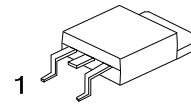


**78DXXAA****LINEAR INTEGRATED CIRCUIT****3-TERMINALS 1.5A POSITIVE  
VOLTAGE REGULATOR****■ DESCRIPTION**

The UTC **78DXXAA** family is monolithic fixed voltage regulator integrated circuit. They are suitable for applications that required supply current up to 1.5 A.

**■ FEATURES**

- \* Peak output current up to 1.5A.
- \* Fixed output voltage of 5V, 6V, 7V, 8V, 9V, 10V, 12V, 15V and 18V available.
- \* Thermal overload shutdown protection.
- \* Short circuit current limiting.
- \* Output transistor SOA protection.



TO-252

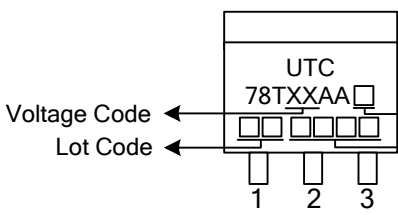
**■ ORDERING INFORMATION**

| Ordering Number |                | Package | Pin Assignment |   |   | Packing   |
|-----------------|----------------|---------|----------------|---|---|-----------|
| Lead Free       | Halogen Free   |         | 1              | 2 | 3 |           |
| 78DXXAAL-TN3-R  | 78DXXAAG-TN3-R | TO-252  | I              | G | O | Tape Reel |
| 78DXXAAL-TN3-T  | 78DXXAAG-TN3-T | TO-252  | I              | G | O | Tube      |

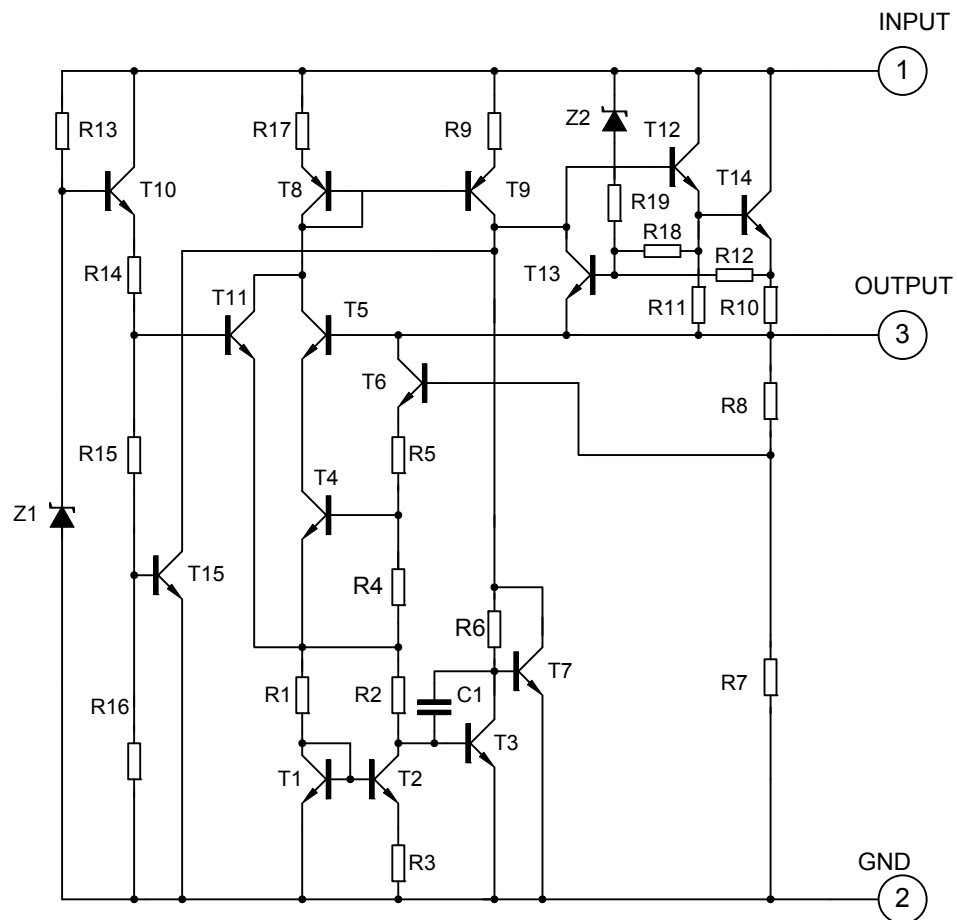
Note: Pin Code: I: Input G: GND O: Output

