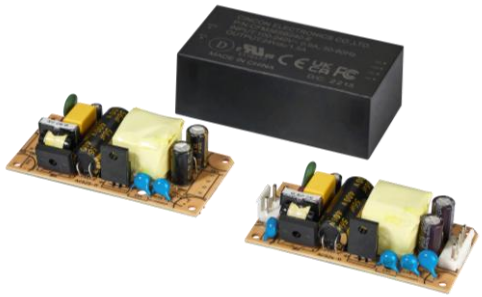
CFM36S SERIES
36 WATT OPEN FRAME AC-DC MODULES

Features

- Universal Input Range 90~264V_{ac}
- High Efficiency up to 89%
- 1.5"x 3" Size
- Class II: Type "Blank" & "E"
- Class II or I: Type "T"
- No Load Power <0.1W
- Approval IEC/EN/UL 62368-1
- Approval EN 55032 Class B and CISPR/FCC Class B
- Design Meets IEC/EN 60335-1
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Voltage Protection



E176177

MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE& NOISE NOTE2	VOLTAGE ACCURACY NOTE1	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
CFM36SA050	5.0 V	6.0 A	100 mV	±2%	±0.5%	±1%	85%
CFM36SA120	12 V	3.0 A	120 mV	±2%	±0.5%	±1%	88%
CFM36SA150	15 V	2.4 A	150 mV	±2%	±0.5%	±1%	88%
CFM36SA240	24 V	1.5 A	240 mV	±2%	±0.5%	±1%	89%
CFM36SA480	48 V	0.75 A	480 mV	±2%	±0.5%	±1%	89%
CFM36SB050	5.0 V	6.0 A	100 mV	±2%	±0.5%	±1%	85%
CFM36SB120	12 V	3.0 A	120 mV	±2%	±0.5%	±1%	88%
CFM36SB150	15 V	2.4 A	150 mV	±2%	±0.5%	±1%	88%
CFM36SB240	24 V	1.5 A	240 mV	±2%	±0.5%	±1%	89%
CFM36SB480	48 V	0.75 A	480 mV	±2%	±0.5%	±1%	89%

Note:

1. Voltage accuracy is set at 100% full load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measurement @20MHz BW.
3. Line regulation is measured from high line to low line with 100% full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 V_{ac} and 100% full load at 25℃.
6. T Version wafer with TAIWAN KING PIN TERMINAL PVHI series, JST PH series and mate with PVHI series or equivalent.

PART NUMBER

Series	Number of Outputs	Nominal Output Voltage	Type
CFM36	SX	XXX	-X
CFM36	SA：Single, Class I (Type "T" Only) SB：Single, Class II (All Types)	050：5.0V 120：12V 150：15V 240：24V 480：48V	Blank：PCB mount T：Wafer E：Encapsulated

Part Number Example:

CFM36SB120: 36W, Single 12V_{dc} Output, Class II, PCB Mount Type
CFM36SB120-E: 36W, Single 12V_{dc} Output, Class II, Encapsulated Type
CFM36SA120-T: 36W, Single 12V_{dc} Output, Class I, Wafer Type
CFM36SB120-T: 36W, Single 12V_{dc} Output, Class II, Wafer Type

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TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, 100% full load at 25℃ unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Safety approvals only to the AC input	All	90 120		264 370	V_{ac} V_{dc}
Operating Temperature	**See derating curve**	All	-40		80	℃
Storage Temperature		All	-40		85	℃
Operating Altitude	IEC/EN/UL 62368-1 Meets EN 60335-1	All			5000 2000	m

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range	**See derating curve**	All	100		240	V_{ac}
Input Frequency Range		All	50		60	Hz
Maximum Input Current	100% Full load, V_{in}=100V_{ac}	All			0.9	A
Leakage Current		All			0.1	mA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	All			90	A

