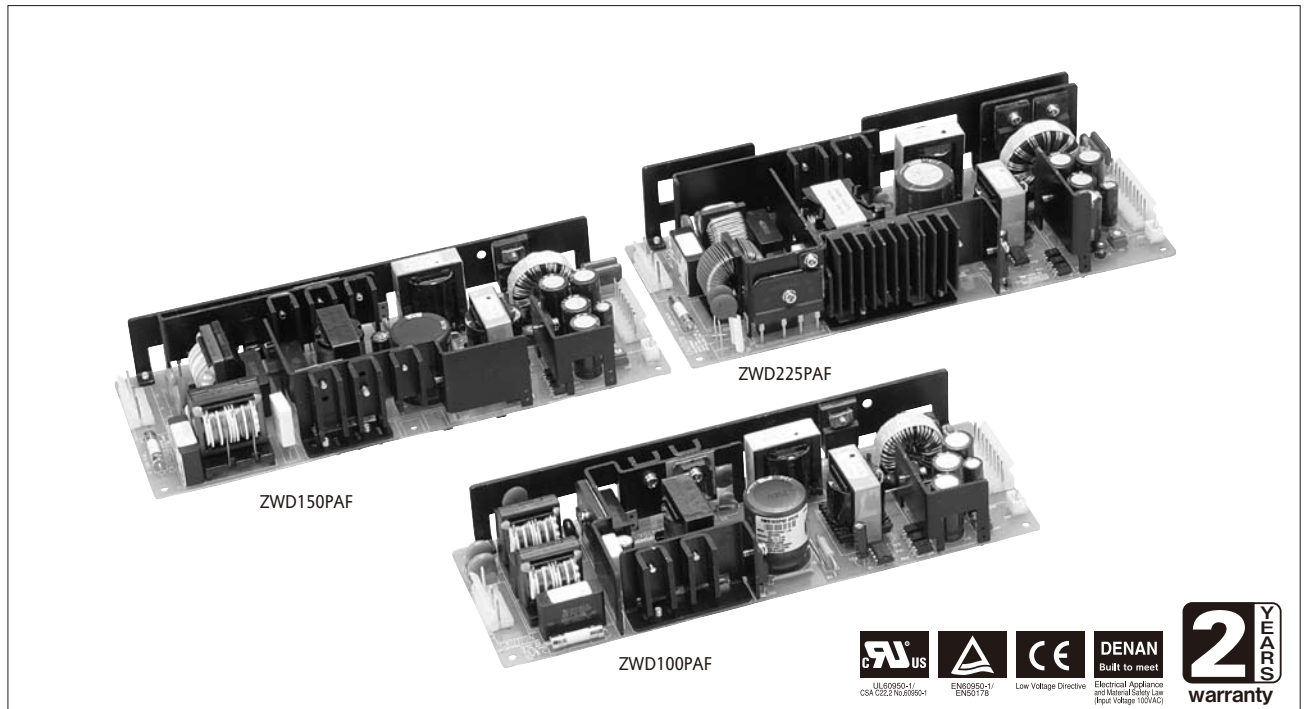



ZWD-PAF SERIES Dual Output 100W - 225W

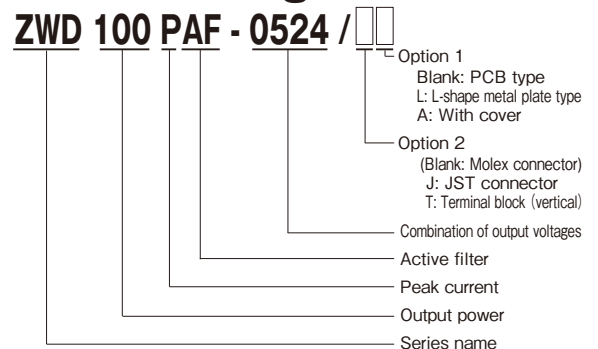


Features

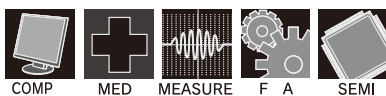
 Complies the standard of the harmonics current limiter

- Worldwide input: 85-265VAC
- Peak load accommodatable double power: Approximately twice the value of average output current
- Operating ambient temperature range (-10C to +50C: 100%)
- Output voltage adjusting trimmer
- Low leakage current
- Complies with EMI / immunity standards
- Safety standard approved: CE(LVD)/UL/CSA/EN
- A wide variety of types: input/output (connector/terminal block), with L angle, with cover

