

TPGLF72101CSP4

Low Quiescent current Load Switch

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Features

- Wide Supply Voltage Range: 1.5V to 5.5V
- Quiescent current :290nA @ Typ
- Standby current : 70nA @ Typ
- Maximum Output current : 2A
- Enable Active High
- Typical Rdson 38mΩ @4.2V
- Thermal Shutdown Protection
- Current Limiting Protection
- Hot Plug-In Application(Soft start)
- Reverse Current Flow Blocking (no body diode)
- RoHS and Halogen free compliance
- ESD Protection: 2kV HBM, 200V MM
- Package CSP-4L

Applications

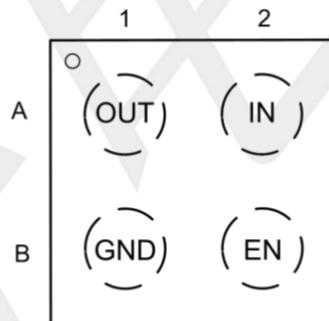
- Notebook and Desktop Computers
- High-Side Power Protection Switches
- Consumer Electronics
- Telecom Systems
- Digital TV
- USB Device Power Switch
- Motherboard USB Power Switch

General Description

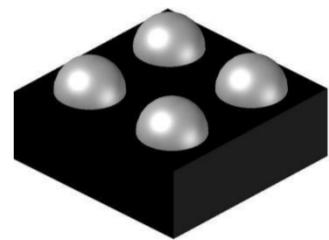
The is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current and ultra-low standby current .The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy.

The contains a P-channel MOSFET that can operate over an input voltage range of 1.2V to 5.5V and can support a maximum continuous current of 2A.

The are available in a small 1 x 1mm CSP-4L Package. Standard products are Pb-free and Halogen-free.



Pin Configuration (Top View)



CSP- 4L

Pin Configurations

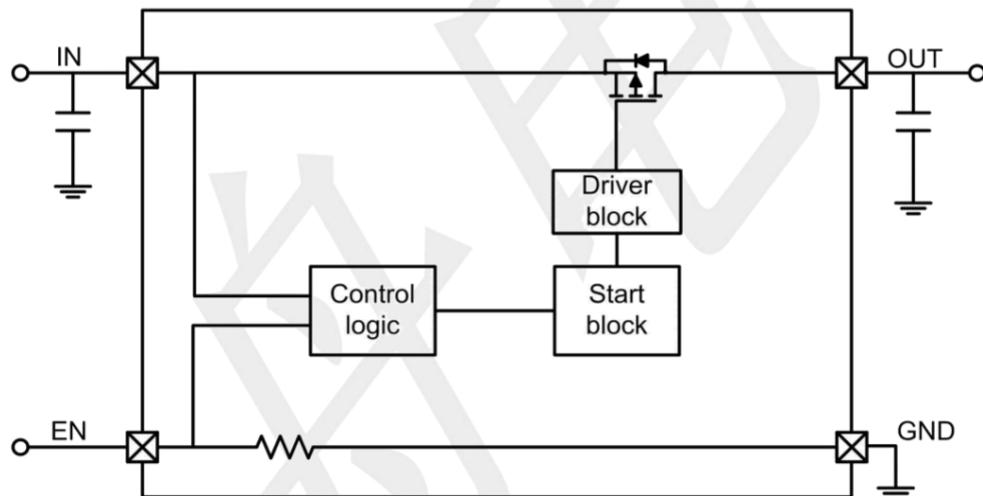
| Pin Number | Pin Name | Pin Function |
|------------|----------|---|
| A1 | VOUT | Output Voltage Pin. |
| A2 | VIN | Power Supply Input. Connect this pin to external DC supply. |
| B1 | GND | Ground. |
| B2 | EN | Enable (Active high) |

