



Test Report: EDR-150-24

150W Single Output Industrial DIN RAIL

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

MODEL : EDR-150-24

DVT TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	V1: 60.2mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24 V~ 28 V	I/P: 230VAC/115VAC O/P: MIN LOAD Ta: 25°C	23.17V~ 28.61V/230VAC 23.17V~ 28.61V/115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 100VAC /264VAC O/P: FULL/ MIN. LOAD Ta: 25°C	V1: 0.074%~ -0.074%	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100VAC~ 264VAC O/P: FULL LOAD Ta: 25°C	V1 : 0%~ -0.025%	P
5	LOAD REGULATION	V1: 1 %~ -1 % (Max)	I/P: 230VAC O/P: FULL ~MIN LOAD Ta: 25°C	V1: 0.074%~ -0.074%	P
6	SET UP TIME	230VAC/1500ms (Max) 115VAC/3000ms (Max)	I/P: 230VAC/115VAC O/P: FULL LOAD Ta: 25°C	230VAC/721.124ms 115VAC/ 1563.862ms	P
7	RISE TIME	230VAC/60ms (Max) 115VAC/60ms (Max)	I/P: 230VAC/115VAC O/P: FULL LOAD Ta: 25°C	230VAC/ 24.069ms 115VAC/11.229ms	P
8	HOLD UP TIME	230VAC/16ms (TYP.) 115VAC/10ms (TYP.)	I/P: 230VAC/115VAC O/P: FULL LOAD Ta: 25°C	230VAC/44.356ms 115VAC/11.845ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	<5%	P
10	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230VAC O/P(1) FULL /Min LOAD 90%DUTY/1KHZ (2) (1) FULL /Min LOAD 90%DUTY/3KHZ (3) FULL /Min LOAD 90%DUTY/5KHZ (4) FULL /Min LOAD 50%DUTY/120HZ Ta: 25°C	250mVp-p 206mVp-p 198mVp-p 338mVp-p	P



150W Single Output Industrial DIN RAIL

EDR-150 series

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P: 80%LOAD Ta:25°C	69.656V~264V	P
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230Vac ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230Vac ON:3Sec OFF:3Sec 12HOURS (POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P:100 VAC ~264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
4	EFFICIENCY	87% (TYP)	I/P:230 VAC O/P:FULL LOAD Ta:25°C	89.22%	P
5	INPUT CURRENT	230V/ 1.7A (Typ) 115V/ 2.6 A (Typ)	I/P: 230 VAC/115VAC O/P:FULL LOAD Ta:25°C	I = 1.317A/ 230VAC I = 2.177A/ 115VAC	P
6	INRUSH CURRENT	230V/35A (Typ) 115V/20A (Typ) COLD START	I/P:230VAC/115VAC O/P:FULL LOAD Ta:25°C	I =33.671A/ 230VAC I = 17.328A/115VAC	P



150W Single Output Industrial DIN RAIL EDR-150 series

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~130% RATED OUTPUT POWER	I/P: 264VAC I/P: 230VAC I/P: 100VAC O/P: TESTING Ta:25°C	111.7%/ 264VAC 111.7%/ 230VAC 110.1%/100VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH:29V~33V(Typ)	I I/P:264VAC I/P: 230VAC I/P: 90VAC O/P: MIN LOAD Ta:25°C	30.79V/ 264VAC 30.69V/ 230VAC 30.79V/90VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shunt down Re-power ON	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE (1)Constant Current Limiting SHORT TEST MOVE Vo/p OVER SHOOT<10% <u>OK</u>	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 11 A/600 V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2)Output Short (3) Full Load Continue Ta:25°C	(1)530V (2)404V (3)524V	P
2	Diode Peak Voltage	D100 Rated 20A/ 150V	I/P:High-Line +3V =267 V O/P: (1)Full Load input on/off (2)Output Short (3) Full Load Continue Ta:25°C	(1)122V (2) 128V (3)121V	P
3	Input Capacitor Voltage	C5 Rated: 180u / 400 V	I/P:High-Line +3V =267 V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Burn-IN 1Hour Ta:25°C	(1) 362V (2) 362V (3) 360V	P
4	Control IC Voltage Test	PWM IC U1 Rated 28 V(MAX) 9 V(MIN.)	I/P:High-Line +3V =267 V O/P:(1)FULL LOAD (2) Output Short (3)NO LOAD VR 下限.LOW LINE Ta:25°C	(2) 17.2V (3) 16.9V (4) 16.9V	P