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V_{in}=Nominal V_{in}, I_o=I_o max., T_c=25℃	CFM36SX050 CFM36SX120 CFM36SX150 CFM36SX240 CFM36SX480	4.90 11.76 14.70 23.52 47.02	5 12 15 24 48	5.10 12.24 15.30 24.48 48.96	V_{dc}
Operating Output Current Range	V_{in}=90V_{ac}~240V_{ac}, **see derating curve**	CFM36SX050 CFM36SX120 CFM36SX150 CFM36SX240 CFM36SX480			6.0 3.0 2.4 1.5 0.75	A
Holdup Time	V_{in}=115V_{ac}	All		8		ms
Output Voltage Regulation						
Load Regulation	10% to 100% Full load	All			±1.0	%
Line Regulation	V_{in}=High line to low line	All			±0.5	%
Over Current Protection	Hiccup mode, auto recovery	All	110		180	%
Short Circuit Protection	Auto recovery	All				
Over Voltage Protection	Latch mode (AC recycle to restart)	CFM36SX050 CFM36SX120 CFM36SX150 CFM36SX240 CFM36SX480			7.44 16.8 21.5 31.5 63.0	V_{dc}
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz bandwidth 3. Ambient temperature=25℃	CFM36SX050 CFM36SX120 CFM36SX150 CFM36SX240 CFM36SX480			100 120 150 240 480	mV

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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is 100% full load 3. Ambient temperature=25℃	CFM36SX050			6000	uF
		CFM36SX120			3000	
		CFM36SX150			2400	
		CFM36SX240			1500	
		CFM36SX480			750	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 100% full load 3. Ambient temperature=25℃	CFM36SX050		85		%
		CFM36SX120		88		
		CFM36SX150		88		
		CFM36SX240		89		
		CFM36SX480		89		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute	All			4000	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	P_{out}=max. rated power	All		65		kHz

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	700			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-1 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour (each axis), Total 3 hrs	All		4		g
Weight	Blank (PCB mount)	All		55		grams
	T (Wafer)			55		
	E (Encapsulated)			156		
Dimensions	Blank (PCB mount)	All	3.00x1.50x1.075 Inches (76.2x38.1x27.30 mm)			
	T (Wafer)		3.00x1.50x1.000 Inches (76.2x38.1x25.40 mm)			
	E (Encapsulated)		3.10x1.60x1.134 Inches (78.8x40.7x28.80 mm)			
Safety	Class I or II, IEC/EN/UL 62368-1					
EMC Emission	EN 55032, EN 61204-3, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue 7					Class B
Conducted Disturbance	EN 55032, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue 7					Class B
Radiated Disturbance	EN 55032, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue 7					Class B
Harmonic Current Emissions	EN 61000-3-2					
Voltage Fluctuations & Flicker	EN 61000-3-3					
EMC Immunity	EN 55035, EN 61204-3, EN 61000-6-1, EN 61000-6-2					
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3: Air Discharge: ±8kV, Level 2: Contact Discharge: ±4kV					Criterion A

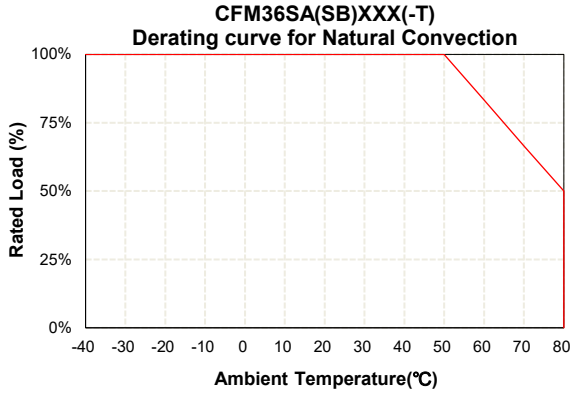
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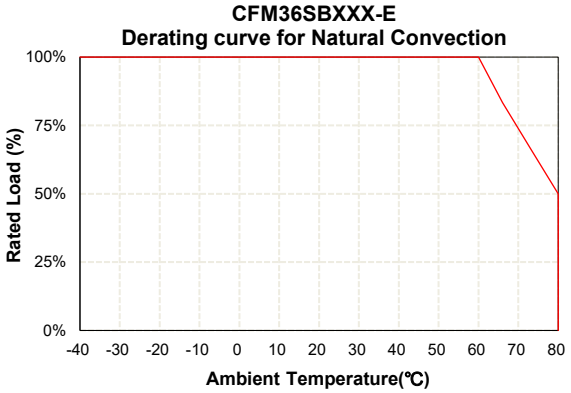
GENERAL SPECIFICATIONS