Model naming method



Applications



Conformity to RoHS Directive

This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

Product Line up

ZWD-PAF (Dual Output, Peak Current)

Output Voltage	100W (Peak186W)		150W (Peak294W)		225W (Peak440W)	
	Output Current (Peak) / Model		Output Current (Peak) / Model		Output Current (Peak) / Model	
5V	5A (-)	ZWD100PAF-0524/J	5A (-)	ZWD150PAF-0524/J	5A (-)	ZWD225PAF-0524/J
24V	4A (8A)		5A (12A)		9A (18A)	

ZWD100PAF Specifications

ITEMS/UNITS		MODEL	ZWD100PAF-0524	
		CH	1	2
Input	Voltage Range (*3)	V	AC85 - 265 or DC120 - 370	
	Frequency (*3)	Hz	47-63	
	Power Factor (100/200VAC)(typ)(*2)		0.99 / 0.95	
	Efficiency (100/200VAC)(typ) (*2)	%	79 / 81	
	Current (100/200VAC)(typ) (*2)	A	1.28 / 0.65	
	Inrush Current (100/200VAC)(typ)(*4)	A	15 / 30, Ta=25°C, Cold Start	
	Leakage Current (*10)	mA	0.75 max (Low leakage current option available --> /FG. Refer to application note).	
Output	Nominal Voltage	VDC	5	24
	Maximum Current	A	5	4
	Maximum Peak Current (100/200VAC) (*1)	A	—	7 / 8
	Maximum Peak Power (100/200VAC)(*1)	W	—	168 / 192
	Total Average Power	W	100	
	Total Allowable Peak Power (100/200VAC) (*1)	W	172 / 196	
	Voltage Setting Accuracy (*2)		4.9 - 5.1V	23.52 - 24.48V
	Maximum Line Regulation (*5)(*6)	mV	20	96
	Maximum Load Regulation (*5)(*7)	mV	40	150
	Temperature Coefficient		0.02%/°C	
	Maximum Ripple & Noise (0≤Ta≤70°C) (*5)	mVp-p	120	150
	Maximum Ripple & Noise (-10≤Ta<0°C)(*5)	mVp-p	160	180
	Hold-up Time (typ) (*2)	ms	40	20
	Voltage Adjustable Range	VDC	4.5 - 5.5	22.8 - 27.6
Function	Over Current Protection (*8)		> 105%	> 205%
	Over Voltage Protection (*9)		120 - 145%	
	Remote ON/OFF Control		-	Possible
	Parallel Operation		Not possible	
	Series Operation		Not possible	
Environment	Operating Temperature (*11)	°C	- 10 to + 70 Convection: -10 to +50 : 100%, +60 : 50%, +70 : 0%	
	Storage Temperature	°C	- 30 to +85	
	Operating Humidity	%RH	20 - 90 (No dewdrop)	
	Storage Humidity	%RH	10 - 95 (No dewdrop)	
	Vibration		At no operating less than 19.6m/s ² constant, X, Y, Z 1hour each	
	Shock (In package)		Less than 196.1m/s ²	
	Cooling		Convection cooling	
Isolation	Withstand Voltage		Input - Output: 3.0kVAC (20mA), Input - FG: 2.0kVAC (20mA), Output - FG: 500VAC (100mA) for 1min.	
	Isolation Resistance		More than 100MΩ at Ta=25°C and 70%RH, Output - FG : 500VDC, 10 - 55Hz (sweep for 1min)	
Standards	Safety Standards		UL60950-1, CSA C22.2 No.60950-1, EN60950-1, EN50178. Built to meet DENAN	
	PFHC		Built to meet IEC61000-3-2	
	EMI		Complies with FCC-B, CISPR22-B, EN55022-B, VCCI-B	
	Immunity		Built to meet EN61000-4-2,-3,-4,-5,-6,-8,-11	
Mechanical	Weight (typ)	g	460	
	Size (W x H x D)	mm	75 x 35 x 222 (Refer to outline drawing)	

(*1) Operating period at peak output current is less than 10sec; Duty ≤ 0.35. (Average output power and current is less than maximum output power and current.) For peak load derating method, please refer to instruction manual for details.

(*2) At 100/200VAC and total average output power, Ta = 25°C.

(*3) For cases where conformance to various safety specs (UL, CSA, EN) are required, to be described as 100-240VAC, 50/60Hz on name plate.

(*4) Not applicable for the in-rush current to noise filter for less than 0.2ms.

(*5) Please refer to Fig A for measurement of line & load regulation and output ripple voltage.(Measure with normal probe.)

