

Description

The AP2112 is CMOS process low dropout linear regulator with enable function, the regulator delivers a guaranteed 600mA (min.) continuous load current.

The AP2112 is available with a fixed output voltage of 1.2V, 1.8V, 2.5V, 2.6V, or 3.3V. The LDO has an output accuracy of $\pm 1.5\%$ and a very fast loop response providing excellent performance for dealing with line and load transients. The AP2112 includes an auto discharge function which connects the output to ground via 60Ω of resistance when the device is disabled.

The regulator features low power consumption, and provides SOT25, SOT89-5, and SO-8 packages. Previously SOT-23-5, SOT-89-5 and SOIC-8 packages were respectively identified as SOT23-5, SOT89-5 and SO-8 but have been renamed to match the latest Diodes Incorporated's nomenclature.

Features

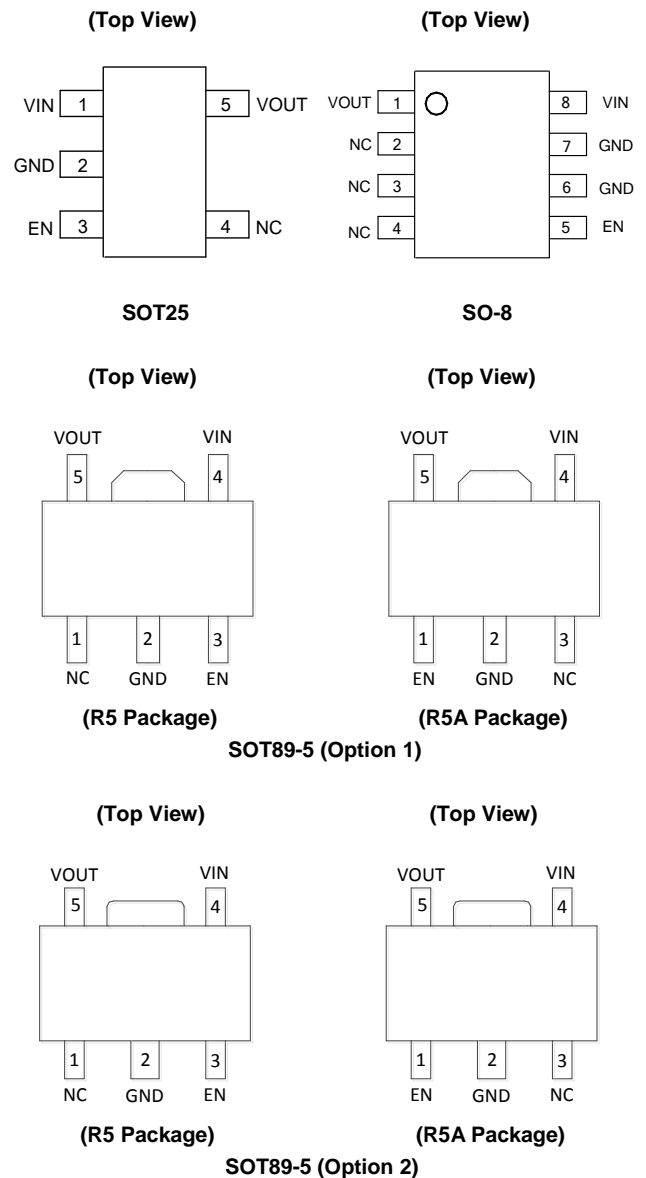
- Output Voltage Accuracy: $\pm 1.5\%$
- Output Current: 600mA (Min.)
- Foldback Short Current Protection: 50mA
- Enable Function to Turn ON/OFF V_{OUT}
- Low Dropout Voltage (3.3V): 250mV (Typ.) @ $I_{OUT} = 600mA$
- Excellent Load Regulation: 0.2%/A (Typ.)
- Excellent Line Regulation: 0.02%/V (Typ.)
- Low Quiescent Current: 55 μA (Typ.)
- Low Standby Current: 0.01 μA (Typ.)
- Low Output Noise: 50 μV_{RMS}
- PSRR: 100Hz -65dB, 1kHz -65dB
- OTSD Protection
- Stable with 1.0 μF Flexible Cap: Ceramic, Tantalum and Aluminum Electrolytic
- Operation Temperature Range: -40°C to +85°C
- ESD: MM 400V, HBM 4000V
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Applications

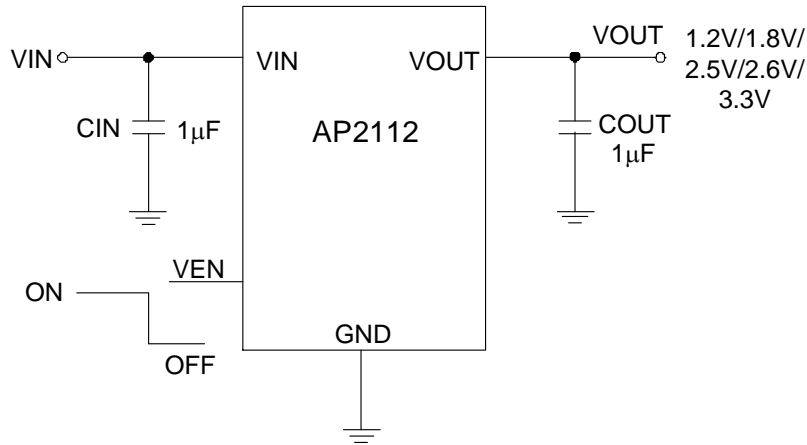
- Laptop Computer
- LCD Monitor
- Portable DVD

- 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 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.

Pin Assignments



Typical Applications Circuit (Note 4)

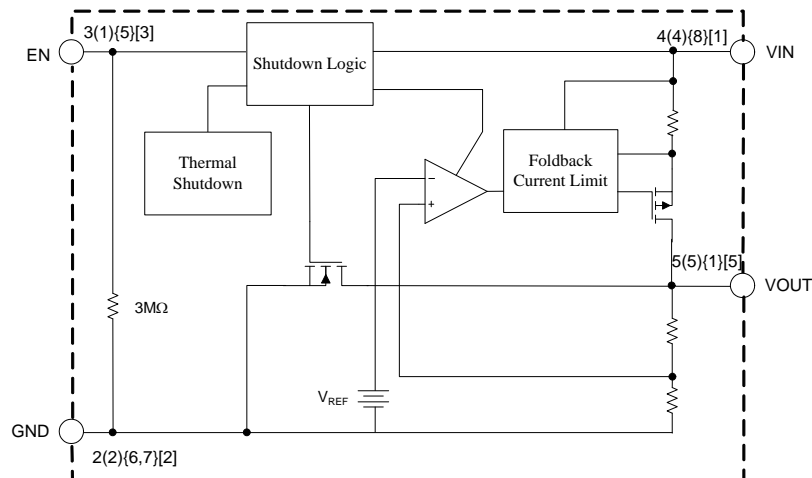


Note 4: It is recommended to use X7R or X5R dielectric capacitor if 1.0µF ceramic capacitor is selected as input/output capacitors.

