

### Description

The PJ79LxxSQ series of fixed voltage monolithic integrated circuit voltage three-terminal negative regulators are suitable for applications that required supply up to 100mA.

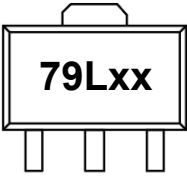
### Features

- Input voltage: -30V
- Output voltage: -5V, -6V, -8V, -9V, -12V
- Output current up to 100 mA
- Thermal overload protection
- Short circuit current limiting

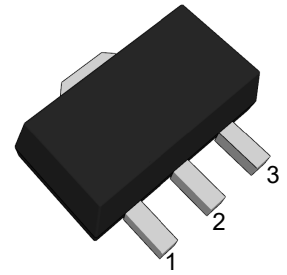
### Applications

- TV Board
- Air Conditioner
- Charging Device

### Ordering Information

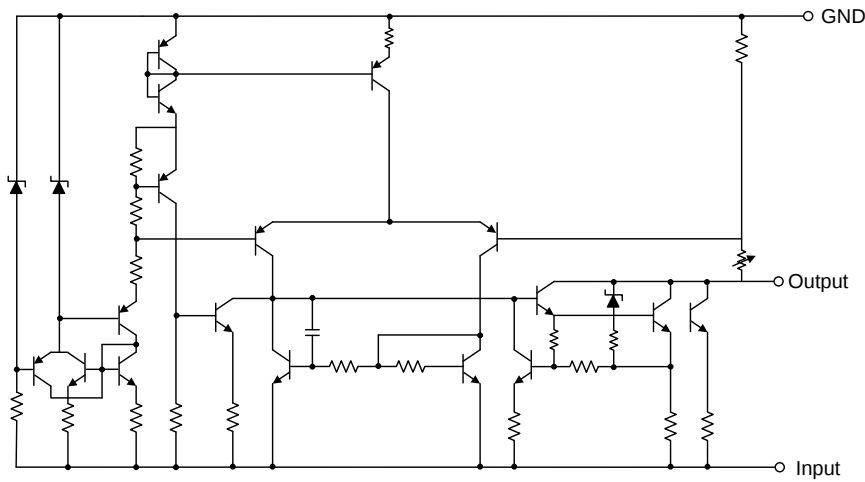
| Orderable Device | Package | Reel (inch) | Package Qty (PCS) | Eco Plan <sup>Note</sup> | MSL Level | Marking Code                                                                                                                               |
|------------------|---------|-------------|-------------------|--------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| PJ79L05SQ        | SOT-89  | 7/13        | 1000/3000         | RoHS & Green             | MSL1      |  <p>79Lxx: Product Code<br/>e.g. PJ79L05SQ: 79L05</p> |
| PJ79L06SQ        |         |             |                   |                          |           |                                                                                                                                            |
| PJ79L08SQ        |         |             |                   |                          |           |                                                                                                                                            |
| PJ79L09SQ        |         |             |                   |                          |           |                                                                                                                                            |
| PJ79L12SQ        |         |             |                   |                          |           |                                                                                                                                            |

### SOT-89

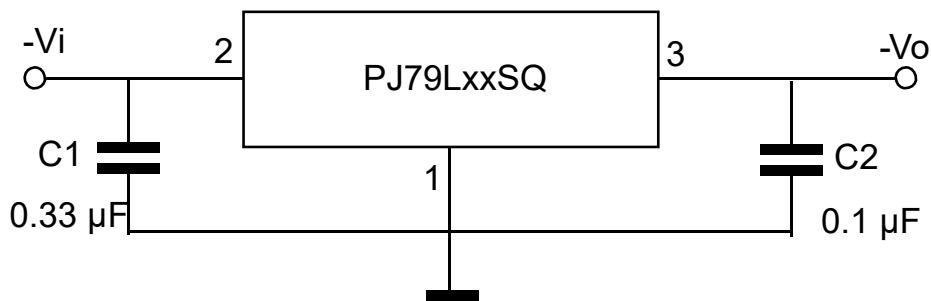


1. GND 2. VIN 3. VOUT

### Function Block Diagram



### Typical Application Circuit



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                   | Symbol    | Value       | Unit |
|-----------------------------|-----------|-------------|------|
| Input Voltage               | $-V_I$    | 30          | V    |
| Output Current              | $I_O$     | 100         | mA   |
| Maximum Power Dissipation   | $P_D$     | 500         | mW   |
| Junction Temperature        | $T_J$     | 125         | °C   |
| Operating Temperature Range | $T_{OPR}$ | 0 to +125   | °C   |
| Storage Temperature Range   | $T_{STG}$ | -65 to +150 | °C   |



# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### PJ78L05SQ Electrical Characteristics

$V_I = -10V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq 125^\circ C$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ , unless otherwise specified.

| Parameter                | Symbol       | Test Conditions                                             | Min. | Typ. | Max. | Unit    |
|--------------------------|--------------|-------------------------------------------------------------|------|------|------|---------|
| Output Voltage           | $-V_O$       | $T_J = 25^\circ C$                                          | 4.8  | 5.0  | 5.2  | V       |
|                          |              | $I_O = 1mA$ to $40mA$ ,<br>$V_I = 7V$ to $20V$              | 4.75 | --   | 5.25 | V       |
|                          |              | $I_O = 1mA$ to $70mA$                                       | 4.75 | --   | 5.25 | V       |
| Line Regulation          | $\Delta V_O$ | $V_I = -7V$ to $-20V$ , $T_J = 25^\circ C$                  | --   | 15   | 150  | mV      |
|                          |              | $V_I = -8V$ to $-20V$ , $T_J = 25^\circ C$                  | --   | 12   | 100  | mV      |
| Load Regulation          | $\Delta V_O$ | $I_O = 1mA$ to $100mA$ , $T_J = 25^\circ C$                 | --   | 20   | 60   | mV      |
|                          |              | $I_O = 1mA$ to $40mA$ , $T_J = 25^\circ C$                  | --   | 10   | 30   | mV      |
| Ripple Rejection         | RR           | $V_I = -8V$ to $-18V$ ,<br>$f = 120Hz$ , $T_J = 25^\circ C$ | 41   | 49   | --   | dB      |
| Dropout Voltage          | $V_D$        |                                                             | --   | 1.7  | --   | V       |
| Quiescent Current        | $I_Q$        | $T_J = 25^\circ C$                                          | --   | --   | 6.0  | mA      |
| Quiescent Current Change | $\Delta I_Q$ | $V_I = -8V$ to $-20V$                                       | --   | --   | 1.5  | mA      |
|                          |              | $I_O = 1mA$ to $40mA$                                       | --   | --   | 0.1  | mA      |
| Output Noise Voltage     | $V_N$        | $10Hz \leq f \leq 100kHz$ , $T_J = 25^\circ C$              | --   | 120  | --   | $\mu V$ |



# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### PJ78L06SQ Electrical Characteristics

$V_I = -12V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq 125^\circ C$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ , unless otherwise specified.

| Parameter                | Symbol       | Test Conditions                                             | Min. | Typ. | Max. | Unit    |
|--------------------------|--------------|-------------------------------------------------------------|------|------|------|---------|
| Output Voltage           | $-V_O$       | $T_J = 25^\circ C$                                          | 5.76 | 6.0  | 6.24 | V       |
|                          |              | $I_O = 1mA$ to $40mA$ ,<br>$V_I = -8.5V$ to $-20V$          | 5.7  | --   | 6.3  | V       |
|                          |              | $I_O = 1mA$ to $70mA$                                       | 5.7  | --   | 6.3  | V       |
| Line Regulation          | $\Delta V_O$ | $V_I = -8.5V$ to $-20V$ , $T_J = 25^\circ C$                | --   | --   | 150  | mV      |
|                          |              | $V_I = -9V$ to $-20V$ , $T_J = 25^\circ C$                  | --   | --   | 100  | mV      |
| Load Regulation          | $\Delta V_O$ | $I_O = 1mA$ to $100mA$ , $T_J = 25^\circ C$                 | --   | --   | 60   | mV      |
|                          |              | $I_O = 1mA$ to $40mA$ , $T_J = 25^\circ C$                  | --   | --   | 30   | mV      |
| Ripple Rejection         | RR           | $V_I = -9V$ to $-20V$ ,<br>$f = 120Hz$ , $T_J = 25^\circ C$ | 40   | --   | --   | dB      |
| Dropout Voltage          | $V_D$        |                                                             | --   | 1.7  | --   | V       |
| Quiescent Current        | $I_Q$        | $T_J = 25^\circ C$                                          | --   | --   | 6.0  | mA      |
| Quiescent Current Change | $\Delta I_Q$ | $V_I = -9V$ to $-20V$                                       | --   | --   | 1.5  | mA      |
|                          |              | $I_O = 1mA$ to $40mA$                                       | --   | --   | 0.1  | mA      |
| Output Noise Voltage     | $V_N$        | $10Hz \leq f \leq 100kHz$ , $T_J = 25^\circ C$              | --   | 190  | --   | $\mu V$ |



