

1 Features and Benefits

- Wide operating voltage range: from 3.3V to 18V
- Flexible magnetic thresholds and temperature coefficient
- Integrated self-diagnostic functions activating dedicated Safe Mode
- Reverse supply voltage protection
- Under-Voltage Reset protection
- Thermal protection
- Optional IMC integration for lateral sensing
- Developed according to ISO26262-10, 9 as safety HW element out of context with ASIL-B level

2 Application Examples

- Automotive, Consumer and Industrial
- Brake light wake-up switch
- Electronic Steering Column Lock
- Door latch system
- Seat positioning
- Sunroof/Tailgate opener
- Transmission applications
- Electrical power steering

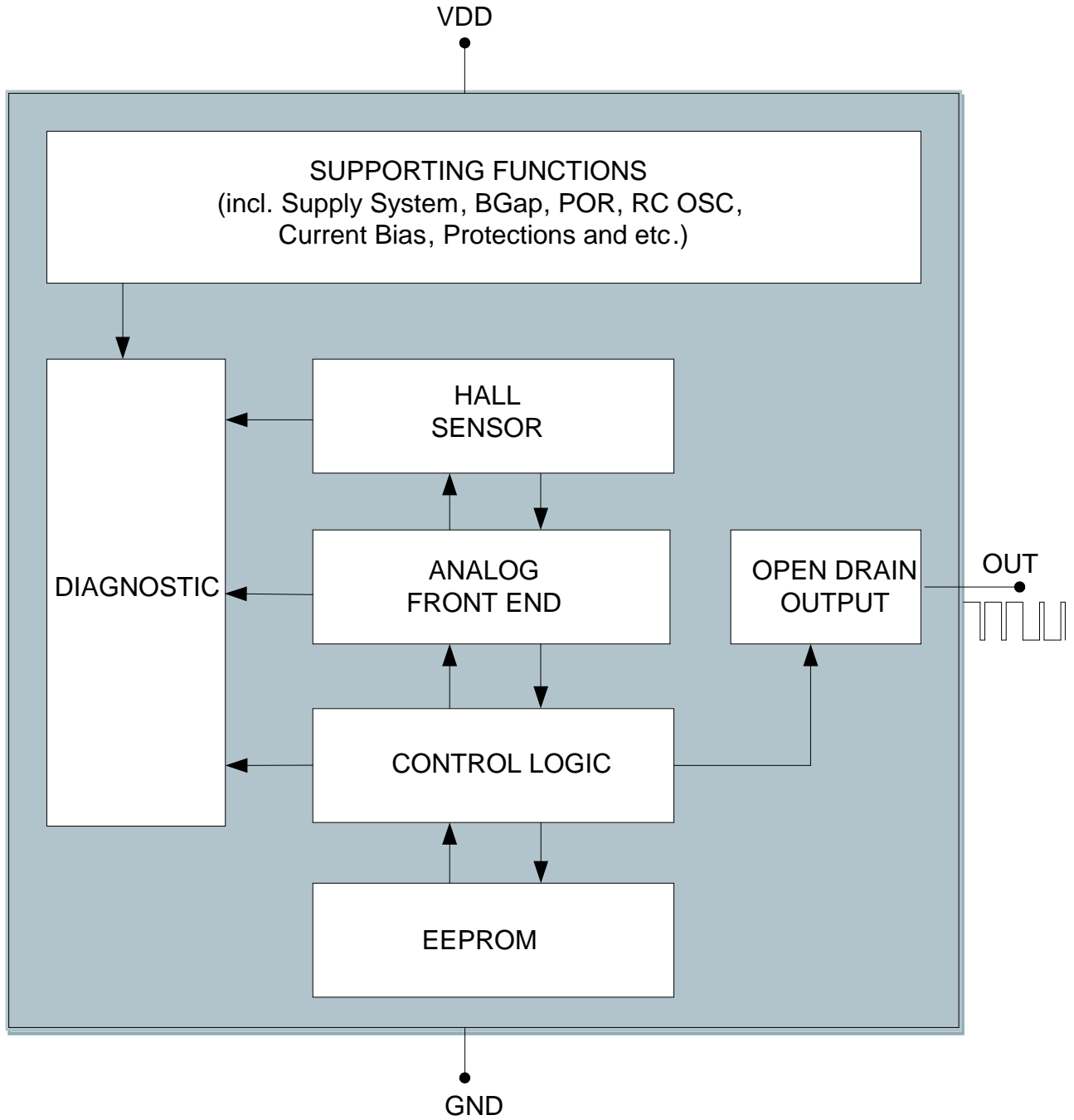
3 Ordering Information

| Product Code | Temperature Code | Package Code | Option Code | Packing Form Code |
|--------------|------------------|--------------|-------------|-------------------|
| MLX92292 | L | SE | AAA-001 | RE |
| MLX92291 | L | SE | AAA-200 | RE |

Legend:

Temperature Code: L (-40°C to 150°C)
Package Code: SE = TSOT-23L
Option Code: 000 => 3 wire hall effect Switch
200 => IMC version
Packing Form: BU=Bulk | RE = Reel | CA = Ammopack
Ordering example: MLX92292LSE-AAA-001-RE

4 Functional Diagram



5 General Description

Melexis has made a major advance in magnetic sensing technology that will have widespread implications for modern automobile design the MLX92292 - effectively represents a whole new way of sensing. This device delivers switch functions, but unlike existing products on the market it can determine the presence of magnetic fields that are lateral, not just orthogonal, to it. The uniqueness of this offering is taken further by the fact that the MLX92292 switch is supporting an ASIL B safety integrity level (in accordance with ISO 26262), with an array of built-in diagnostic mechanisms available.

