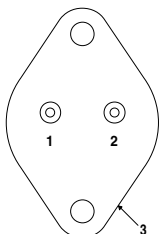
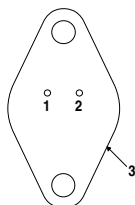


## 1.5 AMP NEGATIVE VOLTAGE REGULATOR



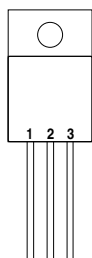
Pin 1 – Ground  
Pin 2 –  $V_{OUT}$   
Case –  $V_{IN}$

**K Package – TO-3**



Pin 1 – Ground  
Pin 2 –  $V_{OUT}$   
Case –  $V_{IN}$

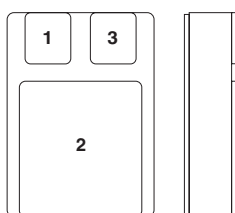
**R Package – TO-66**



Pin 1 – Ground  
Pin 2 –  $V_{IN}$   
Pin 3 –  $V_{OUT}$   
Case –  $V_{IN}$

**TO-257  
TO-220**

Isolated Case Option on  
IG Package



Pin 1 – Ground  
Pin 2 –  $V_{IN}$   
Pin 3 –  $V_{OUT}$

**SMD Packages**

Ceramic Surface Mount

### FEATURES

- **OUTPUT VOLTAGE OF -5V, -12V and -15V**
- **0.7% / V LINE REGULATION AVAILABLE**
- **0.5% / A LOAD REGULATION AVAILABLE**
- **THERMAL OVERLOAD PROTECTION**
- **SHORT CIRCUIT PROTECTION**
- **OUTPUT TRANSISTOR SOA PROTECTION**
- **1.0% VOLTAGE TOLERANCE OPTION ('A' VERSIONS)**

### DESCRIPTION

The IP120 / LM120 / IP7900 / LM7900 series of 3 terminal regulators is available with several fixed output voltage making them useful in a wide range of applications.

The 'A' suffix devices provide 0.7% / V line regulation, 0.5% / A load regulation and  $\pm 1.0\%$  output voltage tolerance at room temperature.

Protection features include Safe Operating Area current limiting and thermal shutdown.

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

|           |                                      |                    |
|-----------|--------------------------------------|--------------------|
| $V_I$     | DC Input Voltage                     | 35V                |
| $P_D$     | Power Dissipation                    | Internally limited |
| $T_j$     | Operating Junction Temperature Range | -55 to 150°C       |
| $T_{stg}$ | Storage Temperature                  | -65 to 150°C       |

