

■ Features :

- Universal AC input / Full range
- Low leakage current < 0.5mA
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- 100% full load burn-in test
- Fixed switching frequency at 100KHz
- Low cost
- High reliability
- 2 years warranty

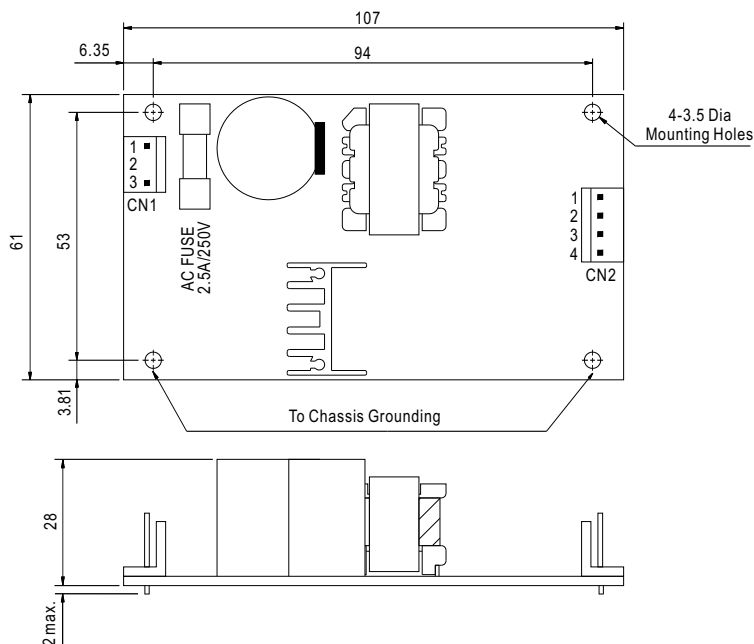


SPECIFICATION

| MODEL | PD-25A | | PD-25B | | PD-2505 | | PD-2512 | | PD-2515 | | |
|-----------------------|---|---|--------------------------|---------------------------------|--------------|--------------|----------------|--------------|----------------|--------------|----------------|
| OUTPUT | OUTPUT NUMBER | CH1 | CH2 | CH1 | CH2 | CH1 | CH2 | CH1 | CH2 | CH1 | CH2 |
| | DC VOLTAGE | 5V | 12V | 5V | 24V | 5V | -5V | 12V | -12V | 15V | -15V |
| | RATED CURRENT | 2.1A | 1.2A | 1.2A | 0.8A | 2.5A | 2.5A | 1A | 1A | 0.8A | 0.8A |
| | CURRENT RANGE | 0.2 ~ 2.5A | 0.1 ~ 1.5A | 0.2 ~ 2A | 0.1 ~ 1A | 0.1 ~ 3A | 0.1 ~ 2.5A | 0.1 ~ 1.2A | 0.1 ~ 1.2A | 0.1 ~ 1A | 0.1 ~ 1A |
| | RATED POWER | 25W | | 25.2W | | 25W | | 24W | | 24W | |
| | RIPPLE & NOISE (max.) Note.2 | 50mVp-p | 150mVp-p | 50mVp-p | 200mVp-p | 50mVp-p | 50mVp-p | 50mVp-p | 50mVp-p | 50mVp-p | 50mVp-p |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±6.0% | ±2.0% | ±6.0% | ±6.0% | ±6.0% | ±4.0% | ±4.0% | ±4.0% | ±4.0% |
| | LINE REGULATION | ±0.5% | ±2.0% | ±0.5% | ±2.0% | ±1.0% | ±1.0% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | LOAD REGULATION | ±1.0% | ±4.0% | ±1.0% | ±4.0% | ±4.0% | ±4.0% | ±3.0% | ±3.0% | ±3.0% | ±3.0% |
| | SETUP, RISE TIME | 250ms, 50ms/230VAC | | 250ms, 30ms/115VAC at full load | | | | | | | |
| HOLD UP TIME (Typ.) | 100ms/230VAC | | 16ms/115VAC at full load | | | | | | | | |
| INPUT | VOLTAGE RANGE | 85 ~ 264VAC | | 120 ~ 370VDC | | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | | | |
| | EFFICIENCY(Typ.) | 71% | | 77% | | 73% | | 74% | | 75% | |
| | AC CURRENT (Typ.) | 0.65A/115VAC | | 0.4A/230VAC | | | | | | | |
| | INRUSH CURRENT (Typ.) | COLD START 32A | | | | | | | | | |
| | LEAKAGE CURRENT | <0.5mA / 240VAC | | | | | | | | | |
| PROTECTION | OVERLOAD | Above 105% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | | | | | | | |
| | OVER VOLTAGE | 5.75 ~ 6.75V | 13.8 ~ 16.2V | 5.75 ~ 6.75V | 27.6 ~ 32.4V | 5.75 ~ 6.75V | -5.75 ~ -6.75V | 13.8 ~ 16.2V | -13.8 ~ -16.2V | 17.3 ~ 20.3V | -17.3 ~ -20.3V |
| | OVER TEMPERATURE | Tj 135°C typically (U1) detect on main control IC Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -10 ~ +60°C (Refer to output load derating curve) | | | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -20 ~ +85°C, 10 ~ 95% RH | | | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) ON CH1 output | | | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | | | | | | | | | |
| SAFETY & EMC (Note 4) | 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, light industry level, criteria A | | | | | | | | | | |
| OTHERS | MTBF | 507.9Khrs min. MIL-HDBK-217F (25°C) | | | | | | | | | |
| | DIMENSION | 107*61*28mm (L*W*H) | | | | | | | | | |
| | PACKING | 0.15Kg; 96pcs/15.9Kg/1.3CUFT | | | | | | | | | |
| NOTE | <ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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

