



# Test Report: LDH-45B-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	1200 mVp-p (Max)	I/P : 24VDC O/P : FULL LOAD Ta : 25°C	452 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE RANGE	21V ~ 64V (Non-DALI) 36V ~ 64V (DALI)	I/P : 18 VDC I/P : 24 VDC I/P : 32 VDC O/P : CV MODE Ta : 25°C	21V ~ 64V (Non-DALI) 36V ~ 64V (DALI)	PASS
3	NO LOAD OUTPUT VOLTAGE	< 75 V	I/P : 24 VDC O/P : NO LOAD Ta : 25°C	TEST : < 75 V	PASS
4	CURRENT ACCURACY	± 5%	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	TEST : ± 2.1 %	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	18VDC~32VDC	I/P : TESTING O/P : FULL LOAD Ta : 25°C  I/P : LOW-LINE-0.2V=17.8 V HIGH-LINE =32 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	17.8V-32V  TEST : OK	PASS
2	EFFICIENCY	95 % (TYP)	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	95.74 %	PASS
3	DC CURRENT	24VDC/ 2.0 A (TYP)	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	I = 1.926 A/ 24 VDC	PASS

## CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																										
1	DIMMING OFF	INPUT CURRENT < 7mA	I/P:24 VDC 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, IO will change with DC input voltage			PASS																																										
		<p>tolerance:±10%</p> <p>TEST RESULT: I/P : 24 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>Iout(%)</td> <td>0%</td> <td>7.7%</td> <td>19%</td> <td>29%</td> <td>40%</td> <td>51%</td> <td>63%</td> <td>73%</td> <td>84%</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	Iout(%)	0%	7.7%	19%	29%	40%	51%	63%	73%	84%	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, IO will change with the PWM duty (PWM Signal: 1K~10KHz)			PASS																																										
		<p>tolerance:±10%</p> <p>TEST RESULT:</p> <p>I/P : 24 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>18.49%</td> <td>33.93%</td> <td>45.36%</td> <td>53.53%</td> <td>59.56%</td> <td>64.21%</td> <td>73.19%</td> <td>84.87%</td> <td>95.23%</td> <td>100.69%</td> </tr> </tbody> </table> <p>I/P : 24 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>7.81%</td> <td>22.93%</td> <td>37.67%</td> <td>52.40%</td> <td>66.80%</td> <td>80.80%</td> <td>92.13%</td> <td>98.49%</td> <td>100.73%</td> </tr> </tbody> </table>	DIMMING	10%		20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	18.49%	33.93%	45.36%	53.53%	59.56%	64.21%	73.19%	84.87%	95.23%	100.69%	DIMMING	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	0%	7.81%	22.93%	37.67%	52.40%	66.80%	80.80%	92.13%	98.49%	100.73%
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4	DALI DIMMING ( DA-Type)	SPEC: ·DALI protocol including 16 groups and 64 addresses. ·Min.dimming level is about 8% of output.  I/P : 24 VDC O/P : DIMMING TEST Ta : 25°C TEST RESULT : OK			PASS																																										

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER VOLTAGE PROTECTION	< 75 V	I/P: 18 VDC I/P: 24VDC I/P: 32VDC O/P:MIN LOAD Ta:25°C	68.87V /18 VDC 68.91V /24VDC 68.97V/32VDC Hold ON	PASS
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 32 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 = 35 V O/P : (1)Full Load Turn on (2)Full load continue Ta : 25°C	(1) 73.2 V (2) 72.0 V	PASS
2	Diode Peak Voltage	D1 Rated 150 V/ 10 A	I/P : High-Line +3V = 35 V O/P : (1)Full Load Turn on (2)Full load continue Ta : 25°C	(1) 68.8 V (2) 67.6	PASS

■ **E.M.C. TEST**

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55015	I/P: 24 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: 24 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 24 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-45B-1050 1. ROOM AMBIENT BURN-IN : 1.0 HRS I/P : 24VDC O/P : LED LOAD=42.22V Ta=30.2 °C 2. HIGH AMBIENT BURN-IN : 1.0 HRS I/P : 24VDC O/P : LED LOAD=42.22V Ta=69.9 °C	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 30.2 °C</th> <th>HIGH AMBIENT Ta= 69.9 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>C1</td><td>38.2°C</td><td>72.6°C</td></tr> <tr><td>2</td><td>LF1</td><td>39.8°C</td><td>73.9°C</td></tr> <tr><td>3</td><td>C3</td><td>41.8°C</td><td>75.3°C</td></tr> <tr><td>4</td><td>L1</td><td>43.7°C</td><td>77.5°C</td></tr> <tr><td>5</td><td>U1</td><td>44.5°C</td><td>77.9°C</td></tr> <tr><td>6</td><td>Q2</td><td>47.5°C</td><td>80.8°C</td></tr> <tr><td>7</td><td>R7</td><td>45.4°C</td><td>78.9°C</td></tr> <tr><td>8</td><td>R18</td><td>45.9°C</td><td>79.5°C</td></tr> <tr><td>9</td><td>D2</td><td>43.6°C</td><td>77.4°C</td></tr> <tr><td>10</td><td>C5</td><td>43.7°C</td><td>77.0°C</td></tr> <tr><td>11</td><td>D1</td><td>48.0°C</td><td>81.4°C</td></tr> <tr><td>12</td><td>C8</td><td>43.2°C</td><td>76.8°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 30.2 °C	HIGH AMBIENT Ta= 69.9 °C	1	C1	38.2°C	72.6°C	2	LF1	39.8°C	73.9°C	3	C3	41.8°C	75.3°C	4	L1	43.7°C	77.5°C	5	U1	44.5°C	77.9°C	6	Q2	47.5°C	80.8°C	7	R7	45.4°C	78.9°C	8	R18	45.9°C	79.5°C	9	D2	43.6°C	77.4°C	10	C5	43.7°C	77.0°C	11	D1	48.0°C	81.4°C	12	C8	43.2°C	76.8°C		P
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 32VDC/18VDC O/P : LED LOAD=43V Ta= -45°C	TEST : OK	P																																																				
3	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P : 24VDC O/P : LED LOAD=43V	± 0.0005%(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 ~ +75°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 : 24VDC/ 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-45B-1050:SUPPOSE C5 IS THE MOST CRITICAL COMPONENT (1) I/P : 24VDC O/P : FULL LOAD Ta=25 °C LIFE TIME (2) I/P : 24VDC O/P : FULL LOAD Ta=70 °C LIFE TIME (3) I/P : 24VDC O/P : 75% LOAD Ta=70 °C LIFE TIME	(1) 1204155.7 HRS (2) 70741 HRS (3) 82970.8 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 75 °C ; 50,000 hours @ Tcase 65 °C		P

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

2009/08/04 A50-G058