Flexibility is a key attribute of the MLX92292. OEM customers can chose straightforward pre-programmed units, or alternatively they can benefit from the end-of-line (EoL) programming capacity. Through this each device may be configured (via its output pin) during the OEM production process, so system optimization is fully realized. The programming facility also enables setting of both magnetic operating points to small increments across a range spanning -90mT to +90mT (-40mT to +40mT for lateral sensing versions).

The MLX92292 can be specified with standard orthogonal sensitivity or the lateral sensitivity option. The upshot of lateral sensitivity being that there is potential to replace multiple devices with a single surface mount unit, thereby saving valuable board space and lowering bill-of-materials costs. This stems directly from Melexis' proprietary Integrated Magnetic Concentrator (IMC™) technology, which enables substantial heightening of signal-to-noise ratios in magnetic field measurement. In addition, the capacity of this technology to sense laterally allows lower profile system implementations, as the magnet can move alongside the device rather than having to be above it.

Safeguarding the MLX92292 are reverse supply voltage, thermal, electro-static discharge (ESD) and over-voltage protections, plus Under-Voltage Reset features. With the capacity to deal with a 40V load dump, it can be connected directly to the vehicle battery. In order to achieve ASIL B compliance, numerous diagnostic/monitoring functions have been incorporated, including Hall sensor and analog frontend diagnostics. The device comprises a full set of programmable reporting features, giving it compatibility with any existing electronic control unit (ECU) interface. Only the normal application pins are required for this - without need of additional diagnostic pins and thus simplifying the design concept considerably.

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6 Absolute Maximum Ratings

| Parameter | Symbol | Value | Units |
|--|---------------------|-------|-------|
| Supply voltage ^(1, 2) | V _{DD} | +28V | V |
| Supply voltage (Load Dump) ^(1, 4) | V _{DD} | + 45V | V |
| Supply current ^(1, 2, 3) | I _{DD} | +20 | mA |
| Supply current ^(1, 3, 4) | I _{DD} | +50 | mA |
| Reverse supply voltage ^(1, 2) | V _{DDREV} | -24 | V |
| Reverse supply voltage ^(1, 4) | V _{DDREV} | -30 | V |
| Reverse supply current ^(1, 2, 5) | I _{DDREV} | -20 | mA |
| Reverse supply current ^(1, 4, 5) | I _{DDREV} | -40 | mA |
| Output voltage ^(1, 2) | V _{OUT} | +28 | V |
| Output current ^(1, 2, 5) | I _{OUT} | +20 | mA |
| Reverse output voltage ⁽¹⁾ | V _{OUTREV} | -0.5 | V |
| Reverse output current ^(1, 2) | I _{OUTREV} | -50 | mA |
| Maximum junction temperature ⁽⁶⁾ | T _J | +165 | °C |
| ESD sensitivity – HBM ⁽⁷⁾ | - | 8 | kV |
| ESD sensitivity – CDM ⁽⁸⁾ | - | 1000 | V |

Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

¹ The maximum junction temperature should not be exceeded

² For maximum 1 hour

³ Including current through protection device

⁴ For maximum 500ms

⁵ Through protection device

⁶ For 1000 hours.