Pin Descriptions

| Pin Number | | | Pin Name | Function |
|------------|---------|---------|----------|---|
| SOT25 | SOT89-5 | SO-8 | | |
| 1 | 4 | 8 | VIN | Input Voltage |
| 2 | 2 | 6, 7 | GND | GND |
| 3 | 3 (R5) | 5 | EN | Chip Enable, H – normal work, L – shutdown output |
| | 1 (R5A) | | | |
| — | 1 (R5) | 2, 3, 4 | NC | No Connection |
| | 3 (R5A) | | | |
| 5 | 5 | 1 | VOUT | Output Voltage |

Functional Block Diagram



A (B){C}[D]
A: SOT89-5 (R5)
B: SOT89-5 (R5A)
C: SO-8
D: SOT25

Absolute Maximum Ratings (Note 5)

| Symbol | Parameter | Rating | | Unit |
|-------------------|---|-------------|-----|------|
| V _{CC} | Power Supply Voltage | 6.5 | | V |
| T _J | Operating Junction Temperature Range | +150 | | °C |
| T _{STG} | Storage Temperature Range | -65 to +150 | | °C |
| T _{LEAD} | Lead Temperature (Soldering, 10 Seconds) | +260 | | °C |
| θ _{JA} | Thermal Resistance (Junction to Ambient)(No Heatsink) | SOT25 | 184 | °C/W |
| | | SO-8 | 114 | |
| | | SOT89-5 | 120 | |
| — | ESD (Machine Model) | 400 | | V |
| — | ESD (Human Body Model) | 4000 | | V |

Note 5: Stresses greater than 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 Ratings” for extended periods may affect device reliability.

Recommended Operating Conditions

| Symbol | Parameter | Min | Max | Unit |
|-----------------|-------------------------------------|-----|-----|------|
| V _{IN} | Supply Voltage | 2.5 | 6.0 | V |
| T _A | Ambient Operation Temperature Range | -40 | +85 | °C |

Electrical Characteristics

AP2112-1.2 Electrical Characteristics (@ $V_{IN} = 2.5V$, $C_{IN} = 1.0\mu F$ (Ceramic), $C_{OUT} = 1.0\mu F$ (Ceramic), Typical $T_A = +25^\circ C$, unless otherwise specified (Note 6))

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---|--|--|--------------------|-----------|---------------------|-----------------|----|
| V_{OUT} | Output Voltage | $V_{IN} = 2.5V$, $1mA \leq I_{OUT} \leq 30mA$ | $V_{OUT} * 98.5\%$ | 1.2 | $V_{OUT} * 101.5\%$ | V | |
| $I_{OUT(MAX)}$ | Maximum Output Current | $V_{IN} = 2.5V$, $V_{OUT} = 1.182V$ to $1.218V$ | 600 | — | — | mA | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta I_{OUT}$ | Load Regulation | $V_{IN} = 2.5V$, $1mA \leq I_{OUT} \leq 600mA$ | -1 | 0.2 | 1 | %/A | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta V_{IN}$ | Line Regulation | $2.5V \leq V_{IN} \leq 6V$, $I_{OUT} = 30mA$ | -0.1 | 0.02 | 0.1 | %/V | |
| V_{DROP} | Dropout Voltage | $I_{OUT} = 10mA$ | — | 1000 | 1300 | mV | |
| | | $I_{OUT} = 300mA$ | — | 1000 | 1300 | | |
| | | $I_{OUT} = 600mA$ | — | 1000 | 1300 | | |
| I_Q | Quiescent Current | $V_{IN} = 2.5V$, $I_{OUT} = 0mA$ | — | 55 | 80 | μA | |
| I_{STD} | Standby Current | $V_{IN} = 2.5V$, V_{EN} in OFF mode | — | 0.01 | 1.0 | μA | |
| PSRR | Power Supply Rejection Ratio | Ripple 0.5Vp-p $V_{IN} = 2.5V$, $I_{OUT} = 100mA$ | $f = 100Hz$ | — | 65 | — | dB |
| | | | $f = 1kHz$ | — | 65 | — | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta T$ | Output Voltage Temperature Coefficient | $I_{OUT} = 30mA$ $T_A = -40^\circ C$ to $+85^\circ C$ | — | ± 100 | — | ppm/ $^\circ C$ | |
| I_{SHORT} | Short Current Limit | $V_{OUT} = 0V$ | — | 50 | — | mA | |
| V_{NOISE} | RMS Output Noise | No Load, $10Hz \leq f \leq 100kHz$ | — | 50 | — | μV_{RMS} | |
| V_{IH} | V_{EN} High Voltage | Enable logic high, regulator on | 1.5 | — | 6.0 | V | |
| V_{IL} | V_{EN} Low Voltage | Enable logic low, regulator off | 0 | — | 0.4 | | |
| t_S | Start-up Time | No Load | — | 20 | — | μs | |
| R_{PD} | EN Pull Down Resistor | — | — | 3.0 | — | M Ω | |
| R_{DCHG} | V_{OUT} Discharge Resistor | Set EN pin at Low | — | 60 | — | Ω | |
| $T_{OTS D}$ | Thermal Shutdown Temperature | — | — | +160 | — | $^\circ C$ | |
| $T_{HYOTS D}$ | Thermal Shutdown Hysteresis | — | — | +25 | — | | |
| θ_{JC} | Thermal Resistance (Junction to Case) | SOT25 | — | 96 | — | $^\circ C/W$ | |
| | | SO-8 | — | 75 | — | | |
| | | SOT89-5 | — | 47 | — | | |

Note 6: Production testing at $T_A = +25^\circ C$. Over temperature specifications guaranteed by design only.

Electrical Characteristics (Cont.)

AP2112-1.8 Electrical Characteristics (@ $V_{IN} = 2.8V$, $C_{IN} = 1.0\mu F$ (Ceramic), $C_{OUT} = 1.0\mu F$ (Ceramic), Typical $T_A = +25^\circ C$, unless otherwise specified (Note 6))

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---|--|---|--------------------|-----------|---------------------|-----------------|----|
| V_{OUT} | Output Voltage | $V_{IN} = 2.8V$, $1mA \leq I_{OUT} \leq 30mA$ | $V_{OUT} * 98.5\%$ | 1.8 | $V_{OUT} * 101.5\%$ | V | |
| $I_{OUT(MAX)}$ | Maximum Output Current | $V_{IN} = 2.8V$, $V_{OUT} = 1.773V$ to $1.827V$ | 600 | — | — | mA | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta I_{OUT}$ | Load Regulation | $V_{OUT} = 1.8V$, $V_{IN} = V_{OUT} + 1V$, $1mA \leq I_{OUT} \leq 600mA$ | -1 | 0.2 | 1 | %/A | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta V_{IN}$ | Line Regulation | $2.8V \leq V_{IN} \leq 6V$, $I_{OUT} = 30mA$ | -0.1 | 0.02 | 0.1 | %/V | |
| V_{DROP} | Dropout Voltage | $I_{OUT} = 10mA$ | — | 500 | 700 | mV | |
| | | $I_{OUT} = 300mA$ | — | 500 | 700 | | |
| | | $I_{OUT} = 600mA$ | — | 500 | 700 | | |
| I_Q | Quiescent Current | $V_{IN} = 2.8V$, $I_{OUT} = 0mA$ | — | 55 | 80 | μA | |
| I_{STD} | Standby Current | $V_{IN} = 2.8V$, V_{EN} in OFF mode | — | 0.01 | 1.0 | μA | |
| PSRR | Power Supply Rejection Ratio | Ripple 0.5Vp-p $V_{IN} = 2.8V$, $I_{OUT} = 100mA$ | f = 100Hz | — | 65 | — | dB |
| | | | f = 1kHz | — | 65 | — | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta T$ | Output Voltage Temperature Coefficient | $I_{OUT} = 30mA$ $T_A = -40^\circ C$ to $+85^\circ C$ | — | ± 100 | — | ppm/ $^\circ C$ | |
| I_{SHORT} | Short Current Limit | $V_{OUT} = 0V$ | — | 50 | — | mA | |
| V_{NOISE} | RMS Output Noise | No Load, $10Hz \leq f \leq 100kHz$ | — | 50 | — | μV_{RMS} | |
| V_{IH} | V_{EN} High Voltage | Enable logic high, regulator on | 1.5 | — | 6.0 | V | |
| V_{IL} | V_{EN} Low Voltage | Enable logic low, regulator off | 0 | — | 0.4 | | |
| t_s | Start-up Time | No Load | — | 20 | — | μs | |
| R_{PD} | EN Pull Down Resistor | — | — | 3.0 | — | M Ω | |
| R_{DCHG} | V_{OUT} Discharge Resistor | Set EN pin at Low | — | 60 | — | Ω | |
| T_{OTSD} | Thermal Shutdown Temperature | — | — | +160 | — | $^\circ C$ | |
| T_{HYOTSD} | Thermal Shutdown Hysteresis | — | — | +25 | — | | |
| θ_{JC} | Thermal Resistance (Junction to Case) | SOT25 | — | 96 | — | $^\circ C/W$ | |
| | | SO-8 | — | 75 | — | | |
| | | SOT89-5 | — | 47 | — | | |

