

PRODUCT ADVISORY

**Data Sheet Specification
Specification Change for
Intersil Product ISL78420***

**Refer to:
PA14061**

Date: November 7, 2014

November 7, 2014

To: Our Valued Intersil Customers

Subject: **Data Sheet Specification Change for Intersil Product ISL78420***

This advisory is to inform you that Intersil has updated the data sheet specification for the ISL78420* product. The change includes corrections to the Electrical Specification Table for various parameters as highlighted on the next page. The change aligns the data sheet with the existing product characteristics. The updated data sheet is available on the Intersil web site at:

<http://www.intersil.com/content/dam/Intersil/documents/fn82/fn8296.pdf>.

Products affected:

ISL78420ARTAZ, ISL78420ARTAZ-T, ISL78420AVEZ, ISL78420AVEZ-T

There have been no changes to the die/silicon or product itself. There will be no change in the part number(s) or external marking (branding) of the packaged the parts.

Intersil will take all necessary actions to conform to agreed upon customer requirements and to ensure the continued high quality and reliability of Intersil products being supplied. Customers may expect to continue receiving product processed to the same established conditions and systems used for manufacturing of the material supplied today.

If you have concerns with this advisory, Intersil must hear from you promptly. Please contact the nearest Intersil Sales Office or call the Intersil Corporate line at 1-888-468-3774, in the United States, or 1-321-724-7143 outside of the United States.

Regards,



Jeffrey Touvell

Intersil Corporation

PA14061

CC: D. Thornberry E. Kohler T. Lok

PA14061 Data Sheet Specification Change

From:

Absolute Maximum Ratings (Note 6)

| | |
|--|------------------------------------|
| Supply Voltage, V_{DD} , V_{HB} - V_{HS} (Notes 5) | -0.3V to 18V |
| PWM and EN Input Voltage | -0.3V to $V_{DD} + 0.3V$ |
| Voltage on LO | -0.3V to $V_{DD} + 0.3V$ |
| Voltage on HO | $V_{HS} - 0.3V$ to $V_{HB} + 0.3V$ |
| Voltage on HS (Continuous) | -1V to 110V |
| Voltage on HB | 118V |
| Average Current in V_{DD} to HB Diode | 100mA |

Maximum Recommended Operating Conditions (Note 6)

| | |
|--------------------------------------|--|
| Supply Voltage, V_{DD} | 8V to 14V |
| Voltage on HS | -1V to 100V |
| Voltage on HS (Repetitive Transient) | -5V to 105V |
| Voltage on HB | $V_{HS} + 8V$ to $V_{HS} + 14V$ and $V_{DD} - 1V$ to $V_{DD} + 100V$ |
| HS Slew Rate | < 50V/ns |
| Temperature | -40°C to +125°C |

Thermal Information

| | | |
|--|---|----------------------|
| Thermal Resistance (Typical) | θ_{JA} (°C/W) | θ_{JC} (°C/W) |
| 10 Ld TDFN (Notes 7, 8) | 42 | 4 |
| 9 Ld TDFN (Notes 7, 8) | 42 | 4 |
| Max Power Dissipation at +25°C in Free Air | | |
| 10 Ld TDFN | 3.0W | |
| 9 Ld TDFN | 3.1W | |
| Storage Temperature Range | -65°C to +150°C | |
| Junction Temperature Range | -55°C to +150°C | |
| Pb-Free Reflow Profile | see link below | |
| | http://www.intersil.com/pbfree/Pb-FreeReflow.asp | |

ESD Ratings

| | |
|--|-------|
| Human Body Model Class 2 (Tested per JESD22-A114E) | 3000V |
| Machine Model Class B (Tested per JESD22-A115-A) | 300V |
| Charged Device Model Class IV | 1500V |
| Latch Up (Tested per JESD-78B; Class 2, Level A) | 100mA |

CAUTION: Do not operate at or near the maximum ratings listed for extended periods of time. Exposure to such conditions may adversely impact product reliability and result in failures not covered by warranty.

