

**ECRiM**



**Space · Products**

**ECRiM**

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# INTRODUCTION

Founded in 1968, ECRIM Microelectronics has more than 50 years experience in the development, manufacture and sale of all kinds of products engaged in microelectronics & packages. ECRIM has more than 1600 employees in year 2019, among which, 50%+ engineers. ECRIM is known for their technical strength, proven product reliability, innovative solutions, quick response, competitive price and overall value. We have obtained ISO 9001 and ISO14001 certificates and committed to world-class processes.

ECRIM provides diverse products and solution in microelectronics industry from material, components, devices and modules and system integration. We have complete in house facilities.

Our main products include DC DC converters,EMI Filters,Pulse width modulation amplifiers,the converters circuits(synchro to digital converter, resolver to digital converter, digital to synchro converter,digital to resolver converter,F/V,I/F converter),precision reference sources, signal processing circuits, amplifier circuits and industrial furnaces equipments, electronic materials, which are widely used in industrial highly reliable electronic devices.

With high quality products and good services , our products have been exported to USA, Canada, UK, France, Germany, Netherland , Switzhland ,Austria, Italy, Turkey, Russia, Ukrain, Israel, Singapore, India, Japan, South Korea , Australia ,South Africa, Thailand, Malasia,Vetnam,etc.

Whether you're looking for a standard product or a custom-designed system, ECRIM has the experience to deliver the solutions tailored to your needs.

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# Medium and Low Voltage 20V-50V Input Radiation hardened DC/DC Converter

## Functional Overview

Input DC voltage range: 20V ~ 50V, normal values 28V and 42V  
 Output Voltage: 3.3V, 5V, 12V, 15V, ± 5V, ± 12V, ± 15V, 5V/±15V  
 Output power series: 1.5W, 5W, 15W, 30W, 65W  
 Full load efficiency: 65% ~ 82%  
 Auxiliary function: Short Circuit Protection Function, Inhibit function  
 (low level inhibit) Under-voltage protection (15V ± 3V)

## Radiation Hardness

Total dose: 100 krad (Si)  
 Single even effect: 75 MeV · cm<sup>2</sup>/mg

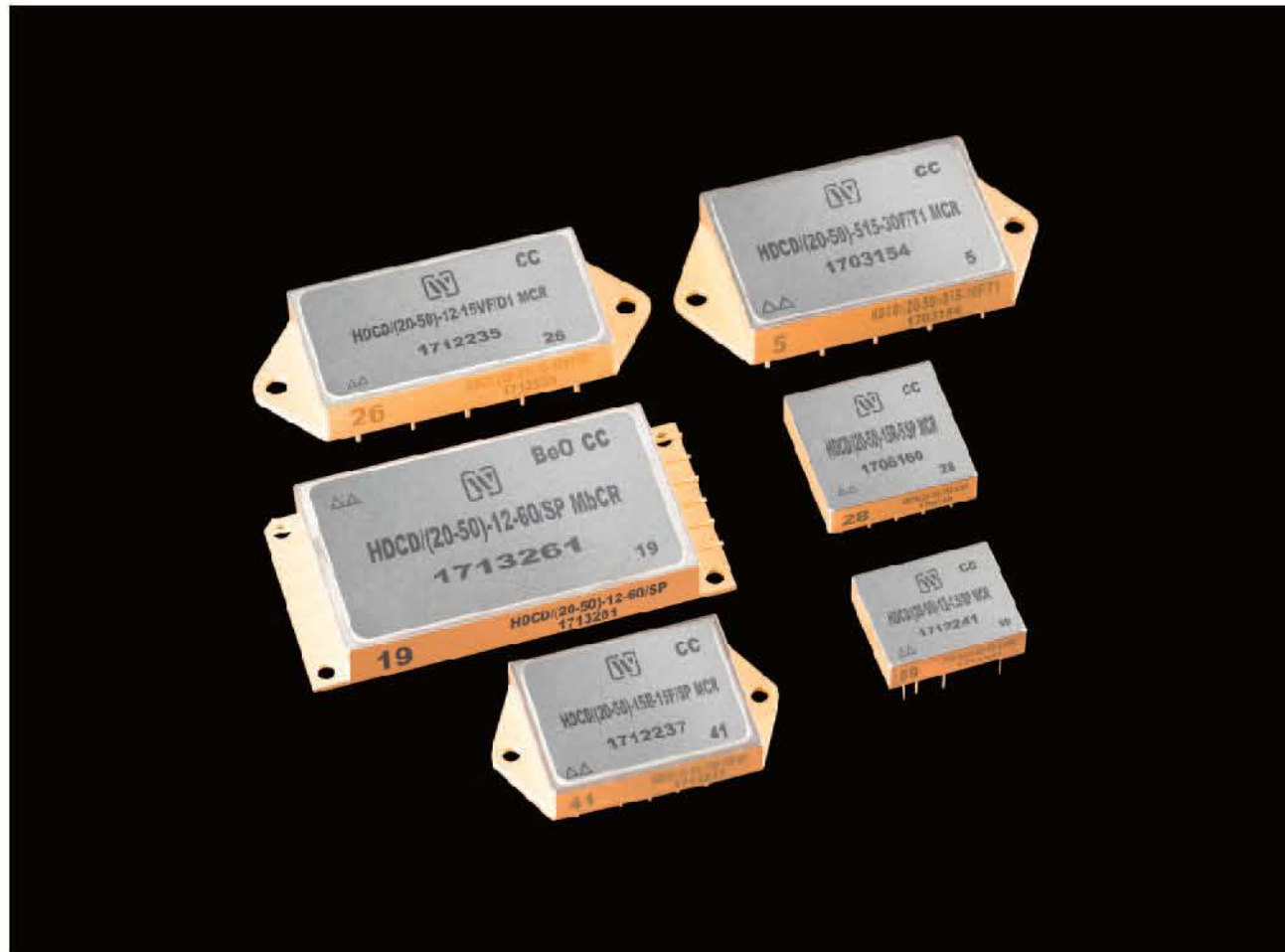
## Features

Operating Mode: Constant Frequency Control  
 Thick film and metal sealing packaging process  
 Input and Output isolation: input, output and package are isolated from each other.  
 Circuit structure: single-ended topology, magnetic isolation feedback  
 Primary and secondary isolation: 1000pF ~ 3300pF/1000V  
 Operating frequency: fixed (350 kHz ~ 500 kHz), typical 400 kHz;  
 MTBF: ≥2×10<sup>6</sup>h

## Application

Aerospace, aviation and other space vehicles.