 Note 6: Production testing at $T_A = +25^\circ C$. Over temperature specifications guaranteed by design only.

Electrical Characteristics (Cont.)

AP2112-2.5 Electrical Characteristics (@ $V_{IN} = 3.5V$, $C_{IN} = 1.0\mu F$ (Ceramic), $C_{OUT} = 1.0\mu F$ (Ceramic), Typical $T_A = +25^\circ C$, unless otherwise specified (Note 6))

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---|--|---|--------------------|-----------|---------------------|-----------------|----|
| V_{OUT} | Output Voltage | $V_{IN} = 3.5V$, $1mA \leq I_{OUT} \leq 30mA$ | $V_{OUT} * 98.5\%$ | 2.5 | $V_{OUT} * 101.5\%$ | V | |
| $I_{OUT(MAX)}$ | Maximum Output Current | $V_{IN} = 3.5V$, $V_{OUT} = 2.463V$ to $2.537V$ | 600 | — | — | mA | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta I_{OUT}$ | Load Regulation | $V_{OUT} = 2.5V$, $V_{IN} = V_{OUT} + 1V$, $1mA \leq I_{OUT} \leq 600mA$ | -1 | 0.2 | 1 | %/A | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta V_{IN}$ | Line Regulation | $3.5V \leq V_{IN} \leq 6V$, $I_{OUT} = 30mA$ | -0.1 | 0.02 | 0.1 | %/V | |
| V_{DROP} | Dropout Voltage | $I_{OUT} = 10mA$ | — | 5 | 8 | mV | |
| | | $I_{OUT} = 300mA$ | — | 125 | 200 | | |
| | | $I_{OUT} = 600mA$ | — | 250 | 400 | | |
| I_Q | Quiescent Current | $V_{IN} = 3.5V$, $I_{OUT} = 0mA$ | — | 55 | 80 | μA | |
| I_{STD} | Standby Current | $V_{IN} = 3.5V$, V_{EN} in OFF mode | — | 0.01 | 1.0 | μA | |
| PSRR | Power Supply Rejection Ratio | Ripple 0.5Vp-p $V_{IN} = 3.5V$, $I_{OUT} = 100mA$ | f = 100Hz | — | 65 | — | dB |
| | | | f = 1KHz | — | 65 | — | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta T$ | Output Voltage Temperature Coefficient | $I_{OUT} = 30mA$ $T_A = -40^\circ C$ to $+85^\circ C$ | — | ± 100 | — | ppm/ $^\circ C$ | |
| I_{SHORT} | Short Current Limit | $V_{OUT} = 0V$ | — | 50 | — | mA | |
| V_{NOISE} | RMS Output Noise | No Load, $10Hz \leq f \leq 100kHz$ | — | 50 | — | μV_{RMS} | |
| V_{IH} | V_{EN} High Voltage | Enable logic high, regulator on | 1.5 | — | 6.0 | V | |
| V_{IL} | V_{EN} Low Voltage | Enable logic low, regulator off | 0 | — | 0.4 | | |
| t_s | Start-up Time | No Load | — | 20 | — | μs | |
| R_{PD} | EN Pull Down Resistor | — | — | 3.0 | — | M Ω | |
| R_{DCHG} | V_{OUT} Discharge Resistor | Set EN pin at Low | — | 60 | — | Ω | |
| T_{OTSD} | Thermal Shutdown Temperature | — | — | +160 | — | $^\circ C$ | |
| T_{HYOTSD} | Thermal Shutdown Hysteresis | — | — | +25 | — | | |
| θ_{JC} | Thermal Resistance (Junction to Case) | SOT25 | — | 96 | — | $^\circ C/W$ | |
| | | SO-8 | — | 75 | — | | |
| | | SOT89-5 | — | 47 | — | | |

Note 6: Production testing at $T_A = +25^\circ C$. Over temperature specifications guaranteed by design only.

Electrical Characteristics (Cont.)

AP2112-2.6 Electrical Characteristics (@ $V_{IN} = 3.6V$, $C_{IN} = 1.0\mu F$ (Ceramic), $C_{OUT} = 1.0\mu F$ (Ceramic), Typical $T_A = +25^\circ C$, unless otherwise specified (Note 6))

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---|---|---|---------------------|-----------|----------------------|-----------------|----|
| V_{OUT} | Output Voltage | $V_{IN} = 3.6V$, $1mA \leq I_{OUT} \leq 30mA$ | V_{OUT} *98.5% | 2.6 | V_{OUT} *101.5% | V | |
| $I_{OUT(MAX)}$ | Maximum Output Current | $V_{IN} = 3.6V$, $V_{OUT} = 2.561V$ to $2.639V$ | 600 | — | — | mA | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta I_{OUT}$ | Load Regulation | $V_{OUT} = 2.6V$, $V_{IN} = V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 600mA$ | -1 | 0.2 | 1 | %/A | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta V_{IN}$ | Line Regulation | $3.6V \leq V_{IN} \leq 6V$, $I_{OUT} = 30mA$ | -0.1 | 0.02 | 0.1 | %/V | |
| V_{DROP} | Dropout Voltage | $I_{OUT} = 10mA$ | — | 5 | 8 | mV | |
| | | $I_{OUT} = 300mA$ | — | 125 | 200 | | |
| | | $I_{OUT} = 600mA$ | — | 250 | 400 | | |
| I_Q | Quiescent Current | $V_{IN} = 3.6V$, $I_{OUT} = 0mA$ | — | 55 | 80 | μA | |
| I_{STD} | Standby Current | $V_{IN} = 3.6V$, V_{EN} in OFF mode | — | 0.01 | 1.0 | μA | |
| PSRR | Power Supply Rejection Ratio | Ripple 0.5Vp-p $V_{IN} = 3.6V$, $I_{OUT} = 100mA$ | f = 100Hz | — | 65 | — | dB |
| | | | f = 1kHz | — | 65 | — | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta T$ | Output Voltage Temperature Coefficient | $I_{OUT} = 30mA$ $T_A = -40^\circ C$ to $+85^\circ C$ | — | ± 100 | — | ppm/ $^\circ C$ | |
| I_{SHORT} | Short Current Limit | $V_{OUT} = 0V$ | — | 50 | — | mA | |
| V_{NOISE} | RMS Output Noise | No Load, $10Hz \leq f \leq 100kHz$ | — | 50 | — | μV_{RMS} | |
| V_{IH} | V_{EN} High Voltage | Enable logic high, regulator on | 1.5 | — | 6.0 | V | |
| V_{IL} | V_{EN} Low Voltage | Enable logic low, regulator off | 0 | — | 0.4 | | |
| t_s | Start-up Time | No Load | — | 20 | — | μs | |
| R_{PD} | EN Pull Down Resistor | — | — | 3.0 | — | M Ω | |
| R_{DCHG} | V_{OUT} Discharge Resistor | Set EN pin at Low | — | 60 | — | Ω | |
| T_{OTSD} | Thermal Shutdown Temperature | — | — | +160 | — | $^\circ C$ | |
| T_{HYOTSD} | Thermal Shutdown Hysteresis | — | — | +25 | — | | |
| θ_{JC} | Thermal Resistance (Junction to Case) | SOT25 | — | 96 | — | $^\circ C/W$ | |
| | | SO-8 | — | 75 | — | | |
| | | SOT89-5 | — | 47 | — | | |

