

MODEL : DR-60-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 21 mVp-p (Max)
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 21.6V~ 26.4V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	20.92 V~ 26.89 V/ 230 VAC 20.92 V~ 26.89 V/ 115 VAC
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 85 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.11 %~ -0.11 %
4	LINE REGULATION	V1: 1 %~ -1 % (Max)	I/P: 85VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %
5	LOAD REGULATION	V1: 1 %~ -1 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.11 %~ -0.11 %
6	SET UP TIME	230VAC: 100 ms (Max) 115 VAC: 200 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 60 ms 115VAC/ 73 ms
7	RISE TIME	230VAC: 30 ms (Max) 115VAC: 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 27.7 ms 115VAC/ 22.7 ms
8	HOLD UP TIME	230VAC: 50 ms (TYP) 115VAC: 18 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 123 ms 115VAC/ 26 ms
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %
10	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	136 mVp-p

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	88VAC~264 VAC)	I/P:TESTING O/P:FULL LOAD Ta:25°C	59 V~264V
			I/P: LOW-LINE-3V= 82 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 85 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	EFFICIENCY	84 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	84.5 %
4	INPUT CURRENT	230V/ 0.8 A (TYP) 115V/ 1.2 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.63 A/ 230 VAC I = 0.98 A/ 115 VAC
5	INRUSH CURRENT	230V/ 36 A (TYP) 115V/ 18 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 35 A/ 230 VAC I = 17 A/ 115 VAC

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105 %~ 160 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	141 %/ 230 VAC 141 %/ 115 VAC Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	CH1: 27.6 V~ 32.4 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	30.7 V/ 230 VAC 30.7 V/ 115 VAC Shunt down Re- power ON
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Constant current limiting, recovers automatically after fault condition is removed

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																				
1	TEMPERATURE RISE TEST	MODEL : DR-60-24 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 27.6 °C 2. HIGH AMBIENT BURN-IN : 2.5 HRS I/P: 230VAC O/P: FULL LOAD Ta= 44.5 °C																																																						
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 27.6 °C</th> <th>HIGH AMBIENT Ta= 44.5 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>74.9°C</td><td>90.5°C</td></tr> <tr><td>2</td><td>D1</td><td>90.3°C</td><td>104.3°C</td></tr> <tr><td>3</td><td>ZD1</td><td>91.9°C</td><td>106.9°C</td></tr> <tr><td>4</td><td>BD1</td><td>71.6°C</td><td>86.8°C</td></tr> <tr><td>5</td><td>C5</td><td>68.6°C</td><td>83.8°C</td></tr> <tr><td>6</td><td>Q1</td><td>89.9°C</td><td>105.8°C</td></tr> <tr><td>7</td><td>Q2</td><td>71.2°C</td><td>88.4°C</td></tr> <tr><td>8</td><td>T1 COIL</td><td>92.5°C</td><td>107.8°C</td></tr> <tr><td>9</td><td>D100</td><td>81.5°C</td><td>96.2°C</td></tr> <tr><td>10</td><td>C107</td><td>79.6°C</td><td>95°C</td></tr> <tr><td>11</td><td>U1</td><td>64.7°C</td><td>80.8°C</td></tr> <tr><td>12</td><td>C51</td><td>46.3°C</td><td>62.0°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 27.6 °C	HIGH AMBIENT Ta= 44.5 °C	1	LF1	74.9°C	90.5°C	2	D1	90.3°C	104.3°C	3	ZD1	91.9°C	106.9°C	4	BD1	71.6°C	86.8°C	5	C5	68.6°C	83.8°C	6	Q1	89.9°C	105.8°C	7	Q2	71.2°C	88.4°C	8	T1 COIL	92.5°C	107.8°C	9	D100	81.5°C	96.2°C	10	C107	79.6°C	95°C	11	U1	64.7°C	80.8°C	12	C51	46.3°C	62.0°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 140 % LOAD Ta:25°C	TEST : OK																																																				
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100 % LOAD Ta= -20 °C	TEST : OK																																																				
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 45 °C HUMIDITY= 95 %R.H	TEST : OK																																																				
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0~50°C)																																																				
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK																																																				

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min	I/P-O/P: 3.6 KVAC/min Ta:25°C	I/P-O/P: 2.85 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P: 7 GΩ NO DAMAGE
3	APPROVAL	TUV: Certificate NO : R50058736 UL: File NO : E183223		

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
4	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
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 107 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 84146 HRS I/P: 230VAC O/P:FULL LOAD Ta= 45 °C LIFE TIME= 23333 HRS I/P: 230VAC O/P:75% LOAD Ta= 45 °C LIFE TIME= 38446 HRS I/P: 230VAC O/P:50% LOAD Ta= 45 °C LIFE TIME= 75925 HRS		
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 216.2K HRS		

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated: 700 V 10A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 676 V (2) 674 V (3) 580 V
2	Diode Peak Voltage	D100 Rated : 200 V 10 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 88 V (2) 157 V (3) 114 V
3	Clamp Diode Peak Voltage	D1 Rated: 600V 2A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 388 V (2) 388 V
4	Input Capacitor Voltage	C 5 Rated : 180u / 400 V/ 105°C	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off	(1) 400 V (2) 392 V



			(2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(3) 392 V
5	Control IC Voltage Test	U1 Rated : 30 V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 17 V (2) 16 V (30) 14 V

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/1/7	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/4/25	PRODUCT SAMPLE W0503C02	PASS	VINCENT TSENG	MAX LIN
2005/6/28	PRODUCT SAMPLE W0505B02	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023