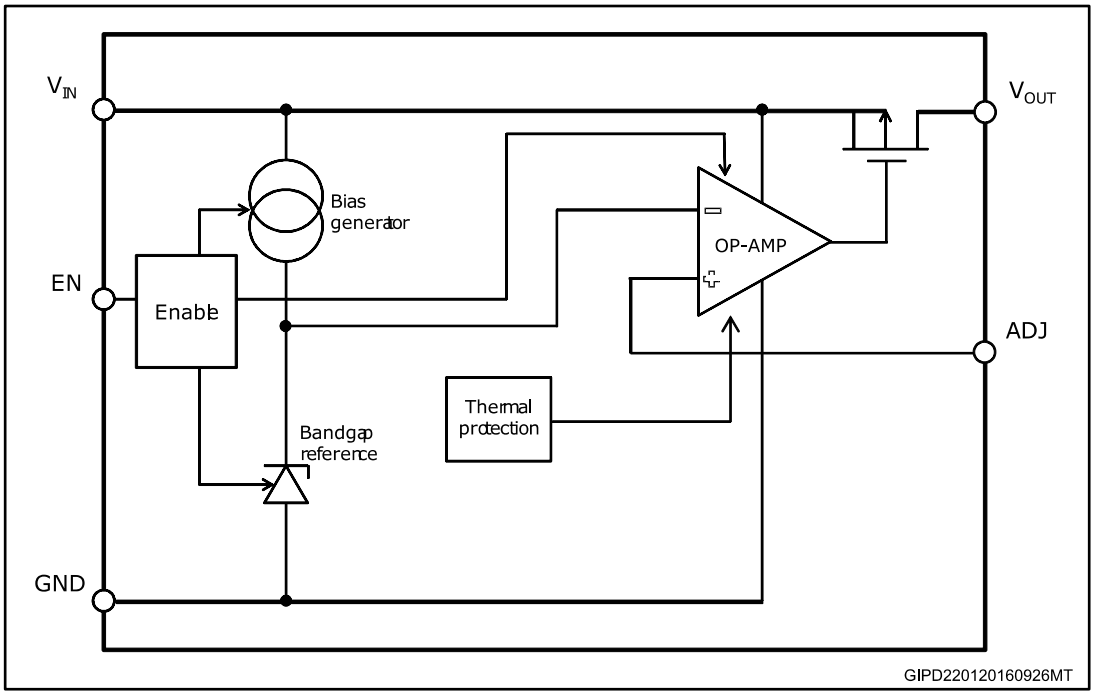



**Figure 2: Block diagram (adjustable version)**



# 2 Pin configuration

**Figure 3: Pin connections (top view)**

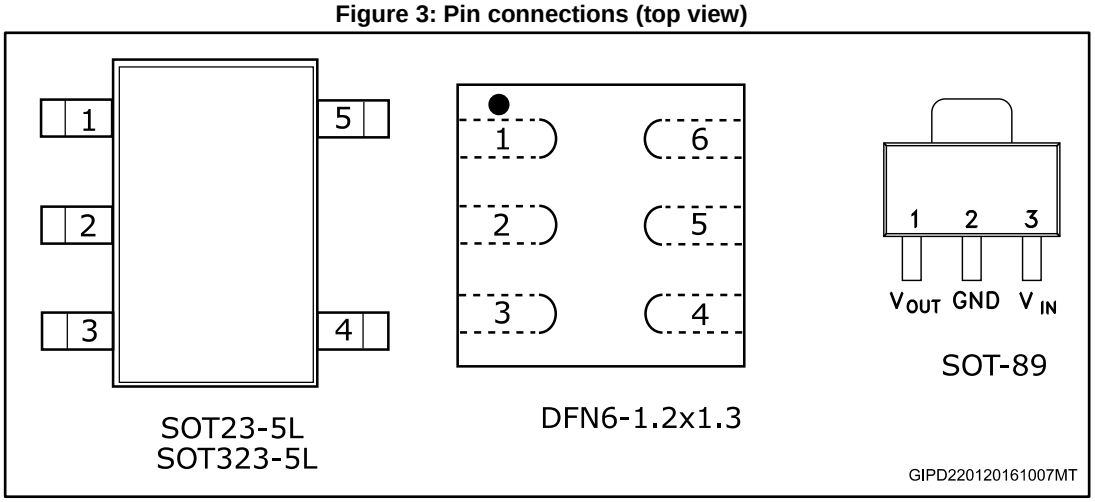



**Table 1: Pin description (SOT23-5L, SOT323-5L)**

| Pin n° | Symbol | Function |
|---|---|---|
| 1 | IN | Input voltage of the LDO |
| 2 | GND | Common ground |
| 3 | EN | Enable pin logic input: low = shutdown, high = active |
| 4 | ADJ/NC | Adjustable pin on ADJ version, not connected on fixed version |
| 5 | OUT | Output voltage of the LDO |

**Table 2: Pin description (DFN6)**

| Pin n° | Symbol | Function |
|---|---|---|
| 1 | OUT | Output voltage of the LDO |
| 2 | N/C | Not connected |
| 3 | ADJ/NC | Adjustable pin on ADJ version, not connected in fixed version |
| 4 | EN | Enable pin logic input: low = shutdown, high = active |
| 5 | GND | Common ground |
| 6 | IN | Input voltage of the LDO |

**Table 3: Pin description (SOT-89)**

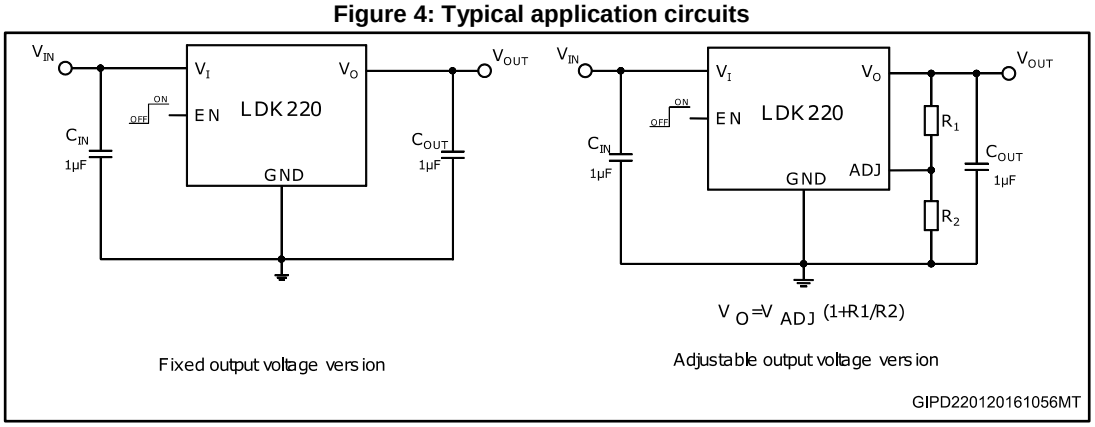
| Pin n° (1) | Symbol | Function |
|---|---|---|
| 1 | OUT | Output voltage of the LDO |
| 2 | GND | Common ground |
| 3 | IN | Input voltage of the LDO |

**Notes:**

(1) Adjustable version and enable pin are not available on the SOT-89 package.

# 3 Typical application

**Figure 4: Typical application circuits**




Adjustable version and enable pin are not available on the SOT-89 package.

# 4 Maximum ratings

**Table 4: Absolute maximum ratings**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{IN}$ | DC input voltage | - 0.3 to 14 | V |
| $V_{OUT}$ | DC output voltage | - 0.3 to VI + 0.3 | V |
| $V_{EN}$ | Enable input voltage | - 0.3 to VI + 0.3 | V |
| $V_{ADJ}$ | ADJ pin voltage | - 0.3 to 2 | V |
| $I_{OUT}$ | Output current | Internally limited | mA |
| $P_D$(1) | Power dissipation | 500 | mW |
| $T_{STG}$ | Storage temperature range | - 65 to 150 | °C |
| $T_{OP}$ | Operating junction temperature range | - 40 to 125 | °C |

**Notes:**

(1) Maximum power dissipation has to be calculated taking into account the package thermal performance.

Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied. All values are referred to GND.

**Table 5: Thermal data**

| Symbol | Parameter | SOT23-5L | SOT323-5L | SOT-89 | DFN-6 | Unit |
|---|---|---|---|---|---|---|
| $R_{thJA}$ | Thermal resistance junction-ambient | 160 | 246 | 110 | 237 | °C/W |
| $R_{thJC}$ | Thermal resistance junction-case | 68 | 134 | 15 | 104 | °C/W |

# 5 Electrical characteristics

$T_J$ = 25 °C, $V_{IN}$ = $V_{OUT(NOM)}$ + 1 V, $C_{IN}$ = $C_{OUT}$ = 1 µF, $I_{OUT}$ = 1 mA, $V_{EN}$ = $V_{IN}$, unless otherwise specified.