|  |                        |                                      |
|--|------------------------|--------------------------------------|
|  | (1)Packing Type        | (1) T: Tube, R: Tape Reel            |
|  | (2)Package Type        | (2) TN3: TO-252                      |
|  | (3)Lead Free           | (3) L: Lead Free, G: Halogen Free    |
|  | (4)Output Voltage Code | (4) XX: refer to Marking Information |

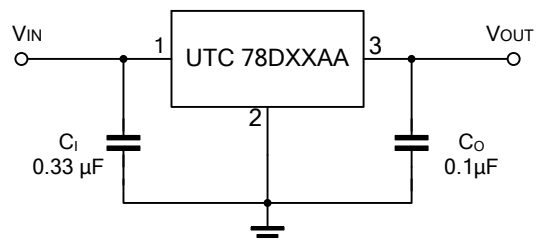
### MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | MARKING                                                                            |
|---------|--------------|------------------------------------------------------------------------------------|
| TO-252  | 05: 5V       |  |
|         | 06: 6V       |                                                                                    |
|         | 08: 8V       |                                                                                    |
|         | 09: 9V       |                                                                                    |
|         | 10: 10V      |                                                                                    |
|         | 12: 12V      |                                                                                    |
|         | 15: 15V      |                                                                                    |
|         | 18: 18V      | L: Lead Free<br>G: Halogen Free<br>Date Code                                       |

### BLOCK DIAGRAM



### APPLICATION CIRCUIT



Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

### ■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                      | SYMBOL    | RATINGS    | UNIT               |
|------------------------------------------------|-----------|------------|--------------------|
| Input Voltage                                  | $V_{IN}$  | 35         | V                  |
| Output Current                                 | $I_{OUT}$ | 1.5        | A                  |
| Power Dissipation ( $T_C=25^{\circ}\text{C}$ ) | $P_D$     | 10         | W                  |
| Junction Temperature                           | $T_J$     | +150       | $^{\circ}\text{C}$ |
| Operating Temperature                          | $T_{OPR}$ | -40 ~ +85  | $^{\circ}\text{C}$ |
| Storage Temperature                            | $T_{STG}$ | -55 ~ +150 | $^{\circ}\text{C}$ |

Notes: 1. Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

2. The maximum steady state usable output current are dependent on input voltage, heat sinking, lead length of the package and copper pattern of PCB. The data are showed as electrical characteristics table represents pulse test conditions with junction temperatures specified at the initiation of test.

### ■ THERMAL DATA

| PARAMETER           | SYMBOL        | RATINGS | UNIT                 |
|---------------------|---------------|---------|----------------------|
| Junction to Ambient | $\theta_{JA}$ | 112     | $^{\circ}\text{C/W}$ |
| Junction to Case    | $\theta_{JC}$ | 12.5    | $^{\circ}\text{C/W}$ |

### ■ ELECTRICAL CHARACTERISTICS

( $T_J=25^{\circ}\text{C}$ ,  $C_I=0.33\mu\text{F}$ ,  $C_O=0.1\mu\text{F}$ ,  $P_D\leq 15\text{W}$ , unless otherwise specified)

