# CHANGE NOTIFICATION

Linear Technology Corporation
1630 McCarthy Blvd., Milpitas, CA 95035-7417
(408) 432-1900

April 28, 2015

Dear Sir/Madam: PCN# 042815

**Subject: Notification of Change to LTC2850, LTC2851, LTC2852, LTC2854, LTC2855 Datasheet**

Please be advised that Linear Technology Corporation has made a minor change to the subject product datasheets to facilitate the improvement of manufacturing yield on H grade version of the product. The changes are shown on the attached pages of the marked up datasheet. There was no change in form, fit, function, quality or reliability of the product. The product shipped after June 29, 2015 will be tested to the new limits.

Should you have any further questions or concerns please contact your local Linear Technology Sales person or you may contact me at 408-432-1900 ext. 2077, or by e-mail at jason.hu@linear.com. If I do not hear from you by June 29, 2015, we will consider this change to be approved by your company.

Sincerely,

Jason Hu
Quality Assurance Engineer

## ELECTRICAL CHARACTERISTICS

**The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A$ = 25°C. $V_{CC}$ = 3.3V, unless otherwise noted. (Note 2)**

| SYMBOL | PARAMETER | CONDITIONS | | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|---|
| **Driver** | | | | | | | |
| $\|V_{OD}\|$ | Differential Driver Output Voltage | R = ∞, $V_{CC}$ = 3V (Figure 1)<br>R = 27Ω, $V_{CC}$ = 3V (Figure 1)<br>R = 50Ω, $V_{CC}$ = 3.13V (Figure 1) | ●<br>●<br>● | <br>1.5<br>2 | | $V_{CC}$<br>$V_{CC}$<br>$V_{CC}$ | V<br>V<br>V |
| $\Delta\|V_{OD}\|$ | Difference in Magnitude of Driver Differential Output Voltage for Complementary Output States | R = 27Ω or 50Ω (Figure 1) | ● | | | 0.2 | V |
| $V_{OC}$ | Driver Common Mode Output Voltage | R = 27Ω or 50Ω (Figure 1) | ● | | | 3 | V |
| $\Delta\|V_{OC}\|$ | Difference in Magnitude of Driver Common Mode Output Voltage for Complementary Output States | R = 27Ω or 50Ω (Figure 1) | ● | | | 0.2 | V |
| $I_{OZD}$ | Driver Three-State (High Impedance) Output Current on Y and Z | DE = 0V, (Y or Z) = –7V, 12V (LTC2852)<br>H-Grade | ●<br>● | | | ±10<br>±50 | µA<br>µA |
| $I_{OSD}$ | Maximum Driver Short-Circuit Current | –7V ≤ (Y or Z) ≤ 12V (Figure 2) | <br>● | <br>–250 | ±180 | ±250<br>300 | mA<br>mA |
| **Receiver** | | | | | | | |
| $I_{IN}$ | Receiver Input Current (A, B) | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = 12V (Figure 3) (C, I-Grade)<br>DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = –7V, (Figure 3) (C, I-Grade) | ●<br>● | <br>–100 | | 125<br> | µA<br>µA |
| | | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = 12V (Figure 3) (H-Grade)<br>DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = –7V, (Figure 3) (H-Grade) | ●<br>● | <br>–145 | | 250<br> | µA<br>µA |
| $R_{IN}$ | Receiver Input Resistance | $\overline{RE}$ = $V_{CC}$ or 0V, DE = TE = 0V, $V_{IN}$ = –7V, –3V, 3V, 7V, 12V (Figure 3) (C, I-Grade) | ● | 96 | 125 | | kΩ |
| | | $\overline{RE}$ = $V_{CC}$ or 0V, DE = TE = 0V, $V_{IN}$ = –7V, –3V, 3V, 7V, 12V (Figure 3) (H-Grade) | ● | 48 | 125 | | kΩ |
| $V_{TH}$ | Receiver Differential Input Threshold Voltage | –7V ≤ B ≤ 12V | ● | | | ±0.2 | V |
| $\Delta V_{TH}$ | Receiver Input Hysteresis | B = 0V | | | 25 | | mV |
| $V_{OH}$ | Receiver Output High Voltage | I(RO) = –4mA, A-B = 200mV, $V_{CC}$ = 3V | ● | 2.4 | | | V |
| $V_{OL}$ | Receiver Output Low Voltage | I(RO) = 4mA, A-B = –200mV, $V_{CC}$ = 3V | ● | | | 0.4 | V |
| $I_{OZR}$ | Receiver Three-State (High Impedance) Output Current on RO | $\overline{RE}$ = $V_{CC}$, 0V ≤ RO ≤ $V_{CC}$ (LTC2850, LTC2852) | ● | | | ±1 | µA |
| $I_{OSR}$ | Receiver Short-Circuit Current | 0V ≤ RO ≤ $V_{CC}$ | ● | | | ±85 | mA |
| **Logic** | | | | | | | |
| $V_{IH}$ | Logic Input High Voltage | $V_{CC}$ = 3.6V | ● | 2 | | | V |
| $V_{IL}$ | Logic Input Low Voltage | $V_{CC}$ = 3V | ● | | | 0.8 | V |
| $I_{INL}$ | Logic Input Current | | ● | | 0 | ±10 | µA |

