

[L78M05T]

**Recommended Operating Conditions** at  $T_a=25^\circ\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings     | Unit |
|----------------|-----------|------------|-------------|------|
| Input voltage  | $V_{IN}$  |            | 7.5 to 20.0 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500    | mA   |

**Operating Characteristics** at  $T_a=25^\circ\text{C}$ ,  $V_{IN}=10\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                   | Ratings |     |      | Unit          |
|--------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|---------|-----|------|---------------|
|                                      |                      |                                                                                                              | min     | typ | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^\circ\text{C}$                                                                                       | 4.8     | 5.0 | 5.2  | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^\circ\text{C}$ , $7\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 3.0 | 50   | mV            |
|                                      |                      | $T_j=25^\circ\text{C}$ , $8\text{V} \leq V_{IN} \leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 1.0 | 25   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                         |         |     | 100  | mV            |
|                                      |                      | $T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                         |         |     | 50   | mV            |
| Output voltage                       | $V_{OUT}$            | $7\text{V} \leq V_{IN} \leq 20\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                        | 4.75    |     | 5.25 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^\circ\text{C}$                                                                                       |         | 4.5 | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $8\text{V} \leq V_{IN} \leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                                             |         |     | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                  |         |     | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                      |         | 40  |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $8\text{V} \leq V_{IN} \leq 19\text{V}$ , $T_j=25^\circ\text{C}$ , $I_{OUT}=100\text{mA}$ | 62      |     |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $8\text{V} \leq V_{IN} \leq 19\text{V}$ , $T_j=25^\circ\text{C}$ , $I_{OUT}=300\text{mA}$ | 62      | 80  |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                       |         | 2.0 |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^\circ\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                        |         | 300 |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^\circ\text{C}$                                                                                       |         | 0.7 |      | A             |

[L78M06T]

**Recommended Operating Conditions** at  $T_a=25^\circ\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings   | Unit |
|----------------|-----------|------------|-----------|------|
| Input voltage  | $V_{IN}$  |            | 8.5 to 21 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500  | mA   |

**Operating Characteristics** at  $T_a=25^\circ\text{C}$ ,  $V_{IN}=11\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                   | Ratings |     |      | Unit          |
|--------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|---------|-----|------|---------------|
|                                      |                      |                                                                                                              | min     | typ | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^\circ\text{C}$                                                                                       | 5.75    | 6.0 | 6.25 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^\circ\text{C}$ , $8\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 5.0 | 60   | mV            |
|                                      |                      | $T_j=25^\circ\text{C}$ , $9\text{V} \leq V_{IN} \leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 1.5 | 30   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                         |         |     | 120  | mV            |
|                                      |                      | $T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                         |         |     | 60   | mV            |
| Output voltage                       | $V_{OUT}$            | $8\text{V} \leq V_{IN} \leq 21\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                        | 5.7     |     | 6.3  | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^\circ\text{C}$                                                                                       |         | 4.5 | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $9\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                                             |         |     | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                  |         |     | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                      |         | 45  |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $9\text{V} \leq V_{IN} \leq 20\text{V}$ , $T_j=25^\circ\text{C}$ , $I_{OUT}=100\text{mA}$ | 59      |     |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $9\text{V} \leq V_{IN} \leq 20\text{V}$ , $T_j=25^\circ\text{C}$ , $I_{OUT}=300\text{mA}$ | 59      | 80  |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                       |         | 2.0 |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^\circ\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                        |         | 300 |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^\circ\text{C}$                                                                                       |         | 0.7 |      | A             |