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| Parameter                                             |                                | Test Conditions                                                               |                                                                           | IP/LM 7905A Series<br>IP/LM 120A Series |      |       | IP/LM 7905 Series<br>IP/LM 120 Series |      |      | Units      |    |
|-------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------|------|-------|---------------------------------------|------|------|------------|----|
|                                                       |                                |                                                                               |                                                                           | Min.                                    | Typ. | Max.  | Min.                                  | Typ. | Max. |            |    |
| V <sub>O</sub>                                        | Output Voltage                 | I <sub>O</sub> = 500mA                                                        | V <sub>IN</sub> = -10V                                                    | -4.95                                   | -5   | -5.05 | -4.9                                  | -5   | -5.1 | V          |    |
|                                                       |                                | I <sub>O</sub> = 5mA to I <sub>MAX</sub><br>P <sub>D</sub> ≤ P <sub>MAX</sub> | V <sub>IN</sub> = -7.5V to -20V<br>T <sub>J</sub> = -55 to 150°C          | -4.85                                   |      | -5.15 | -4.8                                  |      | -5.2 |            |    |
| ΔV <sub>O</sub>                                       | Line Regulation                | I <sub>O</sub> = 0.5 I <sub>MAX</sub>                                         | V <sub>IN</sub> = -7V to -25V                                             |                                         | 3    | 10    |                                       | 3    | 25   | mV         |    |
|                                                       |                                |                                                                               | V <sub>IN</sub> = -7.5V to -20V<br>T <sub>J</sub> = -55 to 150°C          |                                         | 3    | 10    |                                       | 3    | 50   |            |    |
|                                                       |                                | V <sub>IN</sub> = -8V to -12V                                                 |                                                                           |                                         | 1.0  | 4     |                                       | 1.0  | 25   |            |    |
|                                                       |                                | I <sub>O</sub> ≤ I <sub>MAX</sub>                                             | T <sub>J</sub> = -55 to 150°C                                             |                                         | 1.0  | 12    |                                       | 2    | 50   |            |    |
| ΔV <sub>O</sub>                                       | Load Regulation                | V <sub>IN</sub> = -10V                                                        | I <sub>O</sub> = 5mA to 1.5A                                              |                                         | 25   | 35    |                                       | 25   | 100  | mV         |    |
|                                                       |                                |                                                                               | I <sub>O</sub> = 5mA to I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C |                                         | 25   | 35    |                                       | 25   | 100  |            |    |
|                                                       |                                |                                                                               |                                                                           |                                         |      |       |                                       |      |      |            |    |
| I <sub>Q</sub>                                        | Quiescent Current              | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub><br>V <sub>IN</sub> = -10V               |                                                                           |                                         | 1.0  | 1.9   |                                       | 1.0  | 1.9  | mA         |    |
|                                                       |                                | T <sub>J</sub> = -55 to 150°C                                                 |                                                                           |                                         | 1.0  | 2     |                                       | 1.0  | 2    |            |    |
| ΔI <sub>Q</sub>                                       | Quiescent Current<br>Change    | I <sub>O</sub> = 5mA to I <sub>MAX</sub><br>V <sub>IN</sub> = -10V            |                                                                           |                                         | 0.2  | 0.4   |                                       | 0.2  | 0.4  | mA         |    |
|                                                       |                                | T <sub>J</sub> = -55 to 150°C                                                 |                                                                           |                                         | 0.2  | 0.5   |                                       | 0.2  | 0.5  |            |    |
| V <sub>N</sub>                                        | Output Noise<br>Voltage        | f = 10Hz to 100kHz<br>V <sub>IN</sub> = -10V                                  |                                                                           |                                         | 100  |       |                                       | 100  |      | μV         |    |
| $\frac{\Delta V_{IN}}{\Delta V_O}$                    | Ripple Rejection               | f = 120Hz                                                                     | I <sub>O</sub> ≤ I <sub>MAX</sub>                                         | 58                                      |      |       |                                       | 54   |      |            | dB |
|                                                       |                                | V <sub>IN</sub> = -8V to -18V                                                 | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C    | 58                                      |      |       |                                       | 54   |      |            |    |
| Dropout Voltage                                       |                                | I <sub>O</sub> = I <sub>MAX</sub>                                             |                                                                           |                                         | 1.4  |       |                                       | 1.4  |      | V          |    |
| R <sub>O</sub>                                        | Output Resistance              | f = 1.0 kHz                                                                   |                                                                           |                                         | 5    |       |                                       | 5    |      | mΩ         |    |
| I <sub>sc</sub>                                       | Short Circuit<br>Current       | V <sub>IN</sub> = -35V                                                        |                                                                           |                                         | 0.6  | 1.2   |                                       | 0.6  | 1.2  | A          |    |
| I <sub>pk</sub>                                       | Peak Output<br>Current Average | V <sub>IN</sub> = -10V                                                        |                                                                           |                                         | 2.4  | 3.3   |                                       | 2.4  | 3.3  |            |    |
| Temperature<br>Coefficient of V <sub>O</sub>          |                                | I <sub>O</sub> = 5mA                                                          |                                                                           |                                         | 0.2  |       |                                       | 0.2  |      | mV<br>/ °C |    |
| Input Voltage required to<br>maintain line regulation |                                | I <sub>O</sub> ≤ I <sub>MAX</sub>                                             |                                                                           |                                         | -7.3 |       |                                       | -7.3 |      | V          |    |

1) All characteristics are measured with a capacitor across the input of  $2.2\mu\text{F}$  and a capacitor across the output of  $1.0\mu\text{F}$ .

