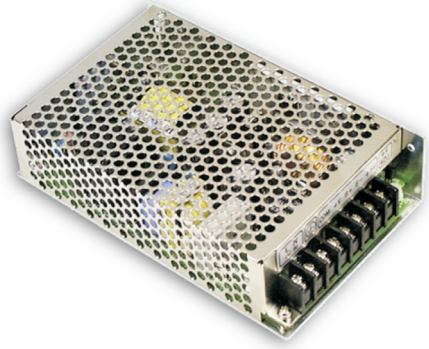
JAMECO ELECTRONICS **Jameco SKU Number: 323652**

MEAN WELL

85W Triple Output Switching Power Supply **RT-85 series**



■ Features :

- Universal AC input / Full range
- Protections:Short circuit/Over load/Over voltage
- Cooling by free air convection
- LED indicator for power on
- 100% full load burn-in test
- All using 105℃ long life electrolytic capacitors
- Withstand 300VAC surge input for 5 second
- High operating temperature up to 70℃
- Withstand 5G vibration test
- High efficiency, long life and high reliability
- 3 years warranty

SPECIFICATION

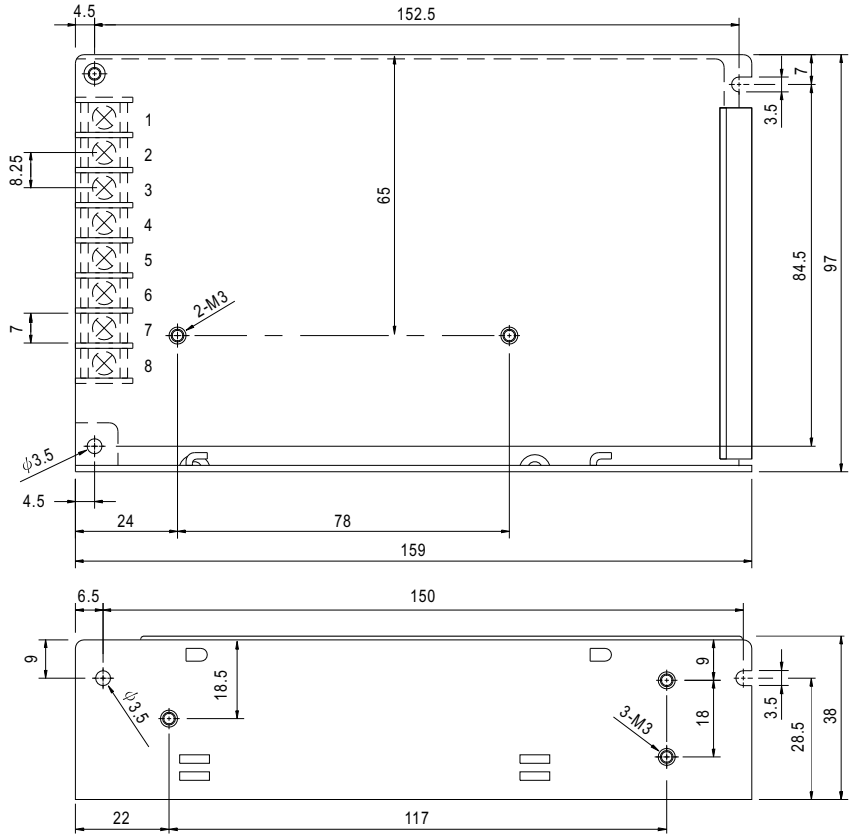
MODEL		RT-85A			RT-85B			RT-85C			RT-85D		
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3
	DC VOLTAGE	5V	12V	-5V	5V	12V	-12V	5V	15V	-15V	5V	24V	12V
	RATED CURRENT	8A	3.5A	0.5A	8A	3.5A	0.5A	7A	3A	0.5A	6A	2A	1A
	CURRENT RANGE Note.6	2 ~ 10A	0.3 ~ 4A	0 ~ 1A	2 ~ 10A	0.3 ~ 4A	0 ~ 1A	2 ~ 10A	0.3 ~ 4A	0 ~ 1A	2 ~ 10A	0.3 ~ 2.5A	0.1 ~ 1A
	RATED POWER Note.6	84.5W			88W			87.5W			90W		
	RIPPLE & NOISE (max.) Note.2	80mVp-p	120mVp-p	100mVp-p	80mVp-p	120mVp-p	120mVp-p	80mVp-p	120mVp-p	120mVp-p	80mVp-p	150mVp-p	120mVp-p
	VOLTAGE ADJ. RANGE	CH1: 4.75 ~ 5.5V			CH1: 4.75 ~ 5.5V			CH1: 4.75 ~ 5.5V			CH1: 4.75 ~ 5.5V		
	VOLTAGE TOLERANCE Note.3	±2.0%	±5.0%	±6.0%	±2.0%	±5.0%	±6.0%	±2.0%	+3,-7%	±6.0%	±2.0%	±5.0%	±6.0%
	LINE REGULATION Note.4	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%
	LOAD REGULATION Note.5	±1.0%	±3.0%	±6.0%	±1.0%	±3.0%	±6.0%	±1.0%	±3.0%	±6.0%	±1.0%	±3.0%	±6.0%
	SETUP, RISE TIME	500ms, 20ms/230VAC 1200ms, 30ms/115VAC at full load											
	HOLD TIME (Typ.)	100ms/230VAC 18ms/115VAC at full load											
INPUT	VOLTAGE RANGE	88 ~ 264VAC 125 ~ 373VDC (Withstand 300VAC surge for 5sec. Without damage)											
	FREQUENCY RANGE	47 ~ 63Hz											
	EFFICIENCY (Typ.)	76%			76%			77%			79%		
	AC CURRENT (Typ.)	2.5A/115VAC 1.5A/230VAC											
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC											
	LEAKAGE CURRENT	<2mA / 240VAC											
PROTECTION	OVER LOAD	110 ~ 150% rated output power											
		Protection type : Hiccup mode, recovers automatically after fault condition is removed											
	OVER VOLTAGE	CH1: 5.75 ~ 6.75V											
		Protection type : Hiccup mode, recovers automatically after fault condition is removed											
ENVIRONMENT	WORKING TEMP.	-25 ~ +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℃)on +5V output											
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes											
SAFETY & EMC (Note 7)	SAFETY STANDARDS	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 EN55022 (CISPR22) Class B											
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3											
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN61000-6-2 (EN50082-2) heavy industry level, criteria A											
OTHERS	MTBF	215Khrs min. MIL-HDBK-217F (25℃)											
	DIMENSION	159*97*38mm (L*W*H)											
	PACKING	0.6Kg; 24pcs/15.4Kg/0.7CUFT											