For 78D05AA ( $V_{IN}=10\text{V}$ ,  $I_{OUT}=0.5\text{A}$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                                                    | MIN  | TYP  | MAX  | UNIT                         |
|--------------------------------------|---------------------------|--------------------------------------------------------------------|------|------|------|------------------------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5\text{mA}\sim 1.0\text{A}$                               | 4.80 | 5.0  | 5.20 | V                            |
|                                      |                           | $V_{IN}=7.5\sim 20\text{V}$ , $I_{OUT}=5\text{mA}\sim 1.0\text{A}$ | 4.75 |      | 5.25 | V                            |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5\text{mA}\sim 1.5\text{A}$                               |      |      | 50   | mV                           |
|                                      |                           | $I_{OUT}=0.25\text{A}\sim 0.75\text{A}$                            |      |      | 25   | mV                           |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=7\sim 25\text{V}$                                          |      |      | 50   | mV                           |
|                                      |                           | $V_{IN}=7.5\sim 20\text{V}$ , $I_{OUT}=1.0\text{A}$                |      |      | 50   | mV                           |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0\text{A}$                                          |      |      | 8.0  | mA                           |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=7.5\sim 20\text{V}$                                        |      |      | 1.0  | mA                           |
|                                      |                           | $I_{OUT}=5\text{mA}\sim 1.0\text{A}$                               |      |      | 0.5  | mA                           |
| Output Noise Voltage                 | eN                        | $10\text{Hz}\leq f\leq 100\text{kHz}$                              |      | 40   |      | $\mu\text{V}$                |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5\text{mA}$                                               |      | -0.6 |      | $\text{mV}/^{\circ}\text{C}$ |
| Ripple Rejection                     | RR                        | $V_{IN}=8\sim 18\text{V}$ , $f=120\text{Hz}$                       | 62   | 80   |      | dB                           |
| Peak Output Current                  | $I_{PEAK}$                |                                                                    |      | 1.8  |      | A                            |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35\text{V}$                                                |      | 250  |      | mA                           |
| Dropout Voltage                      | $V_D$                     |                                                                    |      | 2.0  |      | V                            |

## ■ ELECTRICAL CHARACTERISTICS(Cont.)

For 78D06AA ( $V_{IN}=11V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                             | MIN  | TYP  | MAX  | UNIT            |
|--------------------------------------|---------------------------|---------------------------------------------|------|------|------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                       | 5.76 | 6.0  | 6.24 | V               |
|                                      |                           | $V_{IN}=8.5\sim21V$ , $I_{OUT}=5mA\sim1.0A$ | 5.7  |      | 6.3  | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                       |      |      | 60   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                    |      |      | 30   | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=8\sim25V$                           |      |      | 60   | mV              |
|                                      |                           | $V_{IN}=8.5\sim21V$ , $I_{OUT}=1.0A$        |      |      | 60   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                          |      |      | 8.0  | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=8.5\sim21V$                         |      |      | 1.0  | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                       |      |      | 0.5  | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                     |      | 45   |      | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                               |      | -0.7 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=9\sim19V$ , $f=120Hz$               | 59   | 75   |      | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                             |      | 1.8  |      | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                |      | 250  |      | mA              |
| Dropout Voltage                      | $V_D$                     |                                             |      | 2.0  |      | V               |

For 78D07AA ( $V_{IN}=13V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                             | MIN  | TYP  | MAX  | UNIT            |
|--------------------------------------|---------------------------|---------------------------------------------|------|------|------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                       | 6.72 | 7.0  | 7.28 | V               |
|                                      |                           | $V_{IN}=9.5\sim22V$ , $I_{OUT}=5mA\sim1.0A$ | 6.65 |      | 7.35 | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                       |      |      | 70   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                    |      |      | 35   | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=9\sim25V$                           |      |      | 70   | mV              |
|                                      |                           | $V_{IN}=9.5\sim22V$ , $I_{OUT}=1.0A$        |      |      | 70   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                          |      |      | 8.0  | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=9.5\sim22V$                         |      |      | 1.0  | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                       |      |      | 0.5  | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                     |      | 50   |      | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                               |      | -0.8 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=10\sim20V$ , $f=120Hz$              | 59   | 75   |      | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                             |      | 1.7  |      | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                |      | 250  |      | mA              |
| Dropout Voltage                      | $V_D$                     |                                             |      | 2.0  |      | V               |