All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ( $t_p \leq 10\text{ms}$ ,  $\delta \leq 5\%$ ). Output voltage changes due to changes in internal temperature must be taken into account separately.

2) Test Conditions unless otherwise stated:  $P_{MAX} = 10\text{W}$  for SMD,  $P_{MAX} = 20\text{W}$  for all other package devices

$$I_{MAX} = 1.0\text{A}, T_J = 25^\circ\text{C}$$

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| Parameter                                             | Test Conditions                                                                                                |                                                                        | IP/LM 7912A Series<br>IP/LM120A–12 Series                       |      |        | IP/LM 7912 Series<br>IP/LM120–12 Series |        |        | Units  |        |       |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------|------|--------|-----------------------------------------|--------|--------|--------|--------|-------|
|                                                       |                                                                                                                |                                                                        | Min.                                                            | Typ. | Max.   | Min.                                    | Typ.   | Max.   |        |        |       |
| V <sub>O</sub> Output Voltage                         | I <sub>O</sub> = 500mA            V <sub>IN</sub> = -19V                                                       |                                                                        | -11.88                                                          | -12  | -12.12 | -11.76                                  | -12    | -12.24 | V      |        |       |
|                                                       | V <sub>IN</sub> = -14.8V to -27V   P <sub>D</sub> ≤ P <sub>MAX</sub>                                           |                                                                        | -11.64                                                          |      | -12.36 |                                         | 11.52  |        |        | -12.48 |       |
|                                                       | I <sub>O</sub> = 5mA to I <sub>MAX</sub> T <sub>J</sub> = -55 to 150°C                                         |                                                                        |                                                                 |      |        |                                         |        |        |        |        |       |
| V <sub>O</sub> Low Supply                             | I <sub>O</sub> = 5mA to I <sub>MAX</sub> P <sub>D</sub> ≤ P <sub>MAX</sub><br>V <sub>IN</sub> = -14.5V to -27V |                                                                        | -11.40                                                          |      | -12.36 |                                         | -11.40 |        | -12.60 |        | V     |
| ΔV <sub>O</sub> Line Regulation                       | I <sub>O</sub> = 0.5 I <sub>MAX</sub>                                                                          | V <sub>IN</sub> = -14.5V to -30V                                       | 4                                                               |      | 18     |                                         | 4      |        | 120    |        | mV    |
|                                                       |                                                                                                                | V <sub>IN</sub> = -14.8V to -27V<br>T <sub>J</sub> = -55 to 150°C      | 4                                                               |      | 18     |                                         | 4      |        | 200    |        |       |
|                                                       | I <sub>O</sub> ≤ I <sub>MAX</sub>                                                                              |                                                                        | 1.0                                                             |      | 4      |                                         | 1.0    |        | 25     |        |       |
|                                                       | V <sub>IN</sub> = -16V to -22V    T <sub>J</sub> = -55 to 150°C                                                |                                                                        | 2                                                               |      | 9      |                                         | 2      |        | 60     |        |       |
| ΔV <sub>O</sub> Load Regulation                       | V <sub>IN</sub> = -19V                                                                                         | I <sub>O</sub> = 5mA to 1.5A                                           | 12                                                              |      | 32     |                                         | 12     |        | 80     |        | mV    |
|                                                       |                                                                                                                | I <sub>O</sub> = 250mA to 750mA                                        | 4                                                               |      | 19     |                                         | 4      |        | 60     |        |       |
|                                                       | V <sub>IN</sub> = -19V            I <sub>O</sub> = 5mA to I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C    |                                                                        | 8                                                               |      | 60     |                                         | 8      |        | 120    |        |       |
