

Low Dropout Regulators

Description

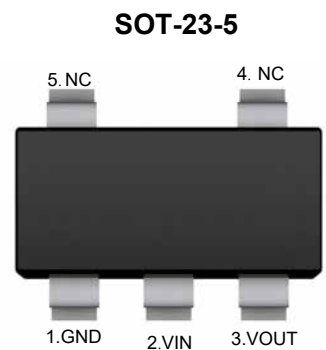
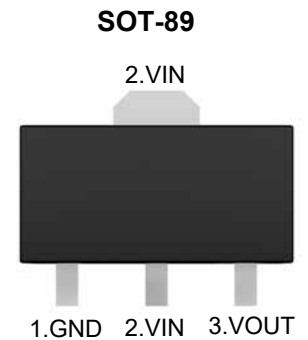
The SL75B series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 36V. They are available with several fixed output voltages ranging from 2.8V to 5.0V. The device features integrated short-circuit and thermal shutdown protection.

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 36V)
- Quiescent current : 2.0 μ A
- Output voltage tolerance: \pm 2%

Applications

- Battery-Powered Equipment
- Ultra Low Power Microcontrollers
- Security Monitoring Equipment



Functional Pin Description

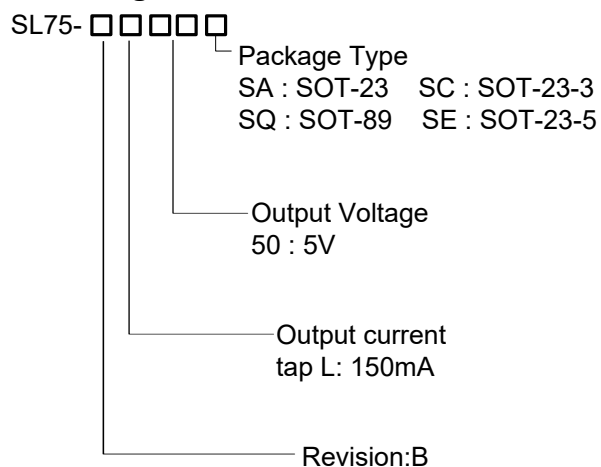
| Pin Name | Pin Function |
|----------|---------------------|
| NC | NO Connected |
| GND | Ground |
| VOUT | Output Voltage |
| VIN | Power Input Voltage |