Unit:mm



AC Input Connector (CN1) : Molex 41791-03 or equivalent

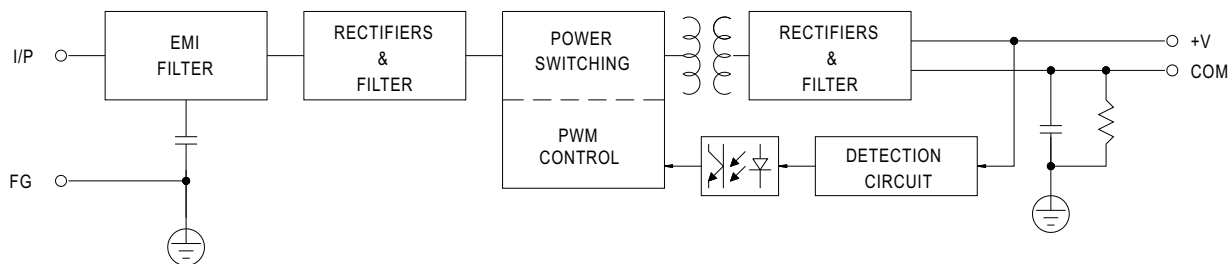
| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|--------------------------|--------------------------|
| 1 | AC/L | Molex 2139 or equivalent | Molex 2478 or equivalent |
| 2 | No Pin | | |
| 3 | AC/N | | |

DC Output Connector (CN2) : Molex 41791-04 or equivalent

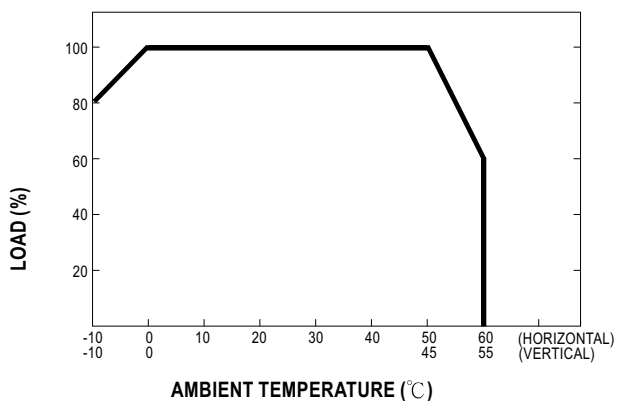
| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|--------------------------|--------------------------|
| 1 | V1 | Molex 2139 or equivalent | Molex 2478 or equivalent |
| 2,3 | COM | | |
| 4 | V2 | | |
| | | | |