**Table 6: LDK220 electrical characteristics for fixed output version**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | Operating input voltage | | 2.5 | | 13.2 | V |
| $V_{OUT}$ | $V_{OUT}$ accuracy | $I_{OUT}$ = 1 mA, $T_J$ = 25 °C | -2 | | 2 | % |
| | | $I_{OUT}$ = 1 mA, -40 °C < $T_J$ < 125 °C | -3 | | 3 | % |
| $\Delta V_{OUT}$ | Static line regulation | $V_{OUT}$ + 1 V ≤ $V_{IN}$ ≤ 13.2 V, $I_{OUT}$ = 1 mA | | 0.001 | 0.05 | %/V |
| $\Delta V_{OUT}$ | Static load regulation | $I_{OUT}$ = 1 mA to 200 mA | | 0.001 | 0.003 | %/mA |
| $V_{DROP}$ | Dropout voltage (1) | $I_{OUT}$ = 100 mA, $V_{OUT}$ = 3.3 V | | 100 | | mV |
| | | $I_{OUT}$ = 200 mA, $V_{OUT}$ = 3.3 V 40 °C < $T_J$ < 125 °C | | 200 | 350 | |
| $e_N$ | Output noise voltage | 10 Hz to 100 kHz, $I_{OUT}$ = 10 mA | | 20 | | $\mu V_{RMS}/V$ |
| SVR | Supply voltage rejection | $V_{IN}$ = $V_{OUTNOM}$+ 0.5 V+/-$V_{RIPPLE}$ $V_{RIPPLE}$ = 0.1 V frequency = 120 Hz to 1 kHz $I_{OUT}$ = 10 mA | | 55 | | dB |
| | | $V_{IN}$ = $V_{OUTNOM}$ + 0.5 V+/-$V_{RIPPLE}$ $V_{RIPPLE}$ = 0.1 V frequency = 10 kHz $I_{OUT}$ = 10 mA | | 50 | | |
| $I_Q$ | Quiescent current | $V_{IN}$ = $V_{OUT}$ +1 V $I_{OUT}$ = 0 mA,-40 °C < $T_J$ < 125 °C | | 55 | 90 | µA |
| | | $V_{OUT}$ +1 V ≤ $V_{IN}$ ≤ 13.2 V (2) $I_{OUT}$ = 200 mA, -40 °C < $T_J$ < 125 °C | | 60 | 100 | |
| | | $V_{IN}$ input current in off mode: $V_{EN}$ = GND, $T_J$ = 25 °C | | 0.1 | 1 | |
| $I_{SC}$ | Short-circuit current (2) | $R_L$ = 0 | | 400 | | mA |
| $V_{EN}$ | Enable input logic low | $V_{IN}$ = 2.5 V to 13.2 V, -40 °C < $T_J$ < 125 °C | | | 0.4 | V |
| | Enable input logic high | $V_{IN}$ = 2.5 V to 13.2 V, -40 °C < $T_J$ < 125 °C | 1.2 | | | |
| $I_{EN}$ | Enable pin input current | $V_{EN}$ = $V_{IN}$ | | 0.1 | 100 | nA |

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $T_{SHDN}$ | Thermal shutdown | | | 160 | | °C |
| | Hysteresis | | | 20 | | |
| $C_{OUT}$ | Output capacitor | Capacitance (see *Section 6: "Typical performance characteristics"*) | 1 | | 22 | µF |

**Notes:**

(1) Dropout voltage is the input-to-output voltage difference at which the output voltage is 100 mV below its nominal value.

(2) The maximum current has to be limited according to the maximum power dissipation.

$T_J$ = 25 °C, $V_{IN}$ = $V_{OUT(NOM)}$ + 1 V, $C_{IN}$ = $C_{OUT}$ = 1 µF, $I_{OUT}$ = 1 mA, $V_{EN}$ = $V_{IN}$, unless otherwise specified.

**Table 7: LDK220 electrical characteristics for adjustable version**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | Operating input voltage | | 2.5 | | 13.2 | V |
| $V_{ADJ}$ | Adjustable voltage | $T_J$ = 25 °C | | 1.185 | | V |
| | Adjustable voltage accuracy | $T_J$ = 25 °C | -2 | | +2 | % |
| | | 40 °C < $T_J$ < 125 °C | -3 | | +3 | |
| $\Delta V_{OUT}$ | Static line regulation | $V_{OUT}$ +1 V ≤ $V_{IN}$ ≤ 13.2 V<br>$I_{OUT}$=1 mA | | 0.001 | 0.05 | %/V |
| $\Delta V_{OUT}$ | Static load regulation | $I_{OUT}$ = 1 mA to 200 mA | | 0.0002 | 0.003 | %/mA |
| $V_{DROP}$ | Dropout voltage (1) | $I_{OUT}$ = 100 mA,<br>$V_{OUT}$ = 3.3 V | | 100 | | |
| | | $I_{OUT}$ = 200 mA,<br>$V_{OUT}$ = 3.3 V<br>40 °C < $T_J$ < 125 °C | | 200 | 350 | mV |
| $e_N$ | Output noise voltage | 10 Hz to 100 kHz, $I_{OUT}$ = 10 mA | | 100 | | $\mu V_{RMS}/V$ |
| $I_{ADJ}$ | Adjust pin current | | | | 1 | µA |
| SVR | Supply voltage rejection | $V_{IN}$ = $V_{OUTNOM}$ + 0.5 V+/-$V_{RIPPLE}$<br>$V_{RIPPLE}$ = 0.1 V<br>Frequency =120 Hz to1 kHz<br>$I_{OUT}$ = 10 mA | | 60 | | dB |
| | | $V_{RIPPLE}$ = 0.1 V<br>$V_{IN}$ = $V_{OUTNOM}$+0.5 V+/-$V_{RIPPLE}$<br>frequency = 10 kHz,<br>$I_{OUT}$ = 10 mA | | 45 | | |

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_Q$ | Quiescent current | $V_{OUT}$ +1 V ≤ $V_{IN}$ ≤ 13.2 V<br>$I_{OUT}$ = 0 mA,<br>-40 °C < $T_J$ < 125 °C | | 55 | 90 | µA |
| | | $V_{OUT}$ +1 V ≤ $V_{IN}$ ≤ 13.2 V (2)<br>$I_{OUT}$ = 200 mA,<br>-40 °C < $T_J$ < 125 °C | | 60 | 100 | |
| | | $V_{IN}$ input current in off mode:<br>$V_{EN}$ = GND,$T_J$ = 25 °C | | 0.1 | 1 | |
| $I_{SC}$ | Short-circuit current (2) | $R_L$ = 0 | | 400 | | mA |
| $V_{EN}$ | Enable input logic low | $V_{IN}$ = 2.5 V to 13.2 V<br>-40 °C < $T_J$ < 125 °C | | | 0.4 | V |
| | Enable input logic high | $V_{IN}$ = 2.5 V to 13.2 V<br>-40 °C < $T_J$ < 125 °C | 1.2 | | | |
| $I_{EN}$ | Enable pin input current | $V_{EN}$ = $V_{IN}$ | | 0.1 | 100 | nA |
| $T_{SHDN}$ | Thermal shutdown | | | 160 | | °C |
| | Hysteresis | | | 20 | | |
| $C_{OUT}$ | Output capacitor | Capacitance (see *Section 6: "Typical performance characteristics"*) | 1 | | 22 | µF |

**Notes:**

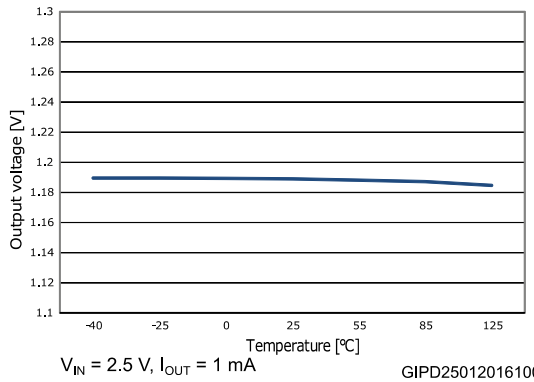
(1) Dropout voltage is the input-to-output voltage difference at which the output voltage is 100 mV below its nominal value.

(2) The maximum current has to be limited according to the maximum power dissipation.

# 6 Typical performance characteristics

($C_{IN}$ = $C_{OUT}$ = 1 µF, $V_{EN}$ to $V_{IN}$)

**Figure 5: Output voltage vs. temperature ($V_{OUT}$ = $V_{ADJ}$, $I_{OUT}$ = 1 mA)**




$V_{IN}$ = 2.5 V, $I_{OUT}$ = 1 mA

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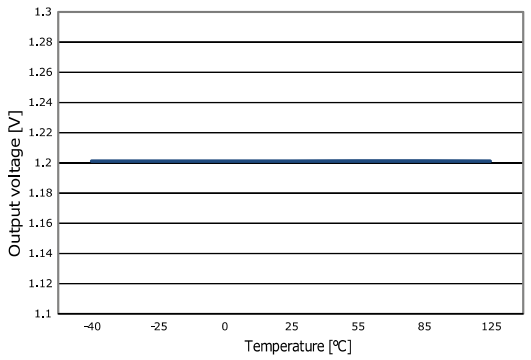
**Figure 6: Output voltage vs. temperature ($V_{OUT}$ = $V_{ADJ}$, $I_{OUT}$ = 200 mA)**




$V_{IN}$ = 2.5 V, $I_{OUT}$ = 200 mA

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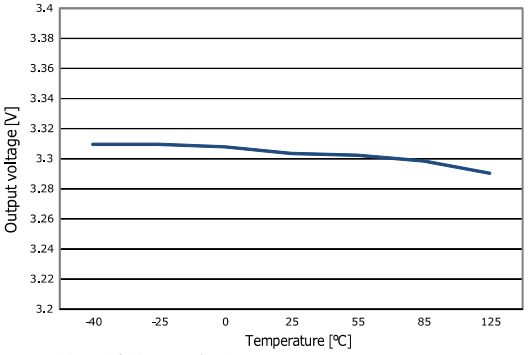
**Figure 7: Output voltage vs. temperature ($V_{OUT}$ = 3.3 V, $I_{OUT}$ = 1 mA)**




