LOW QUIESCENT CURRENT BACK TO BACK MOSFET DRIVER

Features
- Very low quiescent current on and off state
- Back to back configuration
- Boost converter with integrated diode
- Standard level gate voltage
- Input active high and 3.3V compatible
- Under voltage lockout with diagnostic
- Wide operating voltage 3-36V
- Ground loss protection
- Lead-Free, Halogen Free, RoHS compliant

Applications
- Power switch for Stop and Start board net stabilizer
- Battery switch

Product Summary
- Operating voltage 3-36V
  - Vgate 11.5V min.
  - I Vcc average On 45μA max. at 25°C
  - I Vcc average Off 35μA max. at 25°C

Package
- SO8

Description
The AUIR3241S is a high side Mosfet driver for back to back topology targeting back to back switch. It features a very low quiescent current both on and off state. The AUIR3241S is a combination of a boost DC/DC converter using an external inductor and a gate driver. It drives standard level Mosfet even at low battery voltage. The input controls the gate voltage. The AUIR3241S integrates an under voltage lock out protection to prevent to drive the Mosfet in linear mode.

Ordering Information

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>Package Type</th>
<th>Standard Pack</th>
<th>Complete Part Number</th>
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<tbody>
<tr>
<td>AUIR3241S</td>
<td>SOIC8</td>
<td>Tape and reel</td>
<td>2500</td>
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<td></td>
<td></td>
<td></td>
<td>AUIR3241STR</td>
</tr>
</tbody>
</table>
Typical Connection – Back to Back

Main Battery

AUIR3241S

IN

Rin

GND

Source

Sw

100µH

Current measurement

Rg

18V

Cin

Out

VCC

Cout

Load

Rs

Rs

Typical Connection – Q_diode

Main Battery

AUIR3241S

IN

Rin

GND

Source

Sw

100µH

Current measurement

Rg

18V

Cin

Out

VCC

Cout

Load
Typical Connection – Battery switch

Main Battery

AUIR3241S

IN

Rin

GND

100µH

18V

Cin

Gate

Source

Sw

Rs

Current measurement

Rg

VCC

Out

Cout

Main Battery Loads

Rs

Current measurement
### Absolute Maximum Ratings

Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vcc-gnd</td>
<td>Maximum Vcc voltage</td>
<td>-0.3</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Vsw-gnd</td>
<td>Maximum Sw voltage</td>
<td>Vrs-0.3</td>
<td>Vout+Vf</td>
<td></td>
</tr>
<tr>
<td>Vsw-Vrs</td>
<td>Maximum Sw voltage</td>
<td>-0.3</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Vout-Vcc</td>
<td>Maximum Vout-Vcc voltage</td>
<td>-0.3</td>
<td>65</td>
<td></td>
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<tr>
<td>Vout-gnd</td>
<td>Maximum Vout voltage</td>
<td>-0.3</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Vout-Vgate</td>
<td>Maximum Vout-Vgate voltage</td>
<td>-0.3</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Vgate-Vsource</td>
<td>Maximum Vgate-Vsource voltage</td>
<td>-0.3</td>
<td>75</td>
<td></td>
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<tr>
<td>Vout-Vsource</td>
<td>Maximum Vout-Vsource voltage</td>
<td>-0.3</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Vrs-gnd</td>
<td>Maximum Rs pin voltage</td>
<td>-0.3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Vin-gnd</td>
<td>Maximum IN pin voltage</td>
<td>-0.3</td>
<td>Vout+0.3</td>
<td></td>
</tr>
<tr>
<td>Isw</td>
<td>Maximum continuous current in Sw pin</td>
<td>—</td>
<td>200</td>
<td>mA</td>
</tr>
<tr>
<td>ID</td>
<td>Maximum continuous current in the rectifier diode</td>
<td>—</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Rg</td>
<td>Minimum gate resistor</td>
<td>100</td>
<td>—</td>
<td>Ohm</td>
</tr>
<tr>
<td>Tj max.</td>
<td>Maximum operating junction temperature</td>
<td>-40</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td></td>
<td>Maximum storage temperature</td>
<td>-55</td>
<td>150</td>
<td></td>
</tr>
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</table>

### Thermal Characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
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<tbody>
<tr>
<td>Rth</td>
<td>Thermal resistance junction to ambient</td>
<td>100</td>
<td>—</td>
<td>°C/W</td>
</tr>
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</table>

### Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIH</td>
<td>High level input voltage</td>
<td>2.5</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>VIL</td>
<td>Low level input voltage</td>
<td>0</td>
<td>0.8</td>
<td>V</td>
</tr>
</tbody>
</table>
### Static Electrical Characteristics