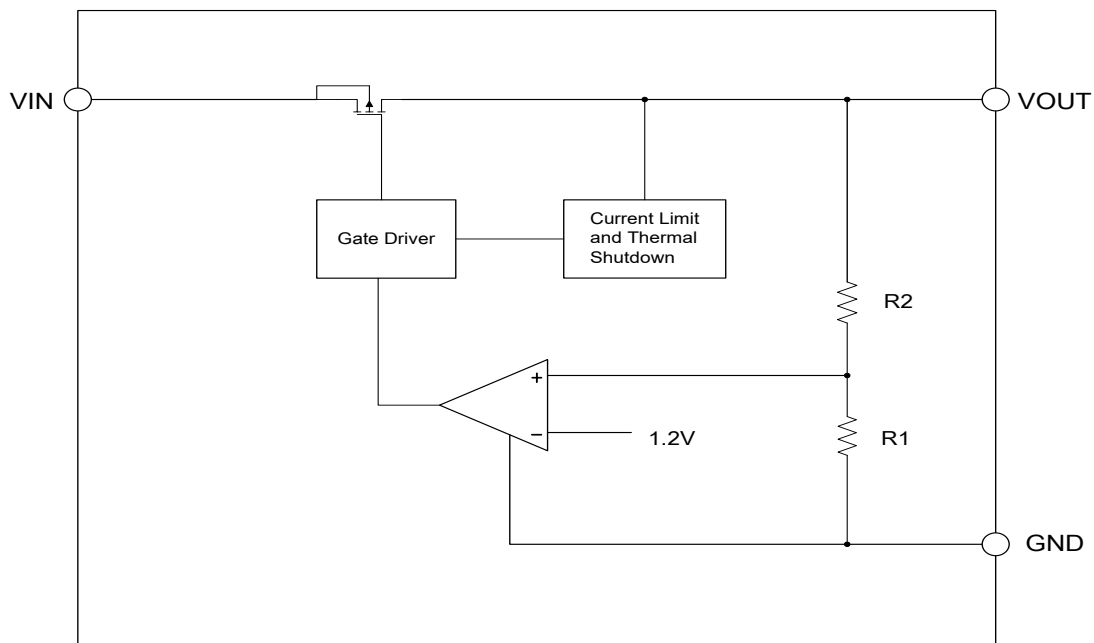
Marking Code ^{Note}

| Output Voltage | Package | Marking Code |
|----------------|----------|--------------|
| 2.8V~5V | SOT-23 | 75XX |
| 2.8V~5V | SOT-23-3 | 75XXC |
| 2.8V~5V | SOT-23-5 | 75XXE |
| 2.8V~5V | SOT-89 | 75XX |

Note . XX : Output Voltage

Ordering Information



Function Block Diagram

Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | | Value | Unit |
|---|----------|------------|------|
| Supply Voltage | | -0.3 ~ +40 | V |
| Power Dissipation | SOT-23 | 300 | mW |
| | SOT-23-3 | 400 | mW |
| | SOT-23-5 | 400 | mW |
| | SOT-89 | 600 | mW |
| Thermal Resistance, Junction-to-Ambient | SOT-23 | 330 | °C/W |
| | SOT-23-3 | 380 | °C/W |
| | SOT-23-5 | 380 | °C/W |
| | SOT-89 | 180 | °C/W |
| Operating Ambient Temperature | | -40 ~ +85 | °C |
| Storage temperature range | | -40 ~ +125 | °C |

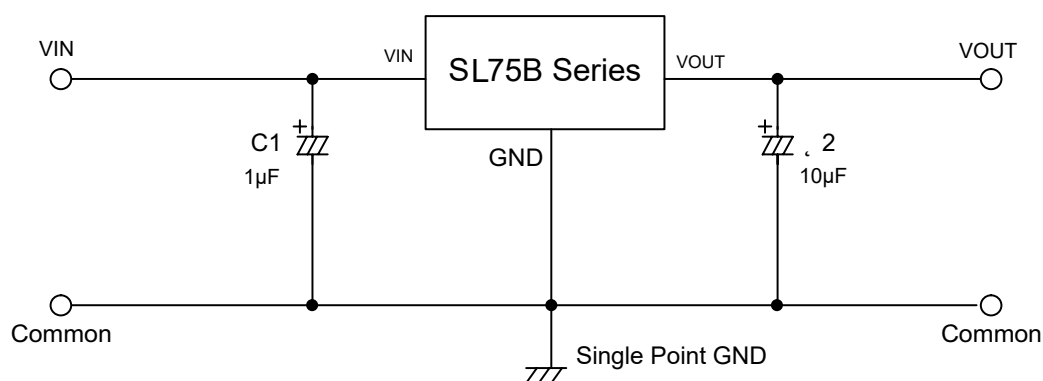
Electrical Characteristics

($V_{IN}=V_{OUT}+2$, $C_{IN}=1\mu F$, $C_{OUT}=10\mu F$, $T_A=25^\circ C$, unless otherwise noted.)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|-------------------|--|------|------|------|---------|
| Input Voltage | V_{IN} | | -- | -- | 36 | V |
| Output Voltage Accuracy | ΔV_{OUT} | $I_{OUT}=1mA$ | -2 | -- | +2 | % |
| Maximum Output Current | $I_{OUT(Max)}$ | | - | 150 | -- | mA |
| Quiescent Current | I_Q | $I_{OUT}=0mA$ | -- | 2 | 3 | μA |
| Dropout Voltage ^{Note1} | V_{DROP} | $I_{OUT}=100mA$ | -- | 450 | 600 | mV |
| Line Regulation | ΔV_{LINE} | $V_{IN}=V_{OUT}+2V$ to 30V $I_{OUT}=10mA$ | -- | -- | 0.2 | %/V |
| Load Regulation | ΔV_{LOAD} | $V_{IN}=V_{OUT}+2V$, $1mA < I_{OUT} < 100mA$ | -- | 25 | 60 | mV |

Note 1. The dropout voltage is defined as $V_{IN} - V_{OUT}$, when V_{OUT} is 98% of the normal value of V_{OUT} .