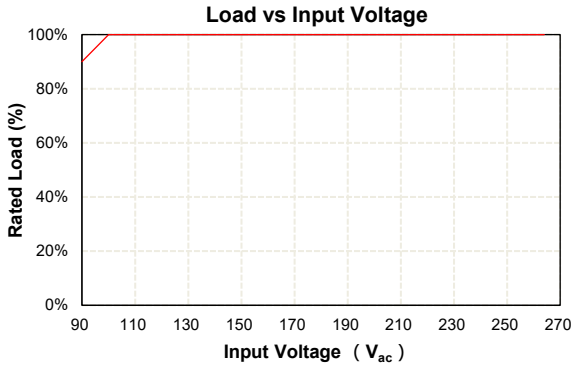
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3, Level 3: 80~1000MHz, 10V/m	Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4, Level 3: ±2kV	Criterion A
Surge	IEC 61000-4-5, Level 3: L-N: ±1kV, L-E(Ground): ±2kV	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6, Level 3:0.15~80MHz, 10V	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8, Level 4:30A/m	Criterion A
Voltage Dips	IEC 61000-4-11, Dip: 30% Reduction, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11, >95% Reduction	Criterion B
Application Note Link	CFM36S Series App Notes	

CHARACTERISTIC CURVE

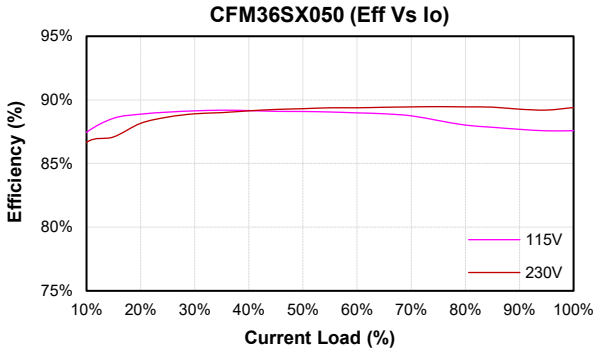
Power Derating Curve

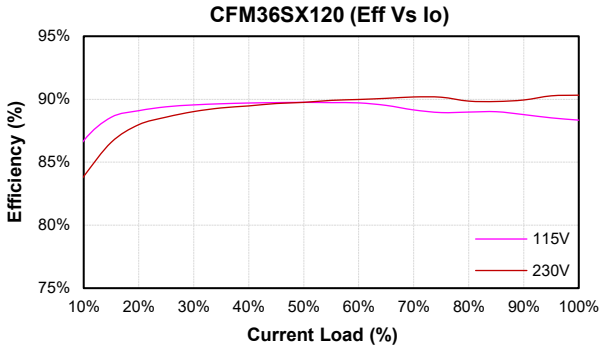


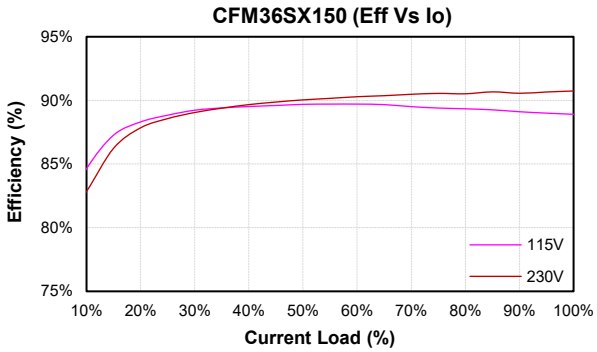


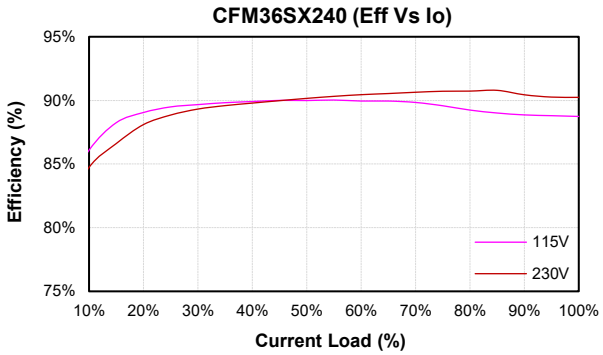


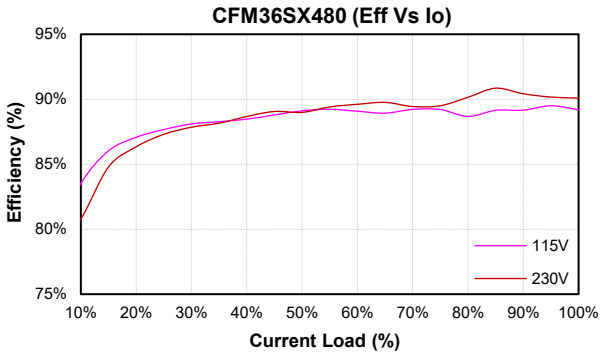
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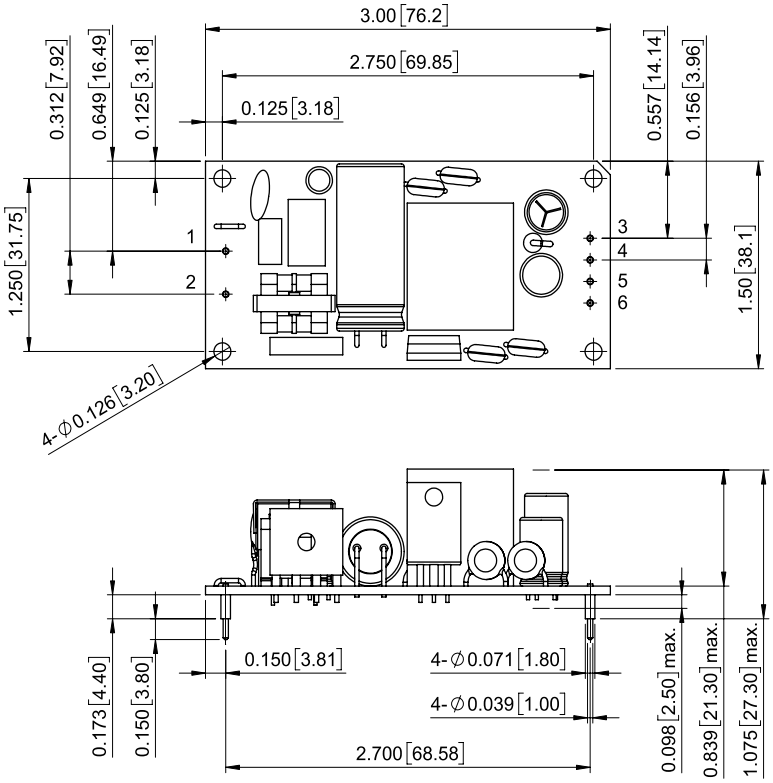






