

20V Input, 2uA Ultra-Low I_Q, High PSRR, 200mA LDO

DESCRIPTION

ETA5122 is a fixed output, low-dropout (LDO) low-power linear voltage regulator that features ultra-low standby current as low as 2uA. It can withstand input voltage up to 20V and deliver 200mA output current, at least. Therefore, ETA5122 is an ideal power supply for low power applications such as IoT, wearables and multi-cell battery powered system, and etc.

ETA5122 is available in SOT89-5.

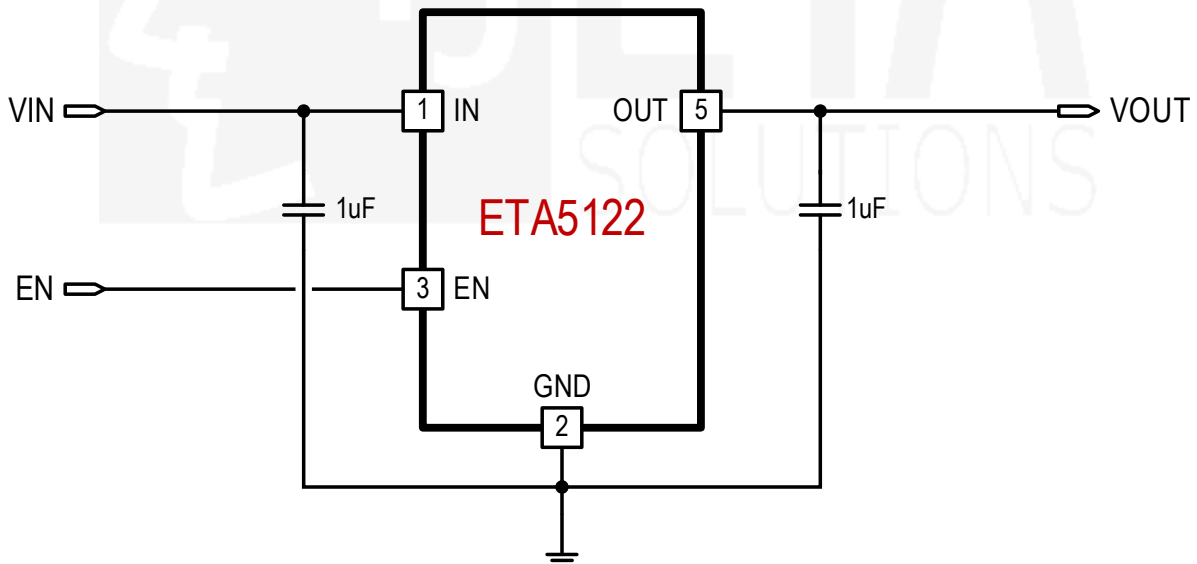
FEATURES

- ◆ 20V Input Voltage
- ◆ 2uA Ultra-low I_Q
- ◆ 200mA Output Current
- ◆ Stable with a Wide Range of Ceramic Capacitor
- ◆ 300mV Dropout Voltage for 100mA at V_{OUT} = 2.8V
- ◆ RoHS Compliant

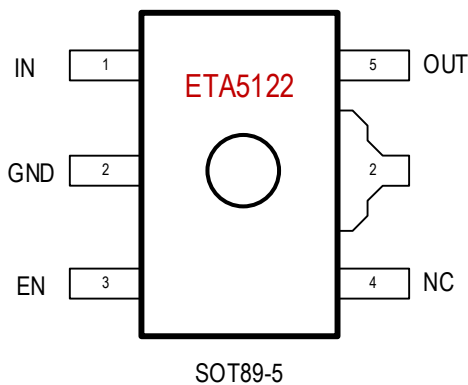
APPLICATIONS

- ◆ NB-IoT module
- ◆ Wearables
- ◆ multi-cell battery powered system

TYPICAL APPLICATION



PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability)

| | | |
|--|----------------|---------------|
| V _{IN} , EN, V _{OUT} Voltage | -0.3V to 30V | |
| Operating Temperature Range..... | -40°C to 85°C | |
| Storage Temperature Range | -55°C to 150°C | |
| Thermal Resistance | θ_{JA} | θ_{JC} |
| SOT89-5..... | 47..... | 77.... °C/W |
| Lead Temperature (Soldering 10 sec) | 260°C | |
| ESD HBM (Human Body Mode)..... | 3KV | |