 Note 6: Production testing at $T_A = +25^\circ C$. Over temperature specifications guaranteed by design only.

Electrical Characteristics (Cont.)

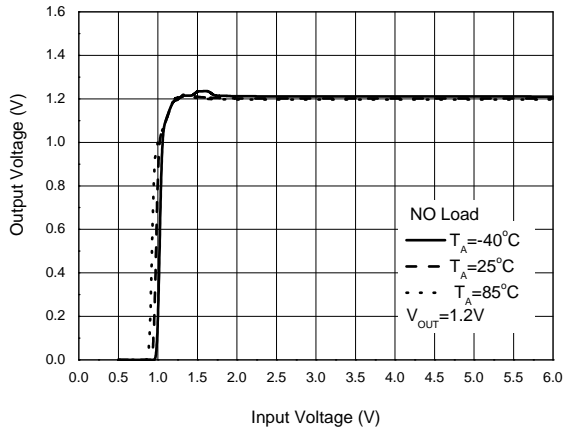
AP2112-3.3 Electrical Characteristics (@ $V_{IN} = 4.3V$, $C_{IN} = 1.0\mu F$ (Ceramic), $C_{OUT} = 1.0\mu F$ (Ceramic), Typical $T_A = +25^\circ C$, unless otherwise specified (Note 6))

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---|--|--|--------------------|-----------|---------------------|-----------------|----|
| V_{OUT} | Output Voltage | $V_{IN} = 4.3V$, $1mA \leq I_{OUT} \leq 30mA$ | $V_{OUT} * 98.5\%$ | 3.3 | $V_{OUT} * 101.5\%$ | V | |
| $I_{OUT(MAX)}$ | Maximum Output Current | $V_{IN} = 4.3V$, $V_{OUT} = 3.251V$ to $3.350V$ | 600 | — | — | mA | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta I_{OUT}$ | Load Regulation | $V_{IN} = 4.3V$, $1mA \leq I_{OUT} \leq 600mA$ | -1 | 0.2 | 1 | %/A | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta V_{IN}$ | Line Regulation | $4.3V \leq V_{IN} \leq 6V$, $I_{OUT} = 30mA$ | -0.1 | 0.02 | 0.1 | %/V | |
| V_{DROP} | Dropout Voltage | $I_{OUT} = 10mA$ | — | 5 | 8 | mV | |
| | | $I_{OUT} = 300mA$ | — | 125 | 200 | | |
| | | $I_{OUT} = 600mA$ | — | 250 | 400 | | |
| I_Q | Quiescent Current | $V_{IN} = 4.3V$, $I_{OUT} = 0mA$ | — | 55 | 80 | μA | |
| I_{STD} | Standby Current | $V_{IN} = 4.3V$, V_{EN} in OFF mode | — | 0.01 | 1.0 | μA | |
| PSRR | Power Supply Rejection Ratio | Ripple 0.5Vp-p $V_{IN} = 4.3V$, $I_{OUT} = 100mA$ | $f = 100Hz$ | — | 65 | — | dB |
| | | | $f = 1kHz$ | — | 65 | — | |
| $(\Delta V_{OUT}/V_{OUT})/\Delta T$ | Output Voltage Temperature Coefficient | $I_{OUT} = 30mA$ $T_A = -40^\circ C$ to $+85^\circ C$ | — | ± 100 | — | ppm/ $^\circ C$ | |
| I_{SHORT} | Short Current Limit | $V_{OUT} = 0V$ | — | 50 | — | mA | |
| V_{NOISE} | RMS Output Noise | No Load, $10Hz \leq f \leq 100kHz$ | — | 50 | — | μV_{RMS} | |
| V_{IH} | V_{EN} High Voltage | Enable logic high, regulator on | 1.5 | — | 6.0 | V | |
| V_{IL} | V_{EN} Low Voltage | Enable logic low, regulator off | 0 | — | 0.4 | | |
| t_S | Start-up Time | No Load | — | 20 | — | μs | |
| R_{PD} | EN Pull Down Resistor | — | — | 3.0 | — | M Ω | |
| R_{DCHG} | V_{OUT} Discharge Resistor | Set EN pin at Low | — | 60 | — | Ω | |
| $T_{OTS D}$ | Thermal Shutdown Temperature | — | — | +160 | — | $^\circ C$ | |
| $T_{HYOTS D}$ | Thermal Shutdown Hysteresis | — | — | +25 | — | | |
| θ_{JC} | Thermal Resistance (Junction to Case) | SOT25 | — | 96 | — | $^\circ C/W$ | |
| | | SO-8 | — | 75 | — | | |
| | | SOT89-5 | — | 47 | — | | |

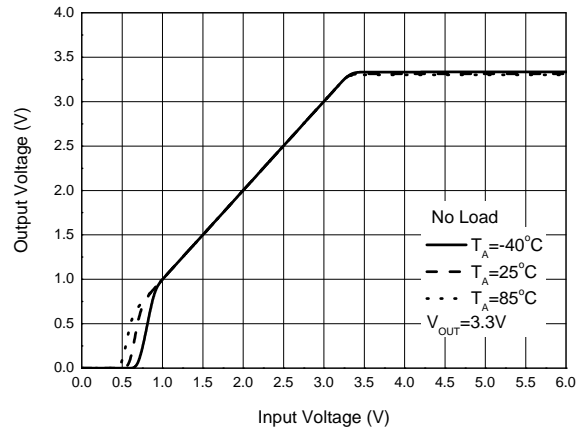
Note 6: Production testing at $T_A = +25^\circ C$. Over temperature specifications guaranteed by design only.