For 78D08AA ( $V_{IN}=14V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                              | MIN  | TYP  | MAX  | UNIT            |
|--------------------------------------|---------------------------|----------------------------------------------|------|------|------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                        | 7.68 | 8.0  | 8.32 | V               |
|                                      |                           | $V_{IN}=10.5\sim23V$ , $I_{OUT}=5mA\sim1.0A$ | 7.6  |      | 8.4  | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                        |      |      | 80   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                     |      |      | 40   | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=10.5\sim25V$                         |      |      | 80   | mV              |
|                                      |                           | $V_{IN}=10.5\sim23V$ , $I_{OUT}=1.0A$        |      |      | 80   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                           |      |      | 8.0  | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=10.5\sim23V$                         |      |      | 1.0  | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                        |      |      | 0.5  | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                      |      | 58   |      | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                                |      | -0.9 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=11.5\sim21.5V$ , $f=120Hz$           | 56   | 72   |      | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                              |      | 1.8  |      | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                 |      | 250  |      | mA              |
| Dropout Voltage                      | $V_D$                     |                                              |      | 2.0  |      | V               |

## ■ ELECTRICAL CHARACTERISTICS(Cont.)

For 78D09AA ( $V_{IN}=15V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                              | MIN  | TYP  | MAX  | UNIT            |
|--------------------------------------|---------------------------|----------------------------------------------|------|------|------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                        | 8.64 | 9.0  | 9.36 | V               |
|                                      |                           | $V_{IN}=11.5\sim24V$ , $I_{OUT}=5mA\sim1.0A$ | 8.55 |      | 9.45 | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                        |      |      | 90   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                     |      |      | 45   | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=11.5\sim25V$                         |      |      | 90   | mV              |
|                                      |                           | $V_{IN}=11.5\sim24V$ , $I_{OUT}=1.0A$        |      |      | 90   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                           |      |      | 8.0  | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=11.5\sim24V$                         |      |      | 1.0  | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                        |      |      | 0.5  | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                      |      | 58   |      | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                                |      | -1.1 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=12.5\sim22.5V$ , $f=120Hz$           | 56   | 72   |      | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                              |      | 1.8  |      | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                 |      | 250  |      | mA              |
| Dropout Voltage                      | $V_D$                     |                                              |      | 2.0  |      | V               |

For 78D10AA ( $V_{IN}=16V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                              | MIN  | TYP  | MAX   | UNIT            |
|--------------------------------------|---------------------------|----------------------------------------------|------|------|-------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                        | 9.60 | 10.0 | 10.40 | V               |
|                                      |                           | $V_{IN}=12.5\sim25V$ , $I_{OUT}=5mA\sim1.0A$ | 9.5  |      | 10.5  | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                        |      |      | 100   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                     |      |      | 50    | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=13\sim25V$                           |      |      | 100   | mV              |
|                                      |                           | $V_{IN}=13\sim25V$ , $I_{OUT}=1.0A$          |      |      | 100   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                           |      |      | 8.0   | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=12.6V\sim25V$                        |      |      | 1.0   | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                        |      |      | 0.5   | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                      |      | 58   |       | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                                |      | -1.1 |       | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=13\sim23V$ , $f=120Hz$               | 56   | 72   |       | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                              |      | 1.8  |       | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                 |      | 250  |       | mA              |
| Dropout Voltage                      | $V_D$                     |                                              |      | 2.0  |       | V               |

For 78D12AA ( $V_{IN}=19V$ ,  $I_{OUT}=0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                              | MIN   | TYP  | MAX   | UNIT            |
|--------------------------------------|---------------------------|----------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT}=5mA\sim1.0A$                        | 11.52 | 12.0 | 12.48 | V               |
|                                      |                           | $V_{IN}=14.5\sim27V$ , $I_{OUT}=5mA\sim1.0A$ | 11.4  |      | 12.6  | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT}=5mA\sim1.5A$                        |       |      | 120   | mV              |
|                                      |                           | $I_{OUT}=0.25A\sim0.75A$                     |       |      | 60    | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN}=14.5\sim30V$                         |       |      | 120   | mV              |
|                                      |                           | $V_{IN}=14.6\sim27V$ , $I_{OUT}=1.0A$        |       |      | 120   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT}\leq 1.0A$                           |       |      | 8.0   | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN}=14.5\sim30V$                         |       |      | 1.0   | mA              |
|                                      |                           | $I_{OUT}=5mA\sim1.0A$                        |       |      | 0.5   | mA              |
| Output Noise Voltage                 | eN                        | $10Hz\leq f\leq 100kHz$                      |       | 75   |       | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT}=5mA$                                |       | -1.5 |       | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN}=15\sim25V$ , $f=120Hz$               | 55    | 72   |       | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                              |       | 1.8  |       | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN}=35V$                                 |       | 250  |       | mA              |
| Dropout Voltage                      | $V_D$                     |                                              |       | 2.0  |       | V               |

