

Low Loss Power Distribution Switch

1. Description

IP2680 is an ultra-low $R_{ds(on)}$ switch with current limiting threshold programmable function, protecting power source from overcurrent and short circuit conditions. It supports over temperature protection and can block the current flowing from the output to the input under the shutdown, in case the output voltage is higher than the input voltage.

2. Application

- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories

3. Features

- Ultra-low low $R_{ds(on)}$ resistance: 40mohm
- Distribution voltage: 2.4V to 5.5V
- Programmable current limit: from 0.3A to 2.1A
- Enable polarity: active high
- Over temperature shutdown and automatic recovery
- Reverse blocking (no body diode)
- Under shutdown, current is blocked when OUT is higher than IN
- Package: SOT23-5

4. Typical Application Schematic

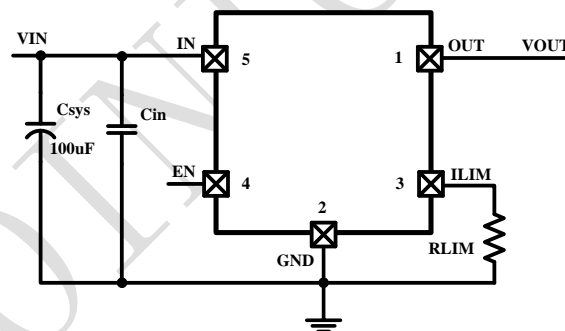
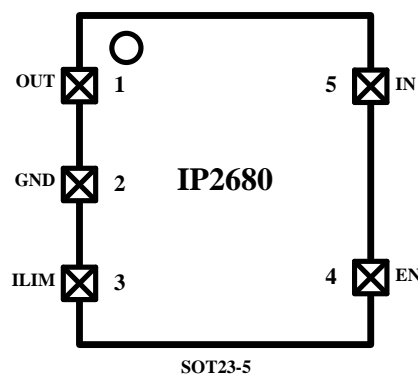


Figure 1 IP2680 Typical Application Circuit

5. PIN Description



| Pin Name | Pin Number | Pin Description |
|----------|------------|---|
| OUT | 1 | Output pin |
| GND | 2 | Ground pin |
| ILIM | 3 | Current limit program pin. Connect to a resistor R _{ILIM} to GND to program the current limit. Current limit threshold is fixed to 2.1A when floating this pin. |
| EN | 4 | ON/OFF control, pull high to enable, pull low to disable. Do not float. |
| IN | 5 | Input pin |

6. Absolute Maximum Ratings

| Parameters | Symbol | Value | Unit |
|---|------------------|-----------|------|
| IN,OUT,EN Voltage Range | | -0.3 ~ 6 | V |
| Junction Temperature Range | T _J | -40 ~ 150 | °C |
| Storage Temperature Range | T _{stg} | -60 ~ 150 | °C |
| Lead Temperature (Soldering, 10sec.) | T _s | 260 | °C |
| Ambient Temperature Range | T _A | -40 ~ 150 | °C |
| Package Thermal Resistance | θ _{JA} | 250 | °C/W |
| Package Thermal Resistance | θ _{JC} | 110 | °C/W |
| Human Body Model (HBM) | ESD | 2 | KV |

*Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to Absolute Maximum Rated conditions for extended periods may affect device reliability.

*Voltages are referenced to GND unless otherwise noted.

7. Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---------------------|-----------------|------|------|------|------|
| Input Voltage | V _{IN} | 2.4 | | 5.5 | V |
| Ambient Temperature | T _A | -40 | | 85 | °C |

*Devices' performance cannot be guaranteed when working beyond those Recommended Operating Conditions.