$T_j=40\ldots125^\circ C, \ Vcc=6\ldots16V$ (unless otherwise specified), typical value are given for $Vcc=14V$ and $T_j=25^\circ C$.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Vcc$ op (ext.)</td>
<td>Supply voltage range for extended operation (some parameters may be downgraded beyond nominal operation)</td>
<td>3</td>
<td>—</td>
<td>36</td>
<td>V</td>
<td>See page 11</td>
</tr>
<tr>
<td>$Vcc$ op (nom), (1)</td>
<td>Supply voltage range for nominal operation</td>
<td>6</td>
<td>—</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ Off</td>
<td>Supply current when Off, $T_j=25^\circ C$</td>
<td>—</td>
<td>2</td>
<td>6</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ On</td>
<td>Supply current when On, $T_j=25^\circ C$</td>
<td>—</td>
<td>3</td>
<td>8</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ Off</td>
<td>Supply current when Off, $T_j=125^\circ C$</td>
<td>—</td>
<td>4</td>
<td>8</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ On</td>
<td>Supply current when On, $T_j=125^\circ C$</td>
<td>—</td>
<td>10</td>
<td>15</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ Off</td>
<td>Quiescent current on Out pin, $T_j=25^\circ C$</td>
<td>—</td>
<td>13</td>
<td>25</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$I_q$ $Vcc$ On</td>
<td>Quiescent current on Out pin, $T_j=125^\circ C$</td>
<td>—</td>
<td>12</td>
<td>20</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$V_{br}$</td>
<td>Breakdown voltage between Out and Source</td>
<td>75</td>
<td>90</td>
<td>—</td>
<td>V</td>
<td>$I=10mA$</td>
</tr>
<tr>
<td>$V_{br}$ Gate</td>
<td>Breakdown voltage between Gate and Source</td>
<td>75</td>
<td>90</td>
<td>—</td>
<td>V</td>
<td>$I=10mA$</td>
</tr>
<tr>
<td>$O_{V}$</td>
<td>Over-voltage protection between Vout and Gnd</td>
<td>50</td>
<td>55</td>
<td>62</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$I_{lin}$</td>
<td>Input current</td>
<td>—</td>
<td>3</td>
<td>6</td>
<td>µA</td>
<td>$V=5V$</td>
</tr>
<tr>
<td>$V_{in,th}$</td>
<td>Input voltage threshold</td>
<td>0.8</td>
<td>1.5</td>
<td>2.5</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$V_{out,th}$</td>
<td>Output voltage threshold</td>
<td>11.5</td>
<td>12.5</td>
<td>14</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$V_{out,th}$ UV LO</td>
<td>Undervoltage lockout between Vout and Vcc</td>
<td>6.5</td>
<td>8</td>
<td>10</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$V_{rs,th}$ UV LO</td>
<td>Output voltage minus Undervoltage lockout threshold</td>
<td>3</td>
<td>4.5</td>
<td>—</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$I_{latch,UV LO}$</td>
<td>Under voltage lockout Latch current between Vout and Vcc</td>
<td>10</td>
<td>25</td>
<td>40</td>
<td>mA</td>
<td>See page 11</td>
</tr>
<tr>
<td>$V_{F}$</td>
<td>Forward voltage of rectifier diode</td>
<td>0.9</td>
<td>1.1</td>
<td>1.7</td>
<td>V</td>
<td>$I=100mA, T_j=25^\circ C$</td>
</tr>
<tr>
<td>$R_{dson}$ K1</td>
<td>$R_{dson}$ of K1, $T_j=40^\circ C$</td>
<td>—</td>
<td>8</td>
<td>13</td>
<td>Ω</td>
<td>$I=100mA, Vout-Vcc=12.5V</td>
</tr>
<tr>
<td>$R_{dson}$ K2</td>
<td>$R_{dson}$ of K2, $T_j=125^\circ C$</td>
<td>—</td>
<td>11</td>
<td>15</td>
<td>Ω</td>
<td></td>
</tr>
<tr>
<td>$R_{dson}$ K3</td>
<td>$R_{dson}$ of K3, $T_j=25^\circ C$</td>
<td>—</td>
<td>15</td>
<td>20</td>
<td>Ω</td>
<td></td>
</tr>
</tbody>
</table>

(1) If the part is supply outside of this range (ex: during ramp up of Vcc), other values in this table might not be guaranteed.