ELECTRICAL CHARACTERISTICS

(V_{IN} = 9V, V_{OUT} = 2.8V, unless otherwise specified. Typical values are at TA = 25°C.)

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|--|-----|------|-----|-----------------|
| Input Voltage Range ⁽¹⁾ | | 2.5 | | 20 | V |
| Ground Current | No Load | | 2 | | μA |
| Shutdown Current | V _{EN} = 0V | | 1 | | μA |
| Dropout Voltage | I _{OUT} = 100mA, V _{OUT} = 2.8V | | 300 | | mV |
| Continuous Output Current | | 200 | | | mA |
| Output Current Limit | V _{OUT} = 95% | | 600 | | mA |
| Output Foldback Current Limit | V _{OUT} = 0V | | 150 | | mA |
| Line Regulation | V _{OUT} + 1V ≤ V _{IN} ≤ 20V, I _{OUT} = 10mA | | 0.15 | | %/V |
| Load Regulation | 0μA ≤ I _{OUT} ≤ 200 mA | | 50 | | mV |
| Output Voltage Range(Fixed V _{OUT}) | Available in 100mV steps | 1.2 | | 5 | V |
| V _{out} Voltage Accuracy | I _{OUT} = 30mA, V _{OUT} > 1.8V | -2 | | +2 | % |
| Power Supply Rejection Ratio | Freq = 100Hz, I _{OUT} = 30mA | | 82 | | dB |
| | Freq = 1kHz, I _{OUT} = 30mA | | 66 | | |
| Start-up time | | | 100 | | μs |
| EN pin Logic Low | 2.5V ≤ V _{IN} ≤ 20V | | | 0.4 | V |
| EN pin Logic High | 2.5V ≤ V _{IN} ≤ 20V | 50% | | | V _{IN} |
| Input current at EN pin | V _{EN} = 3V | | 0 | | μA |
| Thermal Shutdown | Rising, Hysteresis = 60°C | | 150 | | °C |

