

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## TLV760XXDBZR-MS

Product specification

描述

TLV760XXDBZR-MS 是一款采用 CMOS 技术的低压差线性稳压器。最高耐压可达 30V，有几种固定输出电压值，输出范围为 2.8V~5.0V，具有较低的静态功耗，广泛用于各类音频、视频设备和通信等设备的供电。

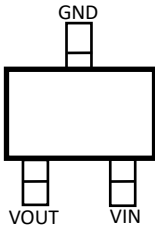
主要特点

- 低功耗
- 输入输出电压差低
- 温度漂移系数小
- 最高工作电压可达 30V
- 静态电流 1.5  $\mu$ A
- 输出电压精度：±2%
- 高输出电流： 100mA

典型应用

- 各类电源设备
- 通信设备
- 音频、视频设备

引脚描述和标记

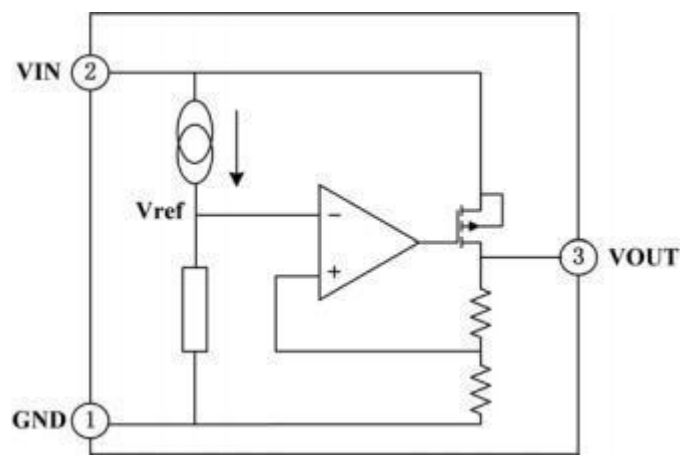
| SOT-23                                                                              | 引脚说明                                                                                  |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |

| TLV76028DBZR-MS | TLV76030DBZR-MS | TLV76033DBZR-MS | TLV76036DBZR-MS |
|-----------------|-----------------|-----------------|-----------------|
| •18G            | •18J            | •18H            | •18L            |
| TLV76040DBZR-MS | TLV76044DBZR-MS | TLV76050DBZR-MS |                 |
| •18D            | •18E            | •18I            |                 |

输出电压选型

| 型号              | 输出电压 | 封装类型   |
|-----------------|------|--------|
| TLV76028DBZR-MS | 2.8V | SOT-23 |
| TLV76030DBZR-MS | 3.0V |        |
| TLV76033DBZR-MS | 3.3V |        |
| TLV76036DBZR-MS | 3.6V |        |
| TLV76040DBZR-MS | 4.0V |        |
| TLV76044DBZR-MS | 4.4V |        |
| TLV76050DBZR-MS | 5.0V |        |

电路功能框图



最大额定值

| 参数说明 | 符号        | 数值范围     | 单位 |
|------|-----------|----------|----|
| 工作电压 | $V_{IN}$  | -0.3~+30 | V  |
| 贮存温度 | $T_{STG}$ | -50~+125 | °C |
| 工作温度 | $T_A$     | -40~+85  | °C |

**注意:** 如果器件运行条件超过上述各项最大额定值，可能对器件造成永久性损坏。上述参数仅是运行条件的极大值，我们不建议器件在该规范范围外运行。如果器件长时间工作在绝对最大极限条件下，其稳定性可能会受到影响。

散热信息

| 参数说明 | 符号            | 数值范围 | 单位   |
|------|---------------|------|------|
| 热阻   | $\theta_{JA}$ | 200  | °C/W |
| 功耗   | $P_D$         | 500  | mW   |

直流电特性 (除特别说明外， $T_A = \pm 25^\circ\text{C}$ )

输出型号 TLV76028DBZR-MS

| 参数说明  | 符号                                               | 测试条件                                                                                        | 最小值   | 典型值  | 最大值   | 单位                    |
|-------|--------------------------------------------------|---------------------------------------------------------------------------------------------|-------|------|-------|-----------------------|
| 输出电压  | $V_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                               | 2.744 | 2.80 | 2.856 | V                     |
| 输出电流  | $I_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$                                                                       | 70    | 100  | —     | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                 | $V_{IN}=V_{OUT}+2.0V$ , $1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                          | —     | 25   | 60    | mV                    |
| 低压差   | $V_{DIF}$                                        | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                 | —     | 30   | 100   | mV                    |
| 静态电流  | $I_{SS}$                                         | 无负载                                                                                         | —     | 1.5  | 3.0   | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} * \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ , $I_{OUT}=1\text{mA}$                                  | —     | —    | 0.2   | %/V                   |
| 输入电压  | $V_{IN}$                                         | —                                                                                           | —     | —    | 24    | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} * V_{OUT}$    | $V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ , $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ | —     | 100  | —     | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ ，固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ 。

