



# Test Report: LDH-45A-700

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DC-DC Step-Up Constant Current LED Driver

## ■ DESIGN VERIFY TEST

Output Function Test  
Input Function Test  
Control Function Test  
Protection Function Test  
Component Stress Test

## ■ E.M.C. TEST

E.M.C. Test

## ■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	1900 mVp-p (Max)	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	860 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE RANGE	12V ~ 64V (Non-DALI) 24V ~ 64V (DALI)	I/P : 9 VDC I/P : 12 VDC I/P : 18 VDC O/P : CV MODE Ta : 25°C	12V ~ 64V (Non-DALI) 24V ~ 64V (DALI)	PASS
3	NO LOAD OUTPUT VOLTAGE	< 75 V	I/P : 12 VDC O/P : NO LOAD Ta : 25°C	TEST : < 75 V	PASS
4	CURRENT ACCURACY	± 5%	I/P : 12 VDC O/P : FULL LOAD Ta : 25°C	TEST : ± 2.56 %	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	9VDC-18VDC	I/P : TESTING O/P : FULL LOAD Ta : 25°C  I/P : LOW-LINE-0.2V=8.8 V HIGH-LINE=18 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	8.8 V- 18 V  TEST : OK	PASS
2	EFFICIENCY	90 % (TYP)	I/P : 12 VDC O/P : FULL LOAD Ta : 25°C	91.78 %	PASS
3	DC CURRENT	12VDC/ 4.2 A (TYP)	I/P : 12 VDC O/P : FULL LOAD Ta : 25°C	I = 3.93 A/ 12 VDC	PASS

## CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																												
1	DIMMING OFF	INPUT CURRENT < 7mA	I/P:12VDC O/P:FULL LOAD Ta:25°C	TEST : 4 mA	PASS																																												
2	ANALOG DIMMING	SPEC: *Output constant current level can be adjusted through output cable by 0.2V~8Vdc DIM (+) and DIM (-). *0.2V~8V dimming function for output current adjustment (Typical) During analog dimming operation, I <sub>O</sub> will change with DC input voltage			PASS																																												
		<p>tolerance:±10%</p> <p>TEST RESULT: I/P : 12 VDC ;Ta : 25°C</p> <table border="1"> <thead> <tr> <th>DIMMING</th> <th>0.2V</th> <th>0.3V</th> <th>0.4V</th> <th>0.5V</th> <th>0.6V</th> <th>0.7V</th> <th>0.8V</th> <th>0.9V</th> <th>1.0V</th> <th>1.1V</th> <th>1.2V</th> <th>1.3V</th> <th>8.0V</th> </tr> </thead> <tbody> <tr> <td>O/P LOAD</td> <td>0%</td> <td>7.5%</td> <td>19%</td> <td>30%</td> <td>41%</td> <td>52%</td> <td>63%</td> <td>73%</td> <td>83%</td> <td>93%</td> <td>99%</td> <td>101%</td> <td>101%</td> </tr> </tbody> </table>	DIMMING	0.2V		0.3V	0.4V	0.5V	0.6V	0.7V	0.8V	0.9V	1.0V	1.1V	1.2V	1.3V	8.0V	O/P LOAD	0%	7.5%	19%	30%	41%	52%	63%	73%	83%	93%	99%	101%	101%																		
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3	PWM DIMMING	SPEC: *Output constant current level can be adjusted through output cable by PWM signal DIM (+) and DIM (-). *2V~8V 1KHz~10KHz PWM signal for output current adjustment (Typical) During PWM dimming operation, I <sub>O</sub> will change with the PWM duty (PWM Signal: 1K~10KHz)			PASS																																												
		<p>tolerance:±10%</p> <p>TEST RESULT:</p> <p>I/P : 12 VDC ;PWM Signal:1KHz ; Ta : 25°C</p> <table border="1"> <thead> <tr> <th>DIMMING</th> <th>10%</th> <th>20%</th> <th>30%</th> <th>40%</th> <th>50%</th> <th>60%</th> <th>70%</th> <th>80%</th> <th>90%</th> <th>100%</th> </tr> </thead> <tbody> <tr> <td>O/P LOAD</td> <td>19.40%</td> <td>34.47%</td> <td>45.46%</td> <td>53.37%</td> <td>59.24%</td> <td>63.73%</td> <td>71.59%</td> <td>83.10%</td> <td>93.39%</td> <td>99.09%</td> </tr> </tbody> </table> <p>I/P : 12 VDC ;PWM Signal:10KHz ; Ta : 25°C</p> <table border="1"> <thead> <tr> <th>DIMMING</th> <th>10%</th> <th>20%</th> <th>30%</th> <th>40%</th> <th>50%</th> <th>60%</th> <th>70%</th> <th>80%</th> <th>90%</th> <th>100%</th> </tr> </thead> <tbody> <tr> <td>O/P LOAD</td> <td>0%</td> <td>6.79%</td> <td>21.81%</td> <td>36.24%</td> <td>50.54%</td> <td>64.51%</td> <td>78.19%</td> <td>89.80%</td> <td>96.56%</td> <td>99.17%</td> </tr> </tbody> </table>	DIMMING	10%		20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	19.40%	34.47%	45.46%	53.37%	59.24%	63.73%	71.59%	83.10%	93.39%	99.09%	DIMMING	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	0%	6.79%	21.81%	36.24%	50.54%	64.51%	78.19%	89.80%	96.56%	99.17%		
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		SPEC: ·DALI protocol including 16 groups and 64 addresses. ·Min.dimming level is about 8% of output.  I/P : 12 VDC O/P : DIMMING TEST Ta : 25°C TEST RESULT : OK																																															
4	DALI DIMMING ( DA-Type)				PASS																																												