⁷ Human Body Model according AEC-Q100-002 standard

⁸ Charged Device Model according AEC-Q100-011 standard

7 General Electrical Specifications

DC Operating Parameters $V_{DD} = 3.3V$ to $18V$, $T_A = -40^\circ C$ to $150^\circ C$ (unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ ⁽¹⁾ | Max | Units |
|--|-------------------|---|---------------------|--------------------|--------------------|---------|
| Under-Voltage Reset threshold | V_{UVR} | V_{DD} monitoring during Active phase | 1.8 | 2.5 | 3 | V |
| UVR reaction time ⁽²⁾ | t_{UVR} | V_{DD} monitoring during Active phase, $V_{DD} = V_{UVR} - 0.3V$ | — | 1 | — | μs |
| Minimum supply voltage for defined output state ⁽²⁾ | V_{DD1} | $R_{PU} = 2.2k\Omega$, $V_{PU} = 5V$ | — | 1 | 1.2 | V |
| Output leakage ⁽⁸⁾ | I_{OFF} | $V_{OUT} = 18V$, $T_A = -40..85^\circ C$ | — | 0.1 | 1 | μA |
| Output leakage | I_{OFF} | $V_{OUT} = 18V$ | — | — | 5 | μA |
| Output saturation voltage | V_{OL} | Fast Mode, $I_{OL} = 20mA$ | 0.1 | 0.25 | 0.7 | V |
| Output saturation voltage | V_{OL} | μ -Power Mode, $I_{OL} = 10mA$ | — | 0.15 | 0.5 | V |
| Output Rise Time ^(2,5) (R_{PU} dependent) | t_R | $R_{PU} = 2.2k\Omega$, $V_{DD} = 12V$, $V_{PU} = 5V$ $C_{LOAD} = 50pF$ to GND | 0.3 | 0.6 | 1 | μs |
| Output Fall Time ^(2,5) (On-chip controlled) | t_F | $R_{PU} = 2.2k\Omega$, $V_{DD} = 12V$, $V_{PU} = 5V$ $C_{LOAD} = 50pF$ to GND | 0.3 | 0.6 | 1 | μs |
| Power-On time ^(3,4) | t_{ON} | $V_{DD} = 5V$, $dV_{DD}/dt > 2V/\mu s$ | — | 0.5 | 1 | ms |
| Power-On state | - | Output state during t_{ON} | High | | | — |
| Output update period | T_{UPD} | Fast Mode | — | 40 | 45 | μs |
| Programmable operating (output update) period | T_{OP} | μ -Power Mode, typical range | 0.16 ⁽¹⁾ | — | 260 ⁽¹⁾ | ms |
| Operating period 1 (1 st ref. value) | T_{OP1} | μ -Power Mode | 196 | 222 | 246 | ms |
| Operating period 2 (2 nd ref. value) | T_{OP2} | μ -Power Mode | 40 | 45 | 50 | ms |
| Programmable diagnostic period in Fail Safe state | T_{DP} | Fast Mode, typical range | 0.13 ⁽¹⁾ | — | 260 ⁽¹⁾ | ms |
| Programmable "Output Ticking" repetition period | T_{TICK} | Equal to (multiple of) T_{OP} , typical range | 0.6 ⁽¹⁾ | — | 260 ⁽¹⁾ | ms |
| Programmable "Output Ticking" duration | t_{TICK} | Typical range | 4 | — | 128 | μs |
| Active phase duration, diagnostic On | t_{ACT_Don} | μ -Power Mode, defined at $I_{DD} > 0.7mA$ | — | 40 | — | μs |
| Active phase duration, diagnostic Off | t_{ACT_Doff} | μ -Power Mode, defined at $I_{DD} > 0.7mA$ | — | 24 | — | μs |
| Tolerance of operating period ratio t_{ACT}/T_{OP} | R_{TOL} | μ -Power Mode | -5 | 0 | 5 | % |
| Active phase supply current, diagnostic On (average value) | I_{DDACT_Don} | μ -Power Mode | 1.8 | 2.4 | 2.9 | mA |
| Active phase supply current, diagnostic Off (average value) | I_{DDACT_Doff} | μ -Power Mode | 2.2 | 3 | 3.5 | mA |
| Standby phase supply current ⁽⁸⁾ | I_{DDSTBY} | $V_{DD} \leq 16V$, $T_A = -40..85^\circ C$ | — | 6 | 9 | μA |
| Standby phase supply current | I_{DDSTBY} | $V_{DD} \leq 16V$ | — | 6 | 27 | μA |
| Average supply current ^(8,9) | I_{DDAVG1} | $V_{DD} \leq 16V$, $T_A = -40..85^\circ C$, $T_{OP} = T_{OP1}$ | — | 6.4 | 9.5 | μA |
| Average supply current ^(8,9) | I_{DDAVG2} | $V_{DD} \leq 16V$, $T_A = -40..85^\circ C$, $T_{OP} = T_{OP2}$ | — | 8.1 | 11.7 | μA |
| Step response time ⁽²⁾ | t_{RESP} | Fast Mode, $B_{OP} = 1mT$, $B_{RP} = -1mT$, square wave magnetic field with $B > \pm 4mT$, $t_{RISE} = t_{FALL} \leq 5\mu s$ | 15 | 40 | 65 | μs |
| Signal bandwidth ^(2,6) | BW | Fast Mode, $B_{OP} = 1mT$, $B_{RP} = -1mT$, sine wave magnetic field with amplitude 5mT | 6 | 8 | — | kHz |
| Peak supply current ⁽²⁾ | I_{DDPEAK} | For peak duration $\geq 5\mu s$ | — | 2.9 | 3.6 | mA |
| Fast Mode supply current | I_{DDFAST} | | 2.2 | 2.9 | 3.5 | mA |
| Fast Mode fail supply current | I_{DDFAIL} | | 0.1 | 0.3 | 0.6 | mA |

MLX92292

3-wire μ Power programmed ASIL B capable Hall Effect Switch

Datasheet

| | | | | | | |
|-------------------------------|-------------|--|----|--------------------|---|------|
| Reverse supply current | I_{DDREV} | $V_{DD} = -16V$ | -1 | — | — | mA |
| Thermal Protection Activation | T_{PROT} | | — | 185 ⁽⁷⁾ | — | °C |
| Thermal Protection Release | T_{REL} | | — | 175 ⁽⁷⁾ | — | °C |
| UA package thermal resistance | R_{THJA} | Single layer PCB, JEDEC standard test boards, still air (LFPM=0) | — | 200 | — | °C/W |
| SE package thermal resistance | R_{THJA} | Single layer PCB, JEDEC standard test boards, still air (LFPM=0) | — | 300 | — | °C/W |

1 Unless otherwise specified the typical values are defined at $T_A = +25^\circ C$ and $V_{DD} = 12V$

2 Guaranteed by design and verified by characterization, not production tested

3 The Power-On Time represents the time from reaching $V_{DD} = 3.3V$ to the first refresh of the output state.

4 Power-On Slew Rate is not critical for the proper device start-up.

5 R_{PU} and V_{PU} are respectively the external pull-up resistor and pull-up power supply

6 OUT switching should track magnetic field frequency without missing pulses

7 T_{PROT} and T_{REL} are the corresponding junction temperature values

8 Guaranteed by correlation with production test at $T_A=150^\circ C$ and verified by characterization

9 Average current consumption for μ -Power Mode

$$I_{DDAVG} = \frac{I_{DDACT} * t_{ACT} * (1 + R_{TOL}/100) + I_{DDSTBY} * (T_{OP} - t_{ACT} * (1 + R_{TOL}/100))}{T_{OP}}$$

where t_{ACT} and T_{OP} are always typical values. The maximum I_{DDACT} , I_{DDSTBY} and R_{TOL} spec values should be used for the maximum I_{DDAVG} calculation.