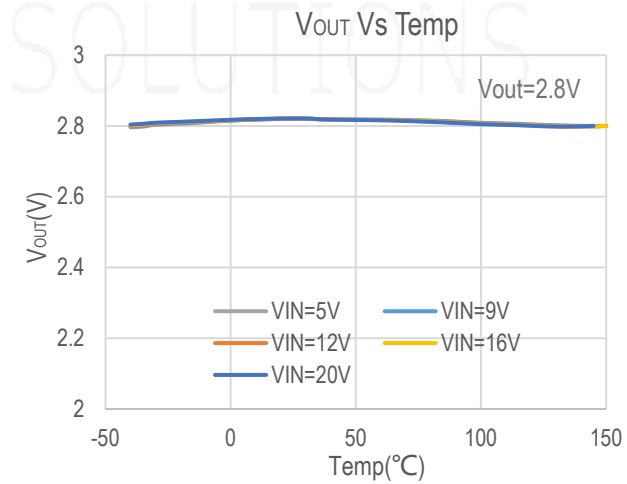
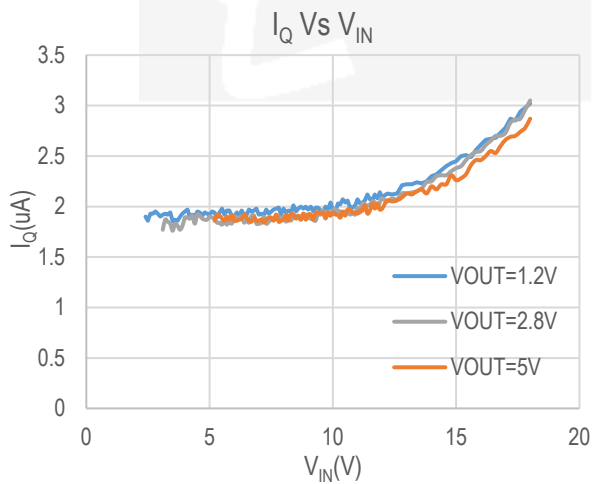
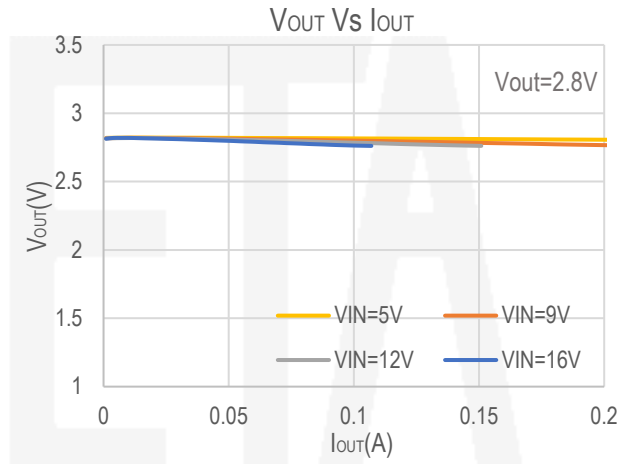
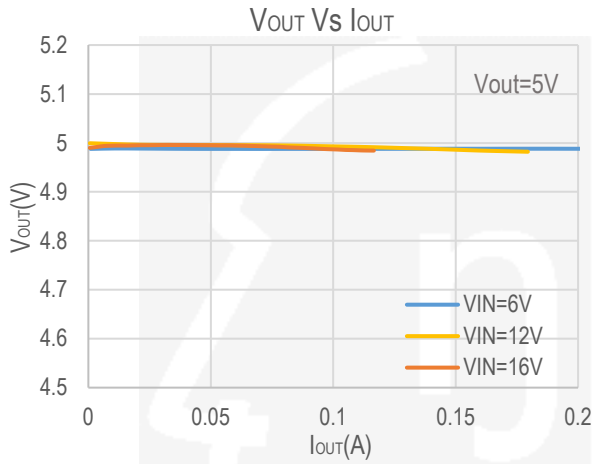
(1): Minimum V_{IN} is V_{OUT} + V_{DROPOUT}, whichever is greater.