(2) Supply current might be higher than specified during the start-up of the part (especially during the charge of Cout)

### Timing Converter Characteristics

$T_j=40\ldots125^\circ C, \ Vcc=6\ldots16V$ (unless otherwise specified), typical value are given for $Vcc=14V$ and $T_j=25^\circ C$.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_{off}$</td>
<td>Off time</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>µs</td>
<td>See figure 4</td>
</tr>
<tr>
<td>$T_{on}$ K1</td>
<td>Turn-on delay of K1</td>
<td>—</td>
<td>5</td>
<td>—</td>
<td>µs</td>
<td>See figure 5</td>
</tr>
<tr>
<td>$T_{off}$ K1</td>
<td>Turn-off delay of K1</td>
<td>—</td>
<td>0.2</td>
<td>—</td>
<td>µs</td>
<td>See figure 10</td>
</tr>
<tr>
<td>POR_Delay</td>
<td>Power On Reset delay</td>
<td>200</td>
<td>500</td>
<td>1200</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>POR_Th</td>
<td>Power On Reset threshold</td>
<td>6</td>
<td>6.5</td>
<td>7.5</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

### Switching Characteristics

$T_j=40\ldots125^\circ C, \ Vcc=6\ldots16V$ (unless otherwise specified), typical value are given for $Vcc=14V$ and $T_j=25^\circ C$.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_{on}$ gate</td>
<td>Turn-on delay</td>
<td>0.5</td>
<td>1.5</td>
<td>3</td>
<td>µs</td>
<td>$C_{gate}=100nF$</td>
</tr>
<tr>
<td>$T_{r}$ gate</td>
<td>Rise time on gate 10% to 90% of Vout-Vcc</td>
<td>—</td>
<td>6</td>
<td>15</td>
<td>µs</td>
<td>$V_{gate}=V_{source}=0V$</td>
</tr>
<tr>
<td>$I_{q,OFF}$</td>
<td>Gate high short circuit pulsed current</td>
<td>100</td>
<td>350</td>
<td>—</td>
<td>mA</td>
<td>$V=5V$</td>
</tr>
<tr>
<td>$T_{off}$ gate</td>
<td>Turn-off delay</td>
<td>0.5</td>
<td>2</td>
<td>5</td>
<td>µs</td>
<td>$C_{gate}=100nF$</td>
</tr>
<tr>
<td>$T_{f}$ gate</td>
<td>Fall time on gate 90% to 10% of Vout-Vcc</td>
<td>—</td>
<td>6</td>
<td>15</td>
<td>µs</td>
<td>$V=5V$</td>
</tr>
<tr>
<td>$I_{q,LCC}$</td>
<td>Gate low short circuit pulsed current</td>
<td>100</td>
<td>350</td>
<td>—</td>
<td>mA</td>
<td>$V=14V$</td>
</tr>
<tr>
<td>$T_{reset}$</td>
<td>Time to reset the under voltage latches</td>
<td>—</td>
<td>1</td>
<td>100</td>
<td>µs</td>
<td>See page 11</td>
</tr>
</tbody>
</table>
Lead Definitions

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN</td>
<td>Input pin</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground pin</td>
</tr>
<tr>
<td>3</td>
<td>RS</td>
<td>Current sense input pin</td>
</tr>
<tr>
<td>4</td>
<td>SW</td>
<td>Output of K1</td>
</tr>
<tr>
<td>5</td>
<td>Source</td>
<td>Connection of the source pin of the Mosfets</td>
</tr>
<tr>
<td>6</td>
<td>Gate</td>
<td>Output of the gate driver</td>
</tr>
<tr>
<td>7</td>
<td>Vcc</td>
<td>Power supply</td>
</tr>
<tr>
<td>8</td>
<td>Out</td>
<td>Output of the boost converter</td>
</tr>
</tbody>
</table>

Lead Assignments
Block diagram

Input Circuitry
The input control circuitry drives the output gate driver stage. The input is active high. With a low level input voltage, the gate is shorted to the source. With a high level input, the output gate driver turn on when Vout reaches Vout_th.

Figure 1
Description

The topology of the AUIR3241S is a boost DC/DC converter working in current mode. The DC/DC is working once the AUIR3241S is powered regardless the input level.

K1 is switched on when the gate voltage is lower than $V_{out}$ threshold. When $R_s$ pin reaches $V_{rs\, th}$, K1 is turned off and the inductor charges the Out capacitor through D. The system cannot restart during $T_{off}$ after $V_{rs\, th}$ has been reached. The DC/DC restart only when the Out and the $V_{cc}$ voltage difference is lower than $V_{out\_th}$ in order to achieve low quiescent current on the power supply.

To turn off the power Mosfet, the input must be low. Then K2 is turned off and K3 shorts the gate to the source.

