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Jameco Part Number 295938



480W Single Output DIN RAIL with PFC Function

DRP-480S series



■ Features :

- AC input range selectable by switch
- Built-in passive PFC function compliance to EN61000-3-2
- High efficiency 89% and low dissipation
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- Can be installed on DIN rail TS-35/7.5 or 15
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- 3 years warranty

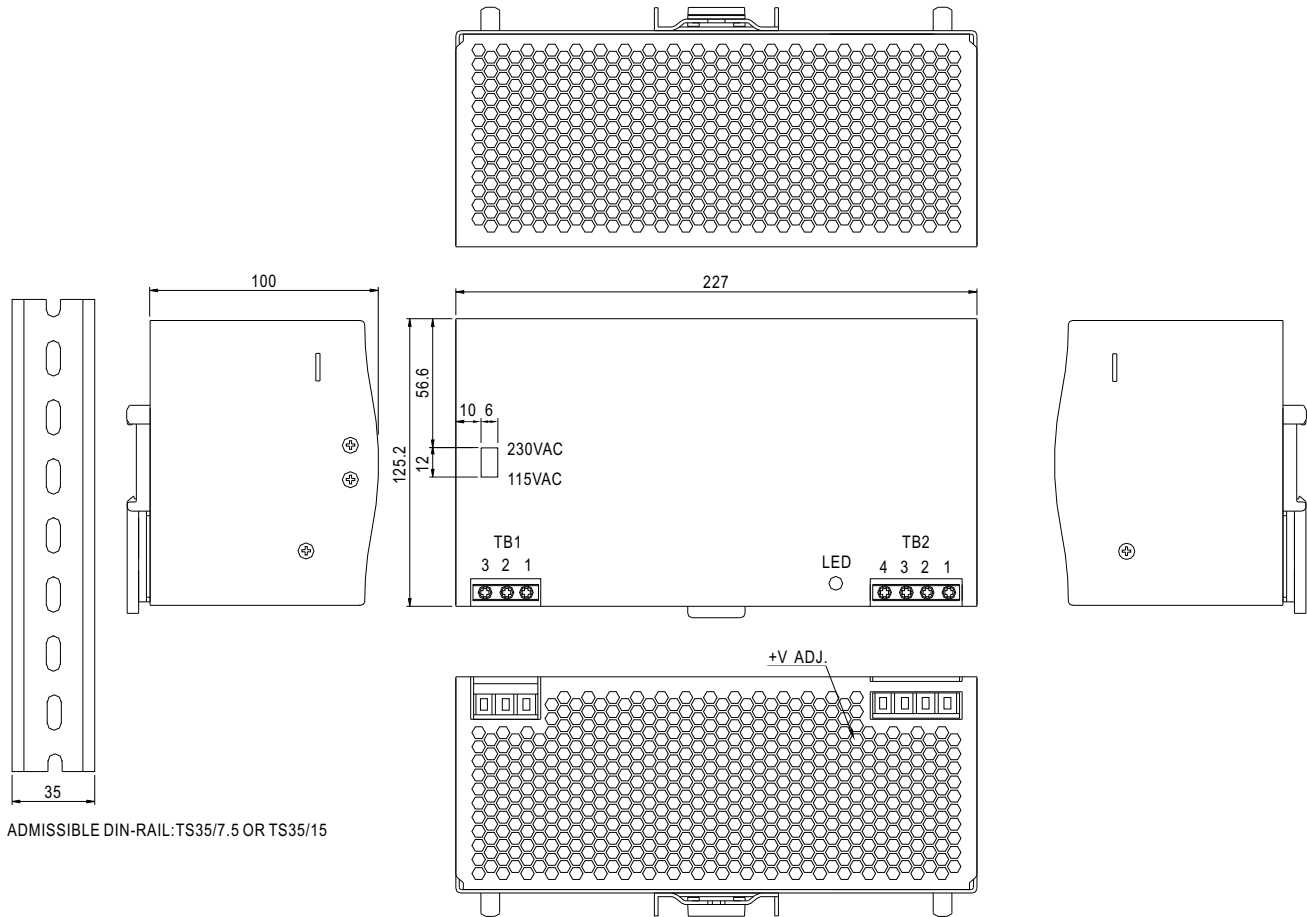


SPECIFICATION

MODEL		DRP-480S-24	DRP-480S-48
OUTPUT	DC VOLTAGE	24V	48V
	RATED CURRENT	20A	10A
	CURRENT RANGE	0 ~ 20A	0 ~ 10A
	RATED POWER	480W	480W
	RIPPLE & NOISE (max.) Note.2	120mVp-p	120mVp-p
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	1200ms, 40ms/230VAC, 115VAC at full load	
	HOLD TIME (Typ.)	23ms/230VAC, 115VAC at full load	
INPUT	VOLTAGE RANGE	90 ~ 132VAC/180 ~ 264VAC by switch	254 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	≥ 0.7/230VAC only	
	EFFICIENCY (Typ.)	89%	
	AC CURRENT (Typ.)	8A/115VAC	3.2A/230VAC
	INRUSH CURRENT (Typ.)	COLD START 27A/115VAC	45A/230VAC
	LEAKAGE CURRENT	<3.5mA / 240VAC	
PROTECTION	OVER LOAD	105 ~ 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed	