PIN DESCRIPTION

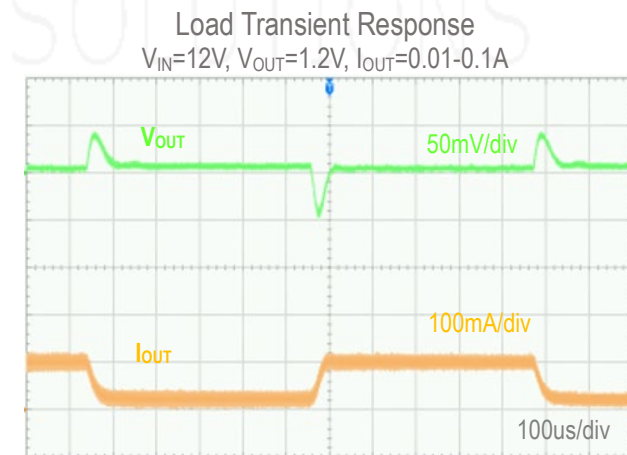
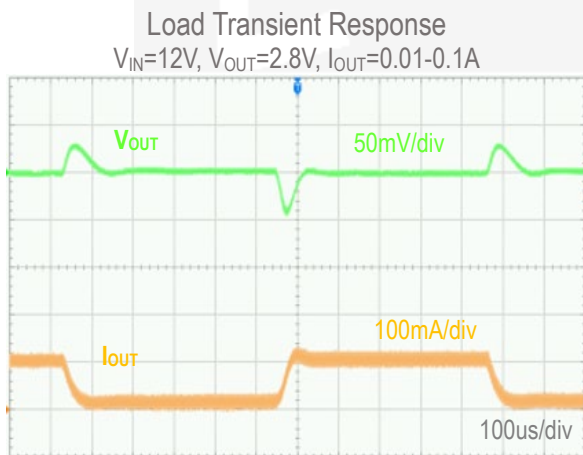
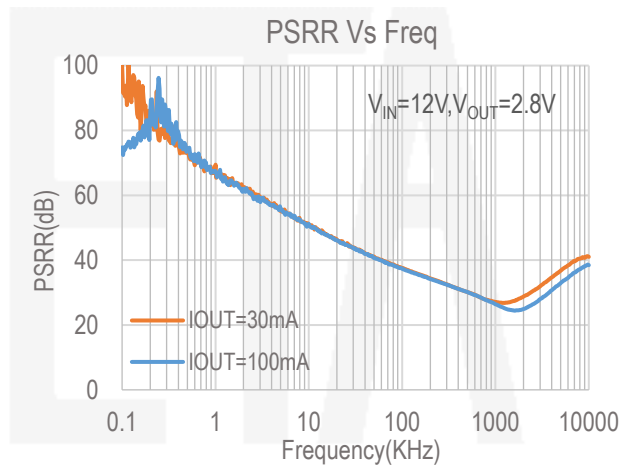
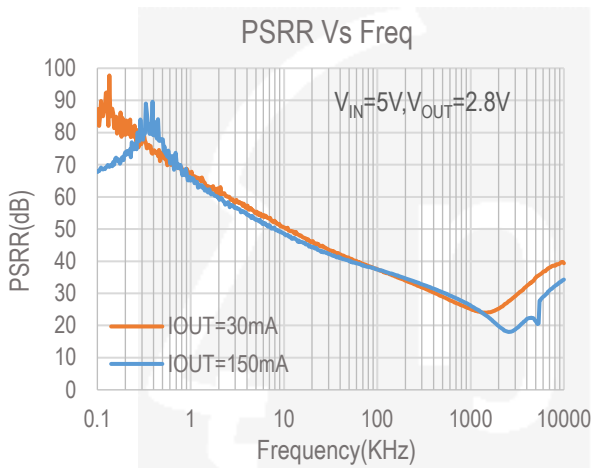
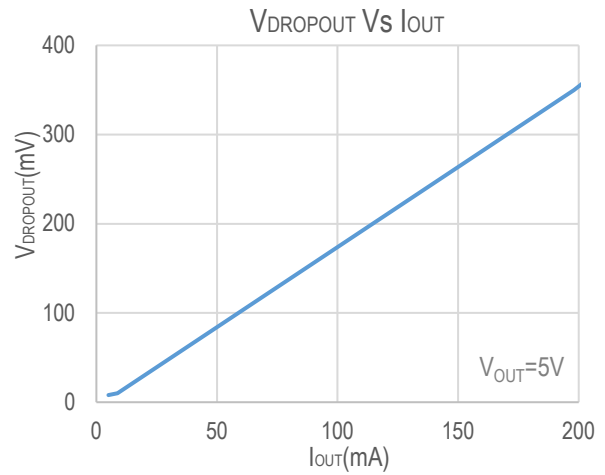
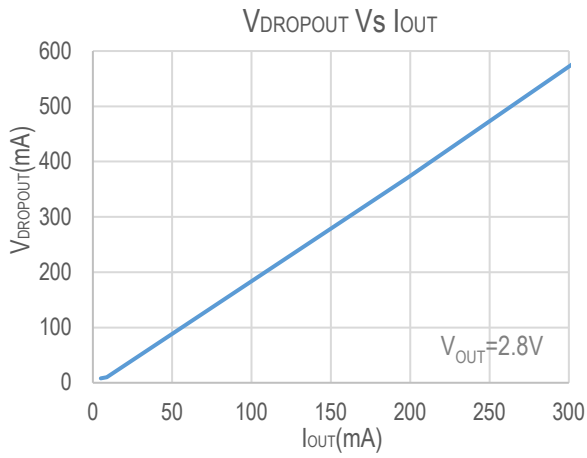
| SOT89-5 PIN# | NAME | DESCRIPTION |
|-----------------|------|---|
| 1 | IN | Input Supply Pin |
| 2 | GND | Ground Pin |
| 3 | EN | Enable Pin. Drive it high to enable IC, drive it low to disable. EN can be connected to IN if not used. |
| 4 | NC | Not Connected |
| 5 | OUT | Output Pin of the regulator |