Block Diagram

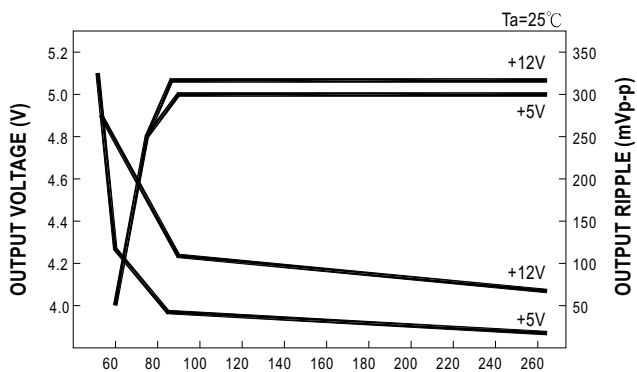
fosc : 100KHz



Derating Curve



Static Characteristics (A)



Quality Engineering Test Report

SERIES:PD25

25W AC-DC DUAL OUTPUT OPEN FRAME SWITCHING POWER SUPPLY

SAMPLE: A.PD-25AV1:+5V /2.1A

C.PD-2505 V1:+5V / 2.5A

E.PD-2515 V1:+15V / 0.8A

V2:+12V / 1.2A

V2:-5V / 2.5A

V2:-15V / 0.8A

B.PD-25BV1:+5V /1.2A

D.PD-2512 V1:+12V / 1A

F.PD-2503 V1:+5V / 3A

V2:+24V /0.8A

V2:-12V /1A

V2:+3.3 / 3A

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|----|--------------------------|--|---|---------|
| 1 | AC INPUT VOLTAGE RANGE | I/P:TESTING O/P:FULL LOAD SPEC:85~264VAC | F:59.1VAC~264VAC | P |
| 2 | LINE REGULATION | I/P:85~264VAC O/P:FULL LOAD SPEC: A :V1 :±0.5% V2 :±2% B :V1 :±0.5% V2 :±2% C :V1 :±1% V2 :±1% D :V1 :±0.5% V2 :±0.5% E :V1 :±0.5% V2 :±0.5% F :V1 :±2% V2 :±1% | A: V1: -0.1%~+0% V2: -0.05%~+1.1% B: V1: -0%~+0% V2: -0.02%~+0.94% C: V1: -0.24%~+0% V2: -0%~+0% D: V1: -0%~+0.1% V2: -0.1%~+0% E: V1: -0.04%~+0% V2: -0%~+0% F: V1: -0.51%~+0% V2: -0%~+0% | P |
| 3 | LOAD REGULATION | I/P:230VAC O/P:MIN. TO FULL LOAD SPEC: A : V1 : ±1% V2 : ±4% B : V1 : ±1% V2 : ±4% C : V1 : ±4% V2 : ±4% D : V1 : ±3% V2 : ±3% E : V1 : ±3% V2 : ±3% F : V1 : ±4% V2 : ±1% | A: V1: -0.1%~+0.1% V2: -0%~+0.2% B: V1: -0.12%~+0% V2: -0%~+0.23% C: V1: -0.62%~+0% V2: -0.12%~+0.62% D: V1: -0.1%~+0% V2: -0.1%~+0.2% E: V1: -0.1%~+0.05% V2: -0.1%~+0.12% F: V1: -0.24%~+0.51% V2: -0.36%~+0.36% | P |
| 4 | OUTPUT VOLTAGE TOLERANCE | I/P:230VAC O/P:MIN. TO FULL LOAD SPEC: A : V1 : ±2% V2 : ±6% B : V1 : ±2% V2 : ±6% C : V1 : ±6% V2 : ±6% D : V1 : ±4% V2 : ±4% E : V1 : ±4% V2 : ±4% F : V1 : -8%~+5% V2 : ±2% | A: V1: -0%~+0.24% V2: -4.79%~+5.67% B: V1: -0.12%~+0.12% V2: -2.43%~+4.0% C: V1: -4.66%~+4.3% V2: -4.39%~+4.8% D: V1: -2.29%~+2.08% V2: -2.19%~+2.23% E: V1: -2.83%~+0.08% V2: -2.6%~+0.37% F: V1: -6.38%~+1.86% V2: +1.69%~+2.45% | P |