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MECHANICAL SPECIFICATION

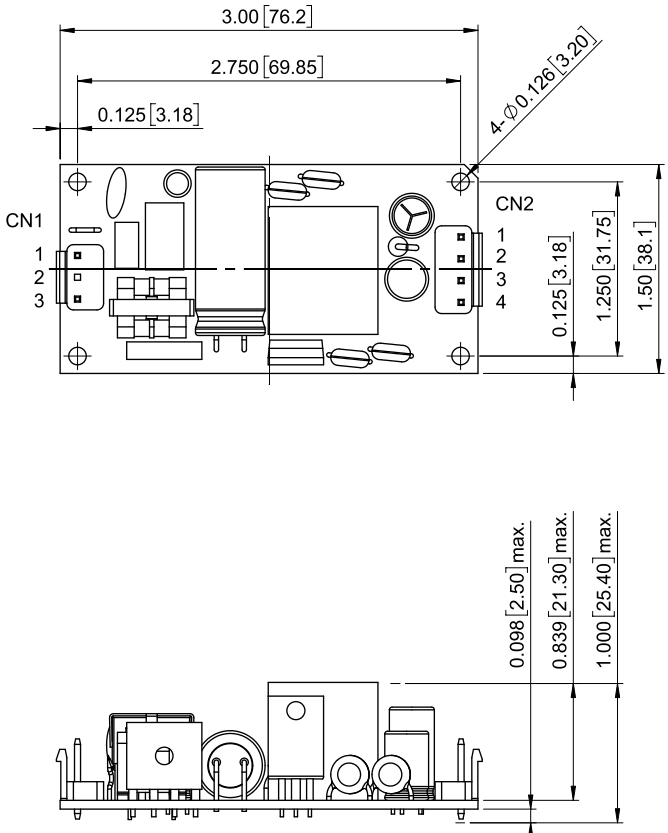


CFM36SBXXX

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

Pin Connection

Pin	Function
1	ACN
2	ACL
3	+Vout
4	+Vout
5	-Vout
6	-Vout



CFM36SBXXX-T

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

AC Input Connector(CN1):TKP PVHI-03N2 or equivalent

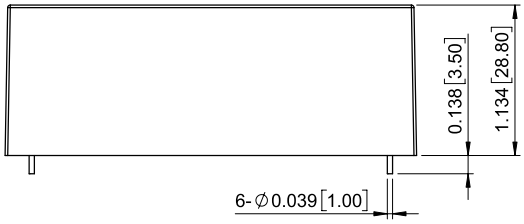
Pin	Function	Mating Housing	Terminal
1	ACN	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-		
3	ACL		

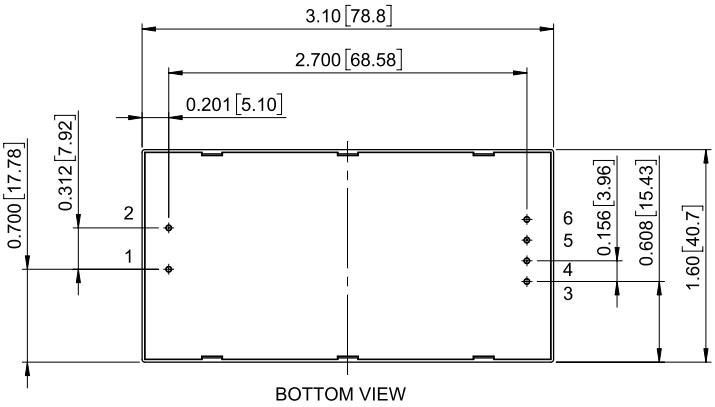
DC Output Connector(CN2):TKP PVHI-04 or equivalent

Pin	Function	Mating Housing	Terminal
1	+Vout	JST VHR-4N or equivalent	JST SVH-21T-P1.1 or equivalent
2	+Vout		
3	-Vout		
4	-Vout		

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MECHANICAL SPECIFICATION



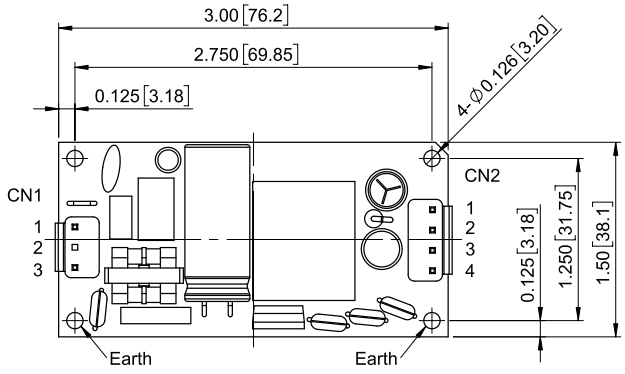


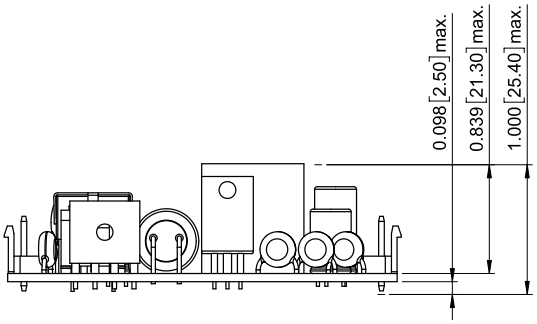
CFM36SBXXX-E

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

Pin Connection

Pin	Function
1	ACN
2	ACL
3	+Vout
4	+Vout
5	-Vout
6	-Vout





CFM36SAXXX-T

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

AC Input Connector(CN1):TKP PVHI-03N2 or equivalent

Pin	Function	Mating Housing	Terminal
1	ACN	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-		
3	ACL		

DC Output Connector(CN2):TKP PVHI-04 or equivalent

Pin	Function	Mating Housing	Terminal
1	+Vout	JST VHR-4N or equivalent	JST SVH-21T-P1.1 or equivalent
2	+Vout		
3	-Vout		
4	-Vout		

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