![Figure 2](image)

Parameters definition

Current definition

![Figure 3](image)
Timing definition

![Timing diagram](image)

**Figure 4**

Low quiescent current operation when On.
The AUIR3241S is able to operate with a very low quiescent current on the Vcc pin. Nevertheless the supply current depends also on the leakage of the power mosfet named "Iq gate" on the diagram below.
The leakage current is given when K1 is off. When K1 is on, the current flowing in Vcc is the current charging the inductor. Therefore the average current on the Vcc is the combination of the current when K1 is ON and OFF. The average current on the Vcc pin can be calculated using:

\[
I_{Vcc\ average\ on} = (Iq\ gate + Iq\ Out\ On) \times \frac{Vout - Vcc + Vf}{Vcc} + Iq\ Vcc\ on + Iq\ Out\ on
\]

\[
I_{Vcc\ average\ off} = (Iq\ gate + Iq\ Out\ Off) \times \frac{Vout - Vcc + Vf}{Vcc} + Iq\ Vcc\ off + Iq\ Out\ off
\]

With Vout: the average voltage on the output.
Vout average = (Vout peak + Vout th)/2

Vout peak can be calculated by:

\[
Vout\ peak = \sqrt{\frac{L}{Cout}} Ipeak^2 + Vout\ th^2
\]
During On operation, the DC/DC works in pulse mode, meaning each time the Vout-Vcc voltage comes below 12.5V, the AUIR3241S switches on K1 to recharge the gate voltage. When the Iout leakage is low enough to maintain the DC/DC in discontinuous mode, the frequency is calculated by:

\[ T = \frac{I_{\text{peak}}^2 \cdot L}{2 \cdot (I_{\text{gate}} + I_{\text{Vout on}}) \cdot (V_{\text{out}} - V_{\text{cc}} + V_f)} \]

**Peak current control**

The current in the inductor is limited by the 1V comparator which monitors the voltage across Rs. Due to the delay in the loop (tdoff K1), the inductor current will exceed the threshold set by: \( V_{\text{rs th}} \). At low voltage, the current waveform in the inductor is not anymore linear, but exponential because the sum of the resistor of K1, the inductor and RS are not any more negligible.

\[ V_{\text{rs}} \]

\[ V_{\text{rs th}} \]

\[ t_{\text{off K1}} \]

\[ t_{\text{on}} \]

**Figure 6**

The peak current and \( t_{\text{on}} \) can be calculated as follow:

\[ t_{V_{\text{rs th}}} = - \frac{L}{R_{\text{ds on K1}} + R_s + R_l} \cdot \ln\left(1 - \frac{R_s + R_{\text{ds on K1}} + R_l}{V_{\text{rs th}} \cdot R_s \cdot V_{\text{cc}}} \right) \]

Where Rl is the resistor of the inductor

With: \( t_{\text{on}} = t_{V_{\text{rs th}}} + t_{\text{off K1}} \)

The peak current can be solved by:

\[ I_{\text{peak}} = \frac{V_{\text{cc}}}{R_{\text{ds on K1}} + R_s + R_l} \cdot \left(1 - e^{-\frac{t_{\text{on}} \cdot R_{\text{ds on K1}} + R_s + R_l}{L}} \right) \]

The peak current must not exceed the Maximum Rating of Isw.
Output capacitor choice
The output capacitor must be chosen based on 2 criteria:
- During the turn on of K2, the voltage drop on Cout must not trigger the Under Voltage Lockout due to the gate charge of the Power Mosfet.
  \[ \text{Cout} > \frac{Q \text{ gate total Power Mosfet}}{(V_{\text{out th}}-UV_{\text{LO}}) \text{ Min.}} \]
- When K1 turn off and the inductor is charging Cout, the peak current on the output capacitor must be limited in order to avoid having current flowing in the Gate zener diode:
  \[ \text{Cout} > \frac{L \times I_{\text{peak}}^2}{V_{z \text{ min gate}}^2 - V_{\text{out th}}^2} \]
  \(V_{z \text{ min gate}}\) is the minimum Zener voltage of the external gate Zener diode.

Minimum operating voltage
While the AUIR3241S operating voltage is specified between 3V and 36V. The 3V minimum operating voltage is when the Vcc is going down. The minimum voltage is also limited by the fact that the Rs voltage must reach the Vrsth taking account all resistors which limit the inductor current.
\[ \text{Vcc min} = \frac{\text{Rdson k1} + \text{Rs} + \text{RI}}{\text{Rs}} \times \text{Vrsth} \]

Over-Voltage protection
The AUIR3241S integrates an over-voltage protection in order to protect K1. When Vcc exceed the Over-voltage threshold, the DC/DC is stopped.