| 5 | RIPPLE&NOISE | I/P:230VAC O/P:FULL LOAD SPEC: A :V1 :50mV V2 :150mV B :V1 :50mV V2 :200mV C :V1 :50mV V2 :50mV D :V1 :50mV V2 :50mV E :V1 :50mV V2 :50mV F :V1 :50mV V2 :50mV | A: V1: 16mV V2: 25mV B: V1: 7mV V2: 20mV C: V1: 7mV V2: 5mV D: V1: 6mV V2: 6mV E: V1: 6mV V2: 5mV F: V1: 6mV V2: 23mV | P |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|----|---|---|--|---------|
| 6 | AC INPUT CURRENT | I/P:230VAC O/P:FULL LOAD SPEC:0.4A | F:0.312A | P |
| 7 | MAX. INRUSH CURREN | I/P:230VAC O/P: FULL LOAD SPEC:40A | F:33.273A | P |
| 8 | SET UP TIME | I/P:230VAC O/P:FULL LOAD SPEC:250ms | F:132mS | P |
| 9 | HOLD UP TIME | I/P:230VAC O/P:FULL LOAD SPEC:50mS | F:129mS | P |
| 10 | EFFICIENCY | I/P:230VAC O/P:FULL LOAD SPEC: A:71% B:77% C:73% D:74% E:75% F:72% | A:72.12% B:78.66% C:74.84% D:75.77% E:76.60% F:73.18% | P |
| 11 | OVER LOAD PROTECTION | I/P:230VAC O/P:TESTING SPEC:ABOVE 105% | A:246% B:269% C:239% D:286.5% E:285% F:230% | P |
| 12 | OVER VOLTAGE PROTECTION | I/P:230VAC O/P:FULL LOAD SPEC: V1:115%~135% V2:115%~135% | A : V1: 123% V2: 128% B : V1: 124% V2: 123% C : V1: 124.4% V2: 126% D : V1: 121% V2: 129% E : V1: 124.3% V2: 130.7% F : V1: 124% V2: 130% | P |
| 13 | OVER TEMPERATURE PROTECTION & FAN ON/OFF TEST | I/P:230VAC O/P:FULL LOAD SPEC: U1 Tj 135°C TYPICALLY POWER SHUTDOWN | A: OTP:115°C | P |
| 14 | GROUND LEAKAGE CURRENT | I/P:240VAC SPEC: L-FG--<0.5mA N-FG--<0.5mA | A: L-FG:0.25mA N-FG:0.24mA | P |
| 15 | INSULATION RESISTANCE | SPEC: O/P-FG 500VDC/100M Ohms MIN. I/P-O/P 500VDC/100M Ohms MIN. I/P-FG 500VDC/100M Ohms MIN. | A: O/P-FG >100M Ohms I/P-O/P >100M Ohms I/P-FG >100M Ohms | P |
| 16 | DIELECTRIC / WITHSTAND VOLTAGE | SPEC: I/P- O/P: 3000VAC/ 1 sec (10mA CUT-OFF) I/P - FG: 1500VAC/ 1 sec (10mA CUT-OFF) O/P - FG: 500VAC/ 1 sec (10mA CUT-OFF) | A: I/P-O/P :1.8mA I/P-FG :2.8mA | P |
| 17 | BURN-IN TEST | I/P: 230VAC O/P:FULL LOAD TA:23.6°C BURN-IN DURATION : 1 hrs | NON BREAK | P |