NOTES:

- The ISL78420 is capable of derated operation at supply voltages exceeding 14V. Figure 17 shows the high-side voltage derating curve for this mode of operation.
- All voltages referenced to V_{SS} unless otherwise specified.

| PARAMETERS | SYMBOL | TEST CONDITIONS | $T_A = +25^\circ\text{C}$ | | | $T_A = -40^\circ\text{C to } +125^\circ\text{C}$ | | UNITS |
|-----------------------------------|--------------|---|---------------------------|------|-----|--|--------------|---------------|
| | | | MIN | TYP | MAX | MIN (Note 9) | MAX (Note 9) | |
| SUPPLY CURRENTS | | | | | | | | |
| V_{DD} Quiescent Current | I_{DD8k} | $R_{DT} = 8k$ | - | 650 | 950 | - | 1000 | μA |
| | I_{DD80k} | $R_{DT} = 80k$ | - | 1.0 | 2.1 | - | 2.2 | mA |
| V_{DD} Operating Current | I_{DD08k} | $f = 500\text{kHz}, R_{DT} = 8k$ | - | 2.5 | 3 | - | 3 | mA |
| | I_{DD080k} | $f = 500\text{kHz}, R_{DT} = 80k$ | - | 3.4 | 4 | - | 4 | mA |
| Total HB Quiescent Current | I_{HB} | $LI = HI = 0V$ | - | 65 | 115 | - | 150 | μA |
| Total HB Operating Current | I_{HBO} | $f = 500\text{kHz}$ | - | 2.0 | 2.5 | - | 3 | mA |
| HB to V_{SS} Current, Quiescent | I_{HBS} | $LI = HI = 0V; V_{HB} = V_{HS} = 114V$ | - | 0.05 | 1.5 | - | 10 | μA |
| HB to V_{SS} Current, Operating | I_{HBSO} | $f = 500\text{kHz}; V_{HB} = V_{HS} = 114V$ | - | 1.2 | 1.5 | - | 1.6 | mA |
| Tri-Level PWM Input | | | | | | | | |
| High Level Threshold | V_{PMMH} | | - | 3.6 | 4.0 | - | 4.3 | V |
| PARAMETERS | SYMBOL | TEST CONDITIONS | $T_A = +25^\circ\text{C}$ | | | $T_A = -40^\circ\text{C to } +125^\circ\text{C}$ | | UNITS |
| | | | MIN | TYP | MAX | MIN (Note 9) | MAX (Note 9) | |
| EN Input | | | | | | | | |
| Low Level Input Threshold | V_{ENL} | | 1.4 | 1.8 | - | 1.2 | - | V |
| High Level Input Threshold | V_{ENH} | | - | 1.8 | 2.2 | - | 2.4 | V |
| EN Pull-up Resistance | R_{PU} | | - | 210 | - | 100 | 320 | k Ω |
| UNDERVOLTAGE PROTECTION | | | | | | | | |
| V_{DD} Rising Threshold | V_{DDR} | | 6.8 | 7.3 | 7.8 | 6.5 | 8.1 | V |
| V_{DD} Threshold Hysteresis | V_{DDH} | | - | 0.6 | - | - | - | V |
| HB Rising Threshold | V_{HBR} | | 6.2 | 6.9 | 7.5 | 5.9 | 7.8 | V |
| HB Threshold Hysteresis | V_{HBH} | | - | 0.6 | - | - | - | V |

To:

Absolute Maximum Ratings (Note 5)

| | |
|--|--|
| Supply Voltage, V _{DD} , V _{HB} - V _{HS} (Note 6) | -0.3V to 18V |
| PWM and EN Input Voltage | -0.3V to V _{DD} + 0.3V |
| Voltage on LO | -0.3V to V _{DD} + 0.3V |
| Voltage on HO | V _{HS} - 0.3V to V _{HB} + 0.3V |
| Voltage on HS (Continuous) | -1V to 110V |
| Voltage on HB | 118V |
| Average Current in V _{DD} to HB Diode | 100mA |
| ESD Ratings | |
| Human Body Model (Tested per AEC-Q100-002) | 2kV |
| Charged Device Model (Tested per AEC-Q100-011) | 1.5kV |
| Latch-up (Tested per AEC-Q100-004) | 100mA |