### PJ78L08SQ Electrical Characteristics

$V_I = -14V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq 125^\circ C$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ , unless otherwise specified.

| Parameter                | Symbol       | Test Conditions                                              | Min. | Typ. | Max. | Unit    |
|--------------------------|--------------|--------------------------------------------------------------|------|------|------|---------|
| Output Voltage           | $-V_O$       | $T_J = 25^\circ C$                                           | 7.68 | 8.0  | 8.32 | V       |
|                          |              | $I_O = 1mA$ to $40mA$ ,<br>$V_I = -10.5V$ to $-23V$          | 7.6  | --   | 8.4  | V       |
|                          |              | $I_O = 1mA$ to $70mA$                                        | 7.6  | --   | 8.4  | V       |
| Line Regulation          | $\Delta V_O$ | $V_I = -10.5V$ to $-23V$ , $T_J = 25^\circ C$                | --   | --   | 175  | mV      |
|                          |              | $V_I = -11V$ to $-23V$ , $T_J = 25^\circ C$                  | --   | --   | 150  | mV      |
| Load Regulation          | $\Delta V_O$ | $I_O = 1mA$ to $100mA$ , $T_J = 25^\circ C$                  | --   | --   | 80   | mV      |
|                          |              | $I_O = 1mA$ to $40mA$ , $T_J = 25^\circ C$                   | --   | --   | 50   | mV      |
| Ripple Rejection         | RR           | $V_I = -11V$ to $-21V$ ,<br>$f = 140Hz$ , $T_J = 25^\circ C$ | 39   | --   | --   | dB      |
| Dropout Voltage          | $V_D$        |                                                              | --   | 1.7  | --   | V       |
| Quiescent Current        | $I_Q$        | $T_J = 25^\circ C$                                           | --   | --   | 6.0  | mA      |
| Quiescent Current Change | $\Delta I_Q$ | $V_I = -11V$ to $-23V$                                       | --   | --   | 1.5  | mA      |
|                          |              | $I_O = 1mA$ to $40mA$                                        | --   | --   | 0.1  | mA      |
| Output Noise Voltage     | $V_N$        | $10Hz \leq f \leq 100kHz$ , $T_J = 25^\circ C$               | --   | 190  | --   | $\mu V$ |



# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### PJ78L09SQ Electrical Characteristics

$V_I = -15V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq 125^\circ C$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ , unless otherwise specified.

| Parameter                | Symbol       | Test Conditions                                                                  | Min. | Typ. | Max. | Unit    |
|--------------------------|--------------|----------------------------------------------------------------------------------|------|------|------|---------|
| Output Voltage           | $-V_O$       | $T_J = 25^\circ C$                                                               | 8.64 | 9.0  | 9.36 | V       |
| Line Regulation          | $\Delta V_O$ | $V_I = 12.5V$ to $24V$ , $T_J = 25^\circ C$                                      | --   | 27   | 200  | mV      |
| Load Regulation          | $\Delta V_O$ | $I_O = 1mA$ to $100mA$ , $T_J = 25^\circ C$                                      | --   | 12   | 90   | mV      |
| Ripple Rejection         | RR           | $V_I = 12V$ to $22V$ ,<br>$f = 150Hz$ , $T_J = 25^\circ C$ , $e_{in} = 1V_{p-p}$ | 38   | 67   | --   | dB      |
| Dropout Voltage          | $V_D$        |                                                                                  | --   | 1.7  | --   | V       |
| Quiescent Current        | $I_Q$        | $T_J = 25^\circ C$                                                               | --   | --   | 6.0  | mA      |
| Quiescent Current Change | $\Delta I_Q$ | $V_I = 12V$ to $22V$                                                             | --   | --   | 1.5  | mA      |
|                          |              | $I_O = 1mA$ to $40mA$                                                            | --   | --   | 0.1  | mA      |
| Output Noise Voltage     | $V_N$        | $10Hz \leq f \leq 100kHz$ , $T_J = 25^\circ C$                                   | --   | 210  | --   | $\mu V$ |



# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### PJ78L12SQ Electrical Characteristics

$V_I = -19V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq 125^\circ C$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ , unless otherwise specified.

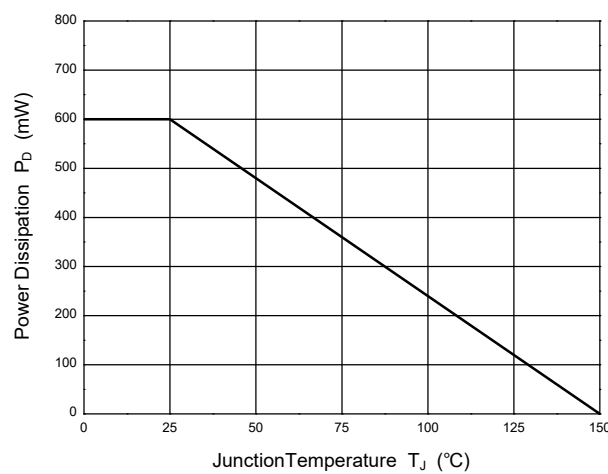
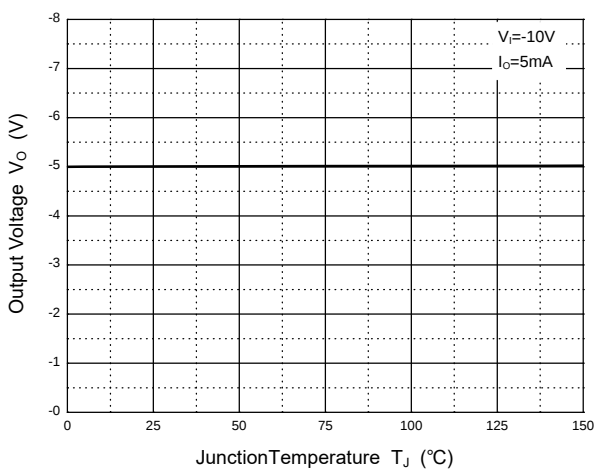
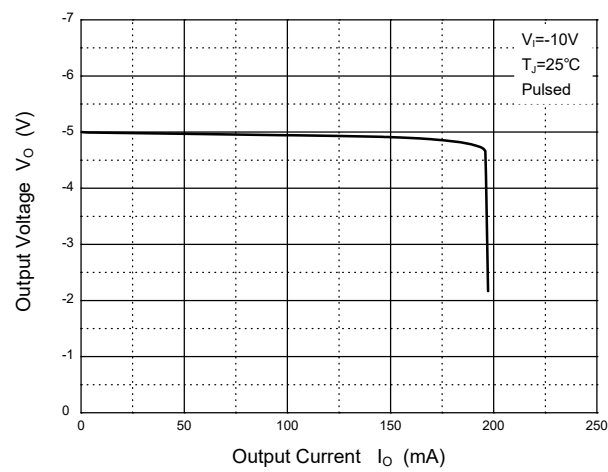
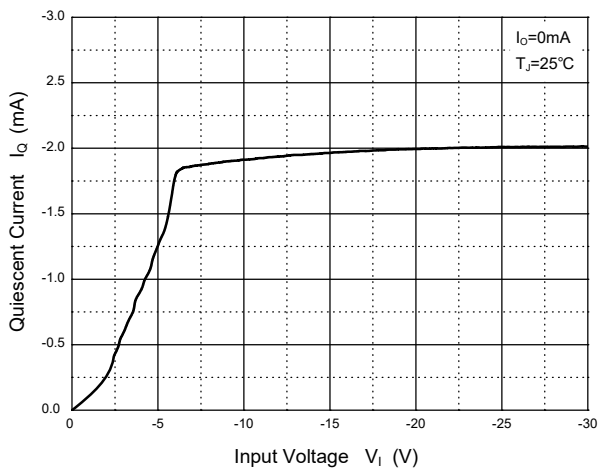
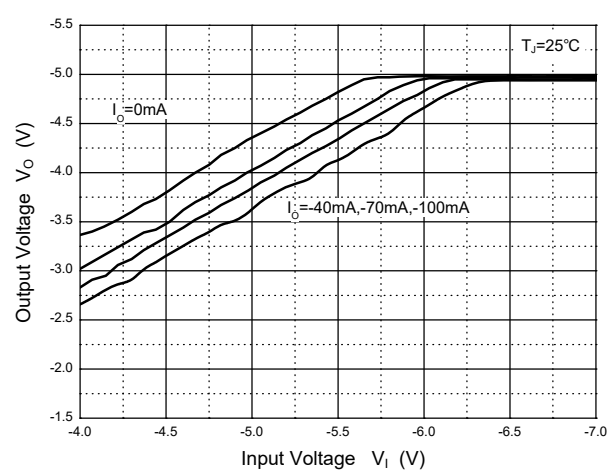
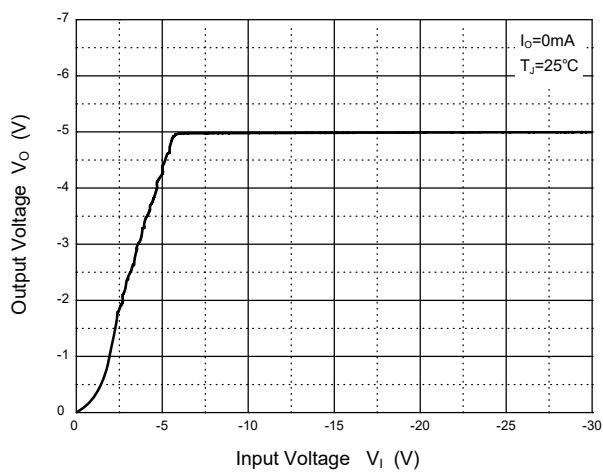
| Parameter                | Symbol       | Test Conditions                                            | Min. | Typ. | Max. | Unit    |
|--------------------------|--------------|------------------------------------------------------------|------|------|------|---------|
| Output Voltage           | $-V_O$       | $T_J = 25^\circ C$                                         | 11.5 | 12   | 12.5 | V       |
| Line Regulation          | $\Delta V_O$ | $V_I = 14.5V$ to $27V$ , $T_J = 25^\circ C$                | --   | --   | 250  | mV      |
| Load Regulation          | $\Delta V_O$ | $I_O = 1mA$ to $100mA$ , $T_J = 25^\circ C$                | --   | --   | 100  | mV      |
| Ripple Rejection         | RR           | $V_I = 15V$ to $25V$ ,<br>$f = 120Hz$ , $T_J = 25^\circ C$ | 36   | --   | --   | dB      |
| Dropout Voltage          | $V_D$        |                                                            | --   | 1.7  | --   | V       |
| Quiescent Current        | $I_Q$        | $T_J = 25^\circ C$                                         | --   | --   | 6.0  | mA      |
| Quiescent Current Change | $\Delta I_Q$ | $V_I = 15V$ to $25V$                                       | --   | --   | 1.5  | mA      |
|                          |              | $I_O = 1mA$ to $40mA$                                      | --   | --   | 0.1  | mA      |
| Output Noise Voltage     | $V_N$        | $10Hz \leq f \leq 100kHz$ , $T_J = 25^\circ C$             | --   | 290  | --   | $\mu V$ |



# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### Typical Characteristic Curves(PJ79L05SQ)





# PJ79LxxSQ

## 3-Terminal Voltage Regulators

### Package Outline

SOT-89

Dimensions in mm