	OVER VOLTAGE	30 ~ 36V	59 ~66V
	OVER TEMPERATURE	100℃ ±5℃ (TSW : Detect on heatsink of power switch)	
		Protection type : Shut down o/p voltage, recovers automatically after temperature goes down	
ENVIRONMENT	WORKING TEMP.	-20 ~ +70℃ (Refer to output load derating curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)	
	VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6	
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL508, UL60950-1, TUV EN60950-1 Approved	
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC	
	EMI CONDUCTION & RADIATION	Compliance to EN55011 (CISPR11), EN55022 (CISPR22), EN61204-3 Class B	
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN61204-3, EN61000-6-2 (EN50082-2) Heavy industry level, criteria A	
OTHERS	MTBF	187.9Khrs min. MIL-HDBK-217F (25℃)	
	DIMENSION	227*125.2*100mm (W*H*D)	
	PACKING	2.6Kg; 6pcs / 16.6Kg / 1.75CUFT	
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.		

Mechanical Specification

Case No.930 Unit:mm



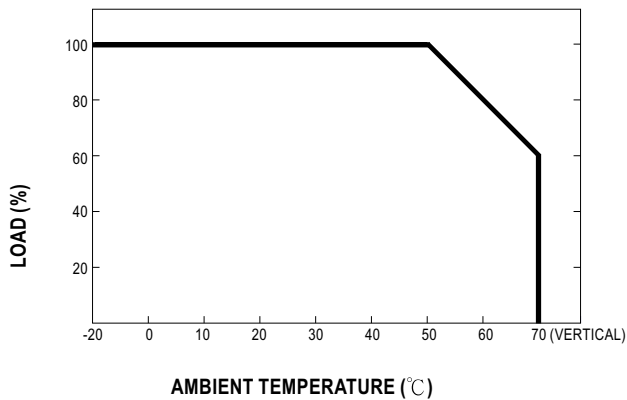
TB1 Terminal Pin. No Assignment

Pin No.	Assignment
1	AC/L(DC+)
2	AC/N(DC-)
3	FG ⚡

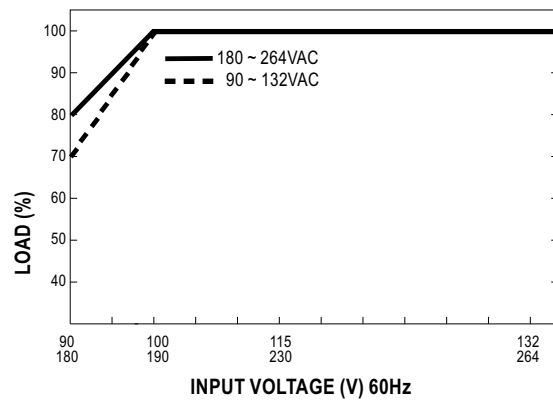
TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