Performance Characteristics

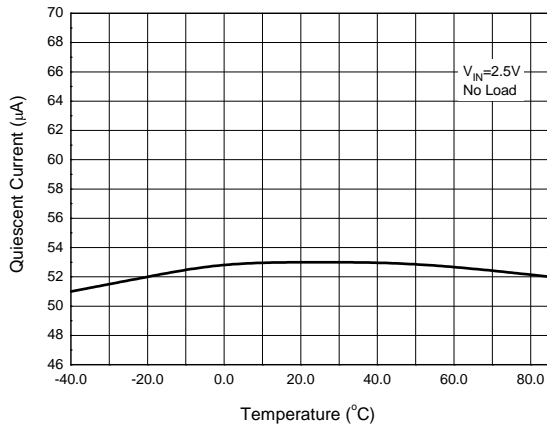
Output Voltage vs. Input Voltage



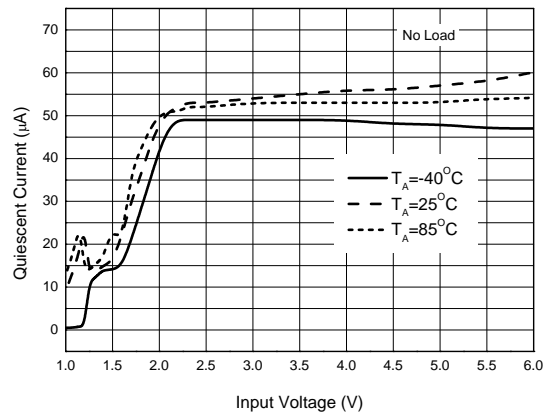
Output Voltage vs. Input Voltage



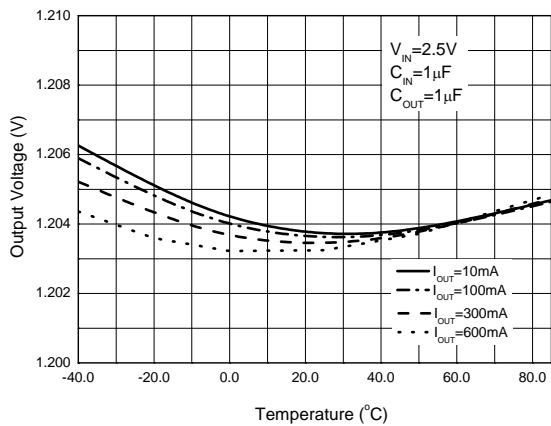
Quiescent Current vs. Temperature



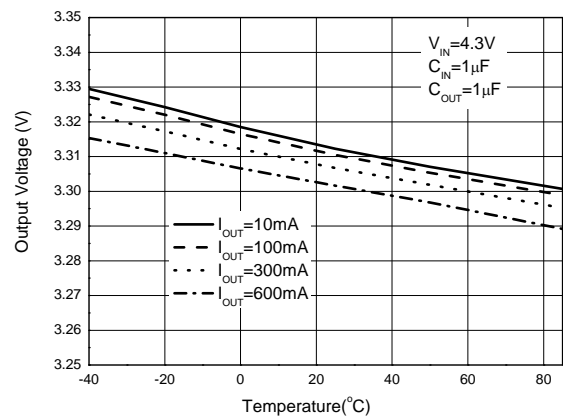
Quiescent Current vs. Input Voltage



Output Voltage vs. Temperature

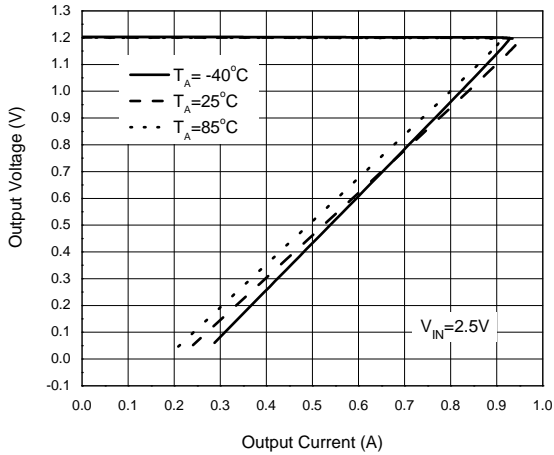


Output Voltage vs. Temperature

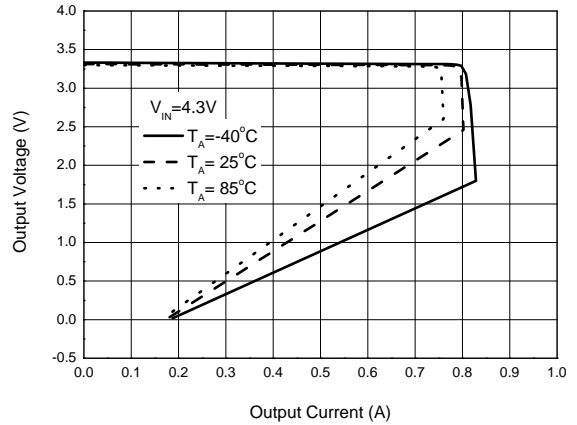


Performance Characteristics (Cont.)

