

Low Power, Low Dropout, 300-mA Low-Noise, Low-IQ LDO

FEATURES

- Low Output Noise
- Low Dropout Voltage
- Thermal-Overload Protection
- 10nA Logic-Controlled Shutdown
- Available in Multiple Output Voltage Versions
- Fixed Outputs of 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V

APPLICATIONS

- Cellular Telephones
- Camera Modules
- Sensors
- HiFi Audio Radio Transceivers
- PLL/Synthesizer, Clocking
- Medium-Current, Noise-Sensitive Applications

DESCRIPTION

The RS3219 series low-power, low-dropout, CMOS LDO operate from 1.7V to 7.5V input voltage that can supply up to 300 mA of output current. Designed to meet the requirements of RF and analog circuits, the RS3219 series device provides low noise, high PSRR, low quiescent current, and low line and load transient response.

The device is designed to work with a 1- μ F input and a 1- μ F output ceramic capacitor.

Other features include a 10nA logic-controlled shutdown mode and thermal shutdown protection.

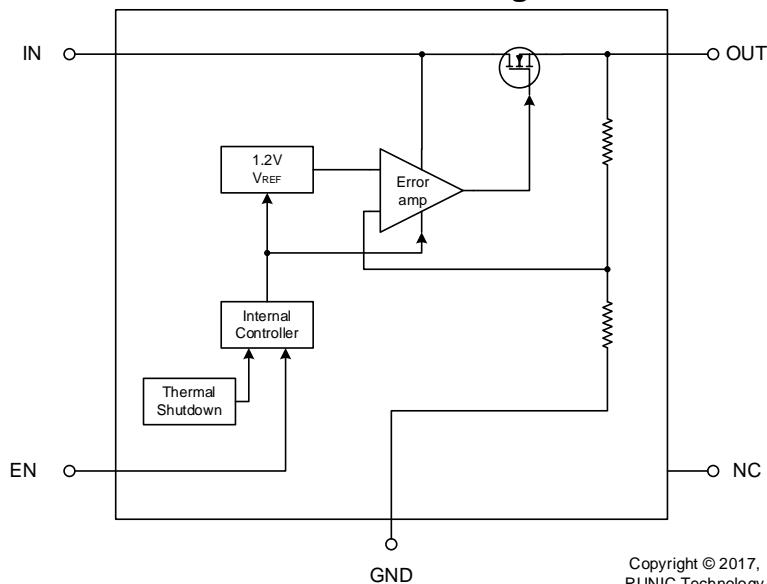
The RS3219 series is available in Green SOT23-3, SOT23-5 and UTDFN-1x1-4 packages. It operates over an ambient temperature range of -40°C to +85°C.

Device Information (1)

| PART NUMBER | PACKAGE | BODY SIZE (NOM) |
|-------------|-------------|-----------------|
| RS3219 | UTDFN-1x1-4 | 1.00mmx1.00mm |
| | SOT23-3 | 1.60mmx2.92mm |
| | SOT23-5 | 1.60mmx2.92mm |

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Functional Block Diagram

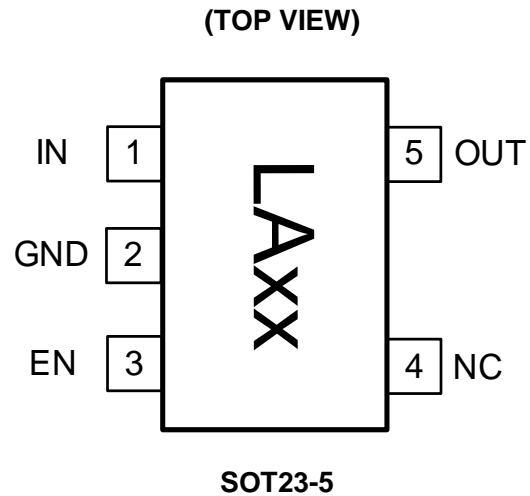
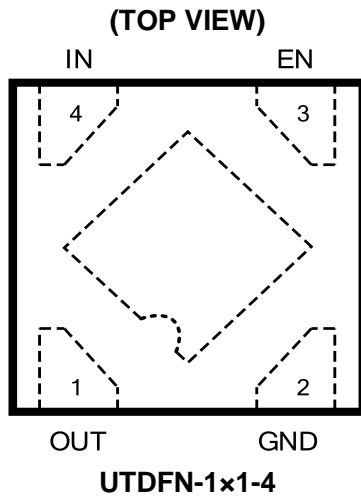


Revision History

Note: Page numbers for previous revisions may differ from page numbers in the current version.

| VERSION | Change Date | Change Item |
|---------|-------------|--|
| B.0 | 2019/03/24 | Initial version completed |
| B.1 | 2020/01/15 | 1) Added output voltage 2) Added SOT23-3 package |
| B.2 | 2021/11/18 | Change SOT23-5 and SOT23-3 Thermal Information on Page 6 @B.1 Version. |