$V_{IN}$ = 4.3 V, $I_{OUT}$ = 1 mA

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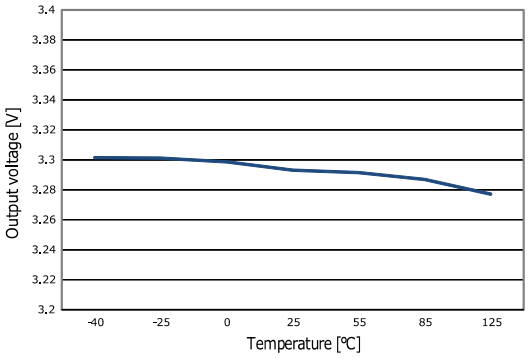
**Figure 8: Output voltage vs. temperature ($V_{OUT}$ = 3.3 V, $I_{OUT}$ = 200 mA)**




$V_{IN}$ = 4.3 V, $I_{OUT}$ = 200 mA

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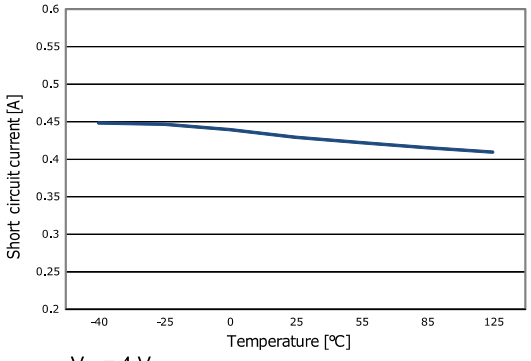
**Figure 9: Short-circuit current vs. temperature**




$V_{IN}$ = 4 V

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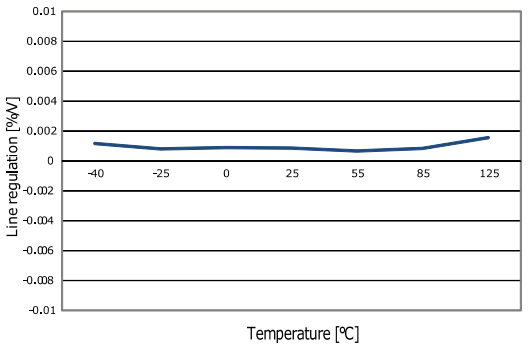
**Figure 10: Line regulation vs. temperature ($V_{OUT}$ = 3.3 V)**




$V_{OUT}$ = 3.3 V, $I_{OUT}$ = 1 mA

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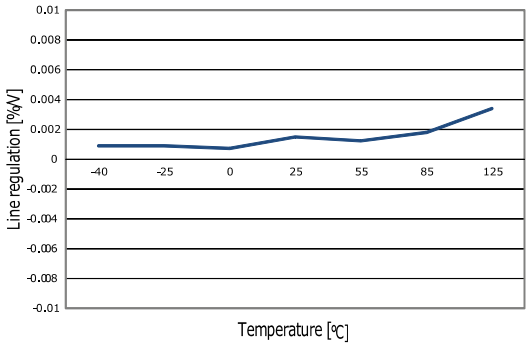
**Figure 11: Line regulation vs. temperature ($V_{OUT}$ = $V_{ADJ}$)**




$V_{OUT}$ = $V_{ADJ}$, $I_{OUT}$ = 1 mA

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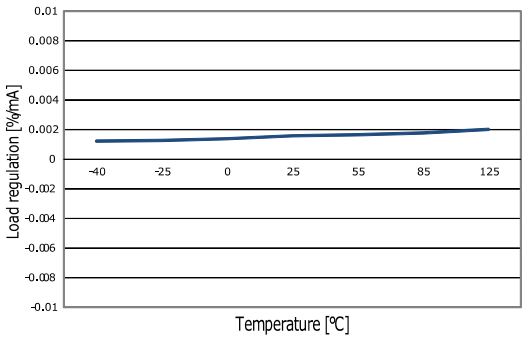
**Figure 12: Load regulation vs. temperature ($V_{OUT}$ = 3.3 V)**




$V_{OUT}$ = 3.3 V, $I_{OUT}$ = 1 mA to 200 mA

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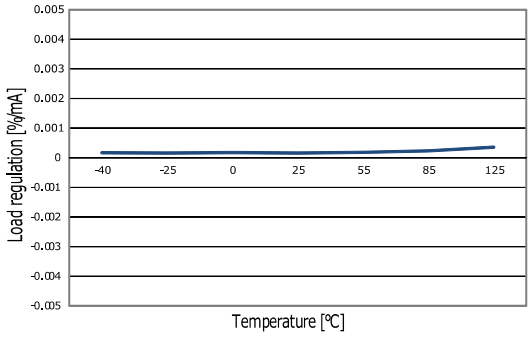
**Figure 13: Load regulation vs. temperature ($V_{OUT}$ = $V_{ADJ}$)**




$I_{OUT}$ = 1 mA to 200 mA

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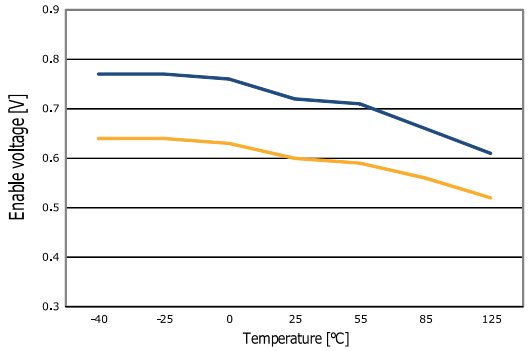
**Figure 14: Enable thresholds vs. temperature**




$I_{OUT}$ = 1 mA

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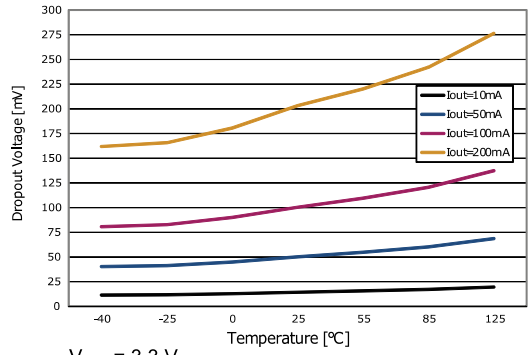
**Figure 15: Dropout voltage vs. temperature**




$V_{OUT}$ = 3.3 V

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**Figure 16: Quiescent current vs. temperature ($I_{OUT}$ = 0 mA)**

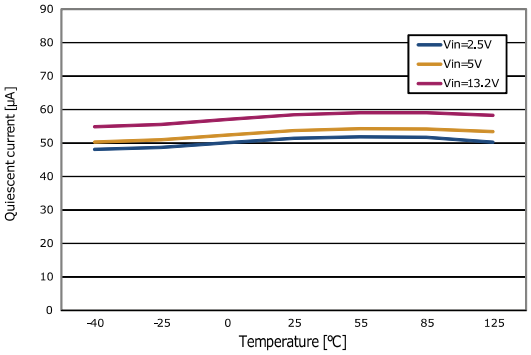


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**Figure 17: Quiescent current vs. temperature ($I_{OUT}$ = 200 mA)**

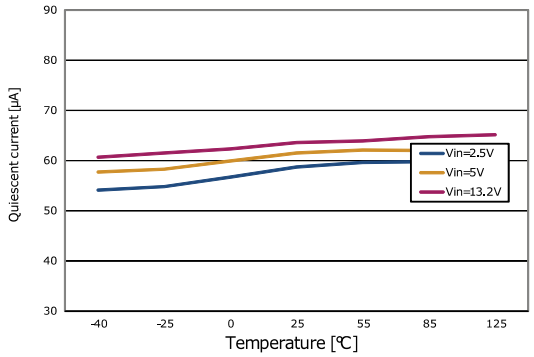


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**Figure 18: Off-state current vs. temperature**

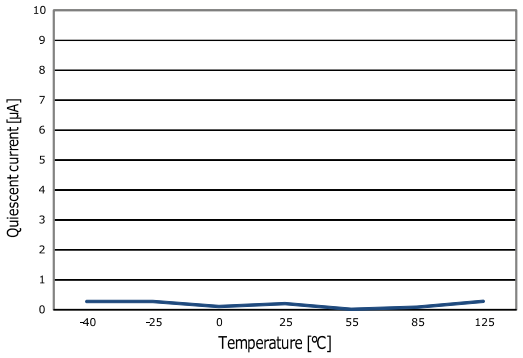


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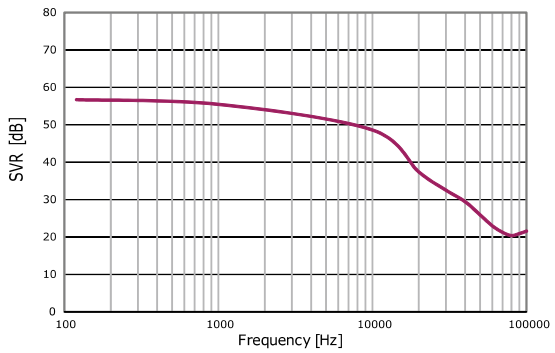
**Figure 19: SVR vs. frequency ($V_{OUT}$ = 3.3 V)**