输出型号 TLV76030DBZR-MS

| 参数说明  | 符号                                               | 测试条件                                                                                               | 最小值  | 典型值  | 最大值  | 单位                    |
|-------|--------------------------------------------------|----------------------------------------------------------------------------------------------------|------|------|------|-----------------------|
| 输出电压  | $V_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                                      | 2.94 | 3.00 | 3.06 | V                     |
| 输出电流  | $I_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$                                                                              | 70   | 100  | —    | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                 | $V_{IN}=V_{OUT}+2.0V$ , $1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                                 | —    | 25   | 60   | mV                    |
| 低压差   | $V_{DIF}$                                        | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                        | —    | 30   | 100  | mV                    |
| 静态电流  | $I_{SS}$                                         | 无负载                                                                                                | —    | 1.5  | 3.0  | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} * \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ , $I_{OUT}=1\text{mA}$                                         | —    | —    | 0.2  | %/V                   |
| 输入电压  | $V_{IN}$                                         | —                                                                                                  | —    | —    | 24   | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} * V_{OUT}$    | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ , $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ | —    | 100  | —    | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ ，固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ 。

直流电特性 (除特别说明外,  $T_A = \pm 25^\circ\text{C}$ )

输出型号 TLV76033DBZR-MS

| 参数说明  | 符号                                               | 测试条件                                                                                                  | 最小值   | 典型值  | 最大值   | 单位                    |
|-------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------|------|-------|-----------------------|
| 输出电压  | $V_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                                         | 3.234 | 3.30 | 3.366 | V                     |
| 输出电流  | $I_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$                                                                                 | 70    | 100  | —     | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                 | $V_{IN}=V_{OUT}+2.0V$<br>$1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                                   | —     | 25   | 60    | mV                    |
| 低压差   | $V_{DIF}$                                        | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                           | —     | 25   | 55    | mV                    |
| 静态电流  | $I_{SS}$                                         | 无负载                                                                                                   | —     | 1.5  | 3.0   | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} * \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ ,<br>$I_{OUT}=1\text{mA}$                                         | —     | —    | 0.2   | %/V                   |
| 输入电压  | $V_{IN}$                                         | —                                                                                                     | —     | —    | 24    | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} * V_{OUT}$    | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ ,<br>$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ | —     | 100  | —     | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ ，固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ 。

输出型号 TLV76036DBZR-MS

| 参数说明  | 符号                                               | 测试条件                                                                                | 最小值   | 典型值  | 最大值   | 单位                    |
|-------|--------------------------------------------------|-------------------------------------------------------------------------------------|-------|------|-------|-----------------------|
| 输出电压  | $V_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                       | 3.528 | 3.60 | 3.672 | V                     |
| 输出电流  | $I_{OUT}$                                        | $V_{IN}=V_{OUT}+2.0V$                                                               | 70    | 100  | —     | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                 | $V_{IN}=V_{OUT}+2.0V$<br>$1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                 | —     | 25   | 60    | mV                    |
| 低压差   | $V_{DIF}$                                        | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                         | —     | 25   | 55    | mV                    |
| 静态电流  | $I_{SS}$                                         | 无负载                                                                                 | —     | 1.5  | 3.0   | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} * \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ ,<br>$I_{OUT}=1\text{mA}$                       | —     | —    | 0.2   | %/V                   |
| 输入电压  | $V_{IN}$                                         | —                                                                                   | —     | —    | 24    | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} * V_{OUT}$    | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ ,<br>$\leq T_A \leq 85^\circ\text{C}$ | —     | 100  | —     | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ ，固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ 。

直流电特性 (除特别说明外,  $T_A = \pm 25^\circ\text{C}$ )