8 Version specific parameters

8.1 MLX92292LSE-AAA-001-RE

DC Operating Parameters $V_{DD} = 3.3$ to $18V$, $T_A = -40^{\circ}C$ to $150^{\circ}C$

| Test Condition | Operating Point B_{OP} (mT) | | | Release Point B_{RP} (mT) | | | TC (ppm/°C) | Output behaviour | Active Pole |
|----------------------|-------------------------------|--------------------|------|-----------------------------|--------------------|------|----------------------|------------------|-------------|
| | Min | Typ ⁽²⁾ | Max | Min | Typ ⁽²⁾ | Max | | | |
| $T_A = -40^{\circ}C$ | 8.7 | 11 | 13.5 | 7.2 | 9.3 | 11.7 | -1100 ⁽³⁾ | Inverted switch | South pole |
| $T_A = 25^{\circ}C$ | 8.6 | 10 | 11.4 | 7.2 | 8.5 | 9.8 | | | |
| $T_A = 150^{\circ}C$ | 6.7 | 8.6 | 10.7 | 5.6 | 7.4 | 9.4 | | | |

| IMC | Safe message | Operating period, ms | Diagnostic period in Fail Safe state, ms | “Output Ticking” duration, µs | “Output Ticking” repetition period, ms |
|-----|--------------|----------------------|--|-------------------------------|--|
| No | uNoDiag | 0.16 | - | - | - |

8.2 MLX92291LSE-AAA-200-RE

DC Operating Parameters $V_{DD} = 3.3$ to $18V$, $T_A = -40^{\circ}C$ to $150^{\circ}C$

| Test Condition | Operating Point B_{OP} (mT) | | | Release Point B_{RP} (mT) | | | TC (ppm/°C) | Output behaviour | Active Pole |
|----------------------|-------------------------------|--------------------|------|-----------------------------|--------------------|-----|----------------------|------------------|-------------|
| | Min | Typ ⁽²⁾ | Max | Min | Typ ⁽²⁾ | Max | | | |
| $T_A = -40^{\circ}C$ | 7.6 | 10.5 | 13.6 | 5.6 | 8.1 | 11 | -2200 ⁽³⁾ | Inverted switch | South pole |
| $T_A = 25^{\circ}C$ | 7 | 9 | 11 | 5.1 | 7 | 8.9 | | | |
| $T_A = 150^{\circ}C$ | 4.5 | 6.6 | 8.9 | 3.2 | 5.2 | 7.2 | | | |

| IMC | Safe message | Operating period, ms | Diagnostic period in Fail Safe state, ms | “Output Ticking” duration, µs | “Output Ticking” repetition period, ms |
|-----|--------------|----------------------|--|-------------------------------|--|
| Yes | FlddMsg | - | 2 | - | - |

- 1 Melexis production testing is limited to version specific parameters only
- 2 Unless otherwise specified the typical values are defined at $T_A = +25^{\circ}C$ and $V_{DD} = 12V$
- 3 The Temperature Coefficient is calculated using following formula:

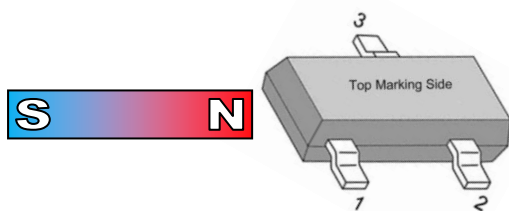
$$TC = \frac{B_{XPTA2} - B_{XPTA1}}{B_{XPTA1} * (T_{A2} - T_{A1})} * 10^6, ppm/^{\circ}C$$

where:

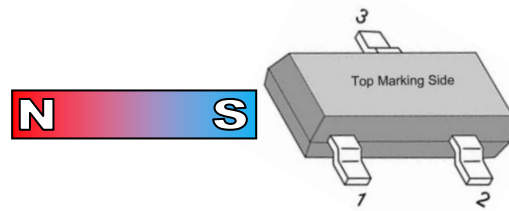
$T_{A1} = 25^{\circ}C$, $T_{A2} = 150^{\circ}C$,

In case of magnetic Latch application: B_{XPTA1} (B_{XPTA2}) = B_{OP} - B_{RP} at T_{A1} (T_{A2})

In case of magnetic Switch application: B_{XPTA1} (B_{XPTA2}) = B_{OP} or B_{RP} at T_{A1} (T_{A2})



North active pole (IMC version)

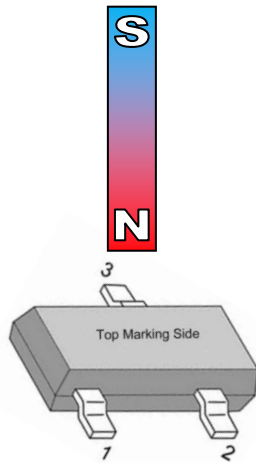


South active pole (IMC version)