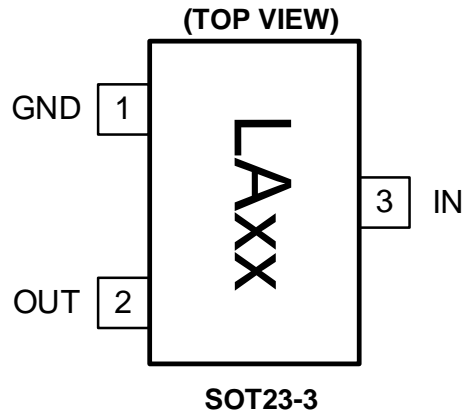
Pin Configuration and Functions (Top View)



| UTDFN-1×1-4 | | I/O | DESCRIPTION |
|-------------|------|-----|--|
| NUMBER | NAME | | |
| 1 | OUT | O | Regulator Output. |
| 2 | GND | G | Ground. |
| 3 | EN | I | Enable Input. A logic low reduces the supply current to 10nA. Connect to IN for normal operation. |
| 4 | IN | I | Regulator Input. Supply voltage can range from 1.7V to 7.5V. Bypass with a 1μF capacitor to GND. |
| Thermal Pad | - | - | Connect the thermal pad to a large-area ground plane. This pad is not an electrical connection to the device ground. |

| SOT23-5 | | I/O | DESCRIPTION |
|---------|------|-----|---|
| NUMBER | NAME | | |
| 1 | IN | I | Regulator Input. Supply voltage can range from 1.7V to 7.5V. Bypass with a 1μF capacitor to GND. |
| 2 | GND | G | Ground. |
| 3 | EN | I | Enable Input. A logic low reduces the supply current to 10nA. Connect to IN for normal operation. |
| 4 | NC | - | No internal connect. |
| 5 | OUT | O | Regulator Output. |

Pin Configuration and Functions (Top View)



| SOT23-3 | | I/O | DESCRIPTION |
|---------|------|-----|--|
| NUMBER | NAME | | |
| 1 | GND | G | Ground. |
| 2 | OUT | O | Regulator Output. |
| 3 | IN | I | Regulator Input. Supply voltage can range from 1.7V to 7.5V. Bypass with a 1μF capacitor to GND. |

PACKAGE/ORDERING INFORMATION

| MODEL | V _{OUT} (V) | PIN- PACKAGE | ORDERING NUMBER | PACKAGE MARKING ⁽¹⁾ | PACKAGE OPTION |
|------------|----------------------|--------------|------------------|--------------------------------|----------------------|
| RS3219-1.2 | 1.2V | UTDFN-1x1-4 | RS3219-1.2YUTDN4 | AC | Tape and Reel, 10000 |
| RS3219-1.5 | 1.5V | UTDFN-1x1-4 | RS3219-1.5YUTDN4 | AD | Tape and Reel, 10000 |
| RS3219-1.8 | 1.8V | UTDFN-1x1-4 | RS3219-1.8YUTDN4 | AE | Tape and Reel, 10000 |
| RS3219-2.5 | 2.5V | UTDFN-1x1-4 | RS3219-2.5YUTDN4 | AG | Tape and Reel, 10000 |
| RS3219-2.8 | 2.8V | UTDFN-1x1-4 | RS3219-2.8YUTDN4 | AH | Tape and Reel, 10000 |
| RS3219-3.0 | 3.0V | UTDFN-1x1-4 | RS3219-3.0YUTDN4 | AI | Tape and Reel, 10000 |
| RS3219-3.3 | 3.3V | UTDFN-1x1-4 | RS3219-3.3YUTDN4 | AJ | Tape and Reel, 10000 |
| RS3219-1.2 | 1.2V | SOT23-5 | RS3219-1.2YF5 | LA12 | Tape and Reel, 3000 |
| RS3219-1.5 | 1.5V | SOT23-5 | RS3219-1.5YF5 | LA15 | Tape and Reel, 3000 |
| RS3219-1.8 | 1.8V | SOT23-5 | RS3219-1.8YF5 | LA18 | Tape and Reel, 3000 |
| RS3219-2.5 | 2.5V | SOT23-5 | RS3219-2.5YF5 | LA25 | Tape and Reel, 3000 |
| RS3219-2.8 | 2.8V | SOT23-5 | RS3219-2.8YF5 | LA28 | Tape and Reel, 3000 |
| RS3219-3.0 | 3.0V | SOT23-5 | RS3219-3.0YF5 | LA30 | Tape and Reel, 3000 |
| RS3219-3.3 | 3.3V | SOT23-5 | RS3219-3.3YF5 | LA33 | Tape and Reel, 3000 |
| RS3219-1.2 | 1.2V | SOT23-3 | RS3219-1.2YF3 | LA12 | Tape and Reel, 3000 |
| RS3219-1.5 | 1.5V | SOT23-3 | RS3219-1.5YF3 | LA15 | Tape and Reel, 3000 |
| RS3219-1.8 | 1.8V | SOT23-3 | RS3219-1.8YF3 | LA18 | Tape and Reel, 3000 |
| RS3219-2.5 | 2.5V | SOT23-3 | RS3219-2.5YF3 | LA25 | Tape and Reel, 3000 |
| RS3219-2.8 | 2.8V | SOT23-3 | RS3219-2.8YF3 | LA28 | Tape and Reel, 3000 |
| RS3219-3.0 | 3.0V | SOT23-3 | RS3219-3.0YF3 | LA30 | Tape and Reel, 3000 |
| RS3219-3.3 | 3.3V | SOT23-3 | RS3219-3.3YF3 | LA33 | Tape and Reel, 3000 |

NOTE:

- (1) There may be additional marking, which relates to the lot trace code information (include data code and vendor code), the logo or the environmental category on the device.

Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) ⁽¹⁾ ⁽²⁾

| | | MIN | MAX | UNIT |
|------------------|---|--------------------|-----------------------|------|
| V _{IN} | Input voltage | -0.3 | 8 | V |
| V _{OUT} | Output voltage | -0.3 | V _{IN} + 0.3 | V |
| V _{EN} | Enable input voltage | -0.3 | V _{IN} | V |
| T _J | Junction temperature | | 150 | °C |
| P _D | Continuous power dissipation ⁽³⁾ | Internally Limited | | W |
| T _{stg} | Storage temperature | -65 | 150 | °C |

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

(2) All voltages are with respect to the GND pin.

(3) Internal thermal shutdown circuitry protects the device from permanent damage.

ESD Ratings

| | | | VALUE | UNIT |
|--------------------|-------------------------|------------------------|-------|------|
| V _(ESD) | Electrostatic discharge | Human-body model (HBM) | ±6000 | V |
| | | Machine model (MM) | ±500 | V |

Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted) ⁽¹⁾

| | | MIN | MAX | UNIT |
|------------------|----------------------|-----|-----------------|------|
| V _{IN} | Input supply voltage | 1.7 | 7.5 | V |
| V _{OUT} | Output voltage | 1.2 | 5 | V |
| V _{EN} | Enable input voltage | 0 | V _{IN} | V |
| I _{OUT} | Output current | 0 | 300 | mA |
| T _J | Junction temperature | -40 | 85 | °C |

(1) All voltages are with respect to the GND pin.

Thermal Information

| THERMAL METRIC | | RS3219 | | | UNIT |
|-----------------------|--|---------|---------|-------------|------|
| | | SOT23-5 | SOT23-3 | UTDFN-1x1-4 | |
| | | 5 PINS | 3 PINS | 4 PINS | |
| R _{θJA} | Junction-to-ambient thermal resistance | 250 | 312.5 | 312.5 | °C/W |
| R _{θJC(top)} | Junction-to-case (top) thermal resistance | 84.3 | 134.3 | 137.9 | °C/W |
| R _{θJB} | Junction-to-board thermal resistance | 39.5 | 84.5 | 83.5 | °C/W |
| ψ _{JT} | Junction-to-top characterization parameter | 2.86 | 4.8 | 5.3 | °C/W |
| ψ _{JB} | Junction-to-board characterization parameter | 58.7 | 81.5 | 83.8 | °C/W |
| R _{θJC(bot)} | Junction-to-case (bottom) thermal resistance | N/A | N/A | 71.8 | °C/W |
| P _d | Power Dissipation | 0.5 | 0.4 | 0.4 | W |

ELECTRICAL CHARACTERISTICS

($V_{IN} = V_{OUT(NOMINAL)} + 0.5V$ ⁽¹⁾, Full = -40°C to +85°C, unless otherwise noted.)

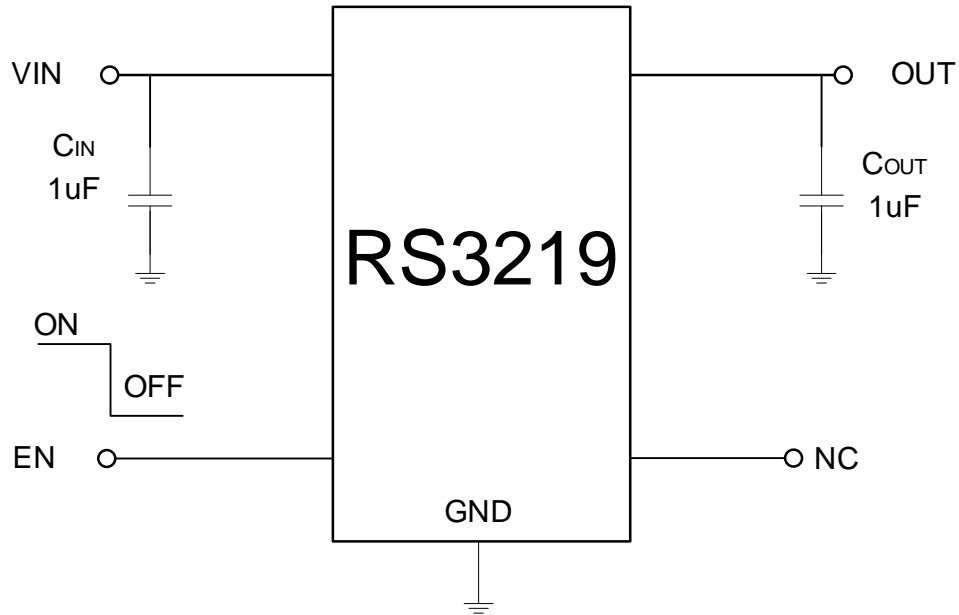
| PARAMETER | SYMBOL | CONDITIONS | TEMP | MIN | TYP | MAX | UNITS | |
|--|-------------------|---|-------------|--------------------|-------|-------|-------|----|
| Input Voltage | V_{IN} | | +25°C | 1.7 ⁽¹⁾ | | 7.5 | V | |
| Output Voltage Accuracy ⁽¹⁾ | | $I_{OUT} = 0.1mA$ | +25°C | -2.5 | | +2.5 | % | |
| Maximum Output Current ⁽¹⁾ | | | +25°C | 300 | | | mA | |
| Ground Pin Current | I_Q | No load, $EN = V_{IN}$ | +25°C | | 120 | 200 | μA | |
| Dropout Voltage ⁽²⁾ | | $I_{OUT} = 1mA$, $V_{OUT}=3.3V$ | +25°C | | 0.95 | | mV | |
| | | $I_{OUT} = 300mA$, $V_{OUT}=3.3V$ | | | 280 | 400 | | |
| Line Regulation ⁽¹⁾ | ΔV_{LNR} | $V_{IN} = 1.7V$ or ($V_{OUT} + 0.5V$) to 5.5V, $I_{OUT} = 1mA$ | +25°C | | 0.03 | 0.09 | %/V | |
| Load Regulation | ΔV_{LDR} | $I_{OUT} = 0.1mA$ to 300mA, $C_{OUT} = 1\mu F$, | +25°C | | 0.002 | 0.005 | %/mA | |
| Output Voltage Noise | e_n | $f = 0.1Hz$ to 10Hz, $C_{OUT} = 1\mu F$ | +25°C | | 38 | | μVPP | |
| Power Supply Rejection Ratio | PSRR | $I_{LOAD} = 50mA$, $C_{OUT} = 1\mu F$, $V_{IN} = V_{OUT}+1V$ | $f = 217Hz$ | +25°C | | 56 | | dB |
| | | | $f = 1kHz$ | +25°C | | 55 | | dB |
| SHUTDOWN ⁽³⁾ | | | | | | | | |
| EN Input Threshold | V_{IH} | $V_{IN} = 1.7V$ | Full | 1.4 | | | V | |
| | V_{IL} | | Full | | | 0.3 | | |
| | V_{IH} | $V_{IN} = 7.5V$ | Full | 2.0 | | | V | |
| | V_{IL} | | Full | | | 0.3 | | |
| EN Input Bias Current | $I_{B(SHDN)}$ | $EN = 0V$ or $EN = V_{IN}$ | +25°C | | 0.01 | 1 | μA | |
| | | | Full | | 0.01 | | | |
| Shutdown Supply Current | $I_{Q(SHDN)}$ | $EN = 0.4V$ | Full | | 0.01 | | μA | |
| Shutdown Exit Delay ⁽⁴⁾ | | $C_{OUT} = 1\mu F$, No Load | +25°C | | 50 | | μs | |
| THERMAL PROTECTION | | | | | | | | |
| Thermal Shutdown Temperature | T_{SHDN} | | | | 150 | | °C | |
| Thermal Shutdown Hysteresis | ΔT_{SHDN} | | | | 15 | | °C | |