8. Electrical Characteristics

Unless otherwise specified, T_A=25°C, V_{IN}=5V

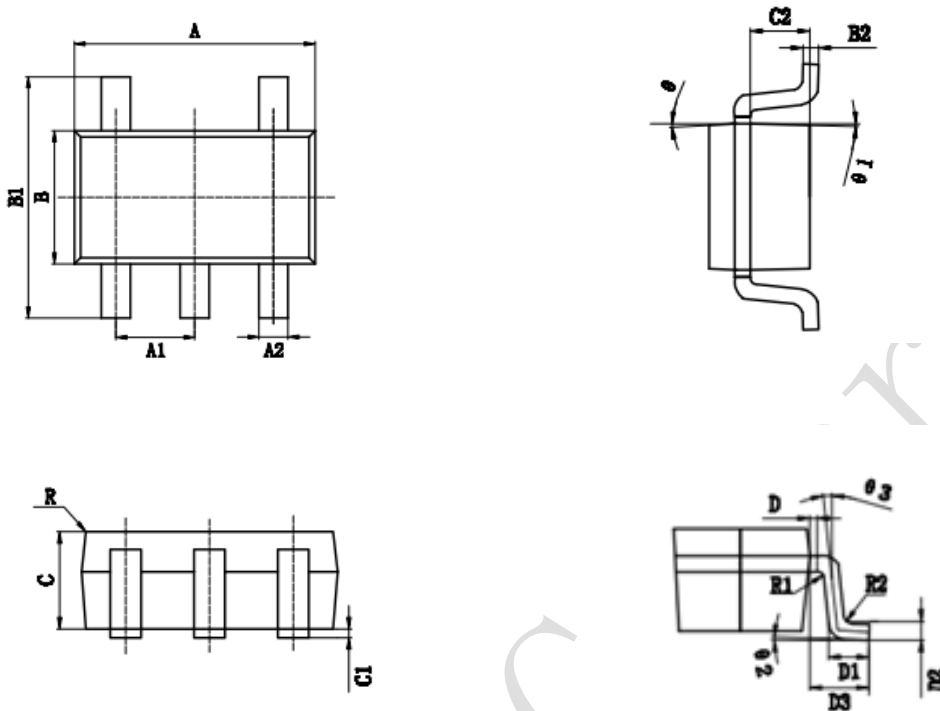
| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------|-------------------|------------------------|------|------|------|------|
| Input Voltage | V _{IN} | | 2.4 | | 5.5 | V |
| Shutdown input current | I _{SHDN} | Open load, IC Disabled | | 0.6 | 1 | µA |
| Quiescent supply current | I _Q | Open load, IC Enabled | | 75 | | µA |

| | | | | | | |
|------------------------------|-------------|-----------------|-----|-----|-----|------|
| FET Ron | Rds(on) | | | 40 | | mohm |
| EN rising threshold | VEN(high) | | 1.5 | | | V |
| EN falling threshold | VEN(low) | | | | 1.4 | V |
| Input UVLO Threshold | VIN_UVLO | VIN Falling | | | 2.3 | V |
| IN UVLO Threshold | VIN_HYS | | | 0.1 | | V |
| Current limit program range | Ilim | | 0.3 | | 3.5 | A |
| Over current limit | ILIM(Rilim) | Rilim=110k | 1.0 | 1.2 | 1.4 | A |
| | ILIM(def) | Rilim floating | 2.1 | 2.3 | 2.5 | A |
| Turn-ON time | TON | RL=10ohm,CL=1uF | | 2.3 | 5 | ms |
| Turn-OFF time | TOFF | RL=10ohm,CL=1uF | | 0 | | us |
| Thermal shutdown temperature | TSD | | | 130 | | °C |
| Thermal shutdown hysteresis | TSD_HYS | | | 20 | | °C |

9. Current Rilim Selections

| Rilim(kOhm) | Ilim(A) | Rilim(kOhm) | Ilim(A) |
|-------------|---------|-------------|---------|
| 39 | 3.6 | 86.6 | 1.6 |
| 43 | 3.3 | 95 | 1.5 |
| 47 | 3 | 100 | 1.4 |
| 51 | 2.9 | 110 | 1.2 |
| 56 | 2.5 | 120 | 1.1 |
| 61 | 2.4 | 130 | 1.0 |
| 62 | 2.3 | 150 | 0.9 |
| 64 | 2.2 | 160 | 0.8 |
| 68 | 2.1 | 180 | 0.7 |
| 71.5 | 2.0 | 220 | 0.6 |
| 75 | 1.9 | 240 | 0.5 |
| 78 | 1.8 | 300 | 0.4 |
| 82 | 1.7 | 360 | 0.3 |

Note: data in this table is laboratory measured, and Rilim resistor tolerance is 5% resistor values. It is important to use higher tolerance resistors of 0.5% or higher, when precision current limiting is desired.