Typical Application Circuit



Applications Information

Input Capacitor

A 1 μ F ceramic capacitor is recommended to connect between VIN 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 less noise. For PCB layout, a wide copper trace is required for both VIN and GND.

Output Capacitor

An output capacitor is required for the stability of the LDO. The recommended minimum output capacitance is 10 μ F, ceramic capacitor is recommended, and temperature characteristics are X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to V_{OUT} and GND pins.

Thermal Considerations

For continuous operation, do not exceed absolute maximum junction temperature. The maximum power dissipation depends on the thermal resistance of the IC package, PCB layout, rate of surrounding airflow, and difference between junction and ambient temperature. The maximum power dissipation can be calculated by the following formula :

$$P_{D(MAX)} = (T_{J(MAX)} - T_A) / R_{\theta JA}$$

Where T_{J(MAX)} is the maximum operation junction temperature 125 °C, T_A is the ambient temperature and the R _{θ JA} is the junction to ambient thermal resistance.

The power dissipation definition in device is:

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

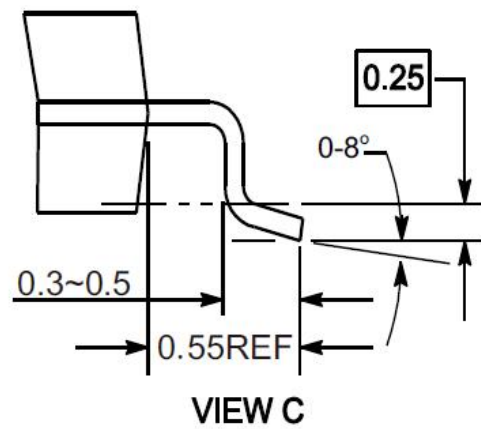
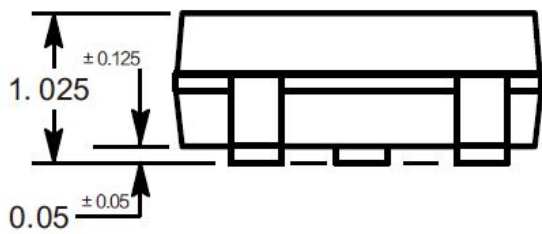
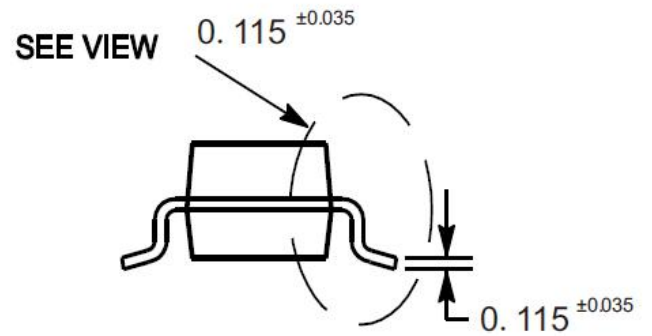
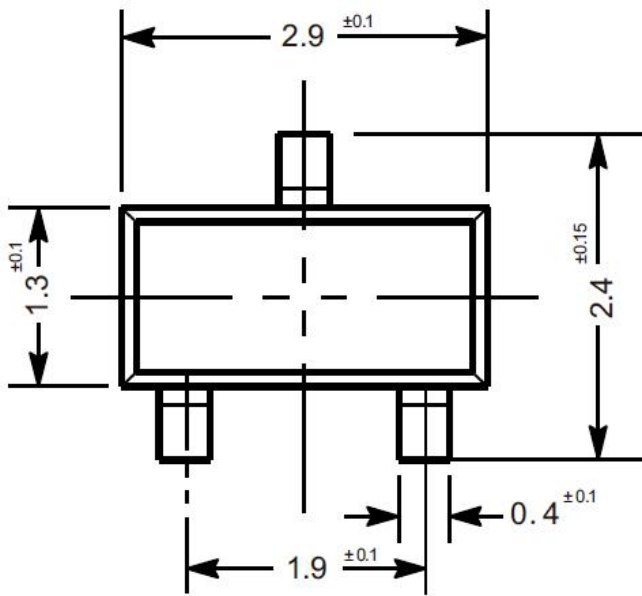
Layout Consideration