| I <sub>Q</sub> Quiescent Current                      | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub>                                                                          |                                                                        | 0.2                                                             |      | 0.4    |                                         | 0.2    |        | 0.4    |        | mA    |
|                                                       | V <sub>IN</sub> = -19V                                                                                         | T <sub>J</sub> = -55 to 150°C                                          | 1.0                                                             |      | 2      |                                         | 1.0    |        | 2      |        |       |
| ΔI <sub>Q</sub> Quiescent Current<br>Change           | I <sub>O</sub> = 5mA to I <sub>MAX</sub>                                                                       |                                                                        | 0.2                                                             |      | 0.4    |                                         | 0.2    |        | 0.4    |        | mA    |
|                                                       | V <sub>IN</sub> = -19V                                                                                         | T <sub>J</sub> = -55 to 150°C                                          | 0.2                                                             |      | 0.5    |                                         | 0.2    |        | 0.5    |        |       |
|                                                       |                                                                                                                | V <sub>IN</sub> = -14.5V to -30V                                       |                                                                 | 0.1  |        | 0.4                                     |        | 0.1    |        | 0.4    |       |
|                                                       | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub>                                                                          |                                                                        | V <sub>IN</sub> = -15V to -30V<br>T <sub>J</sub> = -55 to 150°C |      | 0.1    |                                         | 0.5    |        | 0.1    |        |       |
| V <sub>N</sub> Output Noise<br>Voltage                | f = 10Hz to 100kHz<br>V <sub>IN</sub> = -19V                                                                   |                                                                        | 75                                                              |      | 960    |                                         | 75     |        | 960    |        | μV    |
| $\frac{\Delta V_{IN}}{\Delta V_O}$ Ripple Rejection   | f = 120Hz                                                                                                      | I <sub>O</sub> ≤ I <sub>MAX</sub>                                      | 58                                                              | 72   |        |                                         | 56     | 72     |        |        | dB    |
|                                                       | V <sub>IN</sub> = -15V to -25V                                                                                 | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C | 58                                                              | 72   |        |                                         | 56     | 72     |        |        |       |
| Dropout Voltage                                       | I <sub>O</sub> = I <sub>MAX</sub>                                                                              |                                                                        | 1.1                                                             |      | 2.3    |                                         | 1.1    |        | 2.3    |        | V     |
| R <sub>O</sub> Output Resistance                      | f = 1.0 kHz                                                                                                    |                                                                        | 8                                                               |      |        |                                         | 8      |        |        |        | mΩ    |
| I <sub>sc</sub> Short Circuit<br>Current              | V <sub>IN</sub> = -35V                                                                                         |                                                                        | 0.6                                                             |      | 1.2    |                                         | 0.6    |        | 1.2    |        | A     |
| I <sub>pk</sub> Peak Output<br>Current                | V <sub>IN</sub> = -19V                                                                                         |                                                                        | 2.4                                                             |      | 3.3    |                                         | 2.4    |        | 3.3    |        |       |
| Average Temperature<br>Coefficient of V <sub>O</sub>  | I <sub>O</sub> = 5mA                                                                                           |                                                                        | 0.5                                                             |      | 4.8    |                                         | 0.5    |        | 4.8    |        | mV/°C |
| Input Voltage required to<br>maintain line regulation | I <sub>O</sub> ≤ I <sub>MAX</sub>                                                                              |                                                                        | -14.5                                                           |      |        |                                         | -14.5  |        |        |        | V     |