$V_{IN}$ = 3.7 V +/-100 mV, $V_{OUT}$ = 3.3 V, $C_{OUT}$ = 1 µF

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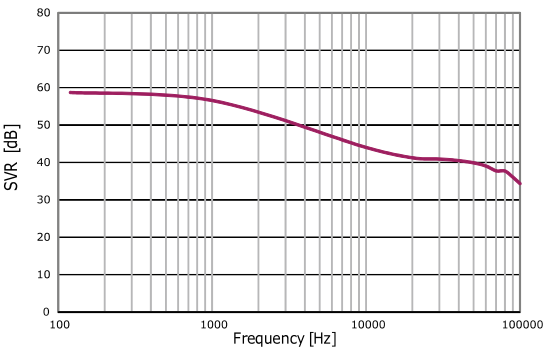
**Figure 20: SVR vs. frequency ($V_{OUT}$ = $V_{ADJ}$)**




$V_{IN}$ = 2.5 V +/- 100 mV, $V_{OUT}$ = $V_{ADJ}$, $C_{OUT}$ = 1 µF

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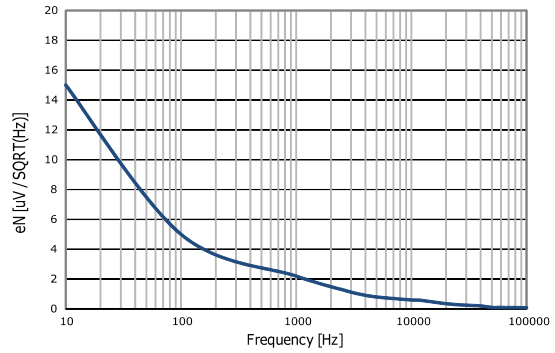
**Figure 21: Output noise spectral density**




$V_{OUT}$ = 3.3 V, $C_{IN}$ = $C_{OUT}$ = 1 µF

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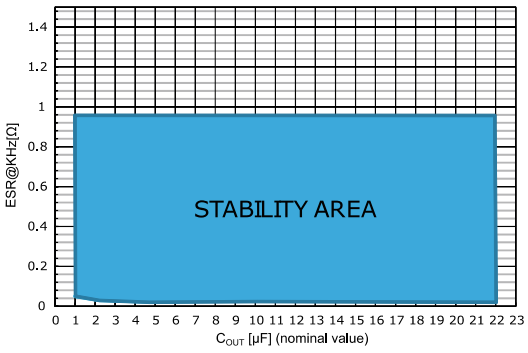
**Figure 22: Stability vs. ($C_{OUT}$, ESR)**




$V_{IN}$ from 2.5 to 13.2 V, $I_{OUT}$ from 0 to 200 mA, $C_{IN}$ = 1 µF

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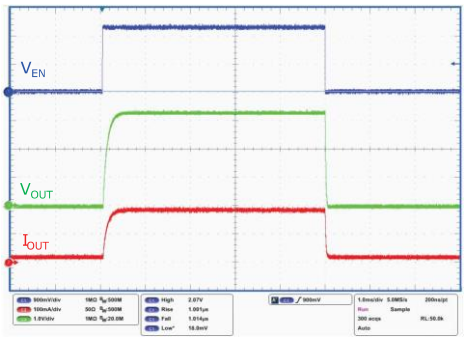
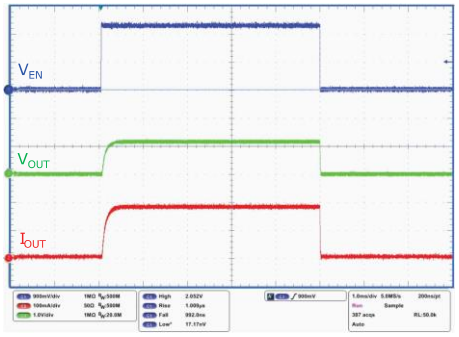
**Figure 23: Startup with enable ($V_{OUT}$ = 3.3 V)**




$V_{IN}$ = 4.3 V, $V_{EN}$ = 0 V to 2 V, $I_{OUT}$ = 0.2 A, $V_{OUT}$ = 3.3 V, $T_r$ = $T_f$ = 1 µs

GIPD250120161426MT

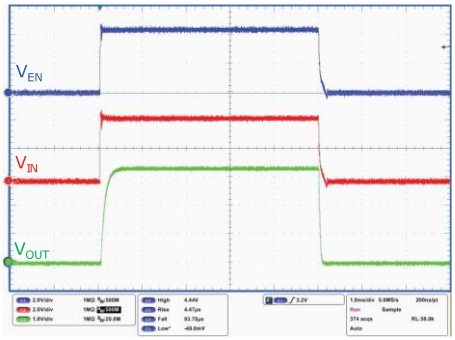
**Figure 24: Startup with enable ($V_{OUT}$ = $V_{ADJ}$)**




$V_{IN}$ = 2.5 V, $V_{EN}$ = 0 V to $V_{IN}$, $I_{OUT}$ = 0.2 A, $V_{OUT}$ = $V_{ADJ}$, $T_r$ = $T_f$ = 1 µs

GIPD250120161427MT

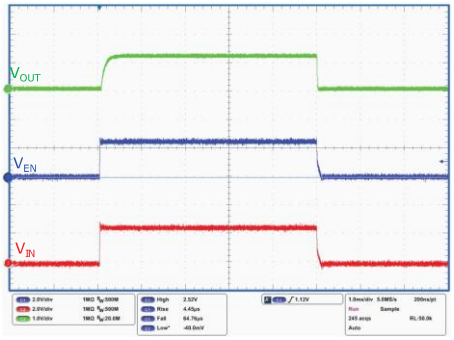
**Figure 25: Turn-on time ($V_{OUT}$ = 3.3 V)**




$V_{IN}$ = $V_{EN}$ = 0 V to 4.3 V, $I_{OUT}$ = 0.2 A, $V_{OUT}$ = 3.3 V, $T_r$ = 5 µs

GIPD250120161428MT

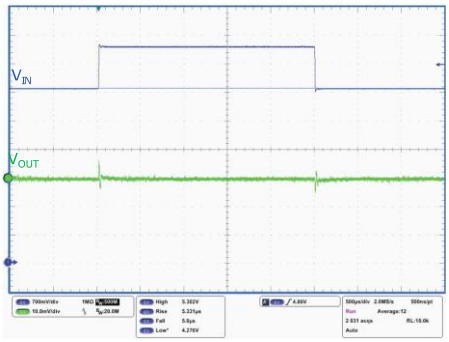
**Figure 26: Turn-on time ($V_{OUT}$ = $V_{ADJ}$)**




$V_{IN}$ = $V_{EN}$ = 0 V to 2.5 V, $I_{OUT}$ = 0.2 A, $V_{OUT}$ = $V_{ADJ}$, Tr = 5 µs

GIPD250120161429MT

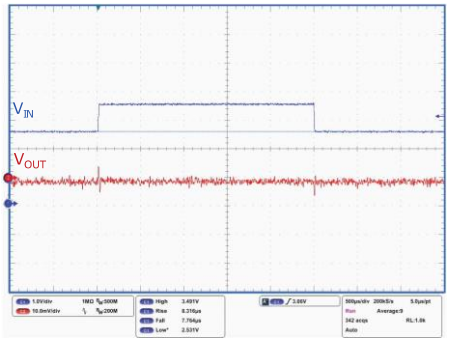
**Figure 27: Line transient ($V_{OUT}$ = 3.3 V)**




$V_{IN}$ = $V_{EN}$ = 4.3 V to 5.3 V, $I_{OUT}$ = 1 mA, $V_{OUT}$ = 3.3 V, $T_r$ = $T_f$ = 5 µs

GIPD250120161430MT

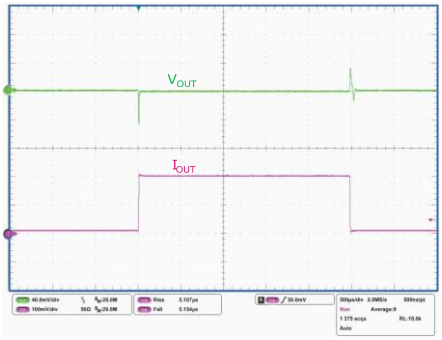
**Figure 28: Line transient ($V_{OUT}$ = $V_{ADJ}$)**




$V_{IN}$ = $V_{EN}$ = 2.5 V to 3.5 V, $I_{OUT}$ = 1 mA, $V_{OUT}$ = $V_{ADJ}$, $T_r$ = $T_f$ = 5 µs

GIPD250120161431MT

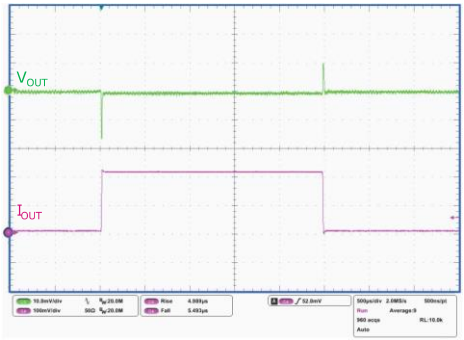
**Figure 29: Load transient ($V_{OUT}$ = 3.3 V)**