## Photograph



Package: UPP2520-07 Weight: 12 ± 3G



Package: UPP22727-08 Weight: 18 ± 3G



Package: UPP3728-08 Weight: 34 ± 5g



Package: UPP5328-10 Weight: 54 ± 5g



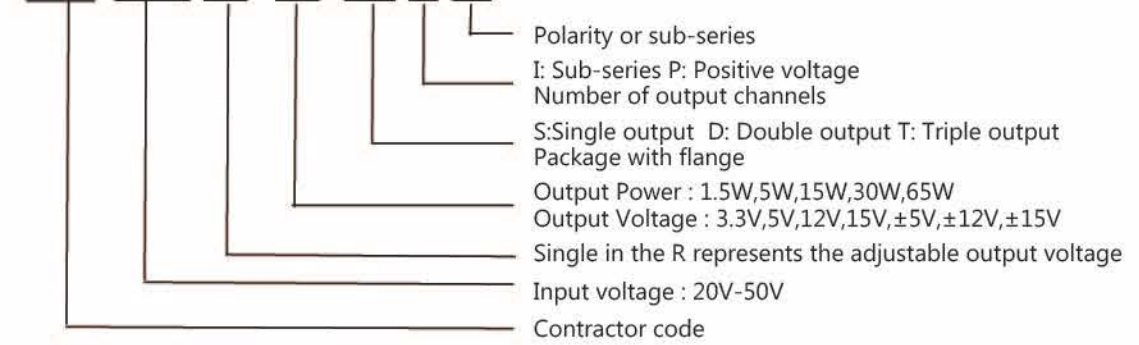
Package: UPP4934-10 Weight: 56 ± 5g



Package: FPP6438-12 Weight: 78 ± 8g

## Naming Rule

HD CD / (20-50) XX - XX - F / X X



## Product List

Table 1 1.5W Series

Model	Output Power	Output Voltage	Full Load Efficiency	Package
HD CD / (20-50) -5-1.5/SP	1.5W	5V	28V:70% 42V:67%	UPP2520-07
HD CD / (20-50) -12-1.5/SP	1.5W	12V	28V:70% 42V:67%	UPP2520-07
HD CD / (20-50) -5-1.5/D1	1.5W	±5V	28V:66% 42V:62%	UPP2727-08
HD CD / (20-50) -12-1.5/D1	1.5W	±12V	28V:66% 42V:65%	UPP2727-08

Table 2 5W Series

Model	Output Power	Output Voltage	Full Load Efficiency	Package
HD CD / (20-50) -5R-5/SP	5W	5V/Adjustable	28V:70% 42V:68%	UPP2727-08
HD CD / (20-50) -12R-5/SP	5W	12V/Adjustable	28V:73% 42V:70%	UPP2727-08
HD CD / (20-50) -15R-5/SP	5W	15V/Adjustable	28V:77% 42V:71%	UPP2727-08
HD CD / (20-50) -5-5F/D1	5W	±5V	28V:73% 42V:71%	UPP3728-08
HD CD / (20-50) -12-5F/D1	5W	±12V	28V:76% 42V:74%	UPP3728-08

**Table 3 15W Series**

Model	Output Power	Output Voltage	Full Load Efficiency	Package
HDCD/(20-50)-3R3-8F/SP	8W	3.3V/Adjustable	28V:70% 42V:69%	UPP3728-08
HDCD/(20-50)-5R-12F/SP	12W	5V/Adjustable	28V:75% 42V:75%	UPP3728-08
HDCD/(20-50)-12R-15F/SP	15W	12V/Adjustable	28V:81% 42V:81%	UPP3728-08
HDCD/(20-50)-15R-15F/SP	15W	15V/Adjustable	28V:82% 42V:81%	UPP3728-08
HDCD/(20-50)-5-12F/D1	12W	±5V	28V:77% 42V:76%	UPP3728-08
HDCD/(20-50)-12-15F/D1	15W	±12V	28V:81% 42V:81%	UPP3728-08
HDCD/(20-50)-15-15F/D1	15W	±15V	28V:83% 42V:82%	UPP3728-08
HDCD/ (20-50) -512-15F/T1	15W	5V±12V	28V:73% 42V:73%	UPP4934-10
HDCD/ (20-50) -515-15F/T1	15W	5V±15V	28V:73% 42V:73%	UPP4934-10
HDCD/ (20-50) -5-15VF/SP	15W	5V adjustable	28V:77% 42V:76%	UPP4934-10
HDCD/ (20-50) -12-15VF/D1	15W	±12V	28V:81% 42V:80%	UPP5328-10
HDCD/ (20-50) -15-15VF/D1	15W	±15V	28V:81% 42V:80%	UPP5328-10

**Table 4 30W Series**

Model	Output Power	Output Voltage	Full Load Efficiency	Package
HDCD/(20-50)-3R3-20F/SP	20W	3.3V	28V:74% 42V:73%	UPP5328-10
HDCD/(20-50)-5-25F/SP	25W	5V	28V:77% 42V:77%	UPP5328-10
HDCD/(20-50)-12-30F/SP	30W	12V	28V:85% 42V:85%	UPP5328-10
HDCD/(20-50)-15-30F/SP	30W	15V	28V:86% 42V:85%	UPP5328-10
HDCD/(20-50)-5-25F/D1	25W	±5V	28V:77% 42V:77%	UPP5328-10
HDCD/(20-50)-12-30F/D1	30W	±12V	28V:84% 42V:83%	UPP5328-10
HDCD/(20-50)-512-30F/T1	30W	5V±12V	28V:74% 42V:72%	UPP4934-10
HDCD/ (20-50) -515-30F/T1	30W	5V±15V	28V:74% 42V:72%	UPP4934-10

**Table 5 65W Series**

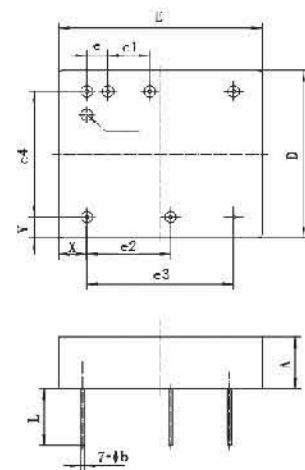
Model	Output Power	Output Voltage	Full Load Efficiency	Package
HDCD/(20-50)-5-50/SP	50W	5V	28V:78% 42V:77%	FPP6438-12
HDCD/(20-50)-12-60/SP	60W	12V	28V:83% 42V:82%	FPP6438-12
HDCD/(20-50)-15-65/SP	65W	15V	28V:84% 42V:83%	FPP6438-12
HDCD/(20-50)-5-50/D1	50W	±5V	28V:77% 42V:77%	FPP6438-12
HDCD/(20-50)-12-60/D1	60W	±12V	28V:85% 42V:84%	FPP6438-12