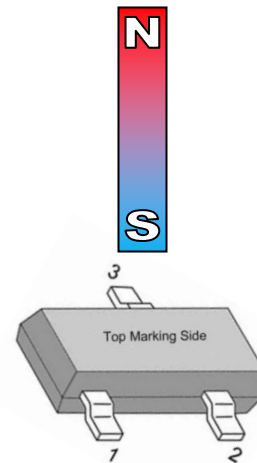
MLX92292

3-wire μ Power programmed ASIL B capable Hall Effect Switch

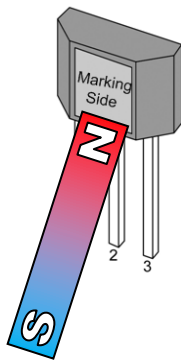
Datasheet



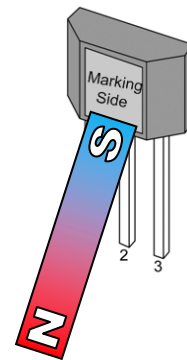
North active pole



South active pole



North active pole



South active pole

9 Magnetic Behaviour

9.1 Latch Sensor

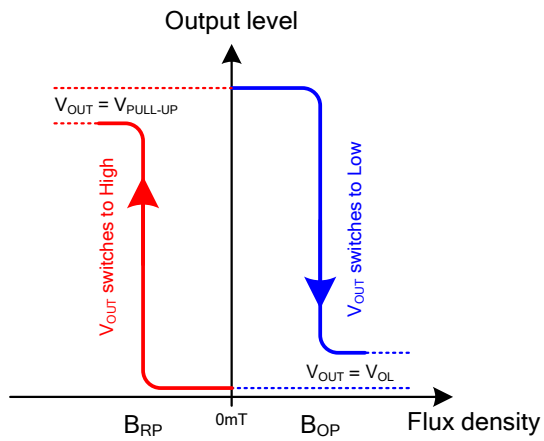


Fig.1 – Direct Output Latch

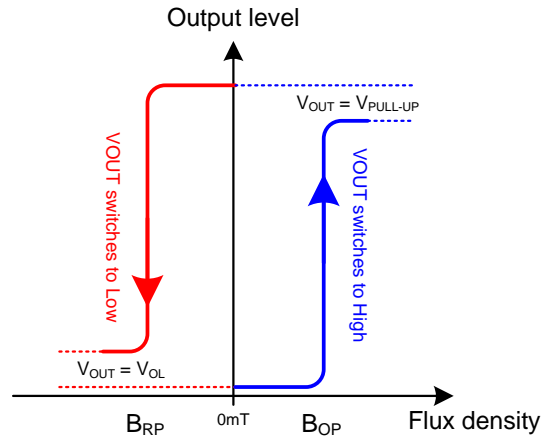


Fig.2 – Inverted Output Latch

9.2 Unipolar Switch Sensor

| Magnetic Field | Output Polarity | Remark |
|----------------|-----------------------|--------|
| South | Direct South Switch | Fig.3 |
| South | Inverted South Switch | Fig.4 |
| North | Direct North Switch | Fig.5 |
| North | Inverted North Switch | Fig.6 |