Absolute Maximum Ratings

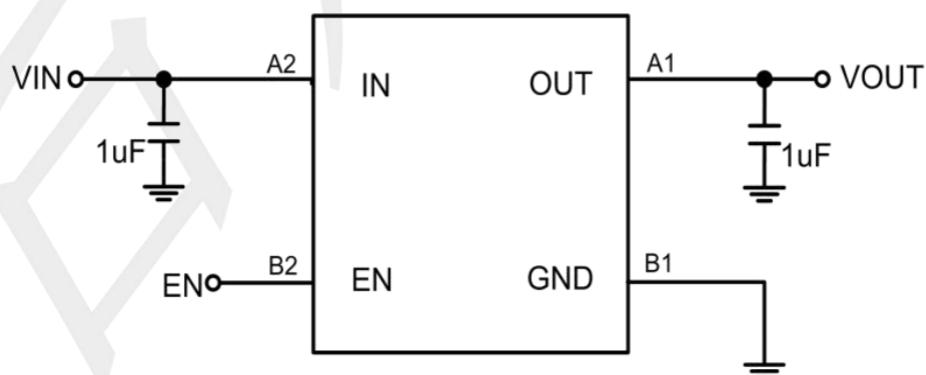
over operating free-air temperature range (unless otherwise noted)

| | | MIN | MAX | UNIT |
|-------------|--------------------------------|------|-----|------|
| VIN | Continuous input voltage range | -0.3 | 6.5 | V |
| VOUT | Output voltage range | -0.3 | 6.5 | |
| EN | EN pin voltage range | -0.3 | 6.5 | |
| ESD HBM | Human Body ESD Protection | 2000 | | |
| ESD MM | Machine Model ESD Protection | 200 | | |
| Temperature | Junction Temperature , TJ | -40 | 125 | °C |
| | Storage, Tstg | -65 | 150 | |
| LT | Lead Temperature | | 260 | |

BLOCK DIAGRAM



Typical Application Circuit



Recommend Operating Ratings

| Parameter | Value | Unit |
|---|---------|------|
| Operating Power voltage | 1.5~5.5 | V |
| Enable Voltage | 0~5.5 | V |
| Maximum DC current | 2 | A |
| Operating ambient temperature | -40~85 | °C |
| Operating Junction temperature | -40~125 | °C |
| Decoupling input capacitor | 1 | uF |
| Decoupling output capacitor | 1 | uF |
| Power Dissipation Rating(25 °C,WLCSP package) | 0.5 | W |
| Power Dissipation Rating(85 °C,WLCSP package) | 0.2 | W |
| Thermal Resistance, $R_{\theta JA}$ (CSP-4L) | 100 | °C/W |

Electrical Characteristics

($T_a=25^{\circ}\text{C}$, $V_{IN}=5\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, unless otherwise noted)