**Outline Dimensions and Pin Definitions**

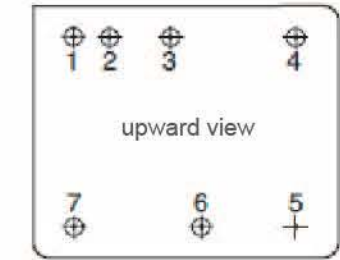
**Case Model 1: UPP2520-07**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	6.86
φb	0.35	0.45	0.55
D	-	20.16	20.66
E	-	24.64	25.14
e	-	2.54	-
e1	-	5.08	-
e2	-	10.16	-
e3	-	17.78	-
e4	-	15.24	-
L	5.90	6.90	-
X	3.13	3.43	3.73
Y	2.16	2.46	2.76

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



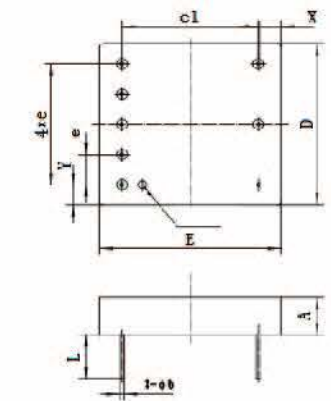
Pins definition	Symbol	1.5W Single Channel
1	Vi	Input positive
2	GND <sub>i</sub>	Input ground
3	Vo	Positive output terminal
4	GND <sub>o</sub>	Output common
5	CASE	Case ground
6	NC	Empty End
7	INH	inhibit End



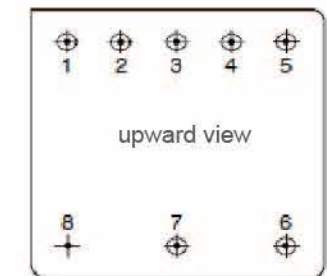
**Case Model 2: UPP2727-08**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	6.86
φb	0.51	0.64	0.77
D	-	27.10	27.60
E	-	27.10	27.60
e	-	5.08	-
e1	-	20.32	-
L	4.21	5.21	-
X	3.05	3.35	3.65
Y	3.05	3.35	3.65

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



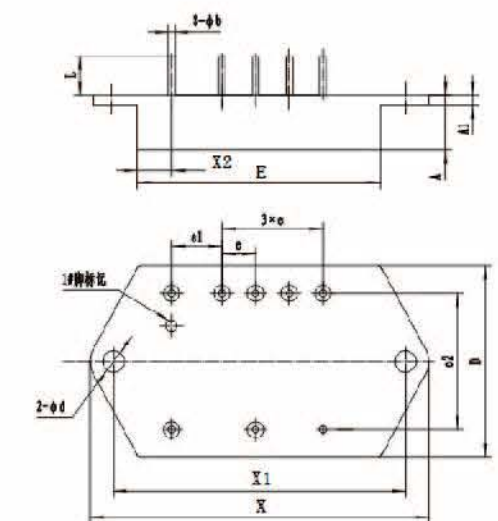
Pin Terminal	Symbol	5W single channel	Pin	Pin	1.5W dual
1	V <sub>o</sub>	Positive output terminal	1	VO <sub>1</sub>	output Positive
2	GND <sub>o</sub>	Output Common	2	GND <sub>o</sub>	Output Common
3	TRIM	Adjusting End	3	V <sub>o2</sub>	Negative output side
4	NC	Empty End	4	NC	Empty End
5	INH	Inhibit End	5	INH	Inhibit End
6	V <sub>i</sub>	Input positive	6	V <sub>i</sub>	Input positive POSITION
7	GND <sub>i</sub>	Input ground	7	GND <sub>i</sub>	Input ground
8	CASE	Package	8	CASE	package



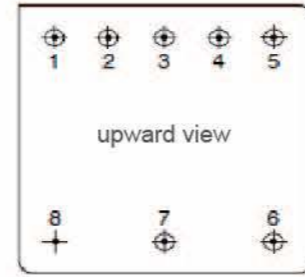
**Case Model 3: UPP3728-08**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	8.38
A1	1.30	1.50	1.70
φb	0.63	0.76	0.89
φd	3.05	3.25	3.45
D	-	28.44	28.94
E	-	36.83	37.33
e	-	5.08	-
e1	-	7.62	-
e2	-	20.32	-
L	5.35	6.35	-
X	-	50.50	51.00
X1	43.75	43.95	44.15
X2	4.91	5.21	5.51

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



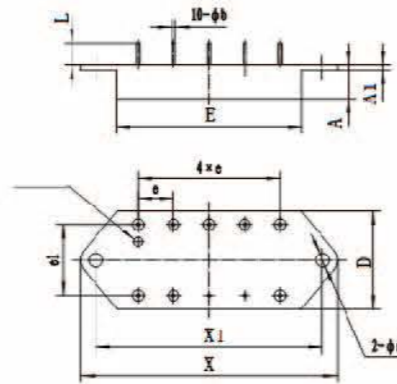
Pin Terminal	Symbol	5W single channel	Pin	Pin	1.5W dual
1	INH	Inhibit End	1	INH	Inhibit End
2	TRIM	Voltage adjustment	2	V <sub>O1</sub>	Output Positive
3	GND <sub>O</sub>	Output Common	3	GND <sub>O</sub>	Output Common
4	V <sub>O</sub>	Positive output	4	V <sub>O2</sub>	Negative output
5	SYNC	Synchronous Terminal	5	SYNC	Synchronous Terminal
6	CASE	Package	6	CASE	Package
7	GND <sub>I</sub>	Input ground	7	GND <sub>I</sub>	Input ground
8	V <sub>I</sub>	Input Positive	8	V <sub>I</sub>	Input Positive



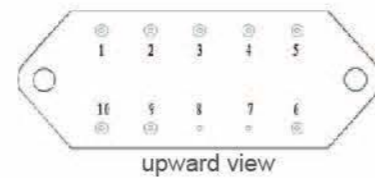
**Case Model 4: UPP5328-10**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.16
A1	1.30	1.50	1.70
φb	0.87	1.00	1.13
φd	3.90	4.10	4.30
D	-	28.19	28.69
E	-	53.08	53.58
e	-	10.16	-
e1	-	20.32	-
L	5.35	6.35	-
X	-	73.41	73.91
X1	64.57	64.77	64.97