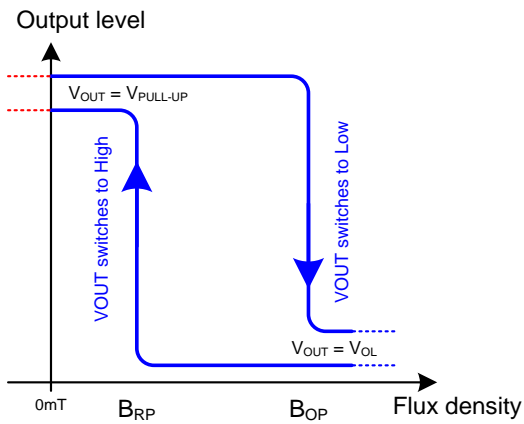


Fig.3 – Direct South Switch

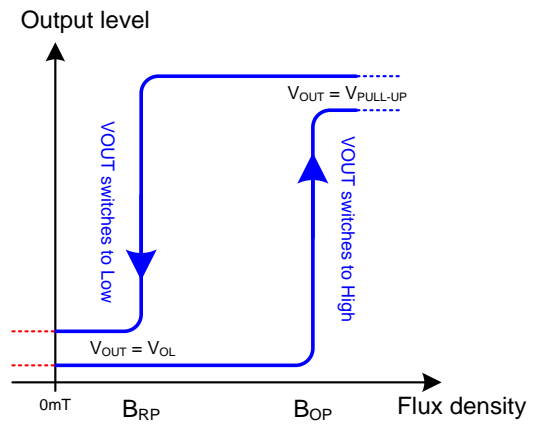


Fig.4 – Inverted South Switch

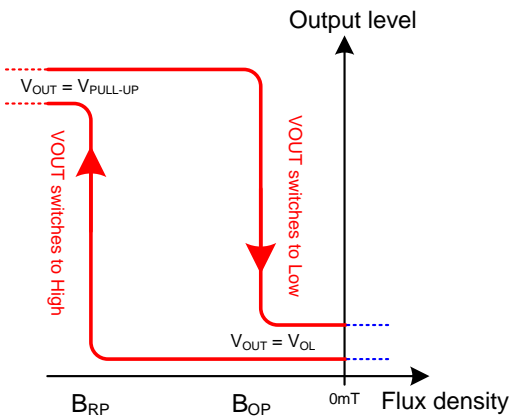


Fig.5 – Direct North Switch

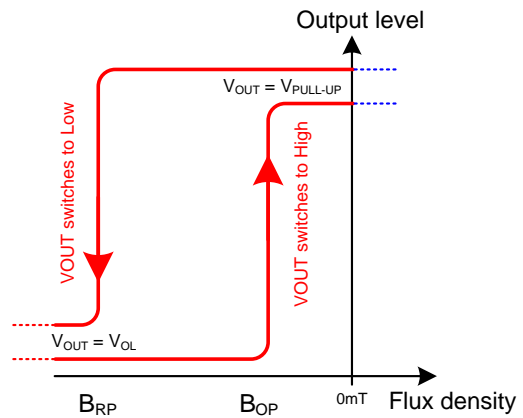


Fig.6 – Inverted North Switch

10 Functional Safety Capability

10.1 Sensor Development

MLX92292 is developed according to the ISO26262 requirements for ASIL B level.

10.2 Technical Safety Requirements

The main (mission) technical safety requirement for MLX92292 is the following:

10.2.1 TS_RQT_Mission

MLX92292 shall detect the presence of magnetic field by comparing it with magnetic thresholds Bop and Brp, each of them being within a Safe Tolerance Interval (STI) defined in mT as $\pm a * B_{xp} \pm b$, where Bxp is the actual magnetic threshold (Bop or Brp) and a, b are parameters depending on the application temperature range.

Two typical examples of Safe Tolerance Interval are given in section 5 and 6.

10.2.2 TS_RQT_Safe_Message

MLX92292 shall report detected failures that could prevent TS_RQT_Mission.

One of the following programmable Safe Message options can be chosen depending on the application:

| Message Option | B<Brp Diagnostic OK | B>Bop Diagnostic OK | All B values Diagnostic Failed | Diagnostic Coverage | Safe States |
|------------------------------------|---|--|---|------------------------|---|
| μ-Power Mode | | | | SPFM | |
| TickMsg ^(1,2) | OUT = Off+Ticking | OUT = On+Ticking | OUT = Off | 92% | B _{OP} , B _{RP} within STI ; OUT = On/Off w/o ticking |
| TickOffMsg ⁽¹⁾ | OUT = Off+Ticking | OUT = On | OUT = Off | 82% | B _{OP} , B _{RP} within STI ; OUT = Off |
| TickOnMsg ⁽²⁾ | OUT = Off | OUT = On+Ticking | OUT = On | 55% | B _{OP} , B _{RP} within STI ; OUT = On |
| OutOffMsg | OUT = Off | OUT = On | OUT = Off | 82% | B _{OP} , B _{RP} within STI ; OUT = Off |
| OutOnMsg | OUT = Off | OUT = On | OUT = On | 55% | B _{OP} , B _{RP} within STI ; OUT = On |
| StbyX2Msg ⁽³⁾ | OUT = Off | OUT = On | OUT = Off Twice increased T _{OP} | 77% | B _{OP} , B _{RP} within STI ; Twice increased Top |
| uNoDiag ⁽⁴⁾ | OUT = Off | OUT = On | - | No diagnostic | B _{OP} , B _{RP} within STI |
| Fast Mode | | | | | |
| FiddMsg | OUT = Off, I _{DD} = I _{DDFAST} | OUT = On, I _{DD} = I _{DDFAST} | OUT = Off, I _{DD} = I _{DDFAIL} | 67% | B _{OP} , B _{RP} within STI ; OUT=Off & I _{DD} below (1..1.6)mA |
| FNoDiag ⁽⁴⁾ | OUT = Off | OUT = On | - | No diagnostic | B _{OP} , B _{RP} within STI |

Note (1) Off+Ticking signal means that the Off state duration lasts significantly longer than the On state duration.

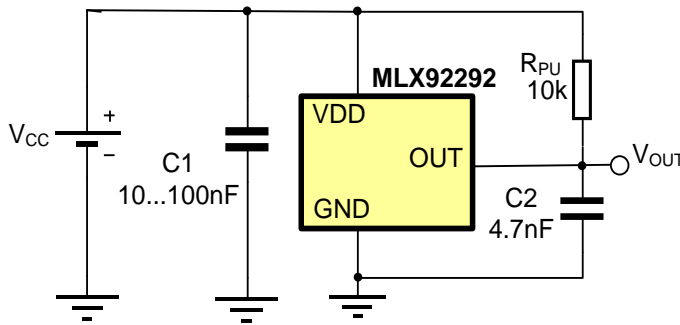
Note (2) On+Ticking signal means that the On state duration lasts significantly longer than the Off state duration.

Note (3) If T_{OP} is set <5ms then T_{OP} increases less than twice in case of diagnostic fail.