[L78M07T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings   | Unit |
|----------------|-----------|------------|-----------|------|
| Input voltage  | $V_{IN}$  |            | 9.5 to 22 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500  | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=12\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                    | Ratings |     |      | Unit          |
|--------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|---------|-----|------|---------------|
|                                      |                      |                                                                                                               | min     | typ | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                      | 6.72    | 7.0 | 7.28 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $9\text{V}\leq V_{IN}\leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                     |         | 6.0 | 60   | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $10\text{V}\leq V_{IN}\leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 2.0 | 30   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA}\leq I_{OUT}\leq 500\text{mA}$                                          |         |     | 140  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA}\leq I_{OUT}\leq 200\text{mA}$                                          |         |     | 70   | mV            |
| Output voltage                       | $V_{OUT}$            | $9\text{V}\leq V_{IN}\leq 22\text{V}$ , $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$                             | 6.6     |     | 7.4  | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                      |         | 4.6 | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $10\text{V}\leq V_{IN}\leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                                               |         |     | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$                                                                     |         |     | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz}\leq f\leq 100\text{kHz}$                                                                         |         | 48  |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $10\text{V}\leq V_{IN}\leq 21\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 58      |     |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $10\text{V}\leq V_{IN}\leq 21\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 58      | 80  |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                        |         | 2.0 |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                       |         | 300 |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                      |         | 0.7 |      | A             |

[L78M08T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings    | Unit |
|----------------|-----------|------------|------------|------|
| Input voltage  | $V_{IN}$  |            | 10.5 to 23 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500   | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=15\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |     |     | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|-----|-----|---------------|
|                                      |                      |                                                                                                                 | min     | typ | max |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 7.7     | 8.0 | 8.3 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $10.5\text{V}\leq V_{IN}\leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 6.0 | 60  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $11\text{V}\leq V_{IN}\leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                      |         | 2.0 | 30  | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA}\leq I_{OUT}\leq 500\text{mA}$                                            |         |     | 160 | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA}\leq I_{OUT}\leq 200\text{mA}$                                            |         |     | 80  | mV            |
| Output voltage                       | $V_{OUT}$            | $10.5\text{V}\leq V_{IN}\leq 23\text{V}$ , $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$                            | 7.6     |     | 8.4 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.6 | 6.0 | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $11\text{V}\leq V_{IN}\leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                                                 |         |     | 0.8 | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$                                                                       |         |     | 0.5 | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz}\leq f\leq 100\text{kHz}$                                                                           |         | 50  |     | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $11.5\text{V}\leq V_{IN}\leq 22\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 56      |     |     | dB            |
|                                      |                      | $f=120\text{Hz}$ , $11.5\text{V}\leq V_{IN}\leq 22\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 56      | 80  |     | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0 |     | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300 |     | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7 |     | A             |

[L78M09T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 12 to 25 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=16\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |     |     | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|-----|-----|---------------|
|                                      |                      |                                                                                                                 | min     | typ | max |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 8.6     | 9.0 | 9.4 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $11.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                  |         | 6.0 | 100 | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $12\text{V} \leq V_{IN} \leq 20\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 2.0 | 50  | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |     | 180 | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |     | 90  | mV            |
| Output voltage                       | $V_{OUT}$            | $11.5\text{V} \leq V_{IN} \leq 24\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                        | 8.5     |     | 9.5 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.6 | 6.0 | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $12.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                                             |         |     | 0.8 | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |     | 0.5 | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 60  |     | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $12\text{V} \leq V_{IN} \leq 23\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 56      |     |     | dB            |
|                                      |                      | $f=120\text{Hz}$ , $12\text{V} \leq V_{IN} \leq 23\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 56      | 80  |     | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0 |     | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300 |     | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7 |     | A             |

[L78M10T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 13 to 25 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=17\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |      |      | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                      |                      |                                                                                                                 | min     | typ  | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 9.6     | 10.0 | 10.4 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $12.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                  |         | 7.0  | 100  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $13\text{V} \leq V_{IN} \leq 22\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 2.0  | 50   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |      | 200  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |      | 100  | mV            |
| Output voltage                       | $V_{OUT}$            | $12.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                        | 9.5     |      | 10.5 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.6  | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $13.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                                             |         |      | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |      | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 65   |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $13\text{V} \leq V_{IN} \leq 25\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 55      |      |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $13\text{V} \leq V_{IN} \leq 25\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 55      | 80   |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0  |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300  |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7  |      | A             |