1) All characteristics are measured with a capacitor across the input of  $2.2\mu\text{F}$  and a capacitor across the output of  $1.0\mu\text{F}$ .

All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ( $t_p \leq 10\text{ms}$ ,  $\delta \leq 5\%$ ). Output voltage changes due to changes in internal temperature must be taken into account separately.

2) Test Conditions unless otherwise stated:  $P_{MAX} = 10\text{W}$  for SMD,  $P_{MAX} = 20\text{W}$  for all other package devices,  $I_{MAX} = 1.0\text{A}$ ,  $T_J = 25^\circ\text{C}$

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Document Number 3725

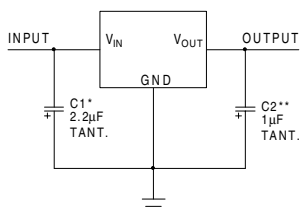
Issue 2

| Parameter                                             | Test Conditions                                                                                                | IP/LM 7915A Series<br>IP/LM120A-15 Series                                 |                |                | IP/LM 7915 Series<br>IP/LM120-15 Series |                |        | Units |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------|----------------|-----------------------------------------|----------------|--------|-------|
|                                                       |                                                                                                                | Min.                                                                      | Typ.           | Max.           | Min.                                    | Typ.           | Max.   |       |
| V <sub>O</sub> Output Voltage                         | I <sub>O</sub> = 500mA            V <sub>IN</sub> = -23V                                                       | -14.85                                                                    | -15            | -15.15         | -14.7                                   | -15            | -15.3  | V     |
|                                                       | V <sub>IN</sub> = -17.9V to -30V   P <sub>D</sub> ≤ P <sub>MAX</sub>                                           | -14.55                                                                    |                | -15.45         | -14.4                                   |                | -15.6  |       |
|                                                       | I <sub>O</sub> = 5mA to I <sub>MAX</sub> T <sub>J</sub> = -55 to 150°C                                         |                                                                           |                |                |                                         |                |        |       |
| V <sub>O</sub> Low Supply                             | I <sub>O</sub> = 5mA to I <sub>MAX</sub> P <sub>D</sub> ≤ P <sub>MAX</sub><br>V <sub>IN</sub> = -17.5V to -30V | -14.25                                                                    |                | -15.45         | -14.25                                  |                | -15.75 | V     |
| ΔV <sub>O</sub> Line Regulation                       | I <sub>O</sub> = 0.5 I <sub>MAX</sub>                                                                          | V <sub>IN</sub> = -17.5V to -30V                                          |                |                | 4        150                            |                |        | mV    |
|                                                       |                                                                                                                | V <sub>IN</sub> = -17.9V to -30V<br>T <sub>J</sub> = -55 to 150°C         |                |                | 4        250                            |                |        |       |
|                                                       | I <sub>O</sub> ≤ I <sub>MAX</sub>                                                                              |                                                                           | 2        10    |                | 2        75                             |                |        |       |
|                                                       | V <sub>IN</sub> = -20V to -26V    T <sub>J</sub> = -55 to 150°C                                                |                                                                           | 5        30    |                | 5        150                            |                |        |       |
| ΔV <sub>O</sub> Load Regulation                       | V <sub>IN</sub> = -23V                                                                                         | I <sub>O</sub> = 5mA to 1.5A                                              |                |                | 12        80                            |                |        | mV    |
|                                                       |                                                                                                                | I <sub>O</sub> = 250mA to 750mA                                           |                |                | 4        75                             |                |        |       |
|                                                       | V <sub>IN</sub> = -23V                                                                                         | I <sub>O</sub> = 5mA to I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C |                |                | 9        150                            |                |        |       |
|                                                       |                                                                                                                |                                                                           |                |                | 9        150                            |                |        |       |