Note (4) This message option do not offer integrated diagnostic

11 Application Information

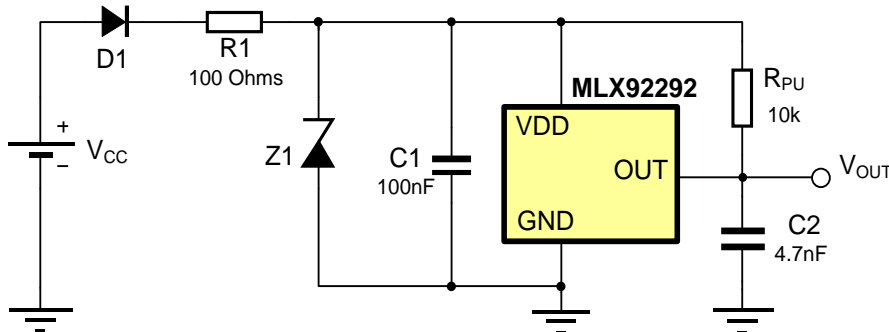
11.1 Typical Automotive Application Circuit



Notes:

1. For proper operation, a 10nF to 100nF bypass capacitor should be placed as close as possible to the V_{DD} and ground pin.
2. A capacitor connected to the output will improve the EMC performance

11.2 Automotive and Harsh, Noisy Environments Application Circuit

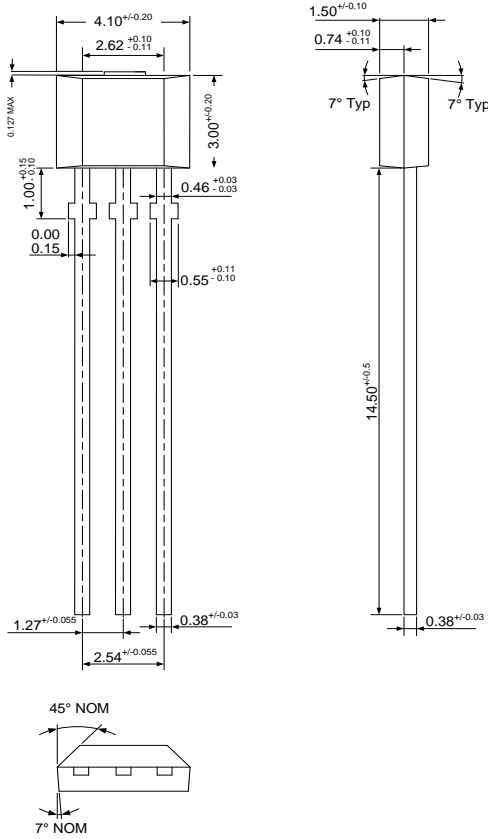


Notes:

1. For proper operation the bypass capacitor C1 should be placed as close as possible to the V_{DD} and GND pins.
2. If negative transients over supply line $V_{PEAK} < -30V$ are expected, usage of the diode D1 is recommended. Otherwise only R1 is sufficient. When selecting the resistor R1, three points are important:
 - the resistor has to limit I_{DD}/I_{DDREV} to 40mA maximum
 - the resistor has to withstand the power dissipated in both over voltage conditions ($V_{R1}^2/R1$)
 - the resulting device supply voltage V_{DD} has to be higher than $V_{DD min}$ ($V_{DD} = V_{CC} - R1 \cdot I_{DD}$)
3. If positive transients over supply line with $V_{PEAK} > 40V$ are expected, usage of Zener diode Z1 is recommended. The R1-Z1 network should be sized to limit the voltage over the device below the maximum allowed.

12 Package Information

12.1 UA (TO92-3L) Package Information



Notes:

1. All dimensions are in millimeters
2. Package dimension exclusive molding flash.
3. The end flash shall not exceed 0.127 mm on the top side.

Marking:

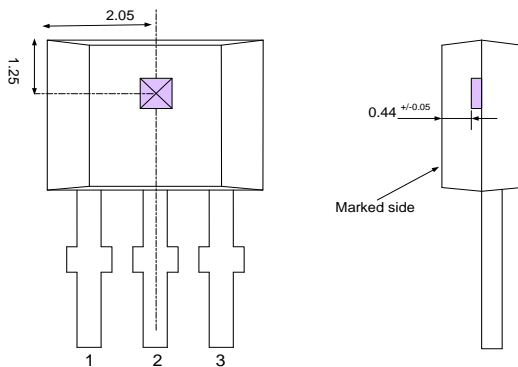
1st Line : 92WW

92: referring to design number
 WW: Calendar week number

2nd Line : YLLL

Y - last digit of year
 LLL – Last three digits of lot number

Hall plate location

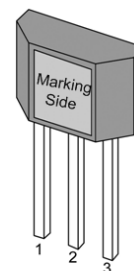


Notes:

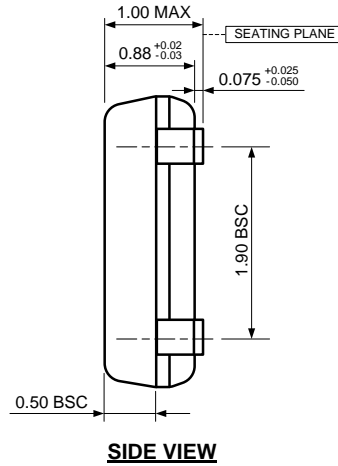
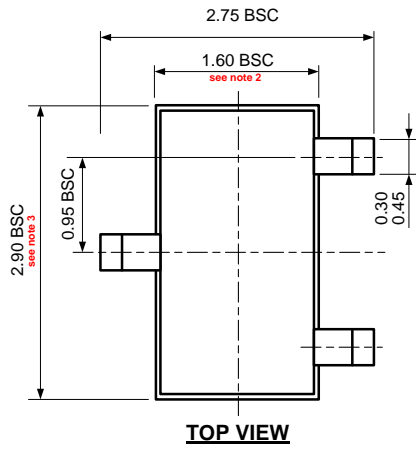
1. All dimensions are in millimeters

| UA Pin № | Name | Type | Function |
|----------|------|--------|--------------------|
| 1 | VDD | Supply | Supply Voltage pin |
| 2 | GND | Ground | Ground pin |
| 3 | OUT | I/O | Output&Test I/O |