[L78M12T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 15 to 25 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=19\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |      |      | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                      |                      |                                                                                                                 | min     | typ  | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 11.5    | 12.0 | 12.5 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $14.5\text{V} \leq V_{IN} \leq 30\text{V}$ , $I_{OUT}=200\text{mA}$                  |         | 8.0  | 100  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $16\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 2.0  | 50   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |      | 240  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |      | 120  | mV            |
| Output voltage                       | $V_{OUT}$            | $14.5\text{V} \leq V_{IN} \leq 27\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                        | 11.4    |      | 12.6 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.8  | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $15\text{V} \leq V_{IN} \leq 30\text{V}$ , $I_{OUT}=200\text{mA}$                                               |         |      | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |      | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 75   |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $15\text{V} \leq V_{IN} \leq 25\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 55      |      |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $15\text{V} \leq V_{IN} \leq 25\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 55      | 80   |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0  |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300  |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7  |      | A             |

[L78M15T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 18 to 30 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=23\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                          | Ratings |      |       | Unit          |
|--------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------|---------|------|-------|---------------|
|                                      |                      |                                                                                                                     | min     | typ  | max   |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                            | 14.4    | 15.0 | 15.6  | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $17.5\text{V} \leq V_{IN} \leq 30\text{V}$ , $I_{OUT}=200\text{mA}$                      |         | 10.0 | 100   | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $19\text{V} \leq V_{IN} \leq 30\text{V}$ , $I_{OUT}=200\text{mA}$                        |         | 3.0  | 50    | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                              |         |      | 300   | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                              |         |      | 150   | mV            |
| Output voltage                       | $V_{OUT}$            | $17.5\text{V} \leq V_{IN} \leq 30\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                            | 14.25   |      | 15.75 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                            |         | 4.8  | 6.0   | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $17.5\text{V} \leq V_{IN} \leq 30\text{V}$ , $I_{OUT}=200\text{mA}$                                                 |         |      | 0.8   | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                         |         |      | 0.5   | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                             |         | 90   |       | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $18.5\text{V} \leq V_{IN} \leq 28.5\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 54      |      |       | dB            |
|                                      |                      | $f=120\text{Hz}$ , $18.5\text{V} \leq V_{IN} \leq 28.5\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 54      | 70   |       | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                              |         | 2.0  |       | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                             |         | 300  |       | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                            |         | 0.7  |       | A             |

[L78M18T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 21 to 33 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=27\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |      |      | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                      |                      |                                                                                                                 | min     | typ  | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 17.3    | 18.0 | 18.7 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $21\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 10.0 | 100  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $22\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 5.0  | 50   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |      | 360  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |      | 180  | mV            |
| Output voltage                       | $V_{OUT}$            | $21\text{V} \leq V_{IN} \leq 33\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                          | 17.1    |      | 18.9 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.9  | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $21\text{V} \leq V_{IN} \leq 33\text{V}$ , $I_{OUT}=200\text{mA}$                                               |         |      | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |      | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 100  |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $22\text{V} \leq V_{IN} \leq 33\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 53      |      |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $22\text{V} \leq V_{IN} \leq 33\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 53      | 70   |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0  |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300  |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7  |      | A             |

[L78M20T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 23 to 35 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=29\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |      |      | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                      |                      |                                                                                                                 | min     | typ  | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 19.2    | 20.0 | 20.8 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $23\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 10.0 | 100  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $24\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 5.0  | 50   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |      | 400  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |      | 200  | mV            |
| Output voltage                       | $V_{OUT}$            | $23\text{V} \leq V_{IN} \leq 35\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                          | 19.0    |      | 21.0 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 4.9  | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $23\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                                               |         |      | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |      | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 110  |      | $\mu\text{V}$ |
| Ripple rejection                     | Rrej                 | $f=120\text{Hz}$ , $24\text{V} \leq V_{IN} \leq 34\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 53      |      |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $24\text{V} \leq V_{IN} \leq 34\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 53      | 70   |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0  |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300  |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7  |      | A             |

[L78M24T]

**Recommended Operating Conditions** at  $T_a=25^{\circ}\text{C}$ 

| Parameter      | Symbol    | Conditions | Ratings  | Unit |
|----------------|-----------|------------|----------|------|
| Input voltage  | $V_{IN}$  |            | 27 to 35 | V    |
| Output current | $I_{OUT}$ |            | 5 to 500 | mA   |