NOTES:

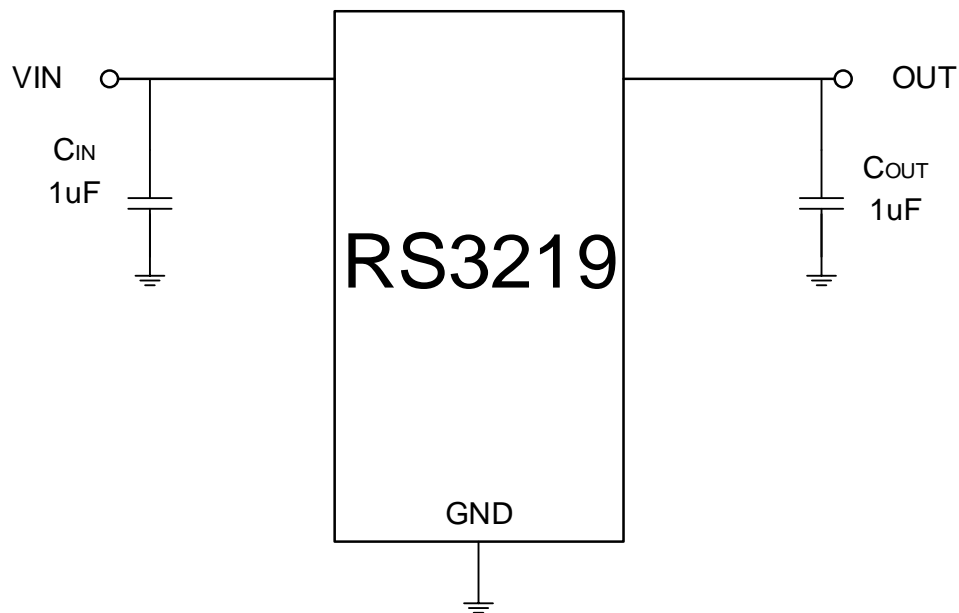
- $V_{IN} = V_{OUT(NOMINAL)} + 0.5V$ or 1.7V, whichever is greater.
- The dropout voltage is defined as $V_{IN} - V_{OUT}$, when V_{OUT} is 100mV below the value of V_{OUT} for $V_{IN} = V_{OUT} + 0.5V$. (Only applicable for $V_{OUT} = +1.2V$ to +5.0V.)
- $V_{EN} = -0.3V$ to V_{IN}
- Time needed for V_{OUT} to reach 90% of final value.