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. Line regulation is measured from low line to high line at rated load.
5. Load regulation is measured from 20% to 100% rated load, and other output at 60% rated load.
6. Each output can work within current range. But total output power can't exceed rated output power.
7. 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.
8. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time.

■ Mechanical Specification

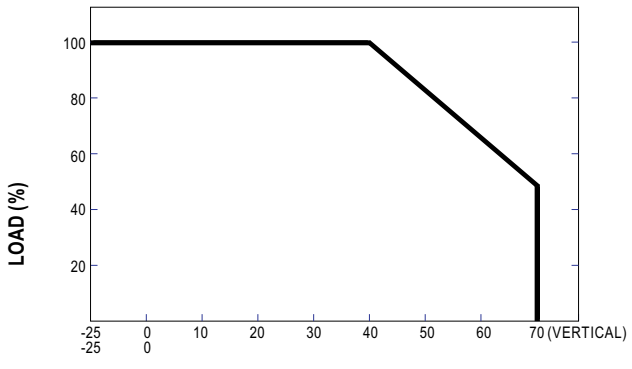
Case No. 901C Unit:mm



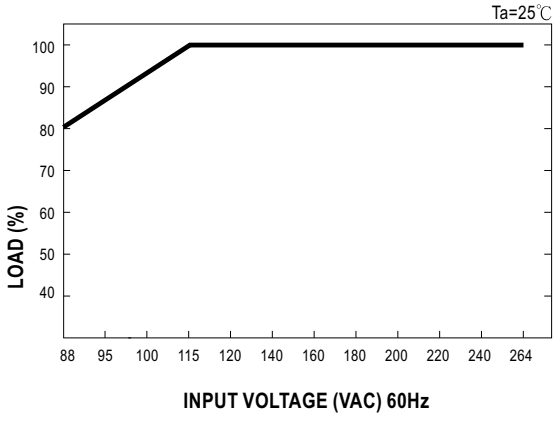
Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4	NC	7	DC OUTPUT COM
2	AC/N	5	DC OUTPUT V3	8	DC OUTPUT +V1
3	FG ⏚	6	DC OUTPUT +V2		

■ Derating Curve



■ Static Characteristics



MODEL：RT-85B

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max) V2: 120 mVp-p (Max) V3: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1:33 mVp-p (Max) V2:30 mVp-p (Max) V3:7 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4.75V ~ 5.5V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	4.45V~5.73V 230VAC 4.45V~5.73V 115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -2 %~ 2 % (Max) V2:-5 %~ 5 % (Max) V3:-6 %~ 6 %(Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN % LOAD Ta:25℃	V1:-0.26 %~ 0.12 % V2-1.78 %~0.77 % V3:-1.01 %~-5.61 %	P
4	LINE REGULATION	V1:-0.5 %~ 0.5 % (Max) V2: -1 %~1 % (Max) V3: -1 %~1 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~0 % V2:0 %~-0.14 % V3: 0 %~-0.14 %	P
5	LOAD REGULATION	V1: -1 %~ 1 % (Max) V2:-3 %~3 % (Max) V3:-6 %~6 % (Max)	I/P:230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.12 %~ 0.12 % V2:0.87 %~0.51% V3:2.65 %~4.67 %	P
6	CROSS REGULATION	V1:-1 %~1 % (Max) V2:-3 %~3 % (Max) V3:-6 %~6 % (Max)	I/P: 230 VAC O/P:Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25℃	V1:0 %~0 % V2:-0.87 %~1.65 % V3:-2.34 %~3.45 %	P
7	SET UP TIME	230 VAC/ 500 ms (Max) 115 VAC/ 1200 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 191 ms 115 VAC/ 1146 ms	P
8	RISE TIME	230 VAC/ 20 ms (Max) 115 VAC/ 30 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 7 ms 115 VAC/ 7 ms	P
9	HOLD UP TIME	230 VAC/ 100 ms(TYP) 115 VAC/ 18 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 121 ms 115 VAC/ 24 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST:1. <5 %	P
11	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	190 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：RT-85A
1. ROOM AMBIENT BURN-IN：1.5 HRS
I/P:230 VAC O/P:100% LOAD Ta= 30.1 ℃
2. HIGH AMBIENT BURN-IN： 14 HRS
I/P:230 VAC O/P:100% LOAD Ta= 43.9 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 30.1 ℃</th><th>HIGH AMBIENT Ta= 43.9 ℃</th></tr>
<tr><td>1</td><td>LF1</td><td>TF479</td><td>78.8℃</td><td>89.1℃</td></tr>
<tr><td>2</td><td>BD1</td><td>D3SB80 4A/800V</td><td>74℃</td><td>85.5℃</td></tr>
<tr><td>3</td><td>D4</td><td>HER208 2A/1KV</td><td>75℃</td><td>86.2℃</td></tr>
<tr><td>4</td><td>ED1</td><td>P6KE300A</td><td>86.8℃</td><td>97.9℃</td></tr>
<tr><td>5</td><td>D1</td><td>HER208 2A/1KV</td><td>90.3℃</td><td>101.7℃</td></tr>
<tr><td>6</td><td>U1</td><td>IC1203</td><td>88.1℃</td><td>100.6℃</td></tr>
<tr><td>7</td><td>Q1</td><td>2SK1358 9A/900V</td><td>87.5℃</td><td>100.2℃</td></tr>
<tr><td>8</td><td>T1CORE</td><td>TF1047</td><td>88.5℃</td><td>100.1℃</td></tr>
<tr><td>9</td><td>T1COIL</td><td>TF1047</td><td>93.6℃</td><td>104.8℃</td></tr>
<tr><td>10</td><td>D55</td><td>BYQ28X-200 10A/200V</td><td>105.2℃</td><td>115.8℃</td></tr>
<tr><td>11</td><td>D60</td><td>MBR3060PT 25A/60V</td><td>106.3℃</td><td>117.1℃</td></tr>
<tr><td>12</td><td>D50</td><td>BYQ284-206 10A/200V</td><td>89.4℃</td><td>100.7℃</td></tr>
<tr><td>13</td><td>C62</td><td>2200u/16V RUB 105℃</td><td>79.8℃</td><td>82.0℃</td></tr>
<tr><td>14</td><td>C56</td><td>1000u/25V RUB 105℃</td><td>69.1℃</td><td>82.1℃</td></tr>
<tr><td>15</td><td>R70</td><td>47Ω/2W</td><td>95.7℃</td><td>107.3℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 130% LOAD
Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100 % LOAD
Ta= -25 ℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 40 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 40 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.01 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">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:5G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
</table>

S 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℃	I/P-O/P:5.2 mA I/P-FG:4.39 mA O/P-FG:3.39 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℃	I/P-O/P: 6.62G Ω I/P-FG: 3.12G Ω O/P-FG:5.91G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	50 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50045826 UL: File NO ：E183223			P

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℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P:230 VAC (50HZ) O/P:FULL/ LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	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℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P:230 VAC/50HZ O/P:FULL LOAD Ta:25℃	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℃	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 62 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 59951 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 40 ℃ LIFE TIME= 23701 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 215K 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**	Q1 Rated 2SK2082: 800 V 9 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 404 V (2) 532 V (3) 658 V	P
2	Diode Peak **Voltage**	D60 Rated MBR3060PT: 60 V 30 A D55 Rated BYQ-28X:200 V 10 A D50 Rated BYQ-28X:200 V 10 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 (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 48.8 V (2) 47 V (3) 49.6 V (1) 72.4 V (2) 67 V (3) 74 V (1) 123 V (2) 110 V (3) 126 V	P
3	Clamp Diode Peak **Voltage**	D1 Rated HER208: 1K V 2 A	I/P:High-Line +3V =267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 528 V (2) 556 V	P
4	**Input Capacitor Voltage**	C5 Rated Rubycon : 150 u / 400 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)Burn-IN Hour Ta:25℃	(1) 374 V (2) 374 V (3) 374V	P
5	**Control IC Voltage Test**	U1 Rated 1203 : 16 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℃	(1) 12.8 V (2) 12.8 V (3) 10.9 V (4) 12.8 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/12/30	RD SMAPLE	PASS	VICENT TSENG	MAX LIN

2003/12/12 A50-F023