Under voltage lockout - Diagnostic
In order to avoid to drive the Power Mosfet in linear mode, the AUIR3241S features an under voltage lockout. During the turn on, the gate will not be powered until Vout-Vcc reaches Vout th, meaning K2 is off and K3 is on. Then the AUIR3241S powers the gate of the mosfet. If Vout-Vcc goes below UV_{LO}, the gate is shorted to the source and the part is latched. A cycle in the input is required to reset the latch. The input must be kept low longer than Treset.

![Diagram](image)

**Figure 7**
When the part is latched a current source \((I_{\text{latch \ UV_{LO}}}^)\) is connected between Out and Vcc to increase the current consumption. By monitoring the current consumption the system can have a diagnostic of the output status. The diagnostic can be analog or digital.
Analog Diagnostic: Output current measurement
The average current into Rs can be measured by adding a low pass filter before the ADC of the micro controller.

![Figure 8](image)

Then the average output current can be evaluated using:
\[ I_{out\ av} = I_{Rs\ av} \cdot \frac{V_{cc}}{V_{out} - V_{cc}} \]
Knowing the output current can be useful to do a diagnostic on the power Mosfet. If the gate is shorted, the output current will be significantly higher than in normal operation.

Digital diagnostic
By adding a diode during high current consumption mode, the output voltage can be close to 1V. Using a bipolar with a pull-up resistor will provide a digital diagnostic.

![Figure 9](image)

Power On Reset
During the power on, the AUIR3241S features a Power On Reset to guarantee a stable state of the 2 latches of the Under voltage lockout and guarantee a stable internal biasing. POR_Delay is triggered when Vout-Gnd exceeds POR_Th.
Figures are given for typical value, Vcc=14V and Tj=25°C otherwise specified

**Figure 11** – $I_q$ Vcc on (µA) Vs Tj (°C)

**Figure 12** – $I_q$ Vcc on (µA) Vs Vcc(V)

**Figure 13** – $I_q$ Out on (µA) Vs Tj (°C)

**Figure 14** – $I_q$ Out on (µA) Vs Vcc(V)
Figure 15 – \( I_q \) Vcc off (\( \mu \)A) Vs Tj (°C)

Figure 16 – \( I_q \) Vcc off (\( \mu \)A) Vs Vcc (V)

Figure 17 – \( I_q \) Out off, Gate leakage current (\( \mu \)A) Vs Tj (°C)

Figure 18 – \( I_q \) Out off (\( \mu \)A) Vs Vcc (V)
Case Outline – SO8

Dimensions are shown in millimeters (inches)

NOTES:
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS.
   MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS.
   MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.
Tape & Reel  SO8

Notes:
1. '0 sprocket hole pitch cumulative tolerance 0.2
2. Camber not to exceed 1mm in 100mm
3. Material: Black Conductive Aramide Polyethylene
4. Ao and Bo measured on a plane 0.3mm above the bottom of the pocket
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier
6. Pocket position relative to sprocket hole measured at true position of pocket, not pocket hole.

Ao = 6.4 mm
Bo = 5.2 mm
Ko = 2.1 mm

- All Dimensions in Millimeters -
Part Marking Information

Part Number: A3241S
Date Code: AYWW?
Pin 1 Identifier: ?
Marking Code: XXXX
Lot Code: (Eng mode – Min. last 4 digit EATI #)
(Prod mode – 4 digit SPN code)
Assembly Site Code: 
Top Marking (Laser)

Qualification Information

<table>
<thead>
<tr>
<th>Qualification Level</th>
<th>Automotive (per AEC-Q100)</th>
<th>Comments: This family of ICs has passed an Automotive qualification. IR’s Industrial and Consumer qualification level is granted by extension of the higher Automotive level.</th>
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<td>Moisture Sensitivity Level</td>
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<td>MSL2, 260°C (per IPC/JEDEC J-STD-020)</td>
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<td>ESD</td>
<td>Human Body Model</td>
<td>Class 1C Passed 1500V (per AEC-Q100-002)</td>
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<td>Charged Device Model</td>
<td>Class C6 (+/-1000V) (per AEC-Q100-011)</td>
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<td>IC Latch-Up Test</td>
<td>Class II Level A (per AEC-Q100-004)</td>
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<tr>
<td>RoHS Compliant</td>
<td>Yes</td>
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<td>2017-04-27</td>
<td>Data Sheet created.</td>
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<tr>
<td>Rev 1.01</td>
<td>2017-09-12</td>
<td>Update drawing, Differentiate Vcc_op (ext) &amp; Vcc_op (nom), add Appendixies (1) &amp; (2) on Page 5</td>
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