TYPICAL APPLICATION CIRCUIT

5Pin Typical Circuit

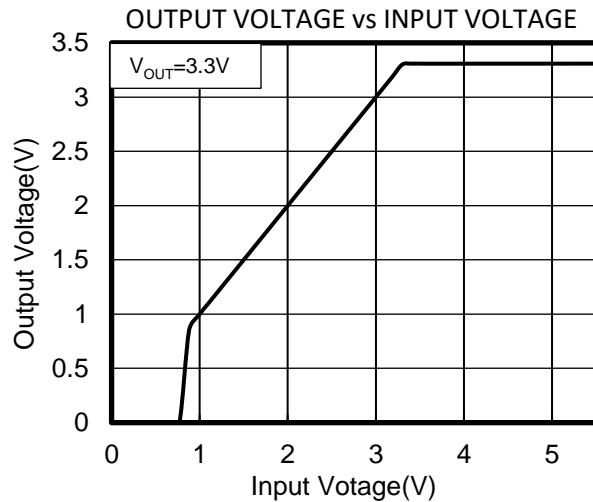
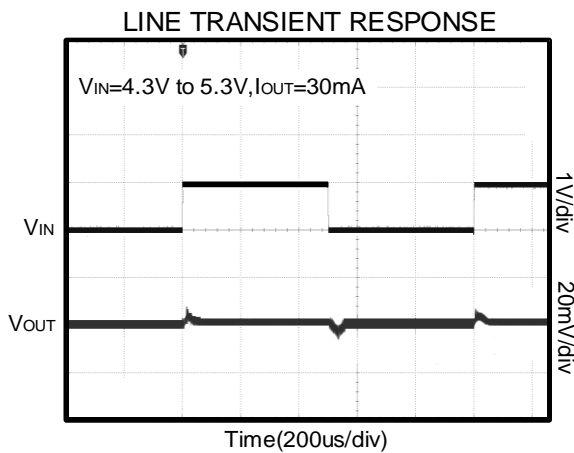
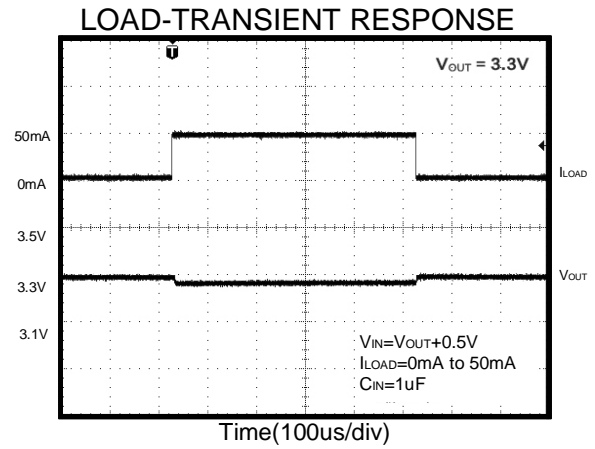
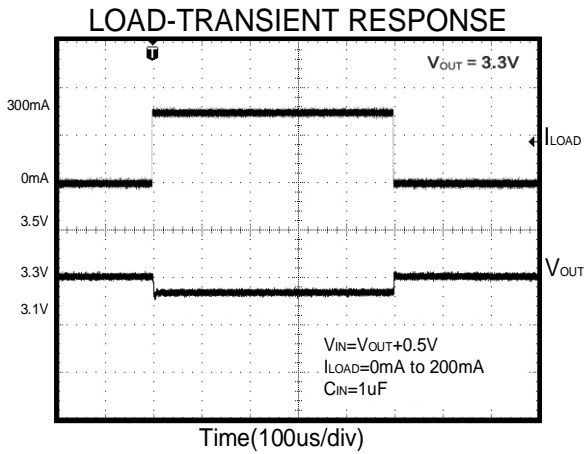
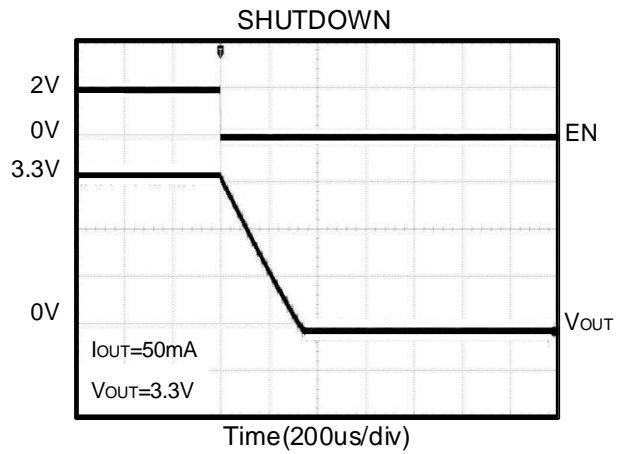
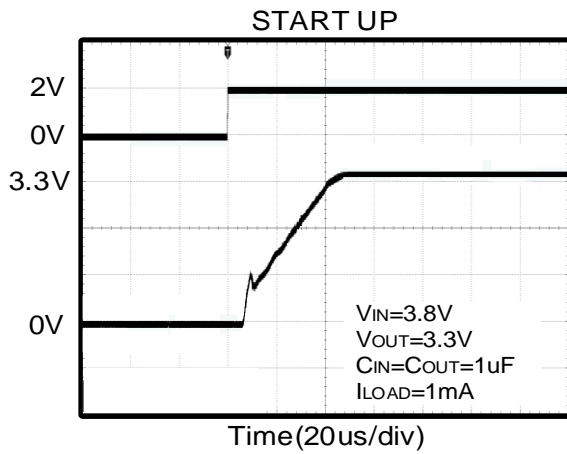


