## ELECTRICAL CHARACTERISTICS

**The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A$ = 25°C. $V_{CC}$ = 5V, $IOV_{CC}$ = 5V, $V^+$ = 15V, $V^-$ = –15V, $V_{REF}$ = 2.5V, $V_{OUT}$ unloaded unless otherwise specified.**

**LTC2666-16/LTC2666-12**

| SYMBOL | PARAMETER | CONDITIONS | | LTC2666-12 MIN | LTC2666-12 TYP | LTC2666-12 MAX | LTC2666-16 MIN | LTC2666-16 TYP | LTC2666-16 MAX | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| **DC Performance** | | | | | | | | | | |
| | Resolution | | ● | 12 | | | 16 | | | Bits |
| | Monotonicity | All Ranges (Note 3) | ● | 12 | | | 16 | | | Bits |
| DNL | Differential Nonlinearity | All Ranges (Note 3) | ● | | ±0.05 | ±0.5 | | ±0.2 | ±1 | LSB |
| INL | Integral Nonlinearity<br>All Ranges (Note 3) | $V^+/V^-$ = ±15V | ● | | ±0.2 | ±1 | | ±2.2 | ±4 | -/+5LSB |
| | | $V^-$ = GND (Note 3) | | | | | | | | |
| | | C-Grade, I-Grade | ● | | ±0.2 | ±1 | | ±2.2 | ±4 | -/+5LSB |
| | | H-Grade | ● | | ±0.2 | ±1 | | ±2.2 | ±5 | LSB |
| $V_{OS}$ | Unipolar Offset Error | 0V to 5V Range | ● | | ±1 | ±2 | | ±1 | ±2 | mV |
| | | 0V to 10V Range | ● | | ±2 | ±4 | | ±2 | ±4 | mV |
| | $V_{OS}$ Temperature Coefficient | All Unipolar Ranges | | | 1 | | | 1 | | ppm/°C |
| ZSE | Single-Supply Zero-Scale Error | All Unipolar Ranges, $V^-$ = GND | ● | | 2 | 5 | | 2 | 5 | mV |
| BZE | Bipolar Zero Error | All Bipolar Ranges | ● | | ±0.02 | ±0.08 | | ±0.02 | ±0.08 | %FSR |
| | BZE Temperature Coefficient | All Bipolar Ranges | | | 1 | | | 1 | | ppm/°C |
| GE | Gain Error | All Ranges, External Reference | ● | | ±0.02 | ±0.08 | | ±0.02 | ±0.08 | %FSR |
| | Gain Temperature Coefficient | | | | 2 | | | 2 | | ppm/°C |
| PSR | Power Supply Rejection<br>All Ranges | $V_{CC}$ = 5V, ±10%<br>$V^+/V^-$ = ±15V, ±5% | | | 0.1<br>0.001 | | | 1<br>0.01 | | LSB/V<br>LSB/V |

| SYMBOL | PARAMETER | CONDITIONS | | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|---|
| $V_{OUT}$ | Output Voltage Swing | To $V^-$ (Unloaded, $V^-$ = GND) | | | $V^-$ + 0.004 | | V |
| | | To $V^+$ (Unloaded, $V^+$ = 5V) | | | $V^+$ – 0.004 | | V |
| | | To $V^-$ (–10mA ≤ $I_{OUT}$ ≤ 10mA) | ● | | | $V^-$ + 1.4 | V |
| | | To $V^+$ (–10mA ≤ $I_{OUT}$ ≤ 10mA) | ● | $V^+$ – 1.4 | | | V |
| | Load Regulation | –10mA ≤ $I_{OUT}$ ≤ 10mA (Note 4) | ● | | 78 | 150 | µV/mA |
| $R_{OUT}$ | DC Output Impedance | –10mA ≤ $I_{OUT}$ ≤ 10mA (Note 4) | ● | | 0.078 | 0.15 | Ω |
| | DC Crosstalk (Note 5)<br>0V to 5V Range | Due to Full-Scale Output Change | | | ±1 | | µV |
| | | Due to Load Current Change | | | ±2 | | µV/mA |
| | | Due to Powering Down (per Channel) | | | ±4 | | µV |
| $I_{SC}$ | $V^+/V^-$ Short-Circuit Output Current (Note 6) | $V_{CC}$ = 5.5V, $V^+/V^-$ = ±15.75V, $V_{REF}$ = 2.5V, ±10V Output Range | | | | | |
| | | Code: Zero-Scale; Forcing Output to GND | ● | 16 | | 42 | mA |
| | | Code: Full-Scale; Forcing Output to GND | ● | –40 | | –14.5 | mA |
| **Reference** | | | | | | | |
| | Reference Output Voltage | | | 2.495 | 2.5 | 2.505 | V |
| | Reference Temperature Coefficient | (Note 7) | | | ±2 | ±10 | ppm/°C |
| | Reference Line Regulation | $V_{CC}$ ±10% | | | 50 | | µV/V |
| | Reference Short-Circuit Current | $V_{CC}$ = 5.5V, Forcing Output to GND | | | 2.5 | | mA |
| | REFCOMP Pin Short-Circuit Current | $V_{CC}$ = 5.5V, Forcing Output to GND | | | 65 | | µA |