| I <sub>Q</sub> Quiescent Current                      | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub>                                                                          |                                                                           | 1.0        1.9 |                | 1.0        1.9                          |                | mA     |       |
|                                                       | V <sub>IN</sub> = -23V                                                                                         | T <sub>J</sub> = -55 to 150°C                                             |                | 1.0        2   |                                         | 1.0        2   |        |       |
| ΔI <sub>Q</sub> Quiescent Current<br>Change           | I <sub>O</sub> = 5mA to I <sub>MAX</sub>                                                                       |                                                                           | 0.2        0.4 |                | 0.2        0.4                          |                | mA     |       |
|                                                       | V <sub>IN</sub> = -23V                                                                                         | T <sub>J</sub> = -55 to 150°C                                             |                | 0.2        0.5 |                                         | 0.2        0.5 |        |       |
|                                                       |                                                                                                                |                                                                           |                | 0.1        0.4 |                                         | 0.1        0.4 |        |       |
|                                                       | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub>                                                                          | V <sub>IN</sub> = -17.5V to -30V                                          |                | 0.1        0.5 |                                         | 0.1        1.0 |        |       |
|                                                       |                                                                                                                | V <sub>IN</sub> = -18.5V to -30V<br>T <sub>J</sub> = -55 to 150°C         |                |                |                                         |                |        |       |
| V <sub>N</sub> Output Noise<br>Voltage                | f = 10Hz to 100kHz<br>V <sub>IN</sub> = -23V                                                                   |                                                                           | 90        1200 |                | 90        1200                          |                | μV     |       |
| $\frac{\Delta V_{IN}}{\Delta V_O}$ Ripple Rejection   | f = 120Hz                                                                                                      | I <sub>O</sub> ≤ I <sub>MAX</sub>                                         |                | 56        70   |                                         | 54        70   |        | dB    |
|                                                       | V <sub>IN</sub> = -18.5V to<br>-28.5V                                                                          | I <sub>O</sub> ≤ 0.5 I <sub>MAX</sub><br>T <sub>J</sub> = -55 to 150°C    |                | 56        70   |                                         | 54        70   |        |       |
| Dropout Voltage                                       | I <sub>O</sub> = I <sub>MAX</sub>                                                                              |                                                                           | 1.1        2.3 |                | 1.1        2.3                          |                | V      |       |
| R <sub>O</sub> Output Resistance                      | f = 1.0 kHz                                                                                                    |                                                                           | 9              |                | 9                                       |                | mΩ     |       |
| I <sub>sc</sub> Short Circuit<br>Current              | V <sub>IN</sub> = -35V                                                                                         |                                                                           | 0.6        1.2 |                | 0.6        1.2                          |                | A      |       |
| I <sub>pk</sub> Peak Output<br>Current                | V <sub>IN</sub> = -23V                                                                                         |                                                                           | 2.4        3.3 |                | 2.4        3.3                          |                |        |       |
| Average Temperature<br>Coefficient of V <sub>O</sub>  | I <sub>O</sub> = 5mA                                                                                           |                                                                           | 0.6        6   |                | 0.6        6                            |                | mV/°C  |       |
| Input Voltage required to<br>maintain line regulation | I <sub>O</sub> ≤ I <sub>MAX</sub>                                                                              |                                                                           | -17.5          |                | -17.5                                   |                | V      |       |