$V_{IN} = V_{EN}$ = 4.3 V, $I_{OUT}$ = 1 mA to 0.2 A, $V_{OUT}$ = 3.3 V, $T_r = T_f$ = 5 µs

GIPD250120161432MT

**Figure 30: Load transient ($V_{OUT} = V_{ADJ}$)**




$V_{IN} = V_{EN}$ = 2.5 V, $I_{OUT}$ = 1 mA to 0.2 A, $V_{OUT} = V_{ADJ}$, $T_r = T_f$ = 5 µs

GIPD250120161433MT

# 7 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: ***www.st.com***. ECOPACK® is an ST trademark.

## 7.1 SOT23-5L package information

**Figure 31: SOT23-5L package outline**

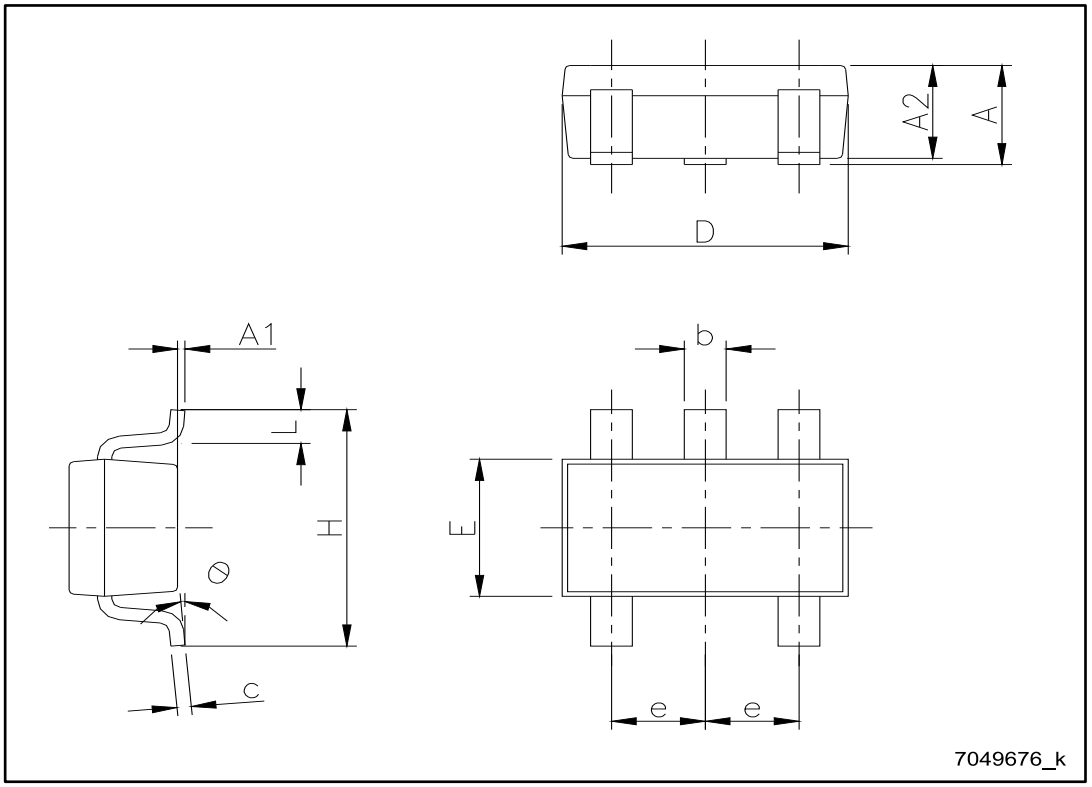
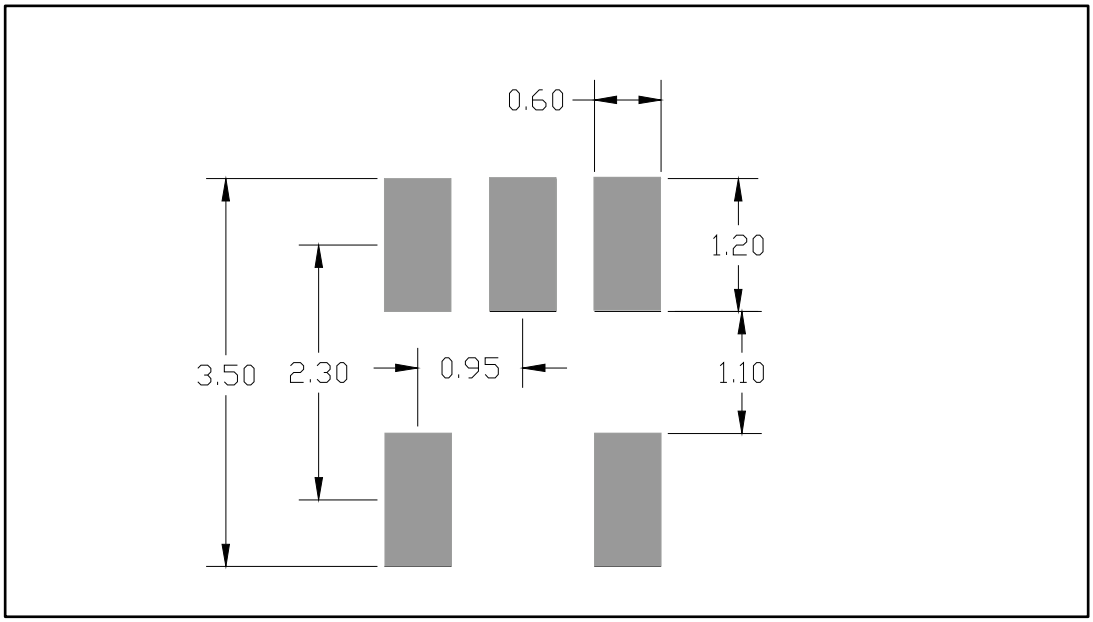


**Table 8: SOT23-5L package mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.90 | | 1.45 |
| A1 | 0 | | 0.15 |
| A2 | 0.90 | | 1.30 |
| b | 0.30 | | 0.50 |
| c | 0.09 | | 0.20 |
| D | | 2.95 | |
| E | | 1.60 | |
| e | | 0.95 | |
| H | | 2.80 | |
| L | 0.30 | | 0.60 |
| θ | 0° | | 8° |

**Figure 32: SOT23-5L recommended footprint**




Dimensions are in mm

## 7.2 SOT23-5L packing information

**Figure 33: SOT23-5L tape and reel outline**

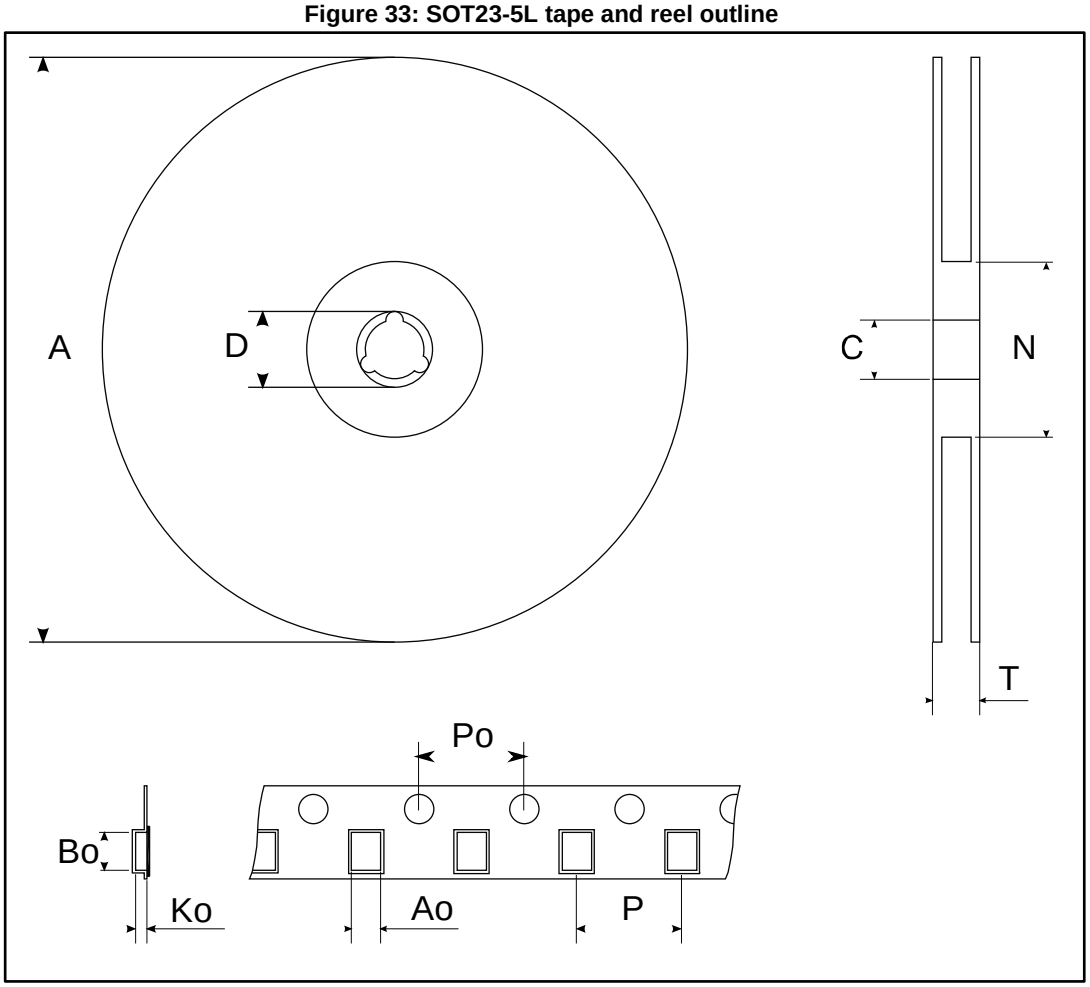



**Table 9: SOT23-5L tape and reel mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | | | 180 |
| C | 12.8 | 13.0 | 13.2 |
| D | 20.2 | | |
| N | 60 | | |
| T | | | 14.4 |
| Ao | 3.13 | 3.23 | 3.33 |
| Bo | 3.07 | 3.17 | 3.27 |
| Ko | 1.27 | 1.37 | 1.47 |
| Po | 3.9 | 4.0 | 4.1 |
| P | 3.9 | 4.0 | 4.1 |