Thermal Information

| | | |
|---|----------------------|----------------------|
| Thermal Resistance (Typical) (Notes 7, 8) | θ_{JA} (°C/W) | θ_{JC} (°C/W) |
| 14 Ld HTSSOP | 35 | 2.5 |
| 10 Ld TDFN | 42 | 4 |
| Max Power Dissipation at +25°C in Free Air (Note 9) | | |
| 14 Ld HTSSOP | 3.5W | |
| 10 Ld TDFN | 3.0W | |
| Storage Temperature Range | -65°C to +150°C | |
| Junction Temperature Range | -55°C to +150°C | |
| Pb-Free Reflow Profile | see TB493 | |

Maximum Recommended Operating Conditions (Note 5)

| | |
|--------------------------------------|---|
| Supply Voltage, V _{DD} | 8V to 14V |
| Voltage on HS | -1V to 100V |
| Voltage on HS (Repetitive Transient) | -5V to 105V |
| Voltage on HB (Note 6) | V _{HS} + 8V to V _{HS} + 14V |
| HS Slew Rate | <50V/ns |
| Temperature | -40°C to +125°C |

CAUTION: Do not operate at or near the maximum ratings listed for extended periods of time. Exposure to such conditions may adversely impact product reliability and result in failures not covered by warranty.

NOTES:

- All voltages referenced to V_{SS} unless otherwise specified.
- The operating voltage from HB to GND is the sum of VDD and the HS voltage. The maximum operating voltage from HB to GND is recommended to be under 114V.

| PARAMETERS | SYMBOL | TEST CONDITIONS | T _A = +25°C | | | T _A = -40°C to +125°C | | UNITS |
|--|---------------------|---|------------------------|------|------|----------------------------------|------------------|-------|
| | | | MIN | TYP | MAX | MIN (Note 10) | MAX (Note 10) | |
| SUPPLY CURRENTS | | | | | | | | |
| V _{DD} Quiescent Current | I _{DD8k} | R _{DT} = 8kΩ; PWM = 12V | - | 0.65 | 0.95 | - | 1 | mA |
| | I _{DD80k} | R _{DT} = 80kΩ; PWM = 12V | - | 1.0 | 2.1 | - | 2.2 | mA |
| V _{DD} Operating Current | I _{DD08k} | f _{PWM} = 500kHz, R _{DT} = 8kΩ | - | 2.5 | 3 | - | 3 | mA |
| | I _{DD080k} | f _{PWM} = 500kHz, R _{DT} = 80kΩ | - | 3.4 | 4 | - | 4 | mA |
| HB to HS Quiescent Current | I _{HB} | PWM = EN = 0V | - | 65 | 115 | - | 150 | μA |
| HB to HS Operating Current | I _{HBO} | f _{PWM} = 500kHz | - | 2.0 | 2.5 | - | 3 | mA |
| HB to V _{SS} Leakage Current | I _{HBS} | PWM = EN = 0V; V _{HB} = V _{HS} = 100V | - | 0.05 | 1.5 | - | 10 | μA |
| HB to V _{SS} Current, Operating | I _{HBSO} | f _{PWM} = 500kHz; V _{HB} = V _{HS} = 100V | - | 1.2 | 1.5 | - | 1.6 | mA |
| TRI-LEVEL PWM INPUT | | | | | | | | |
| High Level Threshold | V _{PWMH} | | - | 3.6 | 4.0 | - | 4.1 | V |

| EN INPUT | | | | | | | | |
|--------------------------------------|------------------|--------------------|-----|-----|-----|-----|-----|----|
| Low Level Threshold | V _{ENL} | | 1.8 | 2.5 | - | 1.8 | - | V |
| High Level Threshold | V _{ENH} | | - | 2.8 | 4.0 | - | 4.1 | V |
| EN Pull-down Resistor | R _{EN} | To V _{SS} | - | 210 | - | 100 | 320 | kΩ |
| UNDERVOLTAGE PROTECTION | | | | | | | | |
| V _{DD} Rising Threshold | V _{DDR} | | 6.8 | 7.3 | 7.8 | 6.5 | 8.0 | V |
| V _{DD} Threshold Hysteresis | V _{DDH} | | - | 0.6 | - | - | - | V |
| V _{HB} Rising Threshold | V _{HBR} | | 6.2 | 6.9 | 7.5 | 5.9 | 7.8 | V |
| V _{HB} Threshold Hysteresis | V _{HBH} | | - | 0.6 | - | - | - | V |

Note: Changes are shaded in yellow

Other changes outside the electrical table is listed on page 15 and 16 of the revised datasheet.