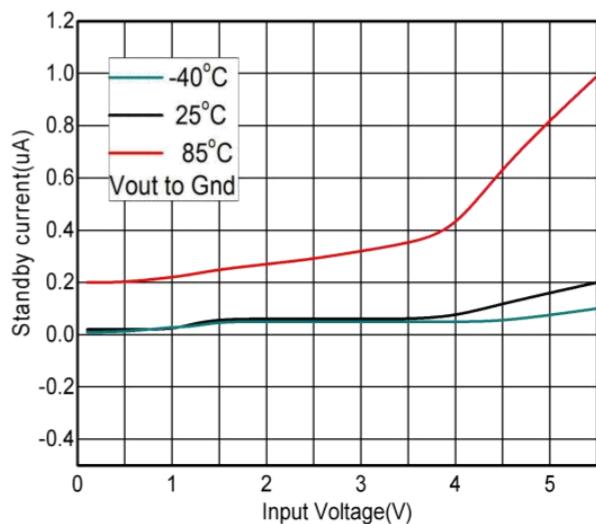
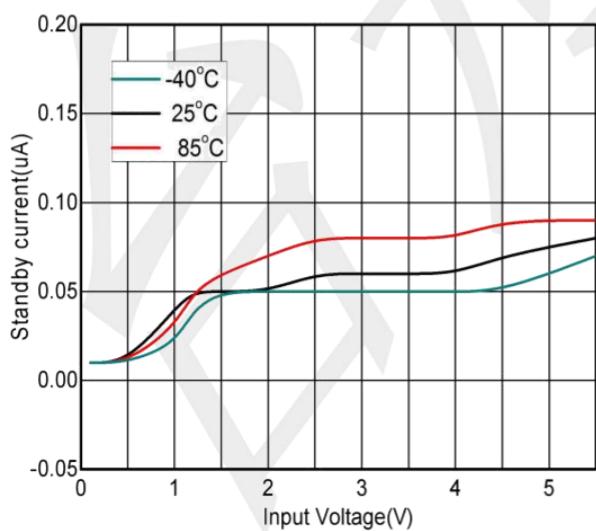
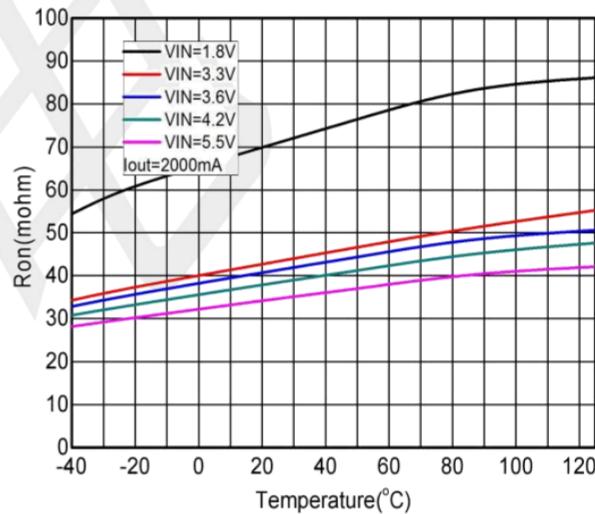
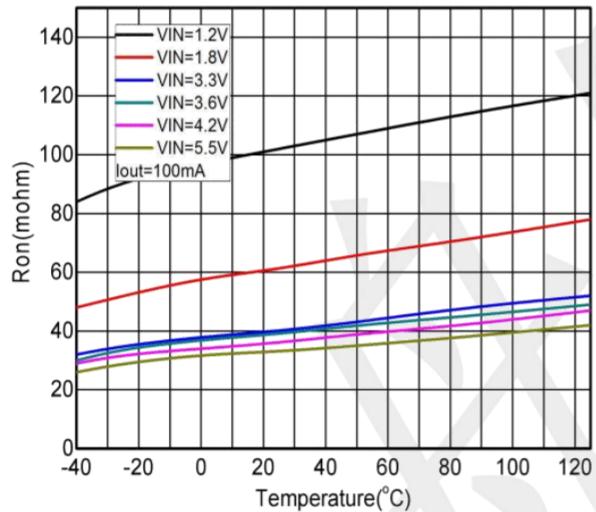
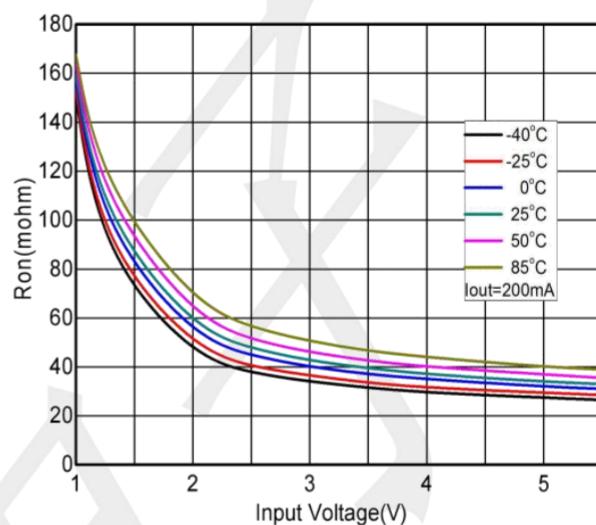
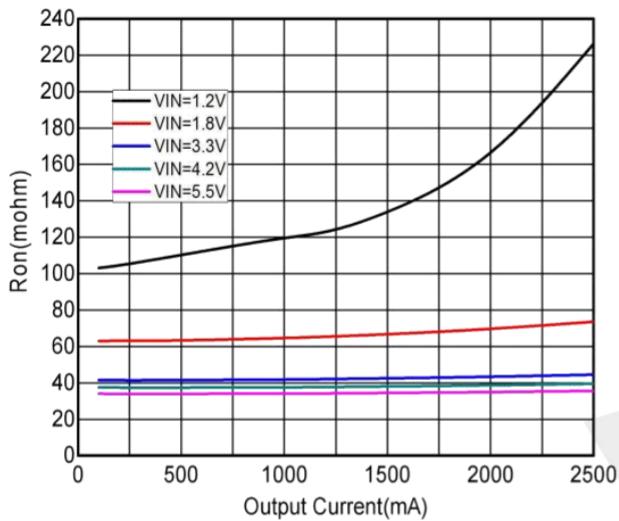
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--|--------------|------------------------------------|-----|-----|-----|------------------|
| Input Voltage | V_{IN} | | -- | -- | 5.5 | V |
| Static drain-source on-state resistance | $R_{DS(on)}$ | $V_{IN}=5.5, I_{OUT}=200\text{mA}$ | -- | 34 | 42 | $\text{m}\Omega$ |
| | | $V_{IN}=4.2, I_{OUT}=200\text{mA}$ | -- | 38 | 47 | |
| | | $V_{IN}=3.3, I_{OUT}=200\text{mA}$ | -- | 42 | 52 | |
| | | $V_{IN}=1.8, I_{OUT}=200\text{mA}$ | -- | 62 | 88 | |
| | | $V_{IN}=1.2, I_{OUT}=200\text{mA}$ | -- | 104 | 250 | |
| EN logic high voltage | V_{ENH} | | 0.9 | -- | -- | V |
| EN logic low voltage | V_{ENL} | | -- | -- | 0.5 | V |
| EN pull down resistor | R_{PD} | | -- | 8 | -- | $\text{M}\Omega$ |
| Standby current | I_{STD} | EN=Low, No load | -- | 70 | -- | nA |
| Quiescent current | I_Q | EN=High, No load | -- | 290 | -- | nA |
| Enable time | T_{EN} | $RL=25\text{ohm}$ | -- | 35 | -- | μs |
| Output rise time | T_R | $RL=25\text{ohm}$ | -- | 25 | -- | μs |
| ON time($T_{EN}+T_R$) | T_{ON} | $RL=25\text{ohm}$ | -- | 60 | -- | μs |
| Output fall time | T_F | $RL=25\text{ohm}$ | -- | 58 | -- | μs |