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



Pin Terminal	Symbol	30W Single Channel Function	Pin Terminal Number	Symbol	30W dual function 15W-V series dual function
1	V <sub>I</sub>	Input Positive	1	V <sub>I</sub>	Input Positive
2	INH	Inhibit End	2	INH	Inhibit End
3	Sense-	Negative sensing	3	VO <sub>1</sub>	Positive output terminal
4	GND <sub>O</sub>	Output Common	4	GND <sub>O</sub>	Output Common
5	V <sub>O</sub>	Positive output	5	V <sub>O2</sub>	Negative output
6	Sense+	Positive sensing end	6	CASE	Package ground
7	CASE	Package ground	7	CASE	Package ground
8	CASE	Package ground	8	CASE	Package ground
9	SYNC	Synchronous Terminal	9	SYNC	Synchronous Terminal
10	GND <sub>I</sub>	Input ground	10	GND <sub>I</sub>	Input ground

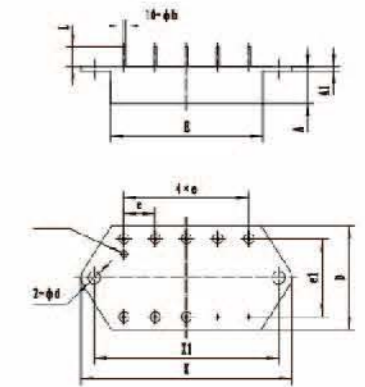


Pin Terminal	Symbol	30W Single Channel Function	Pin Terminal Number	Symbol	15W-V series Single Channel Function
1	V <sub>I</sub>	Input Positive	6	CASE	Package Ground
2	INH	Inhibition End	7	CASE	Package Ground
3	TRIM	Voltage adjustment	8	CASE	Package Ground
4	GND <sub>O</sub>	Output Common	9	SYNC	Synchronous Terminal
5	V <sub>O</sub>	Positive output terminal	10	GND <sub>I</sub>	Input Ground

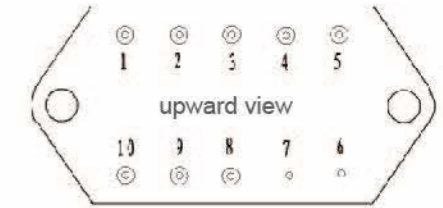
**Case Model 5: UPP4934-10**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.29
A1	1.30	1.50	1.70
φb	0.87	1.00	1.13
φd	3.90	4.10	4.30
D	-	33.79	34.29
E	-	49.03	49.53
e	-	10.16	-
e1	-	25.40	-
L	5.35	6.35	-
X	-	68.09	68.59
X1	59.74	59.94	60.14

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



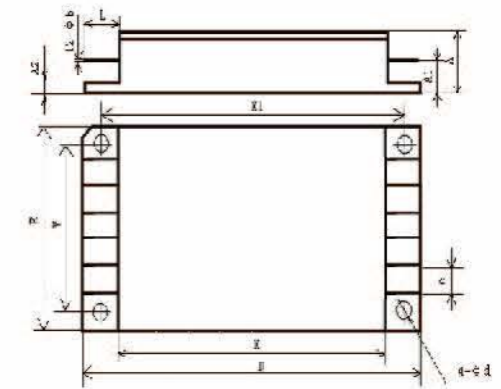
Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	V <sub>I</sub>	Input Positive	6	GND <sub>C</sub>	Package ground
2	V <sub>O1</sub>	Main output (+5V) positive side	7	GND <sub>C</sub>	Package ground
3	GND <sub>O</sub>	Output Common	8	INH	Inhibit End
4	V <sub>O2</sub>	Negative end of output auxiliary circuit	9	SYNC	Synchronous Terminal
5	V <sub>O2</sub>	Positive end of output auxiliary circuit	10	GND <sub>I</sub>	Input ground



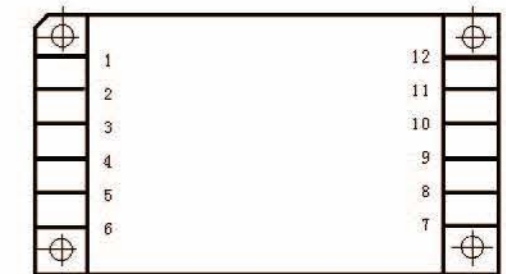
**Case Model 6: FPP6438-12**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.16
A1	5.29	1.50	5.89
A2	1.07	1.00	1.47
φb	0.87	4.10	1.13
φd	3.10	33.79	3.50
D	-	49.03	76.70
E	-	10.16	38.60
e	-	25.40	-
L	4.85	6.35	-
X	-	68.09	64.00
X1	69.90	59.94	70.30
Y	31.70	-	32.30

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	V <sub>I</sub>	Input Positive	1	V <sub>I</sub>	Input Positive
2	GND <sub>I</sub>	Input ground	2	GND <sub>I</sub>	Input ground
3	NC	Empty End	3	NC	Empty End
4	INH1	Inhibit Terminal 1	4	INH1	Inhibit Terminal 1
5	SYNC <sub>OUT</sub>	Synchronous Output Terminal	5	SYNC <sub>OUT</sub>	Synchronous Output Terminal
6	SYNC <sub>IN</sub>	Synchronous Input	6	SYNC <sub>IN</sub>	Synchronous Input
7	V <sub>O</sub>	Positive output terminal	7	V <sub>O1</sub>	Positive output terminal
8	GND <sub>O</sub>	Output Common	8	GND <sub>O</sub>	Output Common
9	SENSE-	Negative Sense Terminal	9	V <sub>O2</sub>	Negative output
10	SENSE+	Positive sense End	10	NC	Empty End
11	SHARE	Current Sharing Terminal	11	SHARE	Current Sharing Terminal
12	INH2	Inhibit Terminal 2	12	INH2	Inhibit Terminal 2



# Medium and Low Voltage 20V-50V Input EMI Filter

## Functional Overview

Package form: metal sealed package
Input voltage: 0 V ~ 50 V, normal value 28/42 V
Output current: 0.8A, 1.5A, 2.7A, 10A
Noise Suppression: $\geq 50\text{dB}$ (500kHz)
DC resistance: $\leq 1.5 \Omega$ , $\leq 0.35 \Omega$ , $\leq 0.2 \Omega$ , $\leq 0.07 \Omega$
Function: Noise suppression
Circuit structure: common-mode filtering, difference-mode filtering
Working temperature range (TC): $-55^\circ\text{C} \sim 125^\circ\text{C}$

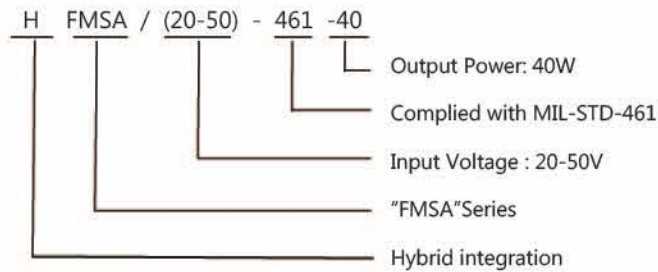
## Applications

Space system, military communication system, satellite, manned space program, etc.