used to be +/-10uA; now changed to +/-50uA

## ELECTRICAL CHARACTERISTICS

**The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A$ = 25°C, $V_{CC}$ = 3.3V unless otherwise noted (Note 2).**

| SYMBOL | PARAMETER | CONDITIONS | | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|---|
| **Driver** | | | | | | | |
| $\|V_{OD}\|$ | Differential Driver Output Voltage | R = ∞, $V_{CC}$ = 3V (Figure 1) | ● | | | $V_{CC}$ | V |
| | | R = 27Ω, $V_{CC}$ = 3V (Figure 1) | ● | 1.5 | | $V_{CC}$ | V |
| | | R = 50Ω, $V_{CC}$ = 3.13V (Figure 1) | ● | 2 | | $V_{CC}$ | V |
| $\Delta\|V_{OD}\|$ | Change in Magnitude of Driver Differential Output Voltage for Complementary Output States | R = 27Ω or R = 50Ω (Figure 1) | ● | | | 0.2 | V |
| $V_{OC}$ | Driver Common Mode Output Voltage | R = 27Ω or R = 50Ω (Figure 1) | ● | | | 3 | V |
| $\Delta\|V_{OC}\|$ | Change in Magnitude of Driver Common Mode Output Voltage for Complementary Output States | R = 27Ω or R = 50Ω (Figure 1) | ● | | | 0.2 | V |
| $I_{OZD}$ | Driver Three-State (High Impedance) Output Current on Y and Z | DE = 0V, (Y or Z) = –7V, 12V (LTC2855) | ● | | | ±10 | µA |
| | | H-Grade | ● | | | ±50 | µA |
| $I_{OSD}$ | Maximum Driver Short-Circuit Current | –7V ≤ (Y or Z) ≤ 12V (Figure 2) | | | 180 | ±250 | mA |
| | | | ● | –250 | | 300 | mA |
| **Receiver** | | | | | | | |
| $I_{IN}$ | Receiver Input Current (A, B) | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = 12V (Figure 3) (C-, I-Grade) | ● | | | 125 | µA |
| | | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = –7V, (Figure 3) (C-, I-Grade) | ● | –100 | | | µA |
| | | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = 12V (Figure 3) (H-Grade) | ● | | | 250 | µA |
| | | DE = TE = 0V, $V_{CC}$ = 0V or 3.3V, $V_{IN}$ = –7V, (Figure 3) (H-Grade) | ● | –145 | | | µA |
| $R_{IN}$ | Receiver Input Resistance | $\overline{RE}$ = $V_{CC}$ or 0V, DE = TE = 0V, $V_{IN}$ = –7V, –3V, 3V, 7V, 12V (Figure 3) (C-, I-Grade) | ● | 96 | 125 | | kΩ |
| | | $\overline{RE}$ = $V_{CC}$ or 0V, DE = TE = 0V, $V_{IN}$ = –7V, –3V, 3V, 7V, 12V (Figure 3) (H-Grade) | ● | 48 | 125 | | kΩ |
| $V_{TH}$ | Receiver Differential Input Threshold Voltage | –7V ≤ B ≤ 12V | ● | | | ±0.2 | V |
| $\Delta V_{TH}$ | Receiver Input Hysteresis | B = 0V | | | 25 | | mV |
| $V_{OH}$ | Receiver Output HIGH Voltage | I(RO) = –4mA, A-B = 200mV, $V_{CC}$ = 3V | ● | 2.4 | | | V |
| $V_{OL}$ | Receiver Output LOW Voltage | I(RO) = 4mA, A-B = –200mV, $V_{CC}$ = 3V | ● | | | 0.4 | V |
| $I_{OZR}$ | Receiver Three-State (High Impedance) Output Current on RO | $\overline{RE}$ = $V_{CC}$, 0V ≤ RO ≤ $V_{CC}$ | ● | | | ±1 | µA |
| $I_{OSR}$ | Receiver Short-Circuit Current | 0V ≤ RO ≤ $V_{CC}$ | ● | | | ±85 | mA |
| $R_{TERM}$ | Receiver Input Terminating Resistor | TE = $V_{CC}$, $V_{AB}$ = 2V, $V_B$ = –7V, 0V, 10V (Figure 8) | ● | 108 | 120 | 156 | Ω |
| **Logic** | | | | | | | |
| $V_{IH}$ | Logic Input High Voltage | $V_{CC}$ = 3.6V | ● | 2 | | | V |
| $V_{IL}$ | Logic Input Low Voltage | $V_{CC}$ = 3V | ● | | | 0.8 | V |
| $I_{INL}$ | Logic Input Current | | ● | | 0 | ±10 | µA |
| **Supplies** | | | | | | | |
| $I_{CCS}$ | Supply Current in Shutdown Mode | DE = 0V, $\overline{RE}$ = $V_{CC}$, TE = 0V (C-, I-Grade) | ● | | 0 | 5 | µA |
| | | (H-Grade) | ● | | 0 | 15 | µA |
| $I_{CCR}$ | Supply Current in Receive Mode | DE = 0V, $\overline{RE}$ = 0V, TE = 0V | ● | | 370 | 900 | µA |

used to be +/-10uA; now changed to +/-50uA