## ■ ELECTRICAL CHARACTERISTICS(Cont.)

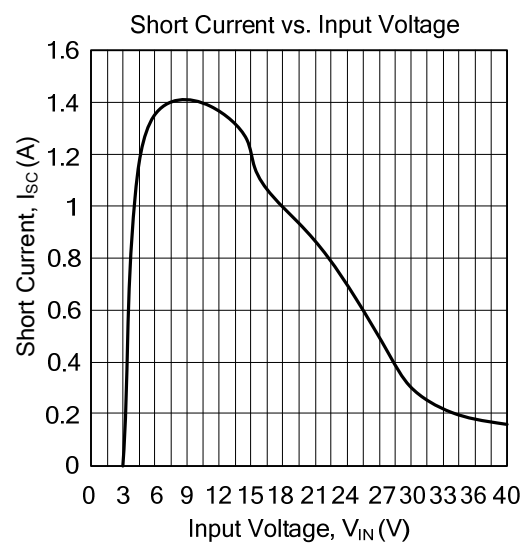
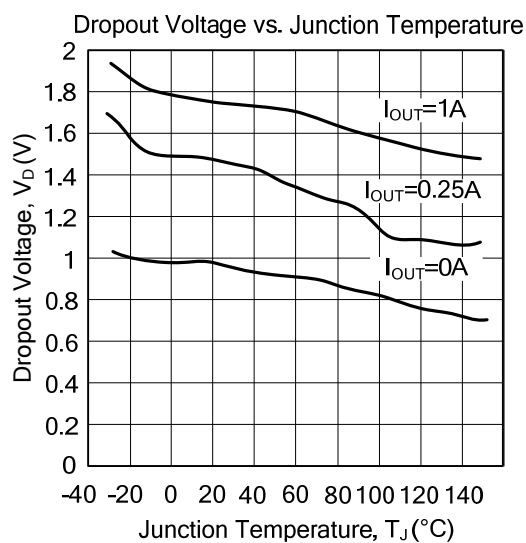
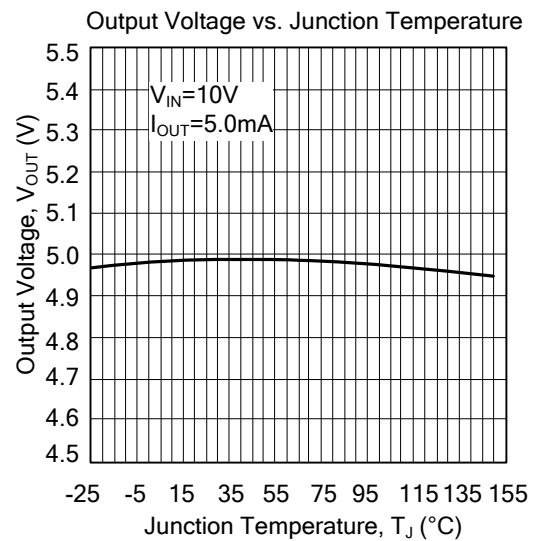
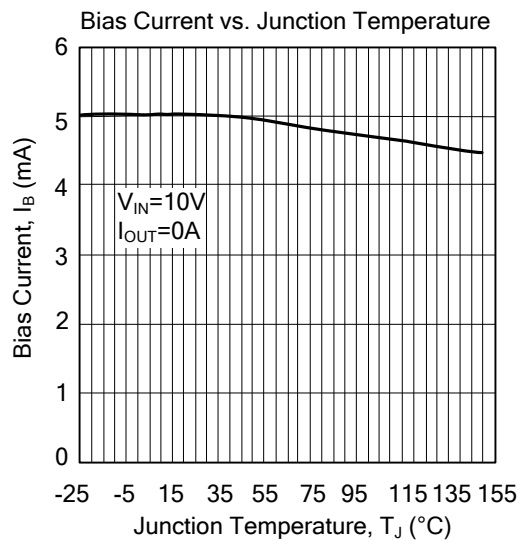
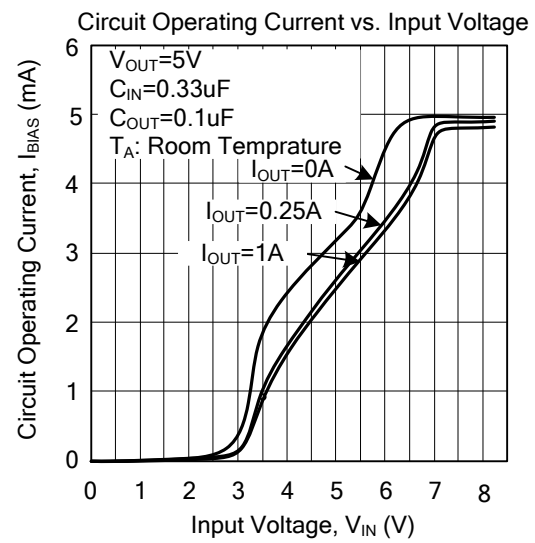
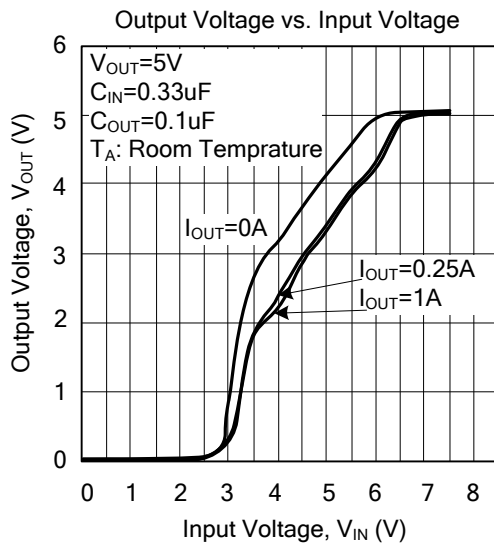
For 78D15AA ( $V_{IN} = 23V$ ,  $I_{OUT} = 0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                                      | MIN   | TYP  | MAX   | UNIT            |
|--------------------------------------|---------------------------|------------------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT} = 5mA \sim 1.0A$                            | 14.40 | 15.0 | 15.6  | V               |
|                                      |                           | $V_{IN} = 17.5 \sim 30V$ , $I_{OUT} = 5mA \sim 1.0A$ | 14.25 |      | 15.75 | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT} = 5mA \sim 1.5A$                            |       |      | 150   | mV              |
|                                      |                           | $I_{OUT} = 0.25A \sim 0.75A$                         |       |      | 75    | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN} = 18.5 \sim 30V$                             |       |      | 150   | mV              |
|                                      |                           | $V_{IN} = 17.7 \sim 30V$ , $I_{OUT} = 1.0A$          |       |      | 150   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT} \leq 1.0A$                                  |       |      | 8.0   | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN} = 17.5 \sim 30V$                             |       |      | 1.0   | mA              |
|                                      |                           | $I_{OUT} = 5mA \sim 1.0A$                            |       |      | 0.5   | mA              |
| Output Noise Voltage                 | eN                        | $10Hz \leq f \leq 100kHz$                            |       | 90   |       | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT} = 5mA$                                      |       | -1.8 |       | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN} = 18.5 \sim 28.5V$ , $f = 120Hz$             | 54    | 70   |       | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                                      |       | 1.8  |       | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN} = 35V$                                       |       | 250  |       | mA              |
| Dropout Voltage                      | $V_D$                     |                                                      |       | 2.0  |       | V               |