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Typical characteristics



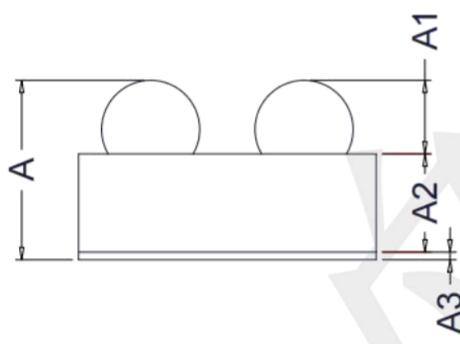
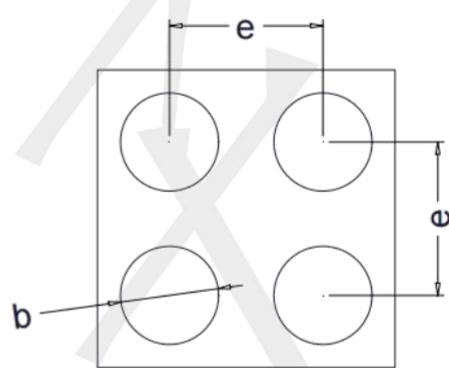
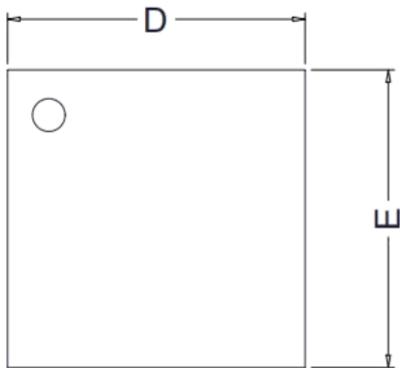
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Package information

CSP-4L



| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|---------|------|
| | Min. | Typ. | Max. |
| A | 0.55 | 0.58 | 0.62 |
| A1 | 0.22 | 0.24 | 0.26 |
| A2 | 0.30 | 0.32 | 0.34 |
| A3 | 0.02 | | 0.03 |
| D | 0.94 | 0.97 | 1.00 |
| E | 0.94 | 0.97 | 1.00 |
| e | | 0.50BSC | |
| b | 0.30 | 0.32 | 0.34 |