- 1) All characteristics are measured with a capacitor across the input of 2.2μF and a capacitor across the output of 1.0μF.  
All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques (t<sub>p</sub> ≤ 10ms, δ ≤ 5%). Output voltage changes due to changes in internal temperature must be taken into account separately.
- 2) Test Conditions unless otherwise stated: P<sub>MAX</sub> = 10W for SMD, P<sub>MAX</sub> = 20W for all other package devices, I<sub>MAX</sub> = 1.0A, T<sub>J</sub> = 25°C

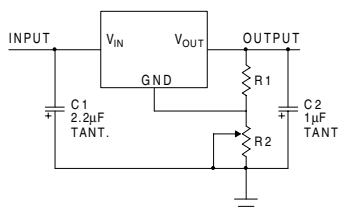
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## APPLICATIONS INFORMATION



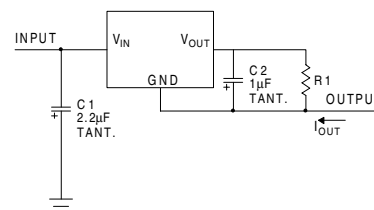
**Fixed Output Regulator**

- \* Required if the regulator is located far from the power supply.  
\*\* Required for stability. 25µF electrolytic may be substituted.



**Adjustable Output Regulator**

$$V_{OUT} \approx V_{REG} \frac{(R1+R2)}{R1}$$



**Current Regulator**

$$I_{OUT} = \frac{V_{REG}}{R1} + I_Q$$

## Order Information

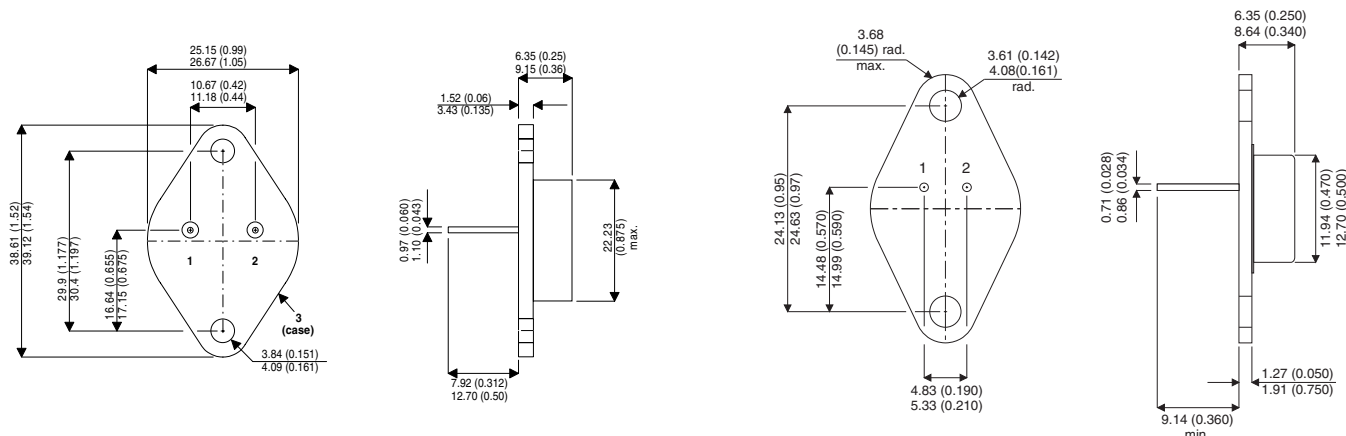
| Part Number | K-Pack<br>(TO-3) | R-Pack<br>(TO-66) | G/IG-Pack<br>(TO-257) | 220M-Pack<br>(TO-220) | SMD<br>(SMD1) | SMD-05<br>(SMD 0.5) |
|-------------|------------------|-------------------|-----------------------|-----------------------|---------------|---------------------|
| IP7905      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| IP7912      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| IP7915      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| IP120-05    | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| IP120-12    | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| IP 120-15   | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM7905      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM7912      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM7915      | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM120-05    | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM120-12    | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |
| LM120-15    | ✓                | ✓                 | ✓                     | ✓                     | ✓             | ✓                   |

## Order Information

### Note:

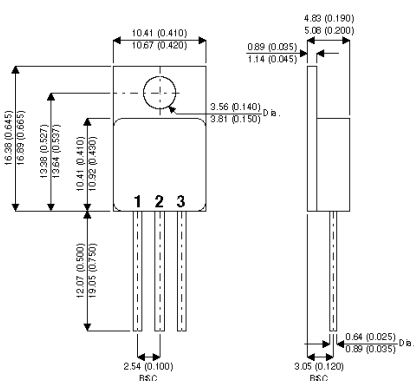
To order, add the package identifier to the part number.  
eg. IP7905AK  
LM120SMD-05

## MECHANICAL INFORMATION



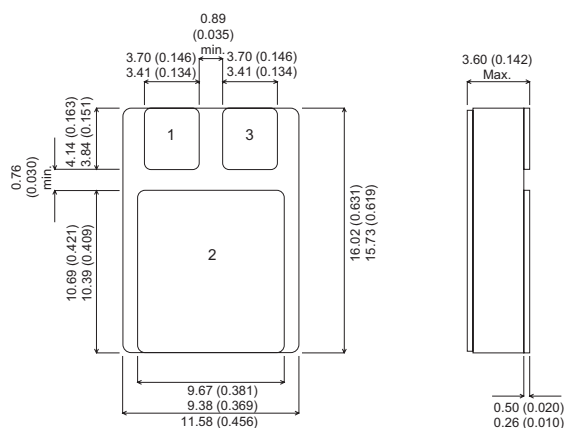
**K-Package  
(TO-3)**

**R-Package  
(TO-66)**



**G/IG-Package  
(TO-257)**

**220M-Package  
(TO-220)**



**SMD  
(SMD 1)**

**SMD-05  
(SMD 0.5)**

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