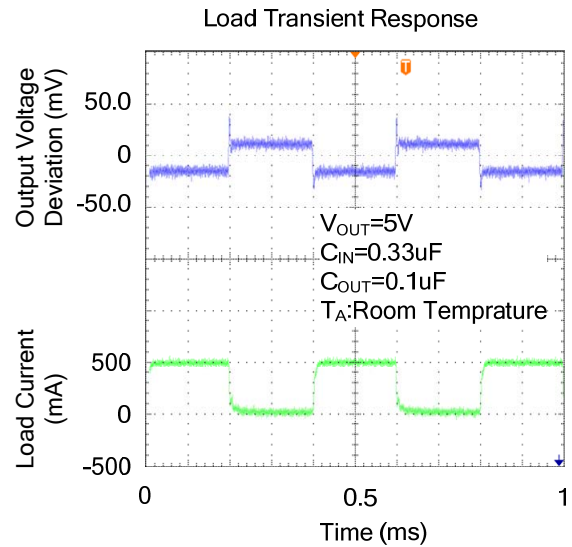
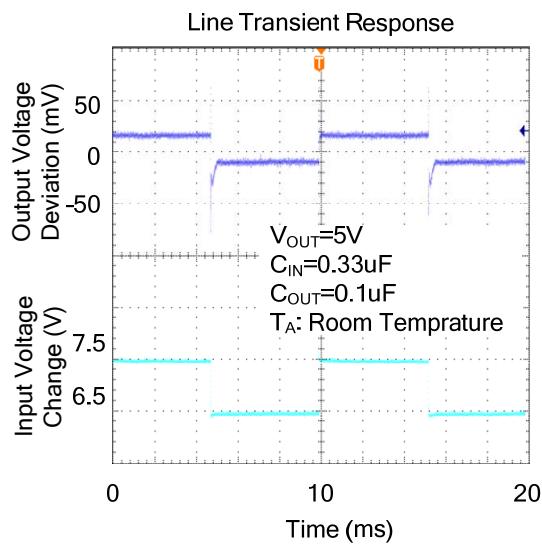
For 78D18AA ( $V_{IN} = 27V$ ,  $I_{OUT} = 0.5A$ )