TYPICAL CHARACTERISTICS

(Typical values are at $T_A = 25^\circ\text{C}$ unless otherwise specified.)

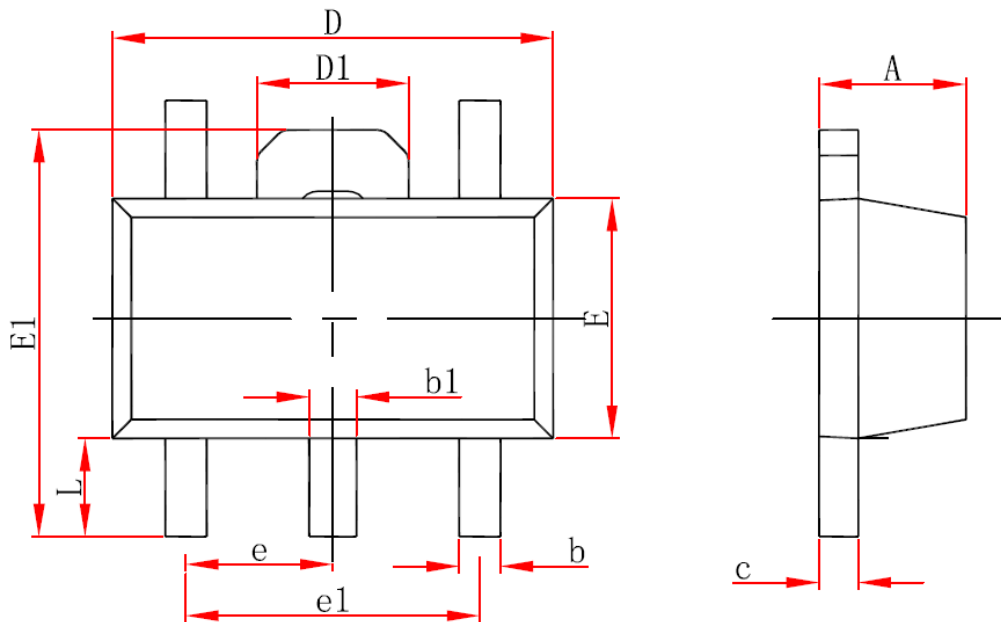


TYPICAL CHARACTERISTICS (cont')