By placing input and output capacitors on the same side of the PCB as the LDO, and placing them as close as is practical to the package can achieve the best performance. The ground connections for input and output capacitors must be back to the SL75B Series ground pin using as wide and as short of a copper trace as is practical. Connections using long trace lengths, narrow trace widths, and connections through via must be avoided. These add parasitic inductances and resistance that results in worse performance especially during transient conditions.

Package Outline

SOT-23

Dimensions in mm



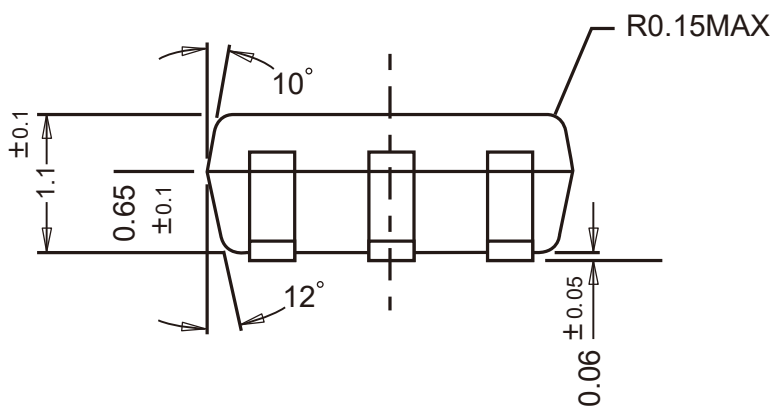
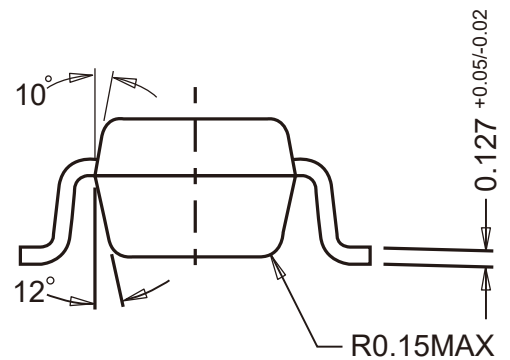
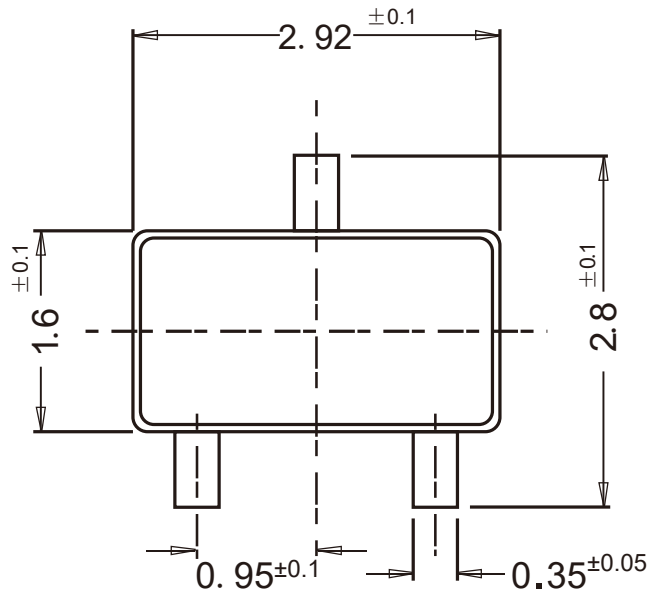
Ordering Information

| Device | Package | Shipping |
|--------------|---------|-----------------------|
| SL75B Series | SOT-23 | 3,000PCS/Reel&7inches |