(*6) 85-132VAC and 170-265VAC, constant load.

(*7) No load - full load, constant input voltage.

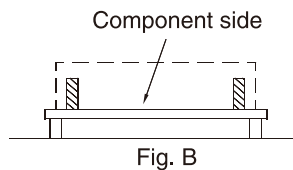
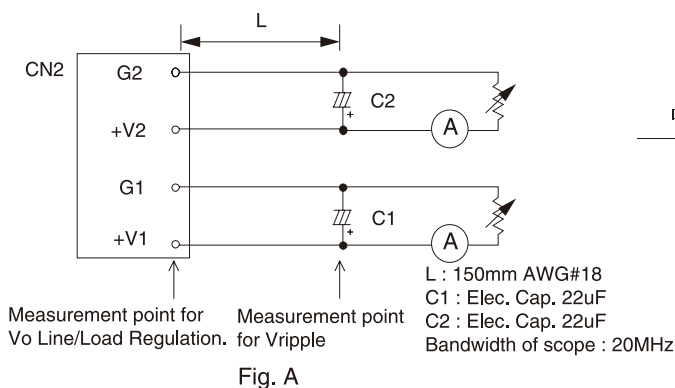
(*8) Current limiting with automatic recovery. Avoid to operate at overload or dead short for more than 30 seconds.

(*9) OVP circuit will shutdown output, manual reset. (Line recycle) (OVP for V1, V1 & V2 shutdown, OVP for V2, only V2 shutdown)

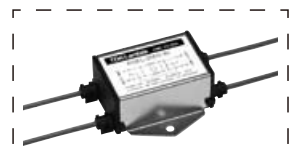
(*10) Measured by each measuring method of UL, CSA, EN and DENAN (at 60Hz).

(*11) At standard mounting method, Fig B.
 - Load(%) is percent of maximum output load (Item 2 and 4), do not exceed derating in both maximum output current and power.
 - For other mountings, refer to derating curve.
 - When forced air cooling, refer to derating curve.

ZWD-PAF



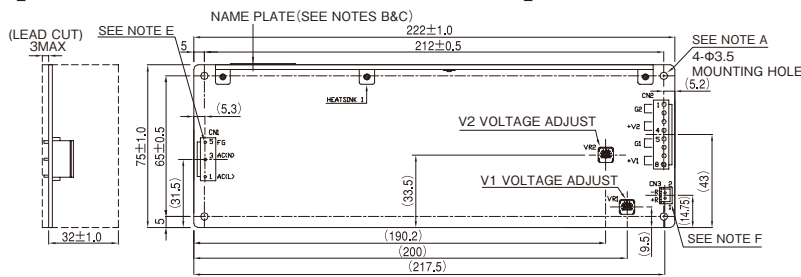
● Recommended EMC Filter



RSEL-2002W
 Please refer to "TDK-Lambda EMC Filters" catalog.

Outline Drawing

[ZWD100PAF (/J : JST connector)]



NOTE
 A. THE 4- ϕ 3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLE. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
 B. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 C. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 D. TO KEEP A DISTANCE MORE THAN 4.5mm FROM PC-BOARD EDGE, LEAD CUT AND COMPONENT HEIGHT TO CUSTOMER'S CHASSIS.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER (OUTPUT SIDE CN2)	B8P-VH	JST	1
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

* CURRENT OF THE CN2 CONNECTOR PIN MUST BE LESS THAN 5A (7A AT PEAK LOAD)

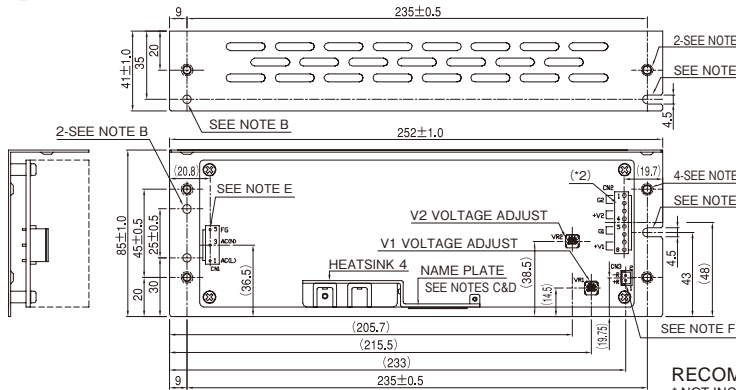
RECOMMENDED HOUSING & TERMINAL PIN :
 * NOT INCLUDED WITH THE PRODUCT.