| PARAMETER                            | SYMBOL                    | TEST CONDITIONS                                    | MIN   | TYP  | MAX   | UNIT            |
|--------------------------------------|---------------------------|----------------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                       | $V_{OUT}$                 | $I_{OUT} = 5mA \sim 1.0A$                          | 17.28 | 18.0 | 18.72 | V               |
|                                      |                           | $V_{IN} = 21 \sim 33V$ , $I_{OUT} = 5mA \sim 1.0A$ | 17.1  |      | 18.9  | V               |
| Load Regulation                      | $\Delta V_{OUT}$          | $I_{OUT} = 5mA \sim 1.5A$                          |       |      | 180   | mV              |
|                                      |                           | $I_{OUT} = 0.25A \sim 0.75A$                       |       |      | 90    | mV              |
| Line Regulation                      | $\Delta V_{OUT}$          | $V_{IN} = 21 \sim 33V$                             |       |      | 180   | mV              |
|                                      |                           | $V_{IN} = 21 \sim 33V$ , $I_{OUT} = 1.0A$          |       |      | 180   | mV              |
| Quiescent Current                    | $I_Q$                     | $I_{OUT} \leq 1.0A$                                |       |      | 8.0   | mA              |
| Quiescent Current Change             | $\Delta I_Q$              | $V_{IN} = 21.5 \sim 33V$                           |       |      | 1.0   | mA              |
|                                      |                           | $I_{OUT} = 5mA \sim 1.0A$                          |       |      | 0.5   | mA              |
| Output Noise Voltage                 | eN                        | $10Hz \leq f \leq 100kHz$                          |       | 110  |       | $\mu V$         |
| Temperature coefficient of $V_{OUT}$ | $\Delta V_{OUT}/\Delta T$ | $I_{OUT} = 5mA$                                    |       | -2.2 |       | mV/ $^{\circ}C$ |
| Ripple Rejection                     | RR                        | $V_{IN} = 22 \sim 32V$ , $f = 120Hz$               | 53    | 69   |       | dB              |
| Peak Output Current                  | $I_{PEAK}$                |                                                    |       | 1.8  |       | A               |
| Short-Circuit Current                | $I_{SC}$                  | $V_{IN} = 35V$                                     |       | 250  |       | mA              |
| Dropout Voltage                      | $V_D$                     |                                                    |       | 2.0  |       | V               |

## ■ TYPICAL CHARACTERISTICS



# ■ TYPICAL CHARACTERISTICS(Cont.)



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