## 7.3 SOT-89 package information

**Figure 34: SOT-89 package outline**

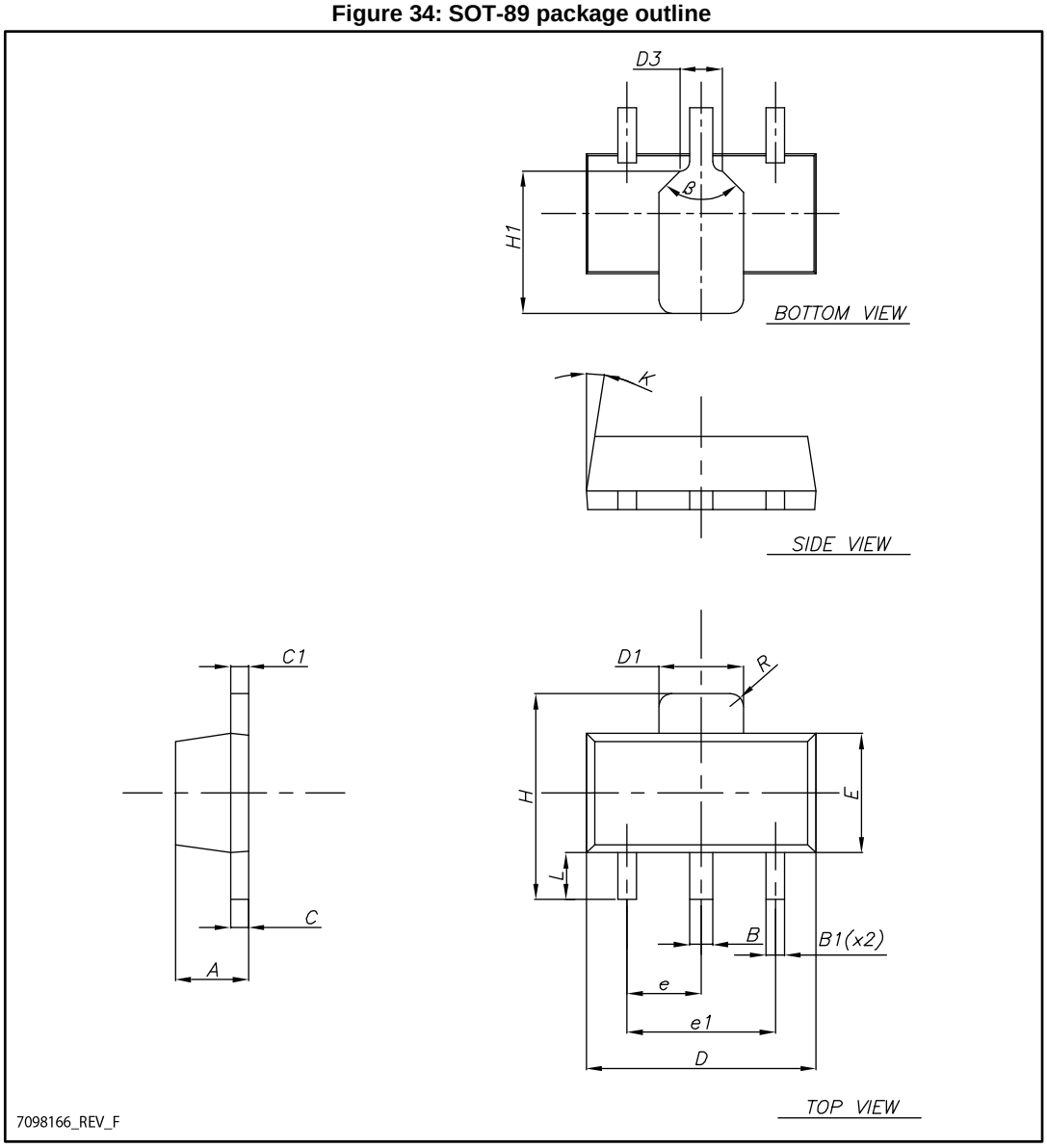
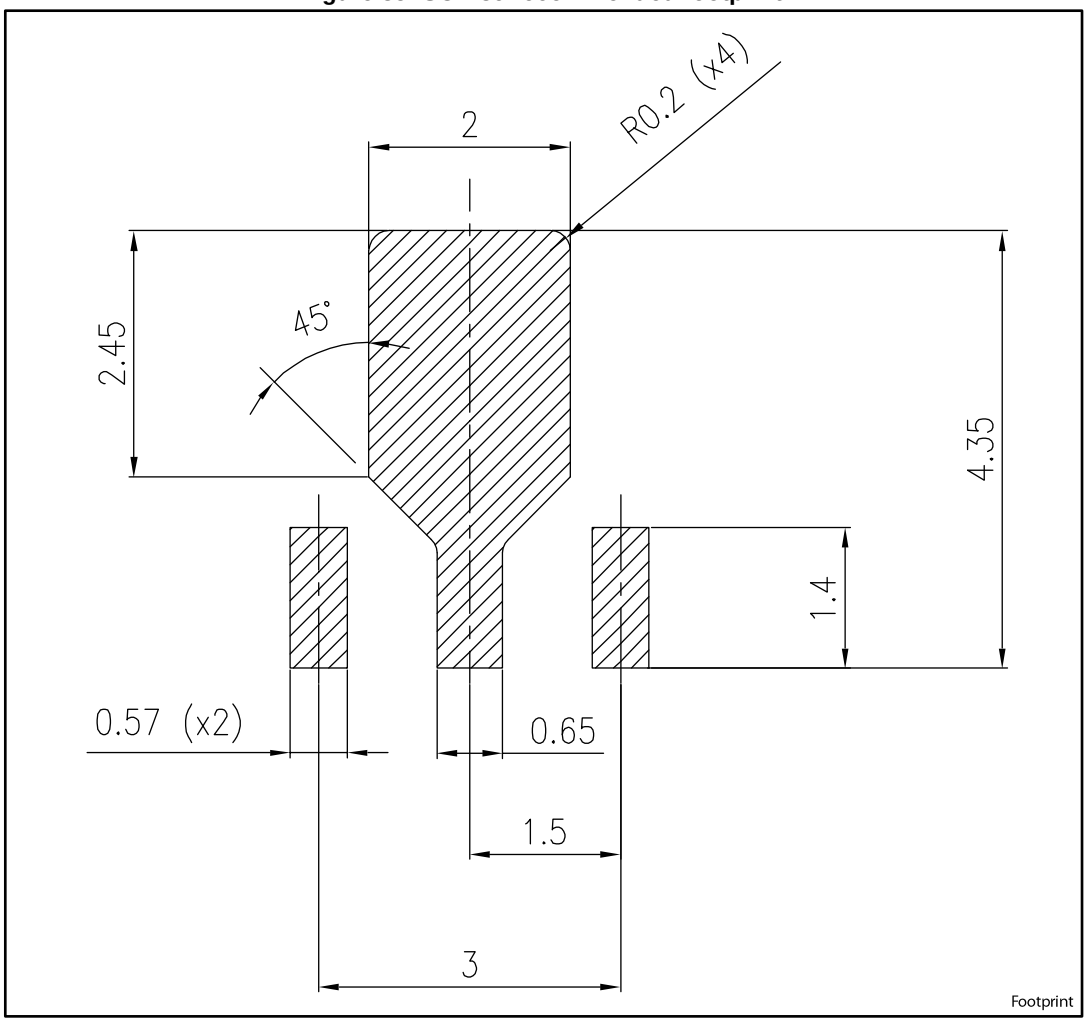


**Table 10: SOT-89 mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 1.40 | | 1.60 |
| B | 0.44 | | 0.56 |
| B1 | 0.36 | | 0.48 |
| C | 0.35 | | 0.44 |
| C1 | 0.35 | | 0.44 |
| D | 4.40 | | 4.60 |
| D1 | 1.62 | | 1.83 |
| D3 | | 0.90 | |
| E | 2.29 | | 2.60 |
| e | 1.42 | | 1.57 |
| e1 | 2.92 | | 3.07 |
| H | 3.94 | | 4.25 |
| H1 | 2.70 | | 3.10 |
| K | 1° | | 8° |
| L | 0.89 | | 120 |
| R | | 0.25 | |
| β | | 90° | |