Derating Curve



Output Derating VS Input Voltage



MODEL : DRP-480S-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 6 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24V ~ 28V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	21.2V~29.78 V/230 VAC 21.2V~29.78 V/115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 % ~ -1 % (Max)	I/P: 190 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.1%~ -0.1 %	P
4	LINE REGULATION	V1: 0.5 % ~ -0.5 % (Max)	I/P: 190 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.05 % ~ -0.05 %	P
5	LOAD REGULATION	V1: 1 % ~ -1 % (Max)	I/P:230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.1%~ -0.1 %	P
6	SET UP TIME	230 VAC/ 1200 ms (Max) 115 VAC/ 1200 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 1001 ms 115 VAC/ 314 ms	P
7	RISE TIME	230 VAC/ 40 ms (Max) 115 VAC/ 40 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 15 ms 115 VAC/ 14 ms	P
8	HOLD UP TIME	230 VAC/ 20 ms (Min) 115 VAC/ 20 ms (Min)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 28 ms 115 VAC/ 30 ms	P
9	OVER/UNDERSHOOT TEST	< $\pm 5\%$	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	P
10	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	662 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	159 V~ 264 V	P
			I/P: LOW-LINE-3V= 177 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	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 190 VAC ~ 264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.7/ 230 VAC (Min)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	PF= 0.78 / 230 VAC	P
4	EFFICIENCY	89 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	89.6 %	P
5	INPUT CURRENT	230 V/ 4 A (Max) 115 V/ 11 A (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 3.1 A/ 230 VAC I = 8 A/ 115 VAC	P
6	INRUSH CURRENT	230 V/ 50 A (Max) 115 V/ 30 A (Max) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 35 A/ 23 VAC I = 20 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 3.5 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.3 mA N-FG: 0.4 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta:25℃	121% / 230 VAC 121% / 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 30 V~36 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta:25℃	34.9V / 230 VAC 34.9V / 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: 100℃±5 ℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: Full LOAD Ta:25℃	NO DAMAGE Constant Current Limiting	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : DRP-480S-24 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P: 230 VAC O/P: FULL LOAD Ta=31.5 °C 2. HIGH AMBIENT BURN-IN : HRS I/P: 230 VAC O/P: FULL LOAD Ta=52.1 °C <table><thead><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31.5 °C</th><th>HIGH AMBIENT Ta= 52.1 °C</th></tr></thead><tbody><tr><td>1</td><td>LF2</td><td>TR385</td><td>64.9°C</td><td>80.5°C</td></tr><tr><td>2</td><td>C6</td><td>1000U/200V HP3 105°C</td><td>59.7°C</td><td>76.0°C</td></tr><tr><td>3</td><td>U1</td><td>2842</td><td>60.0°C</td><td>74.7°C</td></tr><tr><td>4</td><td>BD1</td><td>GBJ2506 25A/600V</td><td>71.5°C</td><td>86.9°C</td></tr><tr><td>5</td><td>Q1</td><td>24N50 24A/500V</td><td>69.1°C</td><td>86.2°C</td></tr><tr><td>6</td><td>D8</td><td>STTA406 4A/600V</td><td>81.7°C</td><td>97.2°C</td></tr><tr><td>7</td><td>Q2</td><td>24N50 24A/500V</td><td>67.0°C</td><td>83.0°C</td></tr><tr><td>8</td><td>TSW1</td><td>ST-100</td><td>68.9°C</td><td>85.7°C</td></tr><tr><td>9</td><td>C33</td><td>330U/35V YXG 105°C</td><td>41.4°C</td><td>54.4°C</td></tr><tr><td>10</td><td>L1</td><td>TF803</td><td>81.9°C</td><td>97.2°C</td></tr><tr><td>11</td><td>U80</td><td>LM358</td><td>52.6°C</td><td>65.8°C</td></tr><tr><td>12</td><td>D6</td><td>STTA406 4A/600V</td><td>73.7°C</td><td>88.8°C</td></tr><tr><td>13</td><td>T1 COIL</td><td>TF-987</td><td>69.1°C</td><td>85.2°C</td></tr><tr><td>14</td><td>C28</td><td>220U/25V 105°C</td><td>49.7°C</td><td>63.0°C</td></tr><tr><td>15</td><td>C53</td><td>1500U/35V 105°C</td><td>66.4°C</td><td>82.3°C</td></tr></tbody></table>			NO	Position	P/N	ROOM AMBIENT Ta= 31.5 °C	HIGH AMBIENT Ta= 52.1 °C	1	LF2	TR385	64.9°C	80.5°C	2	C6	1000U/200V HP3 105°C	59.7°C	76.0°C	3	U1	2842	60.0°C	74.7°C	4	BD1	GBJ2506 25A/600V	71.5°C	86.9°C	5	Q1	24N50 24A/500V	69.1°C	86.2°C	6	D8	STTA406 4A/600V	81.7°C	97.2°C	7	Q2	24N50 24A/500V	67.0°C	83.0°C	8	TSW1	ST-100	68.9°C	85.7°C	9	C33	330U/35V YXG 105°C	41.4°C	54.4°C	10	L1	TF803	81.9°C	97.2°C	11	U80	LM358	52.6°C	65.8°C	12	D6	STTA406 4A/600V	73.7°C	88.8°C	13	T1 COIL	TF-987	69.1°C	85.2°C	14	C28	220U/25V 105°C	49.7°C	63.0°C	15	C53	1500U/35V 105°C	66.4°C	82.3°C	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 117% LOAD Ta:25°C	TEST : OK	P																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC 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: 230 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0~50°C)	P																																																																																
6	VIBRATION TEST	1 Carton & 1 Set Operating at I/P: 230 VAC NO LOAD (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	P																																																																																

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 6.76 mA I/P-FG: 6.21 mA O/P-FG: 4.25 mA 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: 13 G Ω I/P-FG: 6 G Ω O/P-FG: 7 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	30 A / 2min Ta:25°C	4 mΩ	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 20 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
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	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 53 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta=25 °C LIFE TIME=277460 HRS I/P:230 VAC O/P:FULL LOAD Ta=50 °C LIFE TIME=67964 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 187.9K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated 24N50 : 500 V 24 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) 202 V (2) 352 V (3) 472 V	P
2	Diode Peak Voltage	D 54 Rated D9202 : 200 V 20 A D 51 Rated 20CTQ150 : 150 V 20 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 152 V (2) 168 V (3) 185 V (1) 34.4 V (2) 104 V (3) 97.2 V	P
3	Input Capacitor Voltage	C 5 Rated Rubycon : 1000 u / 200 V 105 °C	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 (4)Burn-IN Hour Ta:25°C	(1) 202 V (2) 191 V (3) 191 V (4) 187 V	P
4	Control IC Voltage Test	U 1 Rated IC 2842 : 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 (4) Output Short Ta:25°C	(1) 23.4 V (2) 23.5 V (3) 24.8 V (4) 18.3 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/2/6	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2004/3/12	PRODUCT SAMPLE A402A02	PASS	VINCENT TSENG	MAX LIN
2004/5/6	PRODUCT SAMPLE A404B38	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023