3Pin Typical Circuit



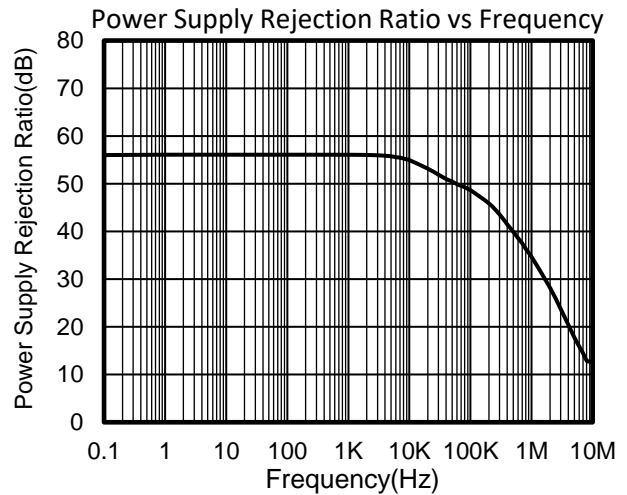
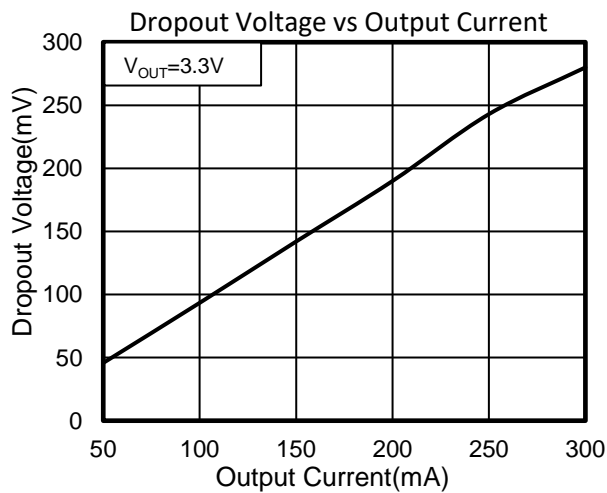
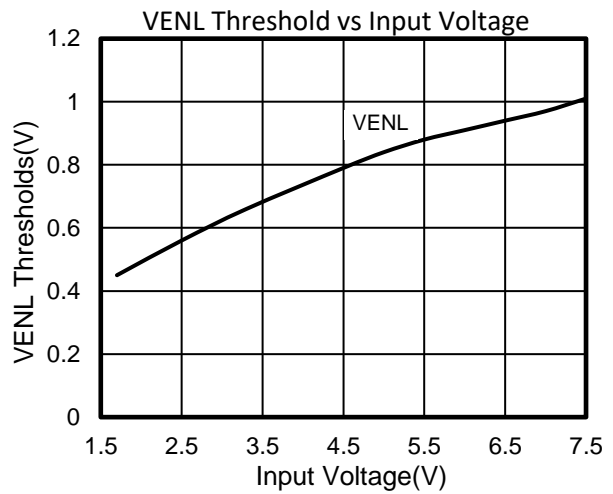
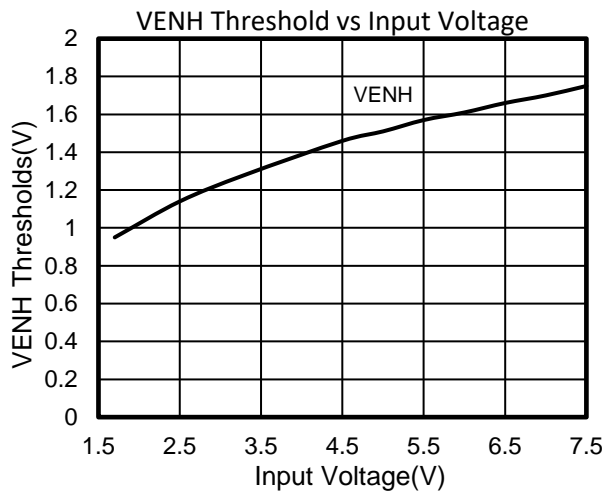
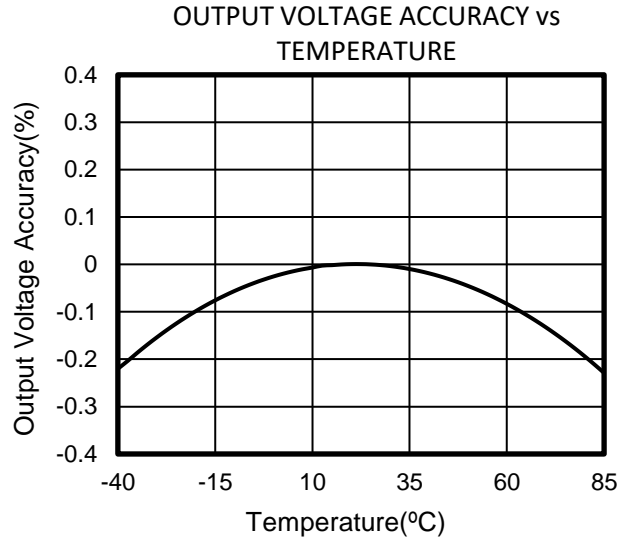
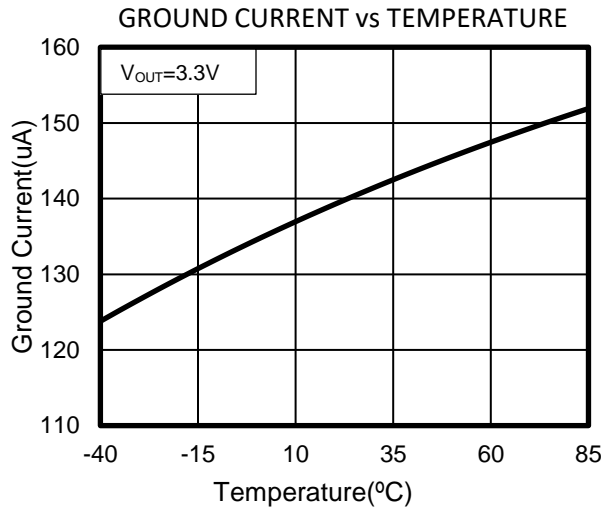
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = V_{OUT} \text{ (NOMINAL)} + 0.5V$, $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.