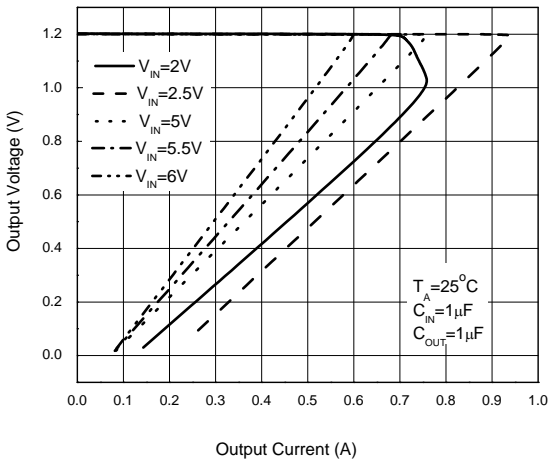
Output Voltage vs. Output Current



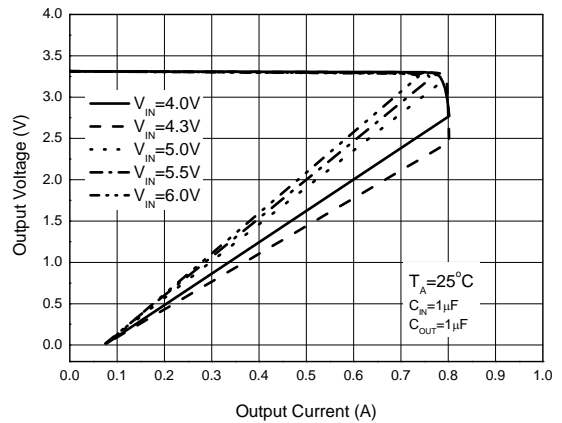
Output Voltage vs. Output Current



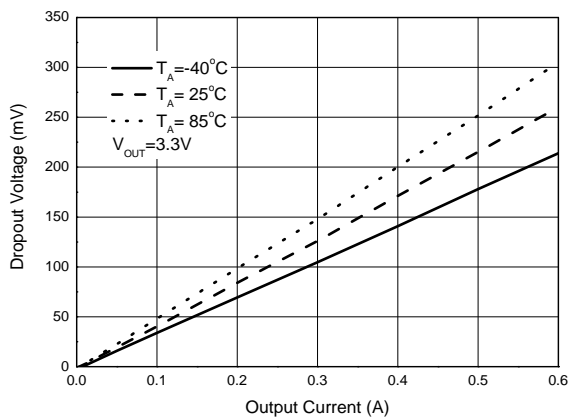
Output Voltage vs. Output Current



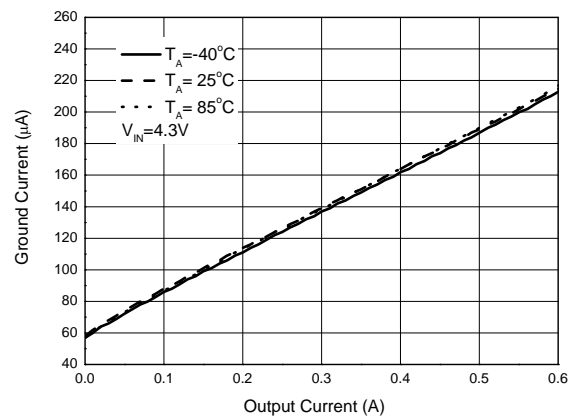
Output Voltage vs. Output Current



Dropout Voltage vs. Output Current

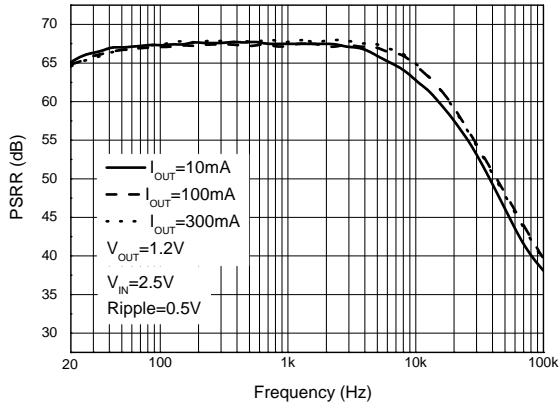


Ground Current vs. Output Current

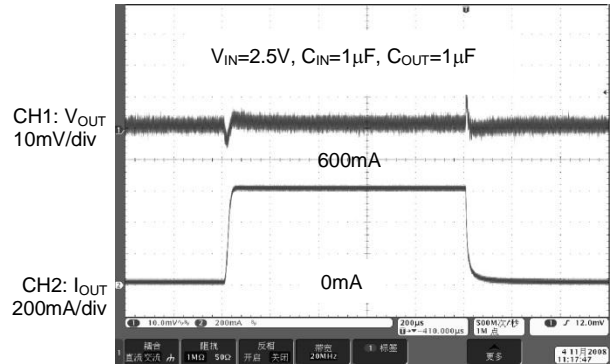


Performance Characteristics (Cont.)

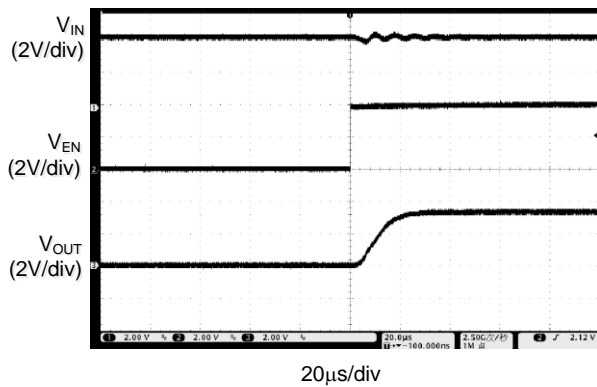
PSRR vs. Frequency



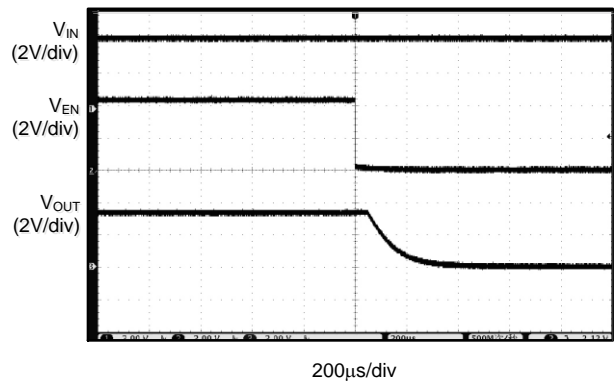
Load Transient



Enable On

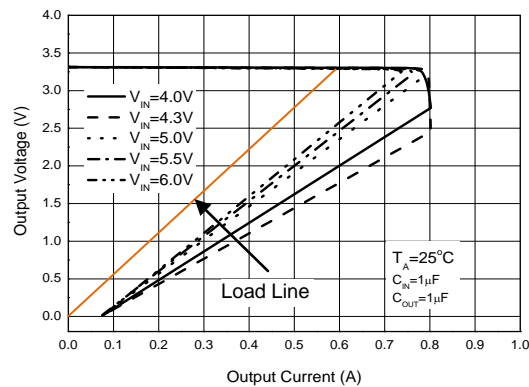


Enable Off

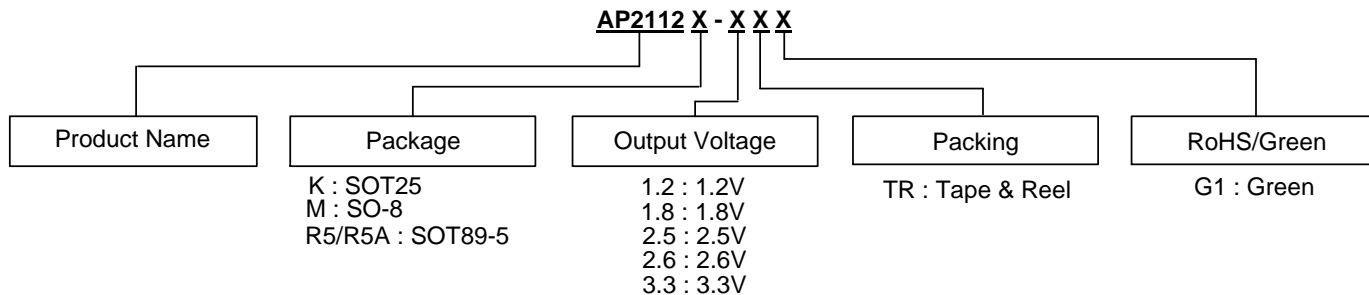


Application Note

In some unusual applications where a current load could be present at the output before the part is enabled the fold back current limiting may prevent the part from starting. Applications with multiple supplies or negative supplies need to be evaluated for this possibility. Product testing where a current source is applied before the part is enabled could be another area of concern. With a normal load as shown below there is no interference of the fold back current limiting circuit.



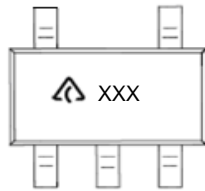
Ordering Information




| Package | Temperature Range | Condition | Part Number | Marking ID | Packing |
|---------|-------------------|-----------|-------------------|-------------|----------------------|
| SOT25 | -40 to +85°C | 1.2V | AP2112K-1.2TRG1 | G3L | 3000/7"/Tape & Reel |
| | | 1.8V | AP2112K-1.8TRG1 | G3M | 3000/7"/Tape & Reel |
| | | 2.5V | AP2112K-2.5TRG1 | G3N | 3000/7"/Tape & Reel |
| | | 2.6V | AP2112K-2.6TRG1 | G5N | 3000/7"/Tape & Reel |
| | | 3.3V | AP2112K-3.3TRG1 | G3P | 3000/7"/Tape & Reel |
| SO-8 | -40 to +85°C | 1.2V | AP2112M-1.2TRG1 | 2112M-1.2G1 | 4000/13"/Tape & Reel |
| | | 1.8V | AP2112M-1.8TRG1 | 2112M-1.8G1 | 4000/13"/Tape & Reel |
| | | 2.5V | AP2112M-2.5TRG1 | 2112M-2.5G1 | 4000/13"/Tape & Reel |
| | | 2.6V | AP2112M-2.6TRG1 | 2112M-2.6G1 | 4000/13"/Tape & Reel |
| | | 3.3V | AP2112M-3.3TRG1 | 2112M-3.3G1 | 4000/13"/Tape & Reel |
| SOT89-5 | -40 to +85°C | 1.2V(R5) | AP2112R5-1.2TRG1 | G37D | 1000/7"/Tape & Reel |
| | | 1.8V(R5) | AP2112R5-1.8TRG1 | G37E | 1000/7"/Tape & Reel |
| | | 2.5V(R5) | AP2112R5-2.5TRG1 | G37F | 1000/7"/Tape & Reel |
| | | 2.6V(R5) | AP2112R5-2.6TRG1 | G13F | 1000/7"/Tape & Reel |
| | | 3.3V(R5) | AP2112R5-3.3TRG1 | G37G | 1000/7"/Tape & Reel |
| SOT89-5 | -40 to +85°C | 1.2V(R5A) | AP2112R5A-1.2TRG1 | G33C | 1000/7"/Tape & Reel |
| | | 1.8V(R5A) | AP2112R5A-1.8TRG1 | G33E | 1000/7"/Tape & Reel |
| | | 2.5V(R5A) | AP2112R5A-2.5TRG1 | G28G | 1000/7"/Tape & Reel |
| | | 2.6V(R5A) | AP2112R5A-2.6TRG1 | G13E | 1000/7"/Tape & Reel |
| | | 3.3V(R5A) | AP2112R5A-3.3TRG1 | G28H | 1000/7"/Tape & Reel |