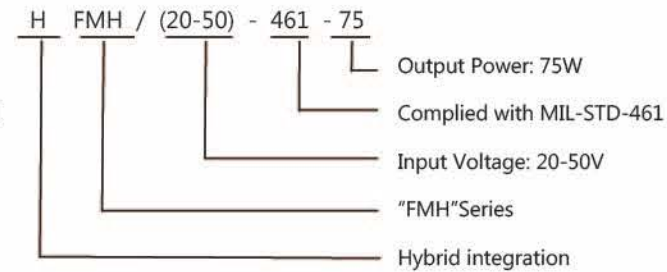
## Product List

Model	Input Voltage V	Output Current A	DC resistance $\Omega$	Noise Suppression Ability	Package
HFMSA/(20-50)-461-40	0 ~ 50	0.8	$\leq 1.5$	$1 \geq \text{dB}(1\text{kHz}) \geq -1$ , $\geq 50\text{dB}(500\text{kHz})$ , $\geq 50\text{dB}(1\text{MHz})$ , $\geq 45\text{dB}(5\text{MHz})$	UPP2520-08g
HFMH/(20-50)-461-75	0 ~ 50	1.5	$\leq 0.35$	$1 \geq \text{dB}(1\text{kHz}) \geq -1$ , $\geq 50\text{dB}(500\text{kHz})$ , $\geq 55\text{dB}(1\text{MHz})$ , $\geq 50\text{dB}(5\text{MHz})$	UPP3728-05r
HFMC/(20-50)-461-135	0 ~ 50	2.7	$\leq 0.2$	$1 \geq \text{dB}(1\text{kHz}) \geq -1$ , $\geq 55\text{dB}(500\text{kHz})$ , $\geq 60\text{dB}(1\text{MHz})$ , $\geq 60\text{dB}(5\text{MHz})$	UPP5328-05v
HFME/(20-50)-461-500	0 ~ 50	10	$\leq 0.07$	$1 \geq \text{dB}(1\text{kHz}) \geq -1$ , $\geq 60\text{dB}(500\text{kHz})$ , $\geq 60\text{dB}(1\text{MHz})$ , $\geq 60\text{dB}(5\text{MHz})$	FPP6438-12ba

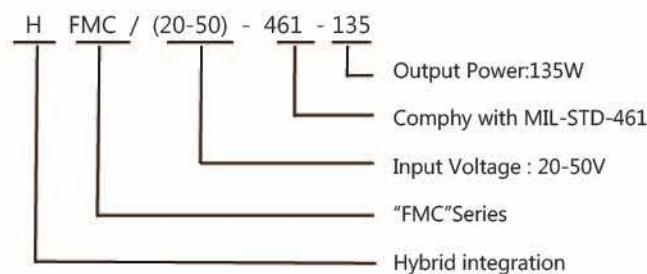
## Product Name



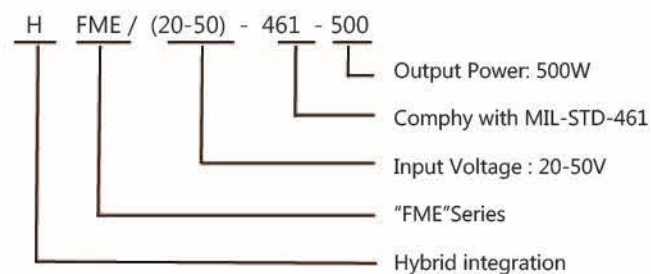
Schematic diagram of EMI filter names for HFMSA/ (20-50) -461-40



Schematic diagram of EMI filter names for HFMH/ (20-50) -461-75



Schematic diagram of EMI filter names for HFMC/ (20-50) -461-135



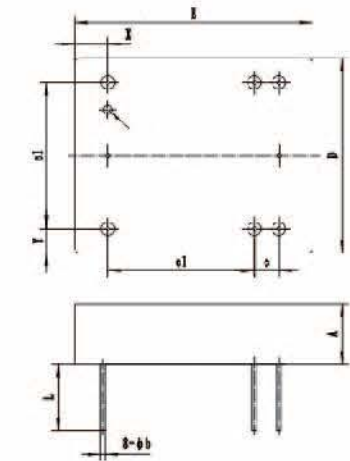
Schematic diagram of EMI filter names for HFME/ (20-50) -461-500

## Outline Dimensions and Pin Definitions

### UPP2520-08g Overall dimensions

Symbol	Numeric		
	Minimal	Nominal	Maximal
A	-	-	6.86
$\phi b$	0.35	0.45	0.55
D	-	20.16	20.66
E	-	24.64	25.14
e	-	2.54	-
e1	-	15.24	-
L	5.90	6.90	-
X	3.13	3.43	3.73
Y	2.16	2.54	2.76

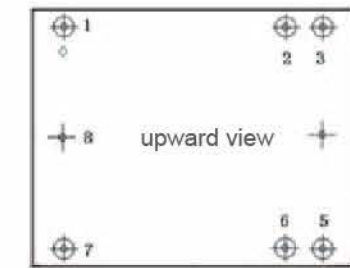
Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



Outline Dimensions of EMI Filter Enclosure for HFMSA/ (20-50) -461-40

Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	$V_i$	Input Positive	5	$\text{GND}_o$	Output common
2	$V_o$	Positive output terminal	6	$\text{GND}_o$	Output common
3	$V_o$	Positive output terminal	7	$\text{GND}_i$	Input ground
4	CASE	Package	8	CASE	Package

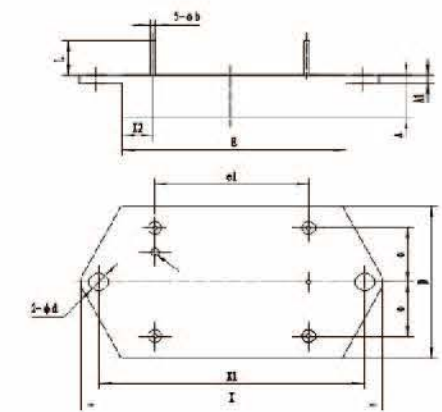
Pin Definition for HFMSA/ (20-50) -461-40 EMI Filter



### UPP3728-05r Outline Dimensions

Dimension Symbol	Numeric		
	Minimal	Nominal	Maximal
A	-	-	8.38
A1	1.30	1.50	1.70
$\phi b$	0.63	0.76	0.89
$\phi d$	3.05	3.25	3.45
D	-	28.44	28.94
E	-	36.83	37.33
e	-	10.16	-
e1	-	25.40	-
L	5.35	6.35	-
X	-	50.50	51.00
X1	43.75	43.95	44.15
X2	4.91	5.21	5.51