Package Outline

SOT-23-3

Dimensions in mm



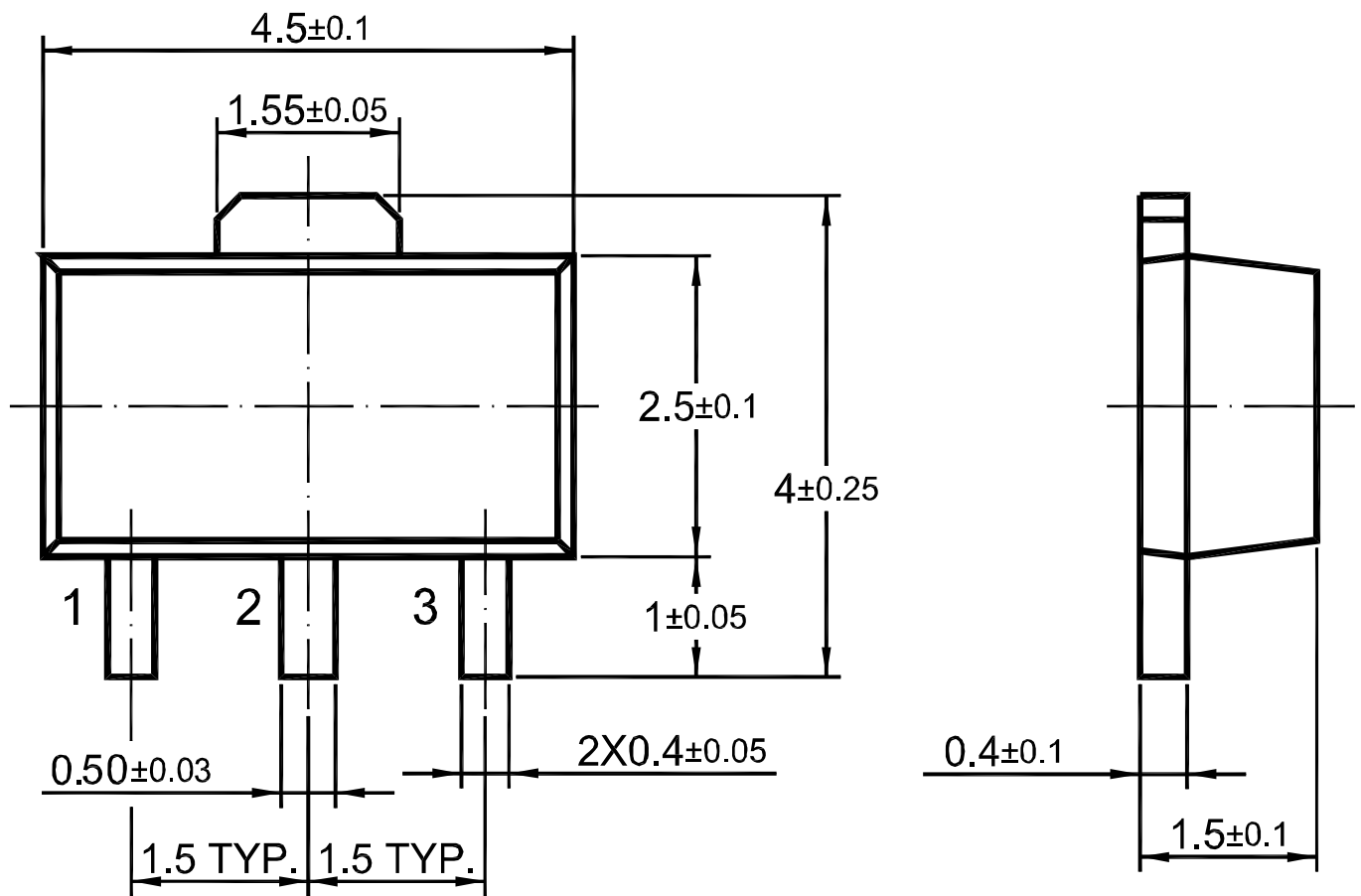
Ordering Information

| Device | Package | Shipping |
|--------------|----------|-----------------------|
| SL75B Series | SOT-23-3 | 3,000PCS/Reel&7inches |