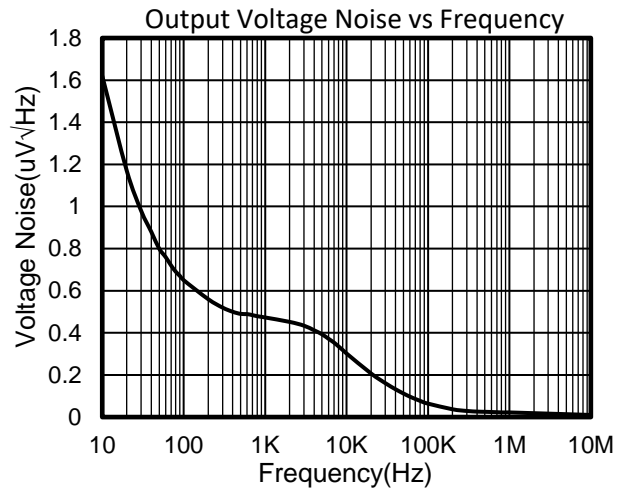
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = V_{OUT (NOMINAL)} + 0.5V$, $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.



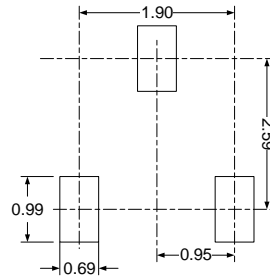
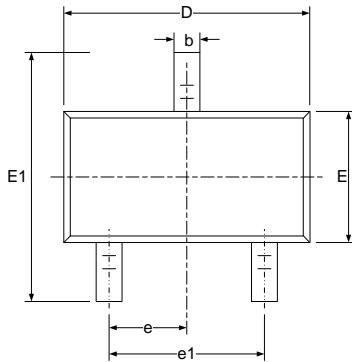
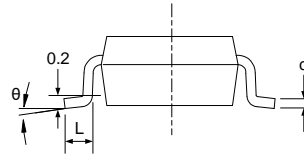
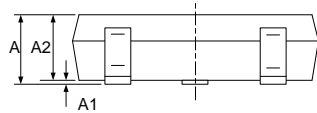
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = V_{OUT (NOMINAL)} + 0.5V$, $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.

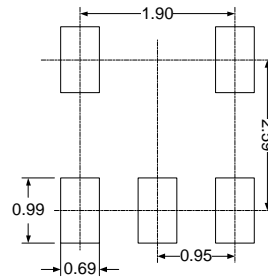
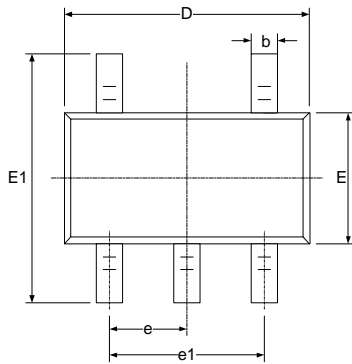
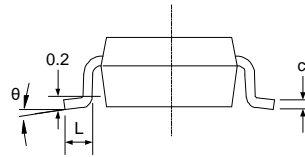
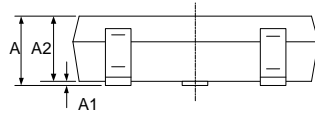


PACKAGE OUTLINE DIMENSIONS

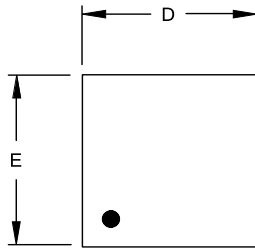
SOT23-3


RECOMMENDED LAND PATTERN (Unit: mm)


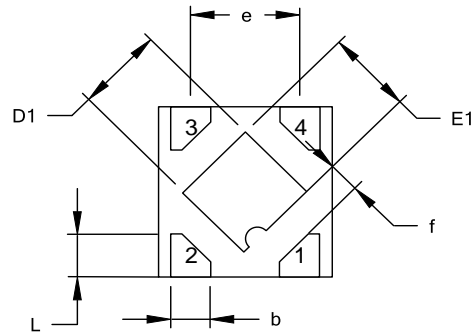
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

SOT23-5

RECOMMENDED LAND PATTERN (Unit: mm)


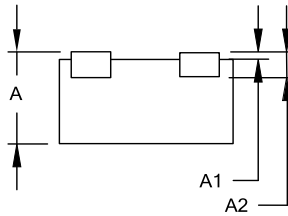
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