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



Outline Dimensions of EMI Filter Enclosure for HFMH/ (20-50) -461-75

Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	$V_i$	Input Positive	4	$\text{GND}_o$	Output Common
2	$V_o$	Positive output terminal	5	$\text{GND}_i$	Input ground
3	CASE	Package			

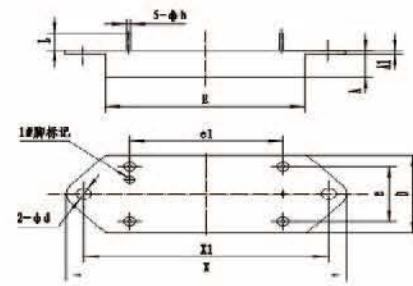
Arrangement of the Outlet of the HFMH/ (20-50) -461-75 EMI Filter



### UPP5328-05v Outline Dimensions

Dimension Symbol	Numeric		
	Minimal	Nominal	Maximal
A	-	-	10.16
A1	1.30	1.50	1.70
$\phi b$	0.87	1.00	1.13
$\phi d$	3.90	4.10	4.30
D	-	28.19	28.69
E	-	53.08	53.58
e	-	20.32	-
e1	-	40.64	-
L	5.35	6.35	-
X	-	73.41	73.91
X1	64.57	64.77	64.97

Note: e, E1 are interchangeability dimensions, ensured and inspected by the package manufacturer.



Outline dimensions of EMI filter housing for HFMC/ (20-50) -461-135

Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	$V_i$	Input Positive	4	$GND_o$	Output Common
2	$V_o$	Positive output terminal	5	$GND_i$	Input ground
3	CASE	Package			

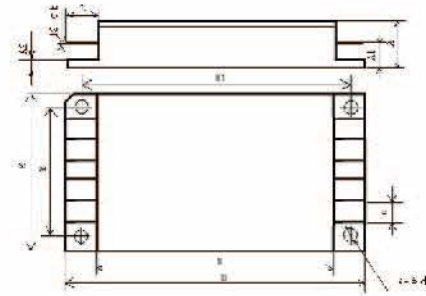


Arrangement of Exits of HFMC/ (20-50) -461-135 EMI Filters

### FPP6438-12ba Outline Dimensions

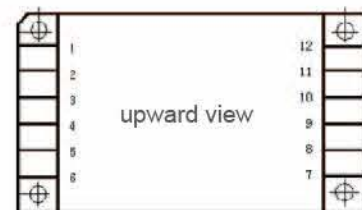
Dimension Symbol	Numeric		
	Minimal	Nominal	Maximal
A	-	-	10.16
A1	5.29	5.59	5.89
A2	1.07	1.27	1.47
$\phi b$	0.87	1.00	1.13
$\phi d$	3.10	3.30	3.50
D	-	76.20	76.70
E	-	38.10	38.60
e	-	5.08	-
L	4.85	5.85	-
X	-	63.50	64.00
X1	69.80	70.10	70.40
Y	31.70	32.00	32.30

Note: E is interchangeability dimensions, ensured and inspected by the package manufacturer.



Outline dimensions of the housing of the HFME/ (20-50) -461-500 EMI filter

Pin Terminal Number	Symbol	Three-way Function	Pin Terminal Number	Symbol	Three-way Function
1	$V_i$	Input Positive	7	$GND_o$	Output Common
2	$V_i$	Input Positive	8	$GND_o$	Output Common
3	$V_i$	Input Positive	9	$GND_o$	Output Common
4	$GND_i$	Input Ground	10	$V_o$	Positive output terminal
5	$GND_i$	Input Ground	11	$V_o$	Positive output terminal
6	$GND_i$	Input Ground	12	$V_o$	Positive output terminal



Arrangement of Outlet of HFME/ (20-50) -461-500 EMI Filter

### Product Picture



(Package UPP2520-08g Weight: 14 ± 3g)



(Package UPP3728-05r Weight: 36 ± 5g)



(Package UPP5328-05v Weight: 54 ± 5g)



(Package FPP6438-12ba Weight: 84 ± 8g)



# 100V Input Radiation hardened DC/DC Converter

## Functional Overview

Input DC voltage range: 80V ~ 120V, normal value 100V
Output Voltage: 3.3V, 5V, 12V, 15V, 28V, $\pm 5V$ , $\pm 12V$ , $\pm 15V$ , $5V/\pm 12V$ , $5V/\pm 15V$
Output power: 5W, 15W, 20W, 30W, 65W
Full load efficiency: 65% ~ 83%
AUXILIARY FUNCTION: Short Circuit Protection Function, Inhibit function (low level inhibit) Under-voltage protection ( $60V \pm 5V$ )

## Radiation Index

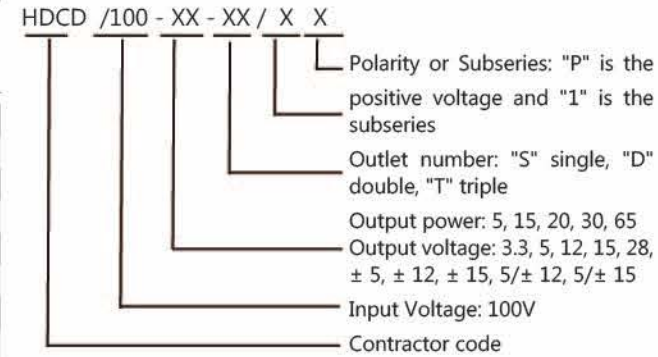
Total dose: 100 krad (Si);
Single event effect: 75 MeV · cm <sup>2</sup> /mg;