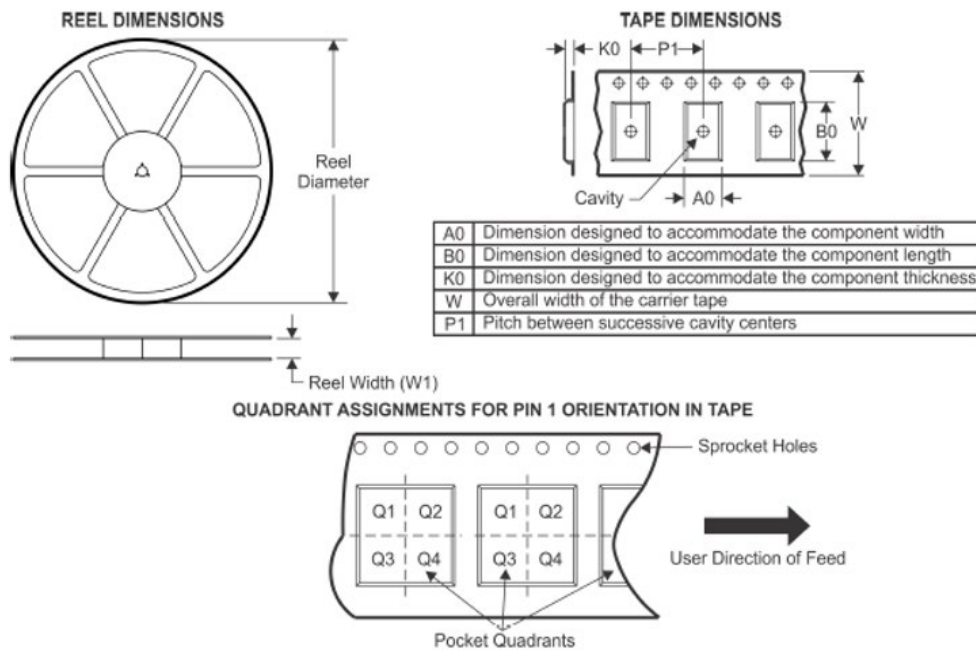
PACKAGE OUTLINE

Package: SOT89-5



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.380 | 0.580 | 0.015 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

TAPE AND REEL INFORMATION



| Device | Package Type | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-----------------|--------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| ETA5122VXXXNS8F | SOT89-5 | 5 | 1000 | 178 | 9.5 | 4.75 | 4.75 | 1.8 | 8 | 8 | Q3 |
| ETA5122VXXXDS8F | SOT89-5 | 5 | 1000 | 178 | 9.5 | 4.75 | 4.75 | 1.8 | 8 | 8 | Q3 |

| ORDERING | | PART No. | PACKAGE | TOP MARK | Pcs/Reel |
|--------------------|-------------------|------------------------------------|------------------------|--------------------------|----------|
| | | ETA5122VXXXNS8F | SOT89-5 | PP | 3000 |
| INFORMATION | | | | | |
| | | <u>XXX</u> : voltage code =1.2V | e.g. <u>120</u> | <u>PP</u> : product code | |
| | | <u>Q=N</u> : no discharge; | <u>Q=D</u> : discharge | <u>YW</u> : date code | |
| SOT89-5 | 1.2V No discharge | ETA5122V120NS8F | SOT89-5 | wK1 | 3000 |
| SOT89-5 | 1.8V No discharge | ETA5122V180NS8F | SOT89-5 | wK2 | 3000 |
| SOT89-5 | 2.5V No discharge | ETA5122V250NS8F | SOT89-5 | wK3 | 3000 |
| SOT89-5 | 2.8V No discharge | ETA5122V280NS8F | SOT89-5 | wK4 | 3000 |
| SOT89-5 | 3V No discharge | ETA5122V300NS8F | SOT89-5 | wK5 | 3000 |
| SOT89-5 | 3.3V No discharge | ETA5122V330NS8F | SOT89-5 | wK6 | 3000 |
| SOT89-5 | 5V No discharge | ETA5122V500NS8F | SOT89-5 | wK7 | 3000 |
| SOT89-5 | 1.2V Discharge | ETA5122V120DS8F | SOT89-5 | WK1 | 3000 |
| SOT89-5 | 1.8V Discharge | ETA5122V180DS8F | SOT89-5 | WK2 | 3000 |
| SOT89-5 | 2.5V Discharge | ETA5122V250DS8F | SOT89-5 | WK3 | 3000 |
| SOT89-5 | 2.8V Discharge | ETA5122V280DS8F | SOT89-5 | WK4 | 3000 |
| SOT89-5 | 3V Discharge | ETA5122V300DS8F | SOT89-5 | WK5 | 3000 |
| SOT89-5 | 3.3V Discharge | ETA5122V330DS8F | SOT89-5 | WK6 | 3000 |
| SOT89-5 | 5V Discharge | ETA5122V500DS8F | SOT89-5 | WK7 | 3000 |