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN2)	VHR-8N	JST	1
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN1, CN2)	SVH-21T-P1.1	JST	11
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL : YC-160R CN1,CN2 MANUFACTURER : JST
 HAND CRIMPING TOOL : YC-110R OR YRS-110 CN3 MANUFACTURER : JST
 *1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

[ZWD100PAF (/JL : With L-shape metal plate, JST connector)]



NOTE
 A. M4 EMBOSSED TAPPED & COUNTERSUNK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING. SCREW MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6mm.
 B. ϕ 4.5 HOLES (3) AND R2.25 SLOT HOLES (2) ARE FOR CUSTOMER'S CHASSIS MOUNTING. (USE M4 MOUNTING SCREW)
 C. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 D. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER (OUTPUT SIDE CN2)	B8P-VH	JST	1
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

* CURRENT OF THE CN2 CONNECTOR PIN MUST BE LESS THAN 5A (7A AT PEAK LOAD)

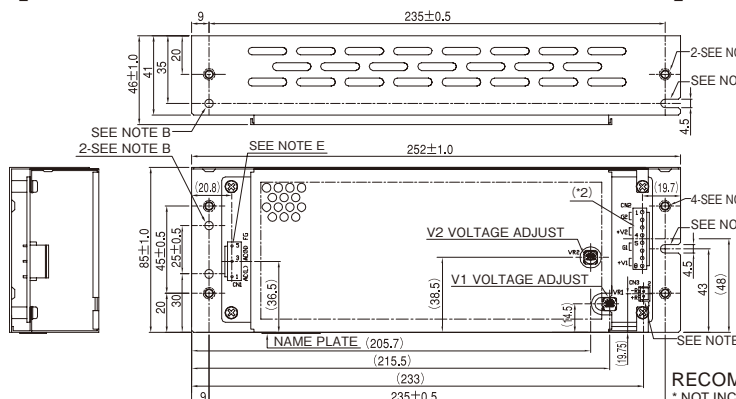
RECOMMENDED HOUSING & TERMINAL PIN :
 * NOT INCLUDED WITH THE PRODUCT.

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN2)	VHR-8N	JST	1
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN1, CN2)	SVH-21T-P1.1	JST	11
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL : YC-160R CN1,CN2 MANUFACTURER : JST
 HAND CRIMPING TOOL : YC-110R OR YRS-110 CN3 MANUFACTURER : JST
 *1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

[ZWD100PAF (/JA : With cover, JST connector)]



NOTE
 A. M4 EMBOSSED TAPPED & COUNTERSUNK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING. SCREW MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6mm.
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 C. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 D. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER (OUTPUT SIDE CN2)	B8P-VH	JST	1
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

* CURRENT OF THE CN2 CONNECTOR PIN MUST BE LESS THAN 5A (7A AT PEAK LOAD)

RECOMMENDED HOUSING & TERMINAL PIN :
 * NOT INCLUDED WITH THE PRODUCT.

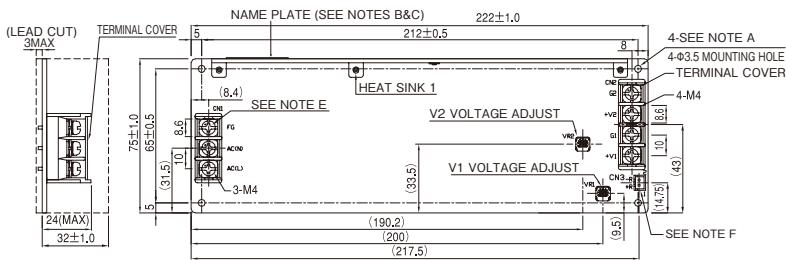
PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN2)	VHR-8N	JST	1
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN1, CN2)	SVH-21T-P1.1	JST	11
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL : YC-160R CN1,CN2 MANUFACTURER : JST
 HAND CRIMPING TOOL : YC-110R OR YRS-110 CN3 MANUFACTURER : JST
 *1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

Outline Drawing

[ZWD100PAF (/T : Vertical terminal)]



NOTE
 A. THE 4-φ3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLE. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
 B. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 C. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 D. TO KEEP A DISTANCE MORE THAN 4.5mm FROM PC-BOARD EDGE, LEAD CUT AND COMPONENT HEIGHT TO CUSTOMER'S CHASSIS.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

RECOMMENDED HOUSING & TERMINAL PIN :

* NOT INCLUDED WITH THE PRODUCT.