## Applications

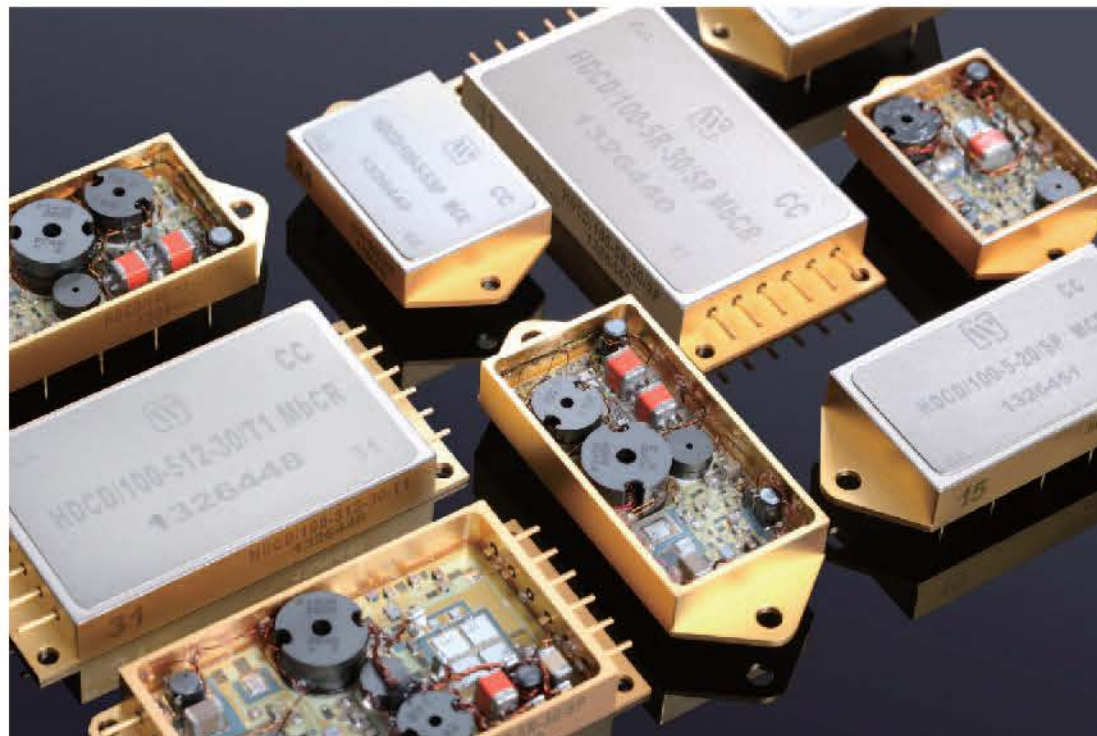
Aerospace, aviation and other space vehicles.
---

## Features

Operating Mode: Constant Frequency Control
Thick film process, all metal sealing.
Input and output isolation: input, output and shell isolation;
Circuit structure: single-ended topology, magnetic isolation;
Isolation capacitance: 1000pF ~ 3300 pF/1000V;
Operating frequency: fixed (260 kHz ~ 360 kHz), typically 300 kHz;
MTBF: $\geq 2 \times 10^6$ h;



## Outline Dimensions and Pin Definitions



## Product List

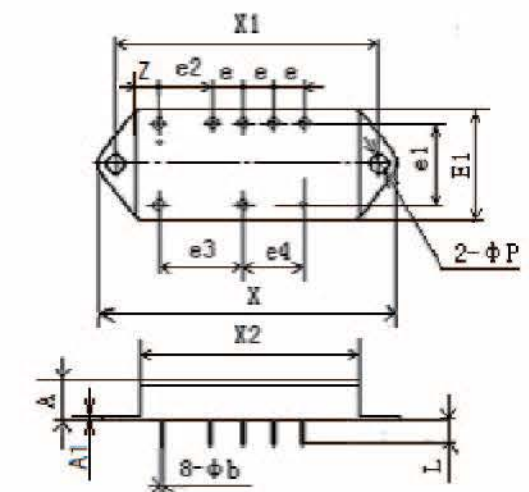
Model	Output Voltage (V)	Power (W)	Full load efficiency (%)	Package type	Encapsulation type
HDCD/100-28-65/SP	28	65	85	FPP6438-12	Metal flat, side lead
HDCD/100-15-65/D1	$\pm 15$	65	83	FPP6438-12	Metal flat, side lead
HDCD/100-12-65/D1	$\pm 12$	65	83	FPP6438-12	Metal flat, side lead
HDCD/100-12-30/SP	12	30	83	FPP6438-12	Metal flat, side lead
HDCD/100-15-30/SP	15	30	83	FPP6438-12	Metal flat, side lead
HDCD/100-5R-30/SP	5	30	75	FPP6438-12	Metal flat, side lead
HDCD/100-12-30/D1	$\pm 12$	30	83	FPP6438-12	Metal flat, side lead
HDCD/100-5-30/D1	$\pm 5$	30	75	FPP6438-12	Metal flat, side lead
HDCD/100-515-30/T1	$5 \pm 15$	30	80	FPP6438-12	Metal flat, side lead
HDCD/100-512-30/T1	$5 \pm 12$	30	80	FPP6438-12	Metal flat, side lead
HDCD/100-5-20/SP	5	20	75	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-3R3-20/SP	3.3	20	65	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-12-20/D1	$\pm 12$	20	80	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-15-20/D1	$\pm 15$	20	80	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-512-20/T1	$5 \pm 12$	20	80	UPP4934-10	METAL BI-INLINE INSERTION
HDCD/100-3R3-15/SP	3.3	15	65	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-12-15/D1	$\pm 12$	15	80	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-12-15/SP	12	15	80	UPP5429-10	METAL BI-INLINE INSERTION
HDCD/100-5R-15/SP	5	15	75	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-15-15/D1	$\pm 15$	15	80	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-28-15/SP	28	15	80	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-15-5/SP	15	5	70	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-5-5/SP	5	5	70	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-12-5/D1	$\pm 12$	5	70	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-3R3-5/SP	3.3	5	60	UPP3728-08	METAL BI-INLINE INSERTION
HDCD/100-2R5-5/SP	2.5	5	60	UPP3728-08	METAL BI-INLINE INSERTION

## Outline Dimensions and Pin Definitions

### Case Model I: UPP3728-08

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	8.90
A1a	-	1.50	-
$\phi b$	-	0.76	-
e a	-	5.08	-
e1 a	-	20.32	-
e2 a	-	7.62	-
e3 a	-	12.70	-
e4 a	-	10.16	-
E1	-	28.44	28.94
L	5.35	6.35	-
$\phi p$	-	3.30	-
X	-	50.80	51.30
X1 a	-	43.95	-
X2	-	36.83	37.33
Z	4.91	5.21	5.51

A Tolerance is  $\pm 0.30$ ;  
B Tolerance is  $\pm 0.13$ .





Pin Terminal Number	Symbol	Single Channel Function	Pin Terminal Number	Symbol	Dual Function
1	INH	Inhibited End	1	INH	Inhibited End
2	NC	Empty End	2	VO+	Positive output terminal
3	GND <sub>o</sub>	Output Common	3	GND <sub>o</sub>	Output Common
4	V <sub>o</sub>	Positive output terminal	4	VO-	Negative output side
5	Trim	Voltage Regulation	5	NC	Empty End
6	GND <sub>c</sub>	Package ground	6	GND <sub>c</sub>	Package ground
7	GND <sub>i</sub>	Input ground	7	GND <sub>i</sub>	Input ground
8	V <sub>i</sub>	Input Positive	8	V <sub>i</sub>	Input Positive

**Case Model II: UPP5429-10**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.66
A1a	-	1.50	-
φb b	-	1.00	-
e a	-	10.16	-
e1 a	-	20.32	-
E	-	28.50	29.00
L	5.35	6.35	-
φP a	-	4.10	-
X	-	73.50	74.00
X1 a	-	64.77	-
X2	-	53.90	54.40

A Tolerance is ± 0.30;  
B Tolerance is ± 0.13.