Package Outline

SOT-89

Dimensions in mm



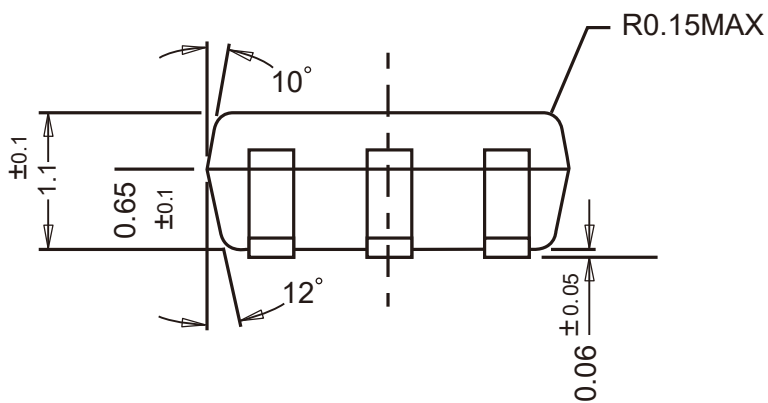
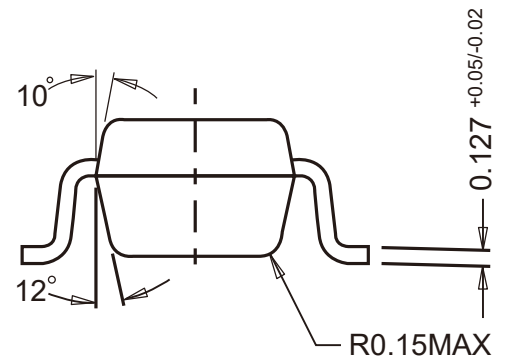
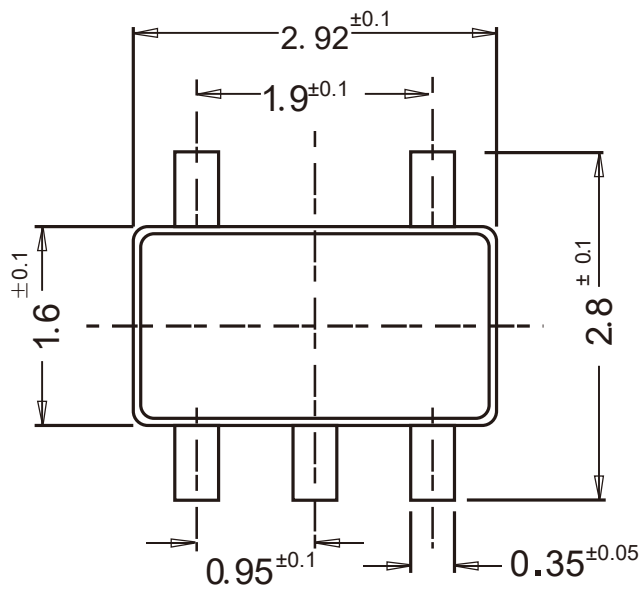
Ordering Information

| Device | Package | Shipping |
|--------------|---------|-----------------------|
| SL75B Series | SOT-89 | 1,000PCS/Reel&7inches |

Package Outline

SOT-23-5

Dimensions in mm



Ordering Information

| Device | Package | Shipping |
|--------------|----------|-----------------------|
| SL75B Series | SOT-23-5 | 3,000PCS/Reel&7inches |

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 [SLKORMICRO](#) 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](#) [BL8077CKETR33](#) [BL9153-33CC3TR](#) [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](#) [HT7533S](#) [662K](#)