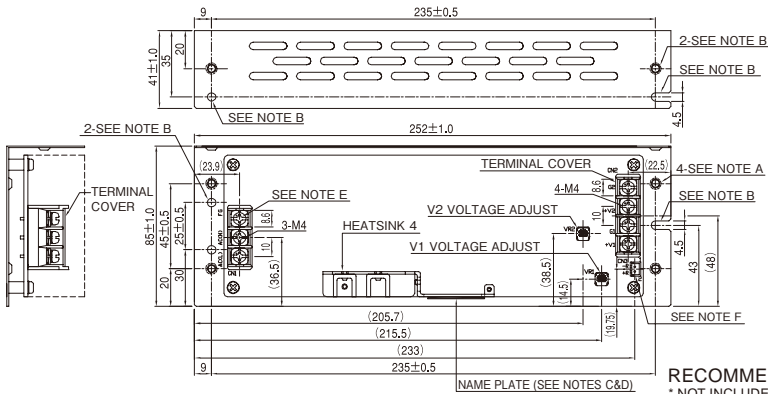
PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL: YC-110R OR YRS-110 CN3 MANUFACTURER: JST

*1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

[ZWD100PAF (/TL : Vertical terminal, with L-shape metal plate)]



NOTE
 A. M4 EMBOSSED TAPPED & COUNTERSUNK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING. SCREW MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6mm.
 B. φ4.5 HOLES (3) AND R2.25 SLOT HOLES (2) ARE FOR CUSTOMER'S CHASSIS MOUNTING. (USE M4 MOUNTING SCREW)
 C. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 D. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

RECOMMENDED HOUSING & TERMINAL PIN :

* NOT INCLUDED WITH THE PRODUCT.

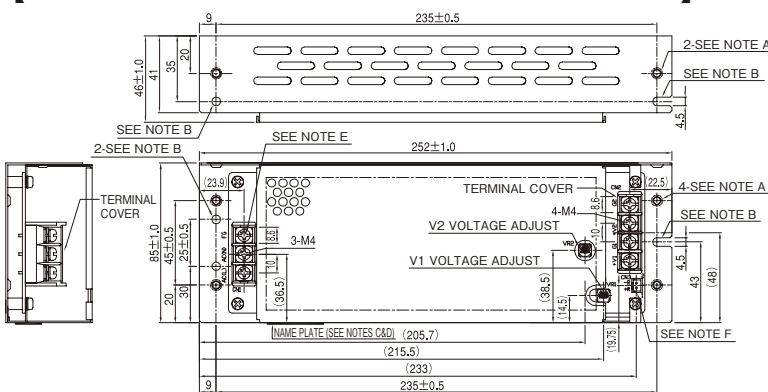
PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL: YC-110R OR YRS-110 CN3 MANUFACTURER: JST

*1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

[ZWD100PAF (/TA : Vertical terminal, with cover)]



NOTE
 A. M4 EMBOSSED TAPPED & COUNTERSUNK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING. SCREW MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6mm.
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 C. MODEL NAME, INPUT VOLTAGE RANGE, AVERAGE OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
 D. COUNTRY OF MANUFACTURER WILL BE SHOWN HERE.
 E. FG IS FOR SAFETY GROUND CONNECTION.
 F. CN3 IS NORMALLY SHORTED BY JM-2W-96(JST). IF USING REMOTE ON/OFF, REMOVE JM-2W-96 AND REFER TO THE TABLE FOR RECOMMENDED HOUSING AND TERMINAL PIN.

CONNECTOR USED :

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (OUTPUT SIDE CN3)	B2B-XH-A	JST	1

RECOMMENDED HOUSING & TERMINAL PIN :

* NOT INCLUDED WITH THE PRODUCT.

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
SOCKET HOUSING (CN3)*1	XHP-2	JST	1
TERMINAL PINS (CN3)*1	BXH-001T-P0.6 OR SXH-001T-P0.6	JST	2

HAND CRIMPING TOOL: YC-110R OR YRS-110 CN3 MANUFACTURER: JST

*1 APPLICABLE ONLY WHEN USING REMOTE ON/OFF

(unit : mm)

Output Derating

[ZWD100PAF]

Recommended standard mounting method is (A).