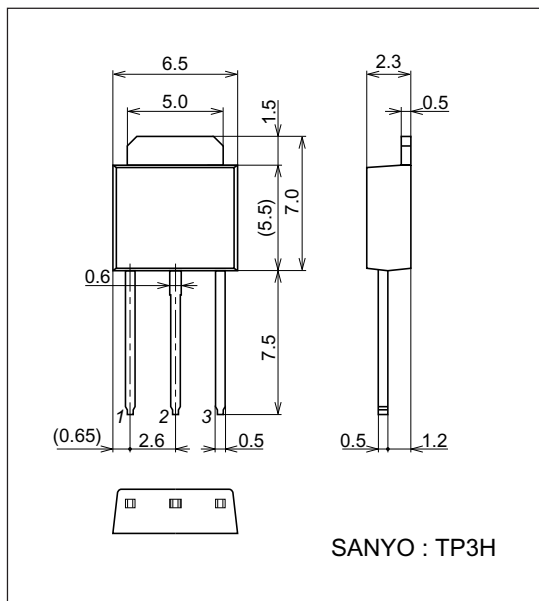
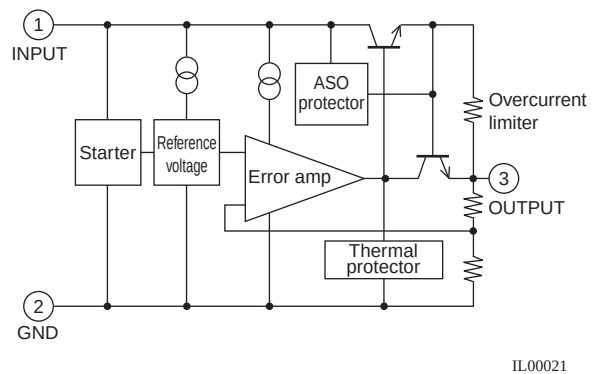
**Operating Characteristics** at  $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=33\text{V}$ ,  $I_{OUT}=350\text{mA}$ , See specified Test Circuit.

| Parameter                            | Symbol               | Conditions                                                                                                      | Ratings |      |      | Unit          |
|--------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                      |                      |                                                                                                                 | min     | typ  | max  |               |
| Output voltage                       | $V_{OUT}$            | $T_j=25^{\circ}\text{C}$                                                                                        | 23.0    | 24.0 | 25.0 | V             |
| Line regulation                      | $\Delta V_O$ line    | $T_j=25^{\circ}\text{C}$ , $27\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 10.0 | 100  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $28\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                    |         | 5.0  | 50   | mV            |
| Load regulation                      | $\Delta V_O$ load    | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$                                          |         |      | 480  | mV            |
|                                      |                      | $T_j=25^{\circ}\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$                                          |         |      | 240  | mV            |
| Output voltage                       | $V_{OUT}$            | $27\text{V} \leq V_{IN} \leq 35\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                          | 22.8    |      | 25.2 | V             |
| Current dissipation                  | $I_{CC}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 5.0  | 6.0  | mA            |
| Current dissipation variation (Line) | $\Delta I_{CC}$ line | $27\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$                                               |         |      | 0.8  | mA            |
| Current dissipation variation (Load) | $\Delta I_{CC}$ load | $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$                                                                     |         |      | 0.5  | mA            |
| Output noise voltage                 | $V_{NO}$             | $10\text{Hz} \leq f \leq 100\text{kHz}$                                                                         |         | 170  |      | $\mu\text{V}$ |
| Ripple rejection                     | $R_{rej}$            | $f=120\text{Hz}$ , $28\text{V} \leq V_{IN} \leq 35\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=100\text{mA}$ | 50      |      |      | dB            |
|                                      |                      | $f=120\text{Hz}$ , $28\text{V} \leq V_{IN} \leq 35\text{V}$ , $T_j=25^{\circ}\text{C}$ , $I_{OUT}=300\text{mA}$ | 50      | 70   |      | dB            |
| Minimum input-output voltage dropout | $V_{drop}$           | $I_{OUT}=350\text{mA}$                                                                                          |         | 2.0  |      | V             |
| Short current                        | $I_{OS}$             | $T_j=25^{\circ}\text{C}$ , $V_{IN}=35\text{V}$ , to GND                                                         |         | 300  |      | mA            |
| Peak output current                  | $I_{OP}$             | $T_j=25^{\circ}\text{C}$                                                                                        |         | 0.7  |      | A             |