10.Package


| SYMBOL | MILLIMETER | | |
|--------|------------|----------|--------|
| | MIN | NOM | MAX |
| A | 2.82 | | 3.02 |
| A1 | 0.90 | | 1.00 |
| A2 | 0.35 | | 0.45 |
| B | 1.52 | | 1.72 |
| B1 | 2.80 | | 3.00 |
| B2 | 0.119 | | 0.135 |
| C | 1.05 | | 1.15 |
| C1 | 0.03 | | 0.13. |
| C2 | 0.60 | | 0.70 |
| D | 0.03 | | 0.13 |
| D1 | 0.40 | | 0.50 |
| D2 | | 0.254TYP | |
| D3 | 0.60 | | 0.70 |
| θ | | 9 °TYP4 | |
| θ1 | | 10 °TYP4 | |
| θ2 | 0 ° | | 8 ° |
| θ3 | | 6 °TYP | |
| R | | | 0.2TYP |
| R1 | | 0.08 TYP | |
| R2 | | 0.08TYP | |

11.IMPORTANT NOTICE

INJOINIC TECHNOLOGY and its subsidiaries reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as “components”) are sold subject to INJOINIC TECHNOLOGY's terms and conditions of sale supplied at the time of order acknowledgment.

INJOINIC TECHNOLOGY assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using INJOINIC TECHNOLOGY's components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of INJOINIC TECHNOLOGY's components in its applications, notwithstanding any applications-related information or support that may be provided by INJOINIC TECHNOLOGY. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify INJOINIC TECHNOLOGY and its representatives against any damages arising out of the use of any INJOINIC TECHNOLOGY's components in safety-critical applications.

Reproduction of significant portions of INJOINIC TECHNOLOGY's information in INJOINIC TECHNOLOGY's data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. INJOINIC TECHNOLOGY is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

INJOINIC TECHNOLOGY will update this document from time to time. The actual parameters of the product may vary due to different models or other items. This document voids all express and any implied warranties.

Resale of INJOINIC TECHNOLOGY's components or services with statements different from or beyond the parameters stated by INJOINIC TECHNOLOGY for that component or service voids all express and any implied warranties for the associated INJOINIC TECHNOLOGY's component or service and is an unfair and deceptive business practice. INJOINIC TECHNOLOGY is not responsible or liable for any such statements.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Power Switch ICs - Power Distribution](#) category:

Click to view products by [INJOINIC](#) manufacturer:

Other Similar products are found below :

[AP22652AW6-7](#) [MAPDCC0001](#) [L9349TR-LF](#) [MAPDCC0005](#) [NCP45520IMNTWG-L](#) [VND5050K-E](#) [MP6205DD-LF-P](#)
[MC15XS3400DHFKR2](#) [FPF1015](#) [FPF1018](#) [DS1222](#) [TCK2065G,LF](#) [SZNCP3712ASNT3G](#) [L9781TR](#) [NCP45520IMNTWG-H](#)
[MC17XS6500BEK](#) [SP2526A-1EN-L/TR](#) [SP2526A-2EN-L/TR](#) [MAX4999ETJ+T](#) [MC22XS4200BEK](#) [MAX14575BETA+T](#) [VN1160C-1-E](#)
[VN750PEP-E](#) [TLE7244SL](#) [BTS50060-1EGA](#) [MAX1693HEUB+T](#) [MC07XSG517EK](#) [TLE7237SL](#) [MIC2033-05BYMT-T5](#) [MIC2033-](#)
[12AYMT-T5](#) [MIC2033-05BYM6-T5](#) [MP6513LGJ-P](#) [NCP3902FCCTBG](#) [AP22811BW5-7](#) [SLG5NT1437VTR](#) [SZNCP3712ASNT1G](#)
[NCV330MUTBG](#) [DML1008LDS-7](#) [MAX4987AEETA+T](#) [KTS1670EDA-TR](#) [MAX1694EUB+T](#) [KTS1640QGDV-TR](#) [KTS1641QGDV-TR](#)
[IPS160HTR](#) [BTS500251TADATMA2](#) [NCV451AMNWTBG](#) [MC07XS6517BEKR2](#) [SIP43101DQ-T1-E3](#) [DML10M8LDS-13](#)
[MAX1922ESA+C71073](#)