Table 1: UA Package pinout



12.2 SE (TSOT-3L) Package Information



Notes:

1. All dimensions are in millimeters
2. Outermost plastic extreme width does not include mold flash or protrusions. Mold flash and protrusions shall not exceed 0.15mm per side.
3. Outermost plastic extreme length does not include mold flash or protrusions. Mold flash and protrusions shall not exceed 0.25mm per side.
4. The lead width dimension does not include dambar protrusion. Allowable dambar protrusion shall be 0.07mm total in excess of the lead width dimension at maximum material condition.
5. Dimension is the length of terminal for soldering to a substrate.
6. Dimension on SECTION B-B' applies to the flat section of the lead between 0.08mm and 0.15mm from the lead tip.
7. Formed lead shall be planar with respect to one another with 0.076mm at seating plane.

Marking:

TOP:

92WW – Normal sensitivity version

93WW – Lateral sensitivity version

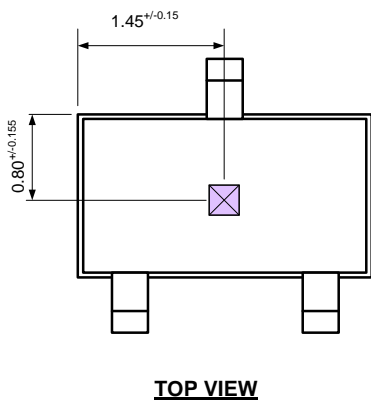
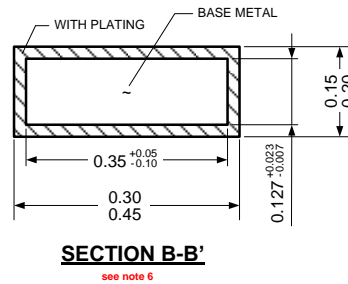
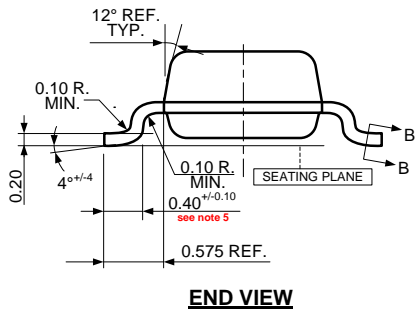
WW: Assembly week

BOTTOM:

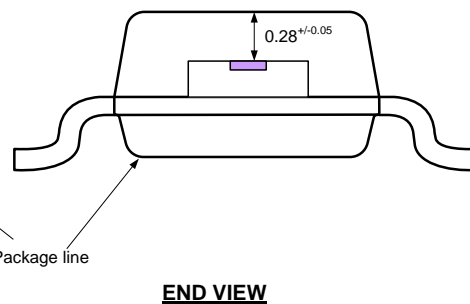
YLLL

Y: Assembly Year

LLL: Last 3 digits from lot#



Hall plate location

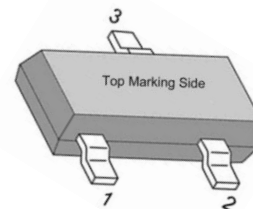


Notes:

1. All dimensions are in millimeters

| SE Pin No | Name | Type | Function |
|-----------|------|--------|--------------------|
| 1 | VDD | Supply | Supply Voltage pin |
| 2 | OUT | I/O | Output&Test I/O |
| 3 | GND | Ground | Ground pin |

Table 2: SE Package pinout



13 Standard information regarding manufacturability of Melexis products with different soldering processes

Our products are classified and qualified regarding soldering technology, solderability and moisture sensitivity level according to following test methods:

Reflow Soldering SMD's (Surface Mount Devices)

- IPC/JEDEC J-STD-020
Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices (classification reflow profiles according to table 5-2)
- EIA/JEDEC JESD22-A113
Preconditioning of Nonhermetic Surface Mount Devices Prior to Reliability Testing (reflow profiles according to table 2)

Wave Soldering SMD's (Surface Mount Devices) and THD's (Through Hole Devices)

- EN60749-20
Resistance of plastic- encapsulated SMD's to combined effect of moisture and soldering heat
- EIA/JEDEC JESD22-B106 and EN60749-15
Resistance to soldering temperature for through-hole mounted devices

Iron Soldering THD's (Through Hole Devices)

- EN60749-15
Resistance to soldering temperature for through-hole mounted devices

Solderability SMD's (Surface Mount Devices) and THD's (Through Hole Devices)

- EIA/JEDEC JESD22-B102 and EN60749-21
Solderability

For all soldering technologies deviating from above mentioned standard conditions (regarding peak temperature, temperature gradient, temperature profile etc) additional classification and qualification tests have to be agreed upon with Melexis.

The application of Wave Soldering for SMD's is allowed only after consulting Melexis regarding assurance of adhesive strength between device and board.

Melexis is contributing to global environmental conservation by promoting **lead free** solutions. For more information on qualifications of **RoHS** compliant products (RoHS = European directive on the Restriction Of the use of certain Hazardous Substances) please visit the quality page on our website: <http://www.melexis.com/quality.aspx>

14 ESD Precautions

Electronic semiconductor products are sensitive to Electro Static Discharge (ESD). Always observe Electro Static Discharge control procedures whenever handling semiconductor products.

15 Contact

For the latest version of this document, go to our website at www.melexis.com.

For additional information, please contact our Direct Sales team and get help for your specific needs:

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