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER VOLTAGE PROTECTION	< 75 V	I/P: 9 VDC I/P: 12VDC I/P: 18VDC O/P:MIN LOAD Ta:25°C	69.33V /9 VDC 69.36V /12VDC 69.40V/18VDC Hold ON	PASS
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 18 VDC O/P : FULL LOAD Ta : 25°C	NO DAMAGE  Fuse Open	PASS

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q2 Rated 150 V/ 33 A	I/P : High-Line +3V = 21 V O/P : (1)Full Load Turn on (2)Full load continue Ta : 25°C	(1) 74.4 V (2) 73.6 V	PASS
2	Diode Peak Voltage	D1 Rated 150 V/ 10 A	I/P : High-Line +3V = 21 V O/P : (1)Full Load Turn on (2)Full load continue Ta : 25°C	(1) 69.6 V (2) 68.8	PASS

■ E.M.C. TEST

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55015	I/P: 12 VDC O/P: FULL LOAD Ta:25°C	PASS Test by certified Lab	PASS
2	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
4	Test by certified Lab & Test Report Prepare				

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																					
1	TEMPERATURE RISE TEST	MODEL : LDH-45A-1050 1. ROOM AMBIENT BURN-IN : 1.0 HRS I/P : 12VDC O/P : LED LOAD=42.48V Ta=30.2 °C 2. HIGH AMBIENT BURN-IN : 1.0 HRS I/P : 12VDC O/P : LED LOAD=42.47V Ta=65.1 °C			P																																																					
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 18VDC/9VDC O/P : LED LOAD=43V Ta= -45°C	TEST : OK	P																																																					
3	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P : 12VDC O/P : LED LOAD=43V	± 0.0007%(0-50°C)	P																																																					
4	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C ~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK	P																																																					
5	THERMAL SHOCK TEST	1. Thermal shock Temperature : -45°C ~ +65°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 12VDC/ LED LOAD=43V DC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	P																																																					
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10-500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 90min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	P																																																					



7	CAPACITOR LIFE CYCLE	LDH-45A-1050:SUPPOSE C5 IS THE MOST CRITICAL COMPONENT (1) I/P : 12VDC O/P : FULL LOAD Ta=25 °C LIFE TIME (2) I/P : 12VDC O/P : FULL LOAD Ta=60 °C LIFE TIME (3) I/P : 12VDC O/P : 75% LOAD Ta=60 °C LIFE TIME	(1) 298910.7 HRS (2) 23140.7 HRS (3) 44123.2 HRS	P
8	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 1179.3KHRS		P
9	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30,000 hours @ Tcase 70°C ; 50,000 hours @ Tcase 60°C		P

SAMPLE	TEST RESULT	TESTER	APPROVAL
PRODUCT SAMPLE	PASS	ZHUOKB/ZOULF	LIUWY

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