



# Test Report: LDH-45B-350

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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	2500 mVp-p (Max)	I/P : 24VDC O/P : FULL LOAD Ta : 25°C	1200 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE RANGE	21V ~ 126V (Non-DALI) 36V ~ 126V (DALI)	I/P : 18 VDC I/P : 24 VDC I/P : 32 VDC O/P : CV MODE Ta : 25°C	21V ~ 126V (Non-DALI) 36V ~ 126V (DALI)	PASS
3	NO LOAD OUTPUT VOLTAGE	< 146 V	I/P : 24 VDC O/P : NO LOAD Ta : 25°C	TEST : < 146 V	PASS
4	CURRENT ACCURACY	± 5%	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	TEST : ±1.63 %	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 )	17.8 V~ 32 V  TEST : OK	PASS
2	EFFICIENCY	93 % (TYP)	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	93.26 %	PASS
3	DC CURRENT	24VDC/ 2.1 A (TYP)	I/P : 24 VDC O/P : FULL LOAD Ta : 25°C	I = 1.912 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>O/P LOAD</td> <td>0%</td> <td>6.6%</td> <td>17%</td> <td>29%</td> <td>40%</td> <td>51%</td> <td>61%</td> <td>72%</td> <td>82%</td> <td>91%</td> <td>97%</td> <td>99%</td> <td>99%</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%	6.6%	17%	29%	40%	51%	61%	72%	82%	91%	97%	99%	99%																	
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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>17.83%</td> <td>32.63%</td> <td>43.57%</td> <td>51.54%</td> <td>57.49%</td> <td>62.11%</td> <td>71.37%</td> <td>82.80%</td> <td>92.97%</td> <td>98.51%</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>6.34%</td> <td>21.14%</td> <td>35.60%</td> <td>50.46%</td> <td>64.40%</td> <td>77.94%</td> <td>89.40%</td> <td>96.60%</td> <td>98.57%</td> </tr> </tbody> </table>	DIMMING	10%		20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	17.83%	32.63%	43.57%	51.54%	57.49%	62.11%	71.37%	82.80%	92.97%	98.51%	DIMMING	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	O/P LOAD	0%	6.34%	21.14%	35.60%	50.46%	64.40%	77.94%	89.40%	96.60%	98.57%	
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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	< 146 V	I/P: 18 VDC I/P: 24VDC I/P: 32VDC O/P:MIN LOAD Ta:25°C	134.5 V /18 VDC 134.6 V /24VDC 134.7 V/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) 138 V (2) 135 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) 128 V (2) 127	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-500 1. ROOM AMBIENT BURN-IN : 1.0 HRS I/P : 24VDC O/P : LED LOAD=85.34V Ta=30.2 °C 2. HIGH AMBIENT BURN-IN : 1.0 HRS I/P : 24VDC O/P : LED LOAD=85.34V Ta=74.9 °C			P
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 32VDC/18VDC O/P : LED LOAD=84V Ta= -45°C	TEST : OK	P
3	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 24VDC O/P : LED LOAD=84V	± 0.0002%(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=84V 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-500: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) 1001145.8 HRS (2) 63826.2 HRS (3) 69956.4 HRS	P
8	MTBF	Conducted by Parts Stress Analysis Prediction 12195.2K hrs min. Telcordia SR-332 (Bellcore) ; 1179.3K hrs min. MIL-HDBK-217F (25°C)		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

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