输出型号 TLV76040DBZR-MS

| 参数说明  | 符号                                                   | 测试条件                                                                                                  | 最小值  | 典型值 | 最大值  | 单位                    |
|-------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------|-----|------|-----------------------|
| 输出电压  | $V_{OUT}$                                            | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                                         | 3.92 | 4.0 | 4.08 | V                     |
| 输出电流  | $I_{OUT}$                                            | $V_{IN}=V_{OUT}+2.0V$                                                                                 | 70   | 100 | —    | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                     | $V_{IN}=V_{OUT}+2.0V$<br>$1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                                   | —    | 25  | 60   | mV                    |
| 低压差   | $V_{DIF}$                                            | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                           | —    | 25  | 55   | mV                    |
| 静态电流  | $I_{SS}$                                             | 无负载                                                                                                   | —    | 1.5 | 3.0  | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} \cdot \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ ,<br>$I_{OUT}=1\text{mA}$                                         | —    | —   | 0.2  | %/V                   |
| 输入电压  | $V_{IN}$                                             | —                                                                                                     | —    | —   | 24   | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} \cdot V_{OUT}$    | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ ,<br>$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ | —    | 100 | —    | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ , 固定负载条件下使输出电压下降 2%, 此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ .

输出型号 TLV76044DBZR-MS

| 参数说明  | 符号                                                   | 测试条件                                                                                                  | 最小值   | 典型值 | 最大值   | 单位                    |
|-------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------|-----|-------|-----------------------|
| 输出电压  | $V_{OUT}$                                            | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$                                                         | 4.312 | 4.4 | 4.488 | V                     |
| 输出电流  | $I_{OUT}$                                            | $V_{IN}=V_{OUT}+2.0V$                                                                                 | 70    | 100 | —     | mA                    |
| 负载调整率 | $\Delta V_{OUT}$                                     | $V_{IN}=V_{OUT}+2.0V$<br>$1\text{mA} \leq I_{OUT} \leq 50\text{mA}$                                   | —     | 25  | 60    | mV                    |
| 低压差   | $V_{DIF}$                                            | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                           | —     | 25  | 55    | mV                    |
| 静态电流  | $I_{SS}$                                             | 无负载                                                                                                   | —     | 1.5 | 3.0   | $\mu\text{A}$         |
| 线性调整率 | $\frac{\Delta V_{OUT}}{V_{OUT}} \cdot \Delta V_{IN}$ | $V_{OUT}+1.0V \leq V_{IN} \leq 24V$ ,<br>$I_{OUT}=1\text{mA}$                                         | —     | —   | 0.2   | %/V                   |
| 输入电压  | $V_{IN}$                                             | —                                                                                                     | —     | —   | 24    | V                     |
| 温度系数  | $\frac{\Delta V_{OUT}}{\Delta T_A} \cdot V_{OUT}$    | $V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ ,<br>$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ | —     | 100 | —     | ppm/ $^\circ\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0V$ , 固定负载条件下使输出电压下降 2%, 此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ .

直流电特性 (除特别说明外， $T_A = \pm 25^{\circ}\text{C}$ )

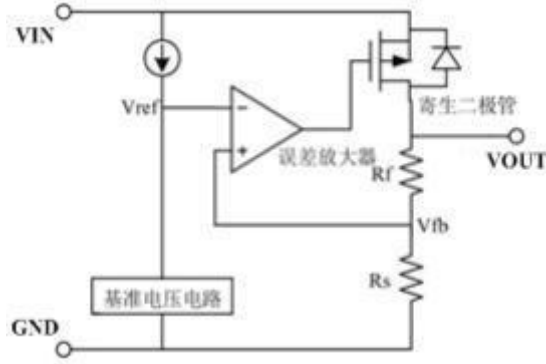
输出型号 TLV76050DBZR-MS

| 参数说明  | 符号                                       | 测试条件                                                                                                          | 最小值 | 典型值 | 最大值 | 单位                      |
|-------|------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----|-----|-----|-------------------------|
| 输出电压  | $V_{OUT}$                                | $V_{IN}=V_{OUT}+2.0\text{V}$ , $I_{OUT}=10\text{mA}$                                                          | 4.9 | 5.0 | 5.1 | V                       |
| 输出电流  | $I_{OUT}$                                | $V_{IN}=V_{OUT}+2.0\text{V}$                                                                                  | 100 | 150 | —   | mA                      |
| 负载调整率 | $\Delta V_{OUT}$                         | $V_{IN}=V_{OUT}+2.0\text{V}$<br>$1\text{mA} \leq I_{OUT} \leq 70\text{mA}$                                    | —   | 25  | 60  | mV                      |
| 低压差   | $V_{DIF}$                                | $I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$                                                                   | —   | 25  | 55  | mV                      |
| 静态电流  | $I_{SS}$                                 | 无负载                                                                                                           | —   | 1.5 | 3.0 | $\mu\text{A}$           |
| 线性调整率 | $\Delta V_{OUT}/V_{OUT} * \Delta V_{IN}$ | $V_{OUT}+1.0\text{V} \leq V_{IN} \leq 24\text{V}$ ,<br>$I_{OUT}=1\text{mA}$                                   | —   | —   | 0.2 | %/V                     |
| 输入电压  | $V_{IN}$                                 | —                                                                                                             | —   | —   | 24  | V                       |
| 温度系数  | $\Delta V_{OUT}/\Delta T_A * V_{OUT}$    | $V_{IN}=V_{OUT}+2.0\text{V}$ , $I_{OUT}=10\text{mA}$ , $-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$ | —   | 100 | —   | ppm/ $^{\circ}\text{C}$ |