**Figure 35: SOT-89 recommended footprint**



## 7.4 SOT-89 packing information

**Figure 36: SOT-89 carrier tape outline**

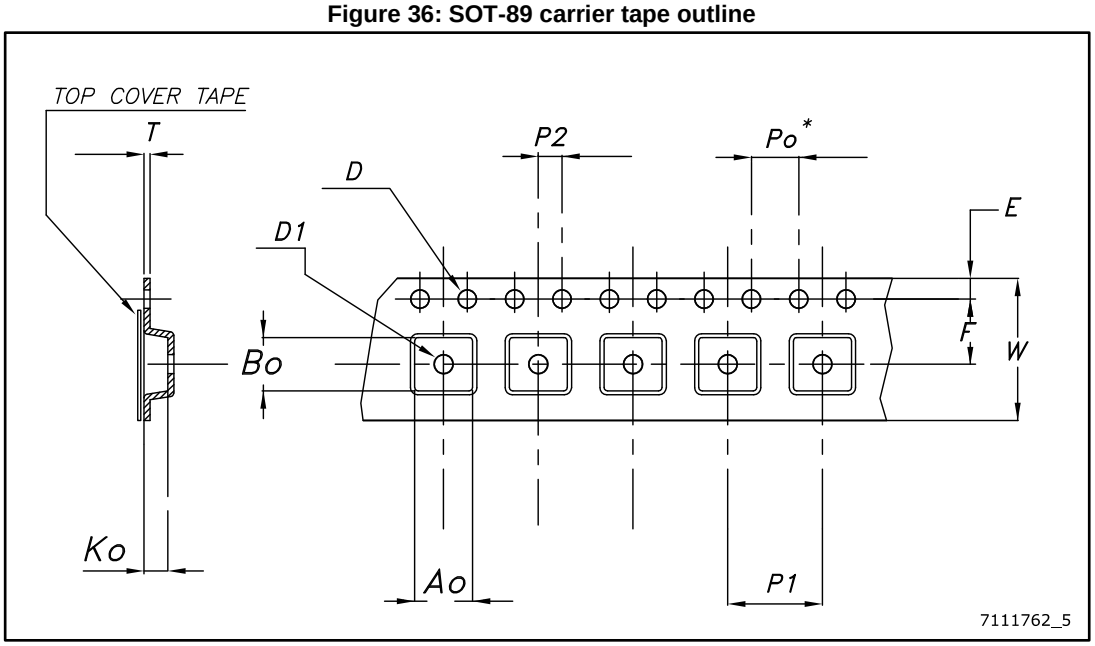



**Table 11: SOT-89 carrier tape mechanical data**

| Dim. | mm | |
|---|---|---|
| | Value | Tolerance |
| Ao | 4.91 | ± 0.10 |
| Bo | 4.52 | ± 0.10 |
| Ko | 1.90 | ± 0.10 |
| F | 5.50 | ± 0.10 |
| E | 1.75 | ± 0.10 |
| W | 12 | ± 0.30 |
| P2 | 2 | ± 0.10 |
| Po | 4 | ± 0.10 |
| P1 | 8 | ± 0.10 |
| T | 0.30 | ± 0.10 |
| D | Ø 1.55 | ± 0.05 |
| D1 | Ø 1.60 | ± 0.10 |

## 7.5 SOT323-5L package information

**Figure 37: SOT323-5L package outline**

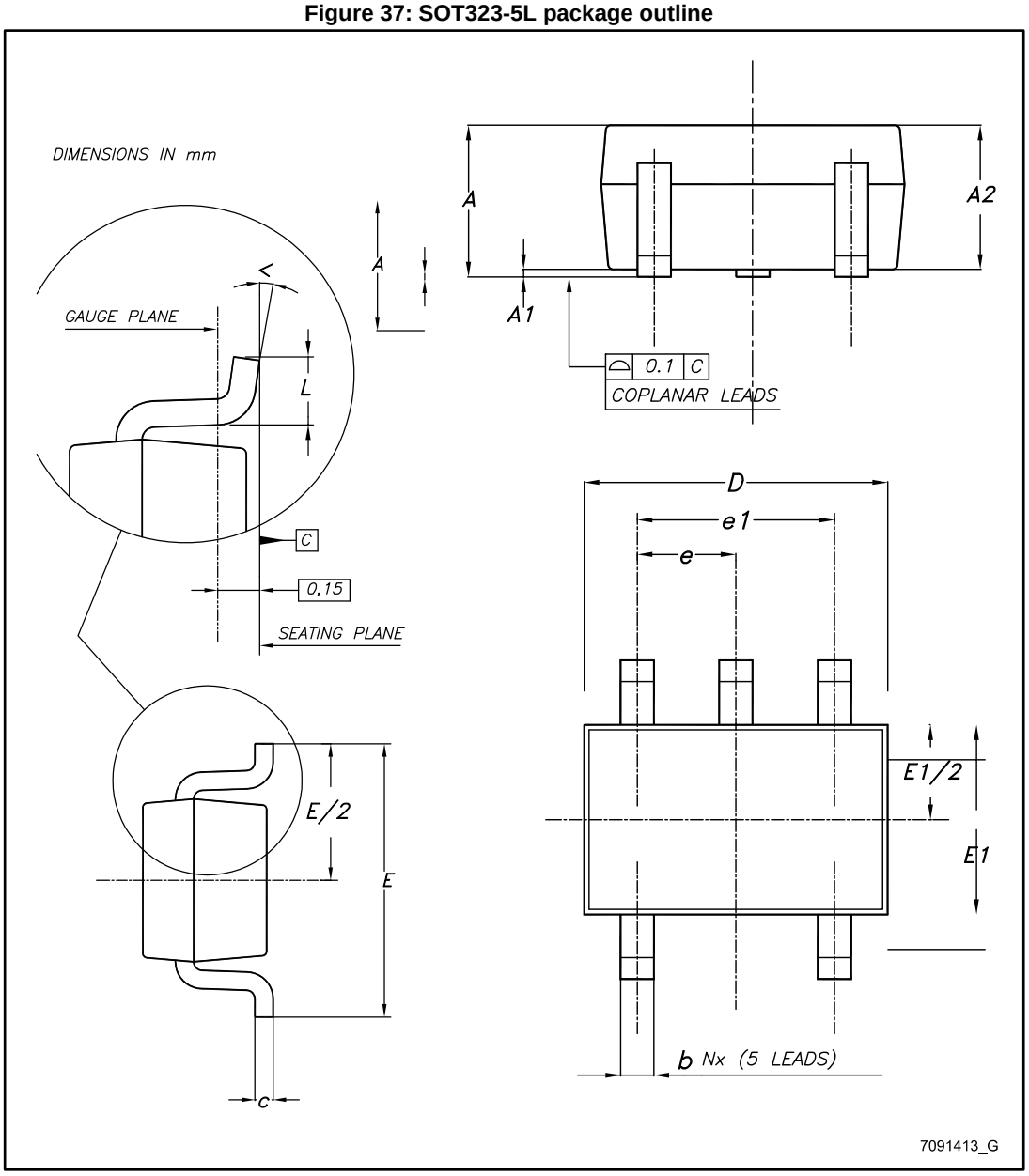
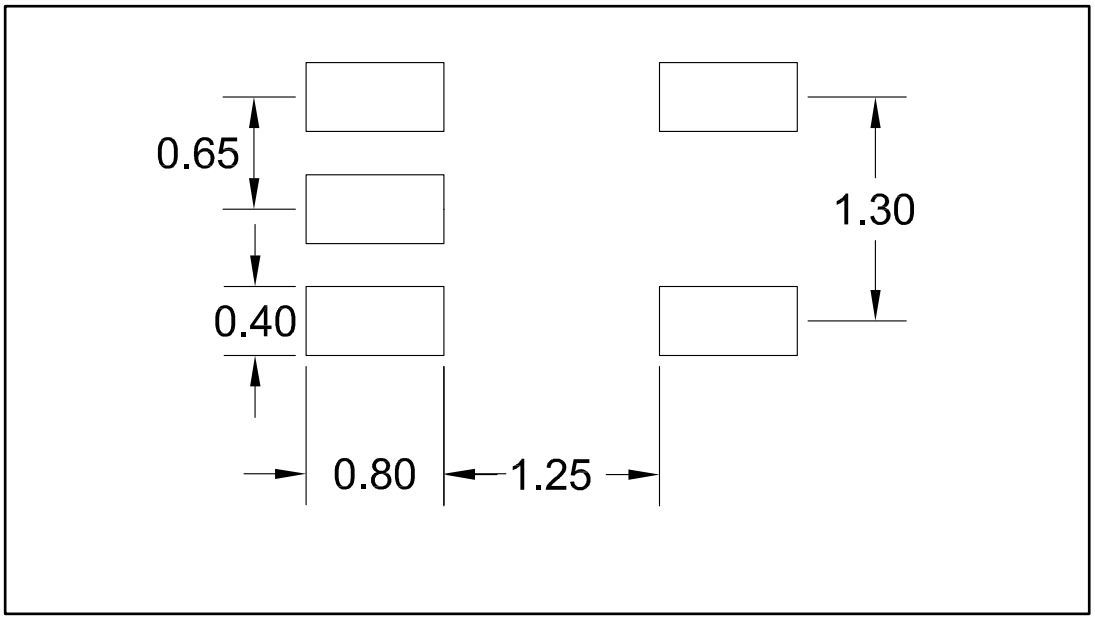