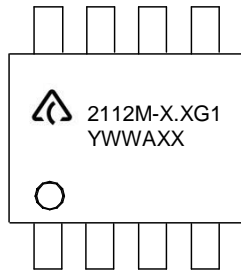
Marking Information

(1) SOT25



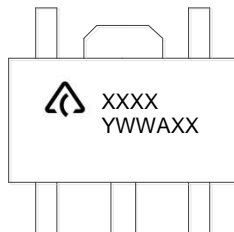
 : Logo
XXX : Marking ID (See Ordering Information)

(2) SO-8



First line: Logo and Marking ID
Second line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

(3) SOT89-5

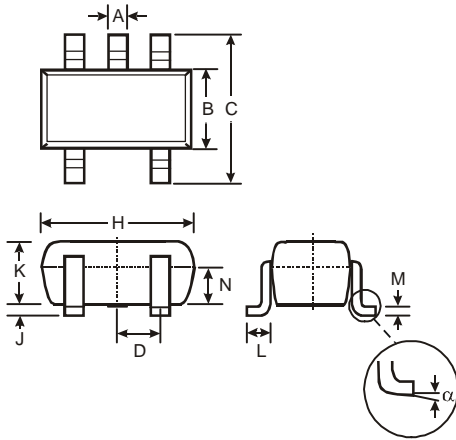


First Line: Logo and Marking ID
Second line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

Package Outline Dimensions (Previously identified as SOT-23-5 for this product)

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

SOT25

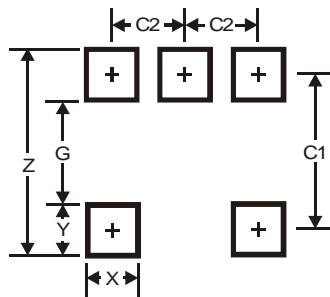


| SOT25 | | | |
|----------------------|-------|------|------|
| Dim | Min | Max | Typ |
| A | 0.35 | 0.50 | 0.38 |
| B | 1.50 | 1.70 | 1.60 |
| C | 2.70 | 3.00 | 2.80 |
| D | - | - | 0.95 |
| H | 2.90 | 3.10 | 3.00 |
| J | 0.013 | 0.10 | 0.05 |
| K | 1.00 | 1.30 | 1.10 |
| L | 0.35 | 0.55 | 0.40 |
| M | 0.10 | 0.20 | 0.15 |
| N | 0.70 | 0.80 | 0.75 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOT25



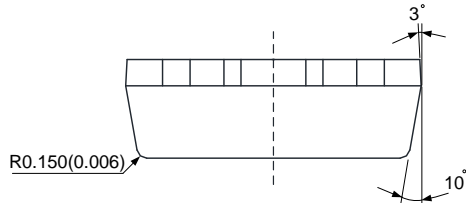
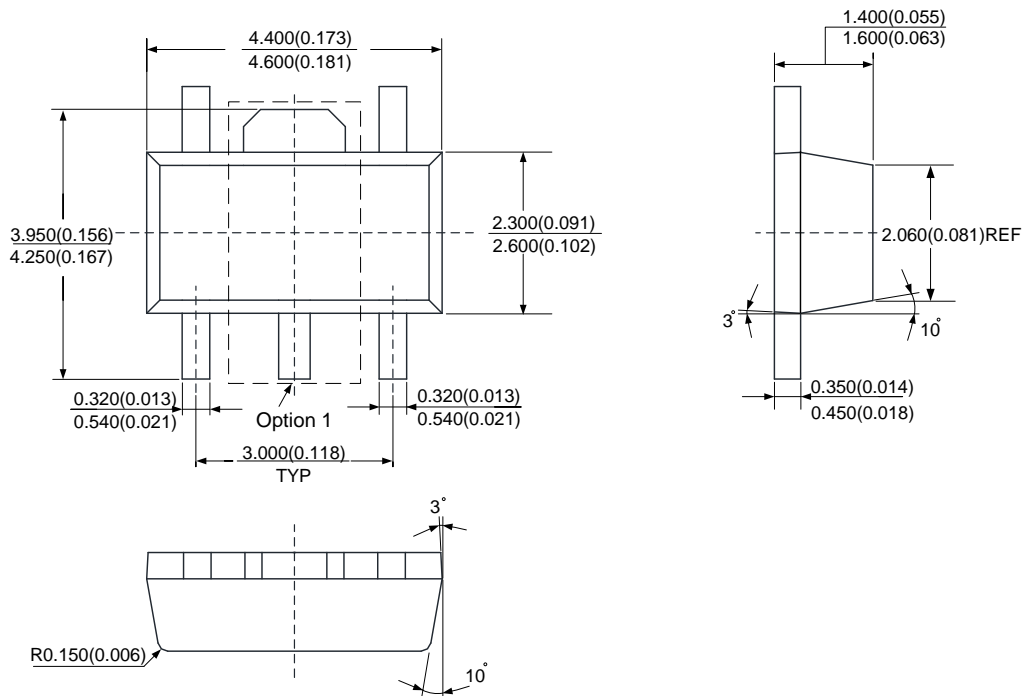
| Dimensions | Value |
|------------|-------|
| Z | 3.20 |
| G | 1.60 |
| X | 0.55 |
| Y | 0.80 |
| C1 | 2.40 |
| C2 | 0.95 |

Note: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application. These dimensions may be modified based on user equipment capability or fabrication criteria. A more robust pattern may be desired for wave soldering and is calculated by adding 0.2 mm to the 'Z' dimension. For further information, please reference document IPC-7351A, Naming Convention for Standard SMT Land Patterns, and for International grid details, please see document IEC, Publication 97.