注：当  $V_{IN}=V_{OUT}+2.0\text{V}$ ，固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值  $V_{DIF}$ 。

## 功能描述

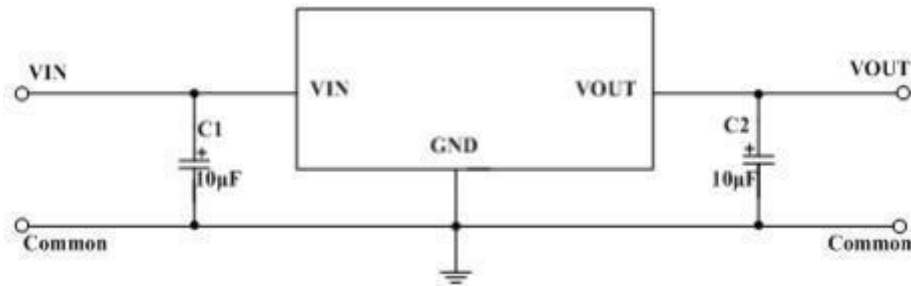
误差放大器根据反馈电阻  $R_s$  及  $R_f$  所构成的分压电阻的输入电压  $V_{fb}$  同基准电压 ( $V_{ref}$ ) 相比较。通过此误差放大器向输出晶体管提供必要的门极电压，而使输出电压不受输入电压或温度变化的影响而保持一定。



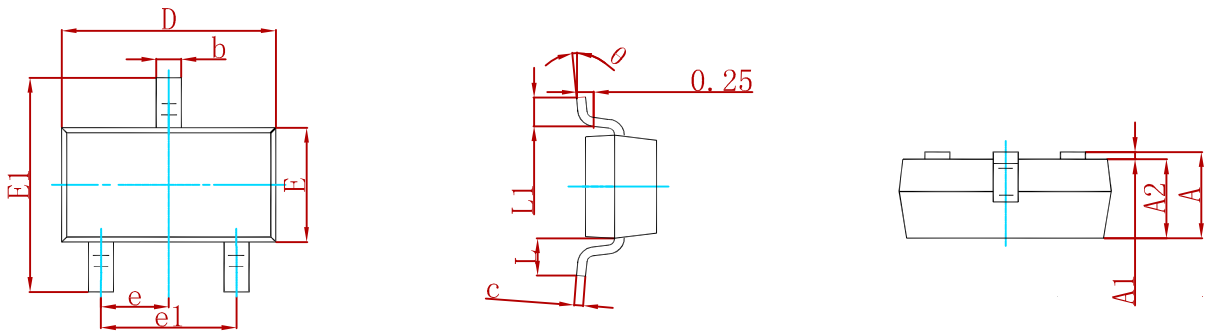
- 1、应用时尽量将电容接到 VIN 和 VOUT 脚位附近。
- 2、电路内部使用了相位补偿电路和利用输出电容的 ESR 来补偿。所以输出到地一定要接大于  $2.2\mu\text{F}$  的电容器，推荐使用钽电容。
- 3、注意输入输出电压、负载电流的使用条件，避免 IC 内部的功耗超出封装允许的最大功耗值。

## 典型应用线路图

### 1、基本应用图

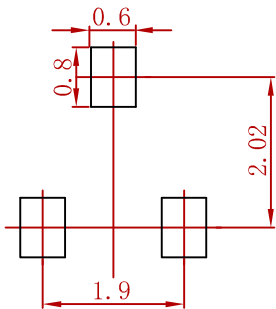


PACKAGE MECHANICAL DATA



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

Suggested Pad Layout



Note:  
1.Controlling dimension:in millimeters.  
2.General tolerance:± 0.05mm.  
3.The pad layout is for reference purposes only.

REELSPECIFICATION

| P/N             | PKG    | QTY  |
|-----------------|--------|------|
| TLV760XXDBZR-MS | SOT-23 | 3000 |

## **Attention**

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