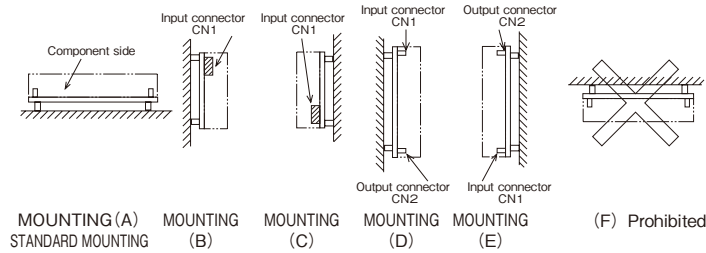
(B), (C), (D) and (E) are also possible. Mounting (F), (G), (H) and (I) are prohibited.

Please do not use (F), where the PCB will be on the top side and heat will be trapped inside the unit.

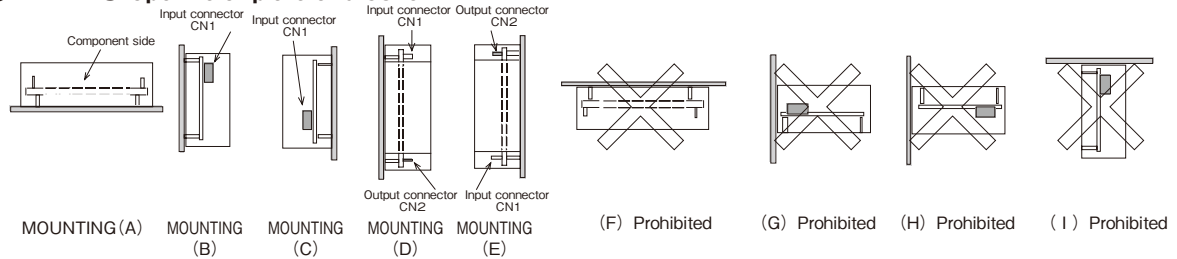
In the following derating curve, average load (%) is percent of maximum output load (both maximum output current and maximum output power in specification.)

Do not exceed the load derating.

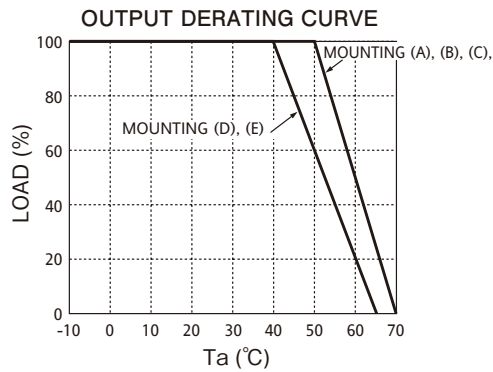
● PCB type



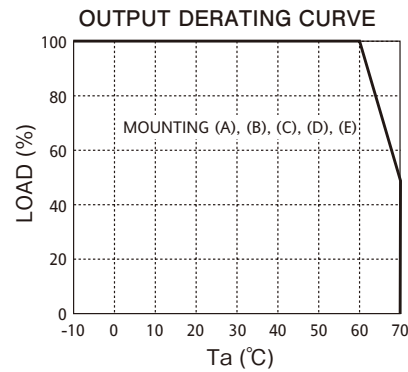
● With L-Shape metal plate and cover



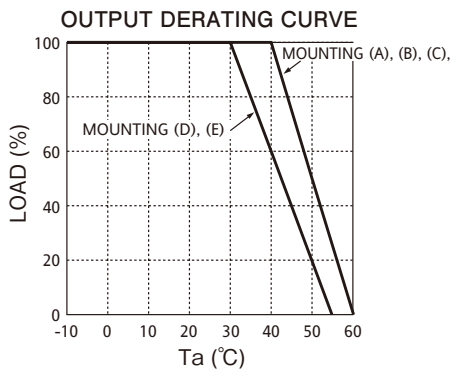
CONVECTION COOLING (PCB type and with chassis type)



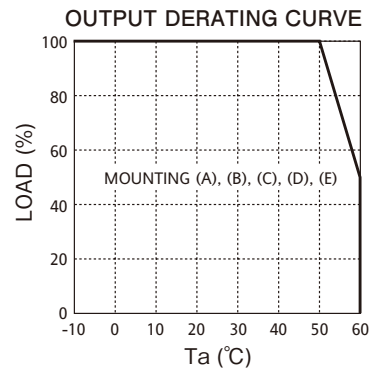
FORCED AIR COOLING (PCB type and with chassis type)



CONVECTION COOLING (With chassis and cover type)



FORCED AIR COOLING (With chassis and cover type)



Recommended minimum air velocity: 0.7m/s (Measured at component side of PCB, air must flow through component side.)