| 18 | ENVIRONMENT TEST (SAMPLE A:) | 1.LOW TEMPERATURE TEST I/P:80 VAC O/P:FULL LOAD AMBIENT TEMPERATURE:-8.7°C | AFTER 1.33 hrs POWER ON OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---|--|-------------------------------|-----------------|-----|------|--------|-----|--------------|--------|--------|----|-----------------|--------|--------|----|------------------|--------|--------|----|-----------|--------|--------|-----|----------------------|--------|--------|----|----------------------|--------|--------|----|-------------|--------|--------|---|
| | | 2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P:230VAC O/P:FULL LOAD AMBIENT TEMPERATURE:51.2°C | AFTER 14 hrs NON BREAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3.ACCELERATED LIFE TEST I/P:267VAC O/P:FULL LOAD POWER ON :3 min POWER OFF :5 sec AMBIENT TEMPERATURE:85°C AMBIENT HUMIDITY:95% | AFTER 4.5 hrs NON BREAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | TEMPERATURE RISE TEST T rise OF PARTS | <p style="text-align: center;">A: I/P :230VAC O/P :FULL LOAD AFTER 1 hr BURN-IN TA:23.6°C</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>T rise</th> </tr> </thead> <tbody> <tr> <td>BD1</td> <td>BRIDGE DIODE</td> <td>49.0°C</td> <td>25.4°C</td> </tr> <tr> <td>U1</td> <td>MAIN TRANSISTOR</td> <td>55.2°C</td> <td>31.6°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER</td> <td>61.9°C</td> <td>38.3°C</td> </tr> <tr> <td>D7</td> <td>O/P DIODE</td> <td>63.8°C</td> <td>40.2°C</td> </tr> <tr> <td>C14</td> <td>O/P FILTER CAPACITOR</td> <td>43.4°C</td> <td>19.8°C</td> </tr> <tr> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>36.1°C</td> <td>12.5°C</td> </tr> <tr> <td>D5</td> <td>CLAMP DIODE</td> <td>52.4°C</td> <td>28.8°C</td> </tr> </tbody> </table> | | POSITION | P/N | TEMP | T rise | BD1 | BRIDGE DIODE | 49.0°C | 25.4°C | U1 | MAIN TRANSISTOR | 55.2°C | 31.6°C | T1 | MAIN TRANSFORMER | 61.9°C | 38.3°C | D7 | O/P DIODE | 63.8°C | 40.2°C | C14 | O/P FILTER CAPACITOR | 43.4°C | 19.8°C | C5 | I/P FILTER CAPACITOR | 36.1°C | 12.5°C | D5 | CLAMP DIODE | 52.4°C | 28.8°C | P |
| POSITION | P/N | TEMP | T rise | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BD1 | BRIDGE DIODE | 49.0°C | 25.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U1 | MAIN TRANSISTOR | 55.2°C | 31.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 | MAIN TRANSFORMER | 61.9°C | 38.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | O/P DIODE | 63.8°C | 40.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C14 | O/P FILTER CAPACITOR | 43.4°C | 19.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C5 | I/P FILTER CAPACITOR | 36.1°C | 12.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | CLAMP DIODE | 52.4°C | 28.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | LIFE CYCLE | A: SUPPOSE C14 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:23.6°C Tc14:43.4°C Life: 424924 hrs I/P:230VAC O/P:FULL LOAD Ta:51.2°C Tc14:65.4°C Life: 92479 hrs | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY) | A: FUSE : T2.5AL/250VAC UL BRIDGE DIODE : KBP208G 2A/800V GLASS LINE FILTER : LF TF-416 ET-20V TRANSFOMER : MT TF-426 EI-28 POWER SWITCHER : PHIL TOP-223Y OUTPUT DIODE : C82-004 TO-220 OUTPUT CAPACITOR : 1000uF/25V ,LL 105°C, 5Khrs INPUT CAPACITOR : HITACHI 82uF/400V,85°C HP3 P.C.B : PD-25-R1,CEM-3 2 OZ SS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DATE | SAMPLE | TEST RESULT | TEST | APPROVAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 980417 | PD-25 | PASS | H.C.LIOU | Max Lin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 980930 | PD-2503 | PASS | H.C.LIOU | Max Lin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |