### Product Specifications

**ColdQuanta**

**Atom Chip Driver**

**Parameter** | **Symbol** | **Conditions** | **Min** | **Typ** | **Max** | **Unit**
---|---|---|---|---|---|---
Output Current¹ | \( I_0 \) | \( 0 < R_{\text{LOAD}} < 0.5 \, \Omega \)  
\( 0.5 < R_{\text{LOAD}} < 1 \, \Omega \) | -5 | +5 | -3 | +3 | A | A
Voltage Input Range  
Differential | \( V_I \)  
Common-Mode | \( V_{CM} \) | -5 | +5 | -5 | +5 | V | V
Input Impedance  
Differential  
Common-Mode | \( Z_i \)  
\( Z_{CM1}, Z_{CM2} \) | DC Resistance | DC Resistance | 9.99 | 20 | 10.1 | MΩ | MΩ
Accuracy  
Zero-Point Offset  
Slope | \( V_i = 0 \) | -50 | 0.1 | 50 | 1.001 | % | µA | A/V
Current Monitor  
Slope  
Bandwidth² |  | 0.99 | 1.00 | 1.01 | | V/A | kHz
eFuse³  
Charge Time Constant  
Decay Time Constant  
Trip Voltage | \( \tau_C \)  
\( \tau_d \) | Set internally | 0.1 | 0.1 | 10.1 | 10.1 | s | s | s | V
Dynamic Performance⁴  
Full Power Bandwidth (-3 dB)  
Step Response⁵ | \( R_{\text{LOAD}} = 0.5 \, \Omega \)  
\( R_{\text{LOAD}} = 0.5 \, \Omega \) | 47 | 5 | 95 | kHz | µs
Total Harmonic Distortion (THD)  
\( f = 1 \, \text{kHz} \)  
\( f = 5 \, \text{kHz} \)  
\( f = 10 \, \text{kHz} \)  
\( f = 30 \, \text{kHz} \) | \( R_{\text{LOAD}} = 0.1 \, \Omega \) | 0.04% | 0.4% | 1.0% | | |
Common Mode  
Rejection Ratio (CMRR)  
\( f = 100 \, \text{Hz} \)  
\( f = 1 \, \text{kHz} \)  
\( f = 10 \, \text{kHz} \)  
\( f = 100 \, \text{kHz} \) | \( Z_0 = 100 \, \Omega \) | 96 | 95 | 82 | 60 | dB
AC Power Requirements  
Voltage  
Frequency |  | 110 | 47 | 240 | 63 | VAC | Hz
Physical Dimensions  
Weight | \( h \times w \times d \)  
\( h \times w \times d \) | 3.47 \times 8.37 \times 16  
8.7 \times 21.3 \times 40.6 | 10 | 4.54 | inches | cm | lbs | kg

¹ColdQuanta recommends selecting the lower limit of the indicated range for the load resistance.  
²For full power bandwidth, \( R_{\text{LOAD}} \) is typically 0.5 Ω.  
³ColdQuanta recommends selecting 24 V DC for the fuse.  
⁴50 Ω output impedance.  
⁵Step response specified for 47 kHz and 47 kHz step input.