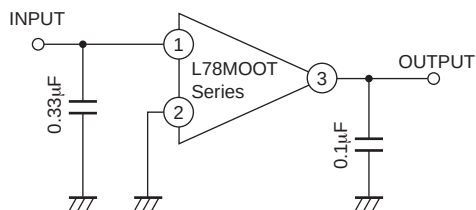
**Package Dimensions**

unit : mm

3110A

**Equivalent Circuit**

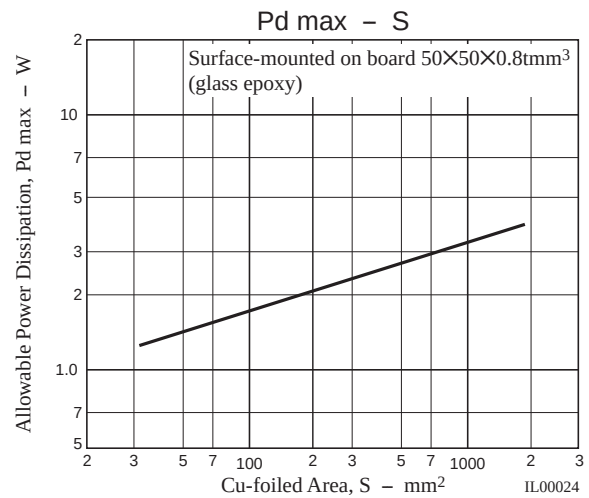
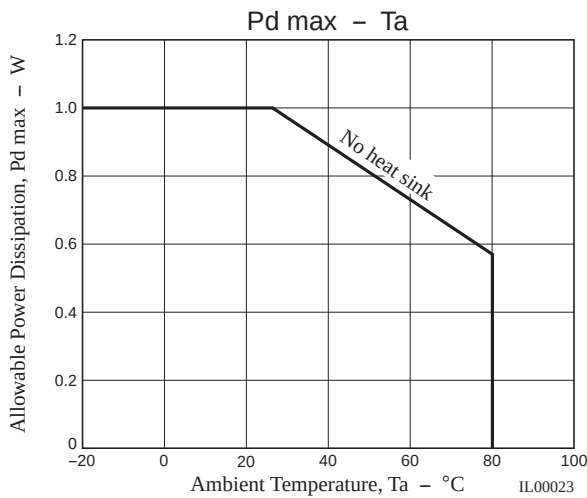
IL00021

**Specified Test Circuit** (Common to L78M00T series)

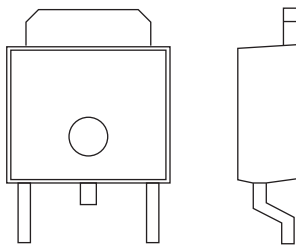
IL00022

The allowable power dissipation ( $P_d \text{ max}$ ) is 1.0W ( $T_a=25^\circ\text{C}$ ) with no fin attached. When the L78M00T series are surface-mounted on a hybrid IC board or printed circuit board, a high allowable power dissipation can be obtained, though they are placed in a small-sized package.

Shown below is the relationship between the Cu-foiled area and the allowable power dissipation when the L78M00T series are surface-mounted on a glass epoxy board ( $50\times 50\times 0.8\text{mm}^3$ ).

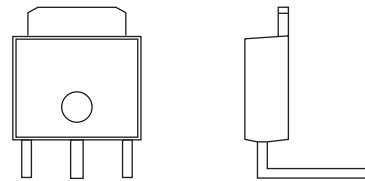


### Lead Formings



IL00025

FA formings



IL00026

LR formings

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