UTDFN-1x1-4


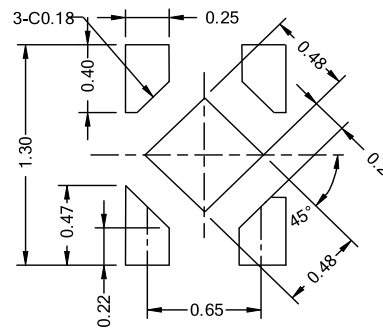
TOP VIEW



BOTTOM VIEW



SIDE VIEW



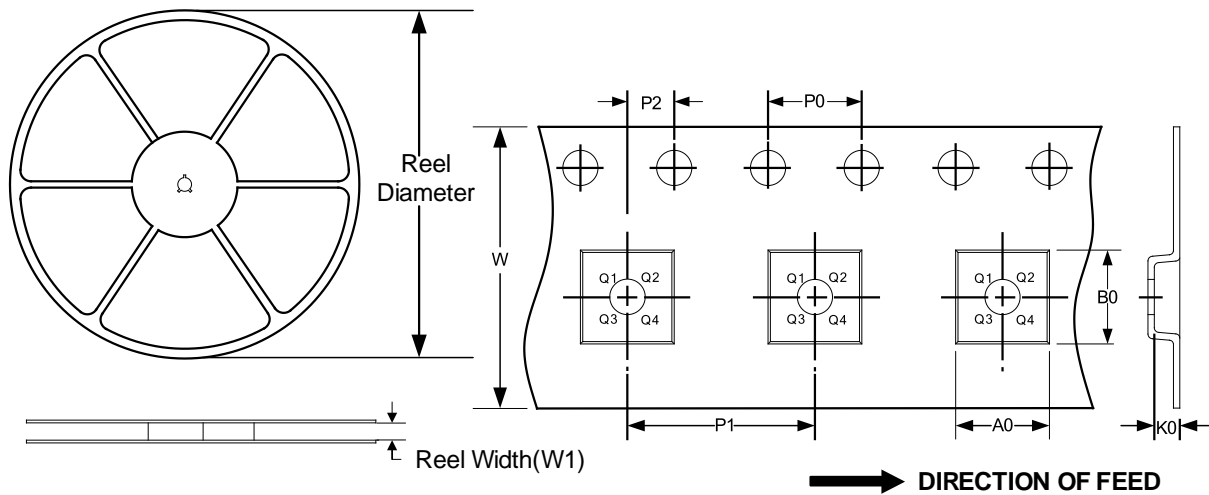
RECOMMENDED LAND PATTERN (Unit: mm)

| Symbol | Dimensions In Millimeters | | | Dimensions In Inches | | |
|--------|---------------------------|-------|-------|----------------------|-------|-------|
| | MIN | TYP | MAX | MIN | TYP | MAX |
| A | 0.340 | 0.370 | 0.400 | 0.013 | 0.015 | 0.016 |
| A1 | 0.000 | 0.020 | 0.050 | 0.000 | 0.001 | 0.002 |
| A2 | 0.100 REF | | | 0.004 REF | | |
| D | 0.950 | 1.000 | 1.050 | 0.037 | 0.039 | 0.041 |
| D1 | 0.430 | 0.480 | 0.530 | 0.017 | 0.019 | 0.021 |
| E | 0.950 | 1.000 | 1.050 | 0.037 | 0.039 | 0.041 |
| E1 | 0.430 | 0.480 | 0.530 | 0.017 | 0.019 | 0.021 |
| b | 0.170 | 0.220 | 0.270 | 0.007 | 0.009 | 0.011 |
| e | 0.600 | 0.650 | 0.700 | 0.024 | 0.026 | 0.028 |
| f | 0.195 REF | | | 0.008 REF | | |
| L | 0.200 | 0.250 | 0.300 | 0.008 | 0.010 | 0.012 |

TAPE AND REEL INFORMATION

REEL DIMENSIONS

TAPE DIMENSION



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

| Package Type | Reel Diameter | Reel Width(mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | P1 (mm) | P2 (mm) | W (mm) | Pin1 Quadrant |
|--------------|---------------|----------------|---------|---------|---------|---------|---------|---------|--------|---------------|
| UTDFN-1x1-4 | 7" | 9.5 | 1.16 | 1.16 | 0.5 | 4.0 | 4.0 | 2.0 | 8.0 | Q1 |
| SOT23-5 | 7" | 9.5 | 3.20 | 3.20 | 1.40 | 4.0 | 4.0 | 2.0 | 8.0 | Q3 |
| SOT23-3 | 7" | 9.0 | 3.20 | 3.30 | 1.30 | 4.0 | 4.0 | 2.0 | 8.0 | Q3 |

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Linear Voltage Regulators](#) category:

Click to view products by [RUNIC](#) manufacturer:

Other Similar products are found below :

[LV5684PVD-XH](#) [MCDTSA6-2R](#) [L7815ACV-DG](#) [LV56801P-E](#) [UA7805CKC](#) [714954EB](#) [ZMR500QFTA](#) [BA033LBSG2-TR](#)

[NCV78M05ABDTRKG](#) [LV5680P-E](#) [L79M05T-E](#) [L78LR05D-MA-E](#) [NCV317MBTG](#) [NTE7227](#) [MP2018GZD-33-P](#) [MP2018GZD-5-P](#)

[LV5680NPVC-XH](#) [ZTS6538SE](#) [UA78L09CLP](#) [UA78L09CLPR](#) [CAT6221-PPTD-GT3](#) [MC78M09CDTRK](#) [NCV51190MNTAG](#)

[BL1118CS8TR1833](#) [BL8563CKETR18](#) [BL8077CKETR33](#) [BL9153-33CC3TR](#) [BL9161G-15BADRN](#) [BL9161G-28BADRN](#)

[BRCO7530MMC](#) [CJ7815B-TFN-ARG](#) [LM317C](#) [GM7333K](#) [GM7350K](#) [XC6206P332MR](#) [HT7533](#) [LM7912S/TR](#) [LT1764S/TR](#) [LM7805T](#)

[LM338T](#) [LM1117IMP-3.3/TR](#) [HT1117AM-3.3](#) [HT7550S](#) [AMS1117-3.3](#) [HT7150S](#) [78L12](#) [HT7550](#) [HT7533-1](#) [HXY6206I-2.5](#) [HT7133](#)