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	EN 60950 I/P-O/P: 3KVAC/min I/P-FG: 2 KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C	I/P-O/P:3.253mA I/P-FG:4.55mA O/P-FG:4.03m A NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	EN 60950 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	14mΩ BY CASE	P
4	LEAKAGE CURRENT	EN 60950 1mA< 240VAC	I/P:264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.46mA N-FG: 0.46mA	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:80%LOAD Ta:25°C	PASS	P
2	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
3	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
4	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P



150W Single Output Industrial DIN RAIL EDR-150 series

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																
1	TEMPERATURE RISE TEST	MODEL : EDR-150-24 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=30.7°C 2. HIGH AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=49.0°C	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=28.6°C</th> <th>HIGH AMBIENT Ta=51.5°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>U1</td><td>62.2°C</td><td>78.4°C</td></tr> <tr><td>2</td><td>U107</td><td>60.7°C</td><td>76.8°C</td></tr> <tr><td>3</td><td>BD1</td><td>59.4°C</td><td>75.3°C</td></tr> <tr><td>4</td><td>C5</td><td>59.4°C</td><td>75.8°C</td></tr> <tr><td>5</td><td>Q1</td><td>72.8°C</td><td>90.5°C</td></tr> <tr><td>6</td><td>D5</td><td>105.3°C</td><td>124.6°C</td></tr> <tr><td>7</td><td>T1</td><td>88.2°C</td><td>104.1°C</td></tr> <tr><td>8</td><td>D100</td><td>79.7°C</td><td>95.7°C</td></tr> <tr><td>9</td><td>RTH2</td><td>76.2°C</td><td>93.0°C</td></tr> <tr><td>10</td><td>C105</td><td>55.3°C</td><td>71.5°C</td></tr> <tr><td>11</td><td>LF2</td><td>68.1°C</td><td>84.5°C</td></tr> <tr><td>12</td><td>C36</td><td>85.9°C</td><td>102.3°C</td></tr> <tr><td>13</td><td>C38</td><td>67.0°C</td><td>84.0°C</td></tr> <tr><td>14</td><td>C200</td><td>58.0°C</td><td>74.6°C</td></tr> <tr><td>15</td><td>R5</td><td>82.9°C</td><td>98.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=28.6°C	HIGH AMBIENT Ta=51.5°C	1	U1	62.2°C	78.4°C	2	U107	60.7°C	76.8°C	3	BD1	59.4°C	75.3°C	4	C5	59.4°C	75.8°C	5	Q1	72.8°C	90.5°C	6	D5	105.3°C	124.6°C	7	T1	88.2°C	104.1°C	8	D100	79.7°C	95.7°C	9	RTH2	76.2°C	93.0°C	10	C105	55.3°C	71.5°C	11	LF2	68.1°C	84.5°C	12	C36	85.9°C	102.3°C	13	C38	67.0°C	84.0°C	14	C200	58.0°C	74.6°C	15	R5	82.9°C	98.6°C		P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 108% LOAD Ta : 25°C	TEST : OK	P																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta=-20°C	TEST : OK	P																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta=50°C HUMIDITY= 95 %R.H	TEST : OK	P																																																																
5	TEMPERATURE COEFFICIENT	$\pm 0.03\%/^{\circ}\text{C}$ (0~50°C)	I/P : 230 VAC O/P : FULL LOAD	0%/°C (0~50°C)	P																																																																
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C~ +85°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																																																																



150W Single Output Industrial DIN RAIL **EDR-150** series

7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -20°C ~ +60°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 : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec	OK	P
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK	P
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=50°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=50°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=50°C LIFE TIME	(1) 490891HRS (2) 100330HRS (3) 140948HRS (4) 184730HRS	P
10	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE : 472.5KHRS		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C		P

SAMPLE	TESTER	APPROVAL
PRODUCT SAMPLE	FRANK	WANGDEZHAO

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