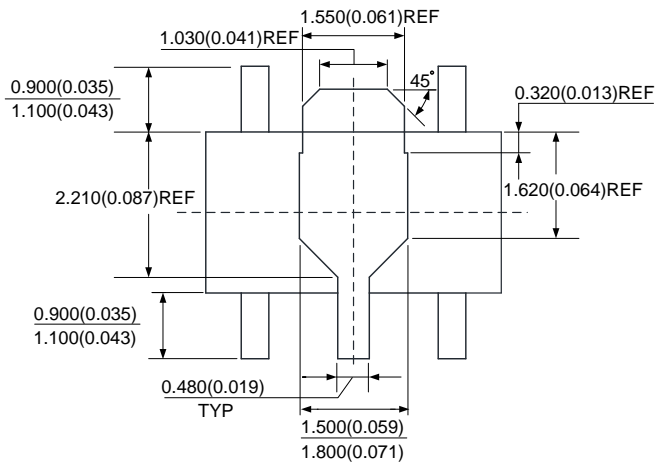
Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

Package Outline Dimensions (All dimensions in mm.) (Previously identified as SOT-89-5 for this product)

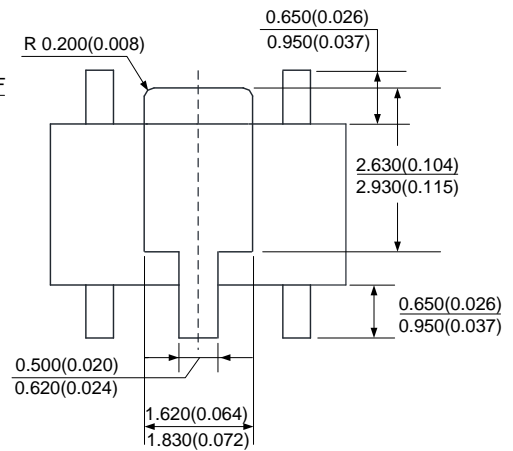
SOT89-5



Option 1

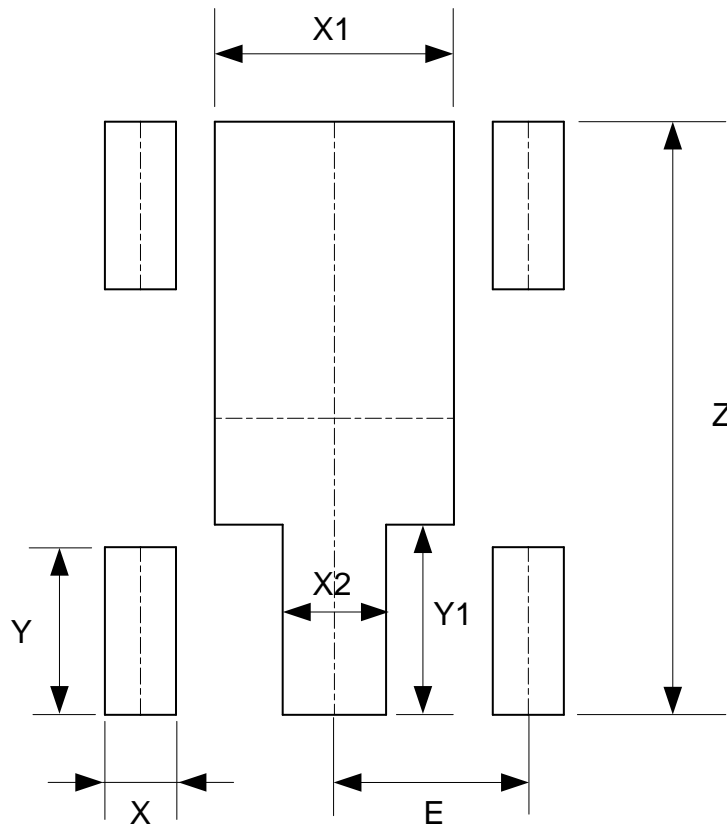


Option 2



Suggested Pad Layout (Previously identified as SOT-89-5 for this product)

SOT89-5

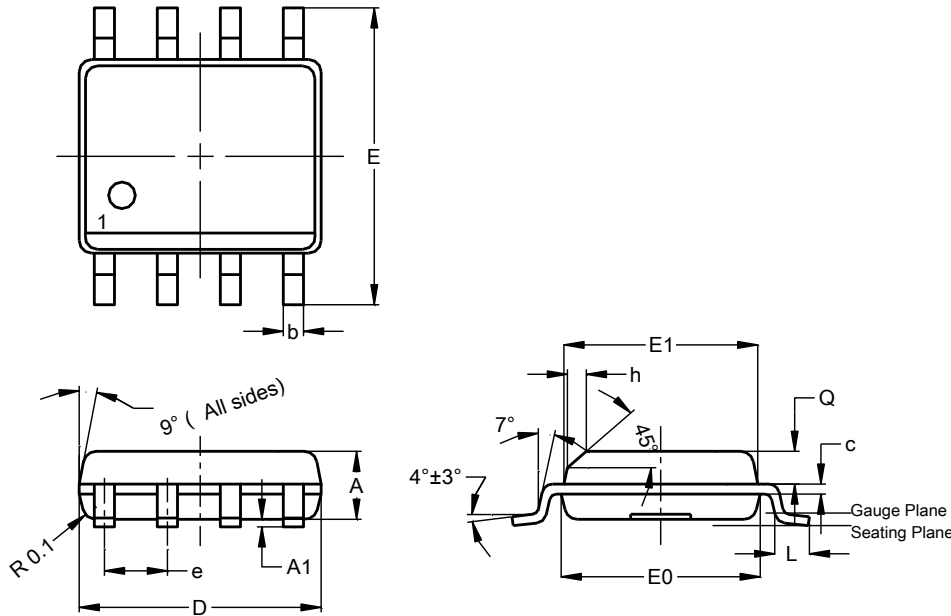


| Dimensions | Z (mm)/(inch) | X (mm)/(inch) | X1 (mm)/(inch) | X2 (mm)/(inch) | Y (mm)/(inch) | Y1 (mm)/(inch) | E (mm)/(inch) |
|------------|------------------|------------------|-------------------|-------------------|------------------|-------------------|------------------|
| Value | 4.600/0.181 | 0.550/0.022 | 1.850/0.073 | 0.800/0.031 | 1.300/0.051 | 1.475/0.058 | 1.500/0.059 |

Package Outline Dimensions (Previously identified as SOIC-8 for this product)

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

SO-8

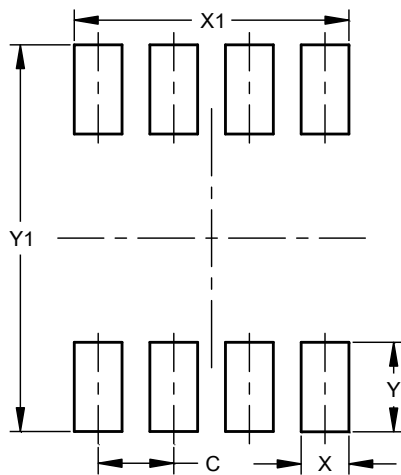


| SO-8 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 1.40 | 1.50 | 1.45 |
| A1 | 0.10 | 0.20 | 0.15 |
| b | 0.30 | 0.50 | 0.40 |
| c | 0.15 | 0.25 | 0.20 |
| D | 4.85 | 4.95 | 4.90 |
| E | 5.90 | 6.10 | 6.00 |
| E1 | 3.80 | 3.90 | 3.85 |
| E0 | 3.85 | 3.95 | 3.90 |
| e | -- | -- | 1.27 |
| h | - | -- | 0.35 |
| L | 0.62 | 0.82 | 0.72 |
| 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.

SO-8



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.27 |
| X | 0.802 |
| X1 | 4.612 |
| Y | 1.505 |
| Y1 | 6.50 |

Note: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application. These dimensions may be modified based on user equipment capability or fabrication criteria. A more robust pattern may be desired for wave soldering and is calculated by adding 0.2 mm to the 'Z' dimension. For further information, please reference document IPC-7351A, Naming Convention for Standard SMT Land Patterns, and for International grid details, please see document IEC, Publication 97.

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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