**Table 12: SOT323-5L package mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.80 | | 1.10 |
| A1 | 0 | | 0.10 |
| A2 | 0.80 | 0.90 | 1 |
| b | 0.15 | | 0.30 |
| c | 0.10 | | 0.22 |
| D | 1.80 | 2 | 2.20 |
| E | 1.80 | 2.10 | 2.40 |
| E1 | 1.15 | 1.25 | 1.35 |
| e | | 0.65 | |
| e1 | | 1.30 | |
| L | 0.26 | 1.36 | 0.46 |
| < | 0° | | 8° |

**Figure 38: SOT323-5L recommended footprint**



## 7.6 DFN6 1.2x1.3 package information

**Figure 39: DFN6 package outline**

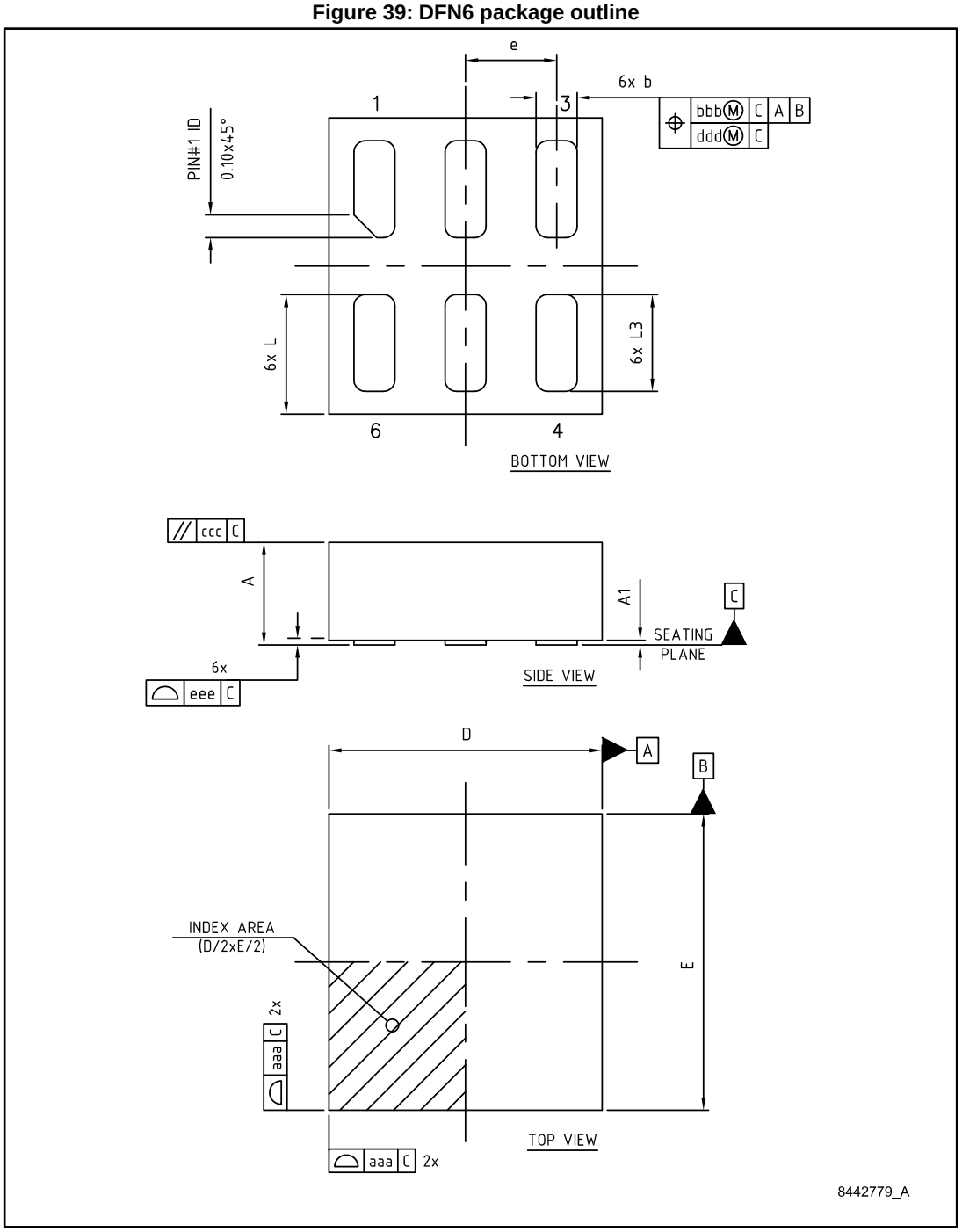
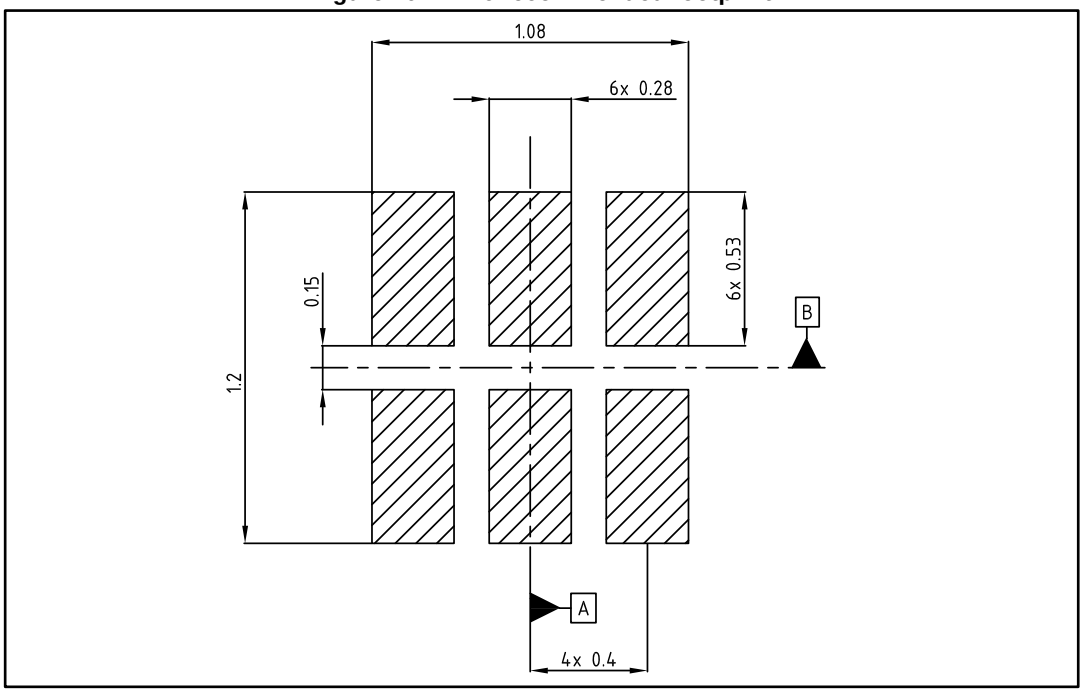


**Table 13: DFN6 package mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.41 | 0.45 | 0.50 |
| A1 | 0.00 | 0.02 | 0.05 |
| D | - | 1.20 | - |
| E | - | 1.30 | - |
| e | - | 0.40 | - |
| b | 0.15 | 0.18 | 0.25 |
| L | 0.475 | 0.525 | 0.575 |
| L3 | 0.375 | 0.425 | 0.475 |
| aaa | - | 0.05 | - |
| bbb | - | 0.10 | - |
| ccc | - | 0.05 | - |
| ddd | - | 0.05 | - |
| eee | - | 0.05 | - |

**Figure 40: DFN6 recommended footprint**



# 8 Ordering information

**Table 14: Order codes**

| SOT323-5L | SOT23-5L | SOT-89 | DFN6 | Output voltage (V) |
|---|---|---|---|---|
| LDK220C25R | LDK220M25R | | LDK220PU25R | 2.5 |
| LDK220C27R | LDK220M27R | | LDK220PU27R | 2.7 |
| LDK220C30R | LDK220M30R | LDK220U30R | LDK220PU30R | 3 |
| LDK220C32R | LDK220M32R | | LDK220PU32R | 3.2 |
| LDK220C33R | LDK220M33R | LDK220U33R | LDK220PU33R | 3.3 |
| LDK220C36R | LDK220M36R | LDK220U36R | LDK220PU36R | 3.6 |
| LDK220C40R | LDK220M40R | | LDK220PU40R | 4 |
| LDK220C50R | LDK220M50R | LDK220U50R | LDK220PU50R | 5 |
| LDK220C-R | LDK220M-R | | LDK220PU-R | adj |

# 9 Revision history

**Table 15: Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 19-Mar-2014 | 1 | Initial release. |
| 24-Nov-2014 | 2 | Updated the features in cover page, *Table 6: LDK220 electrical characteristics for fixed output version, Table 7: LDK220 electrical characteristics for adjustable version, Table 8: SOT23-5L mechanical data*, and *Section 6: Typical characteristics*.<br>Minor text changes. |
| 19-May-2015 | 3 | Added SOT-89 package. Updated features in cover page. Updated *Section 2: Pin configuration*, *Section 3: Typical application*, *Table 5: Thermal data*, *Section 7: Package information* and *Section 8: Ordering information*.<br>Minor text changes. |
| 24-Oct-2016 | 4 | Updated *Table 7: "LDK220 electrical characteristics for adjustable version"* and *Section 7: "Package information"*.<br>Minor text changes. |

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