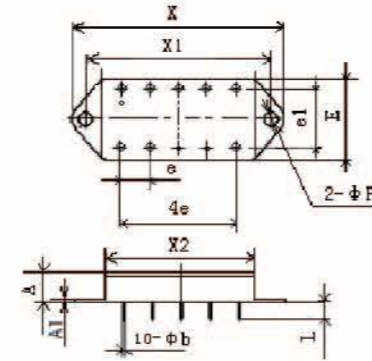


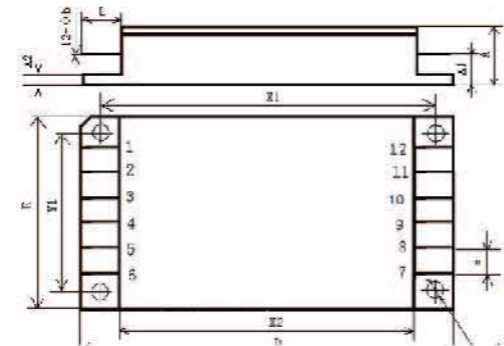
Table 3-1 UPPb Outlet Arrange (Single)

Single Output			Dual Output				
DRAWOUT END	Serial Number	Symbol	Single Channel Function	DRAWOUT END	Serial Number	Symbol	Function
	1	V <sub>i</sub>	Input Positive		1	V <sub>i</sub>	Input Positive
	2	INH	Inhibited End		2	INH	Prohibited End
	3	Trim	Adjusting End		3	VO+	Positive output terminal
	4	GND <sub>o</sub>	Output Common		4	GND <sub>o</sub>	Output Common
	5	V <sub>o</sub>	Positive output terminal		5	VO-	Negative output side
	6	NC	Empty End		6	NC	Empty End
	7	GND <sub>c</sub>	Package ground		7	GND <sub>c</sub>	Package ground
	8	GND <sub>c</sub>	Package ground		8	GND <sub>c</sub>	Package ground
	9	NC	Empty End		9	NC	Empty End
	10	GND <sub>i</sub>	Input ground		10	GND <sub>i</sub>	Input ground

**Case Model III: FPP 6438-12**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.66
A1 a	-	5.59	-
A2 a	-	1.27	-
φb b	-	1.00	-
D	-	76.20	76.70
e a	-	5.08	-
E	-	38.10	38.60
L	5.35	6.35	-
φP a	-	3.30	-
X1 a	-	70.10	-
X2	-	63.50	64.00
Y1 a	-	32.00	-

A Tolerance is ± 0.30; B Tolerance is ± 0.13.



Single Output			Dual Output				
DRAWOUT END	Serial Number	Symbol	Function	DRAWOUT END	Serial Number	Symbol	Function
	1	V <sub>i</sub>	Input Positive		1	V <sub>i</sub>	Input Positive
	2	GND <sub>i</sub>	Input ground		2	GND <sub>i</sub>	Input ground
	3	CASE	Package		3	CASE	Package
	4	INH	Inhibited End		4	INH	Inhibited End
	5	NC	Empty End		5	NC	Empty End
	6	NC	Empty End		6	NC	Empty End
	7	V <sub>o</sub>	Positive output terminal		7	V <sub>o</sub>	Positive output terminal
	8	GND <sub>o</sub>	Output ground		8	GND <sub>o</sub>	Output Common
	9	NC	Empty End		9	VO-	Negative output side
	10	Trim	trim End		10	NC	Empty End
	11	NC	Empty End		11	NC	Empty End
	12	NC	Empty End		12	NC	Empty End

Triple Output Outlet Arrangement					
Pin Terminal Number	Symbol	Function	Pin Terminal Number	Symbol	Function
1	V <sub>i</sub>	Input Positive	7	V <sub>o+</sub>	Positive output terminal
2	GND <sub>i</sub>	Input ground	8	GND <sub>oi</sub>	Output ground
3	CASE	Package	9	V <sub>o-</sub>	Negative output side
4	INH	Inhibited End	10	GND <sub>o</sub>	Main Output Common
5	NC	Empty End	11	NC	Empty End
6	NC	Empty End	12	V <sub>o</sub>	Main output positive

## 100V Input Radiation Hardened EMI Filters

### Functional Overview

Package form: metal sealed package
Input voltage: 80 V ~ 120 V, nominal value: 100 V
Output current: 0.5A, 0.8A, 1A, 3A
Noise suppression: ≥ 35dB (200kHz), ≥ 45dB (500kHz), ≥ 40dB (1MHz) , ≥ 35dB (2MHz)
Output/input DC voltage ratio: ≤ 96%
TID : 100 krad (Si) (active)
SEE: 75 MeV · cm <sup>2</sup> /mg (active)
Function: Surge suppression (active), inhibit (active)
Circuit structure: two-stage common-mode filtering, one stage difference-mode filtering
Working temperature range (TC): -55°C ~ 125°C

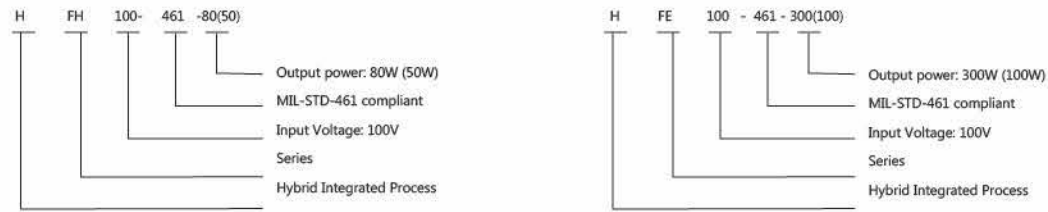
### Applications

Space system, military communication system, satellite, manned space engineering, etc.
--

### Functional Overview

Model	Input Voltage V	Output Current A	Ratio of output to input DC voltage	Noise Suppression Ability	Surge suppression capacity A	Package
HFH100-461-50	80 ~ 120	0.5	≥ 96%	≥ 35dB(200kHz) ,	-	UPP3728-05k
HFH100-461-80	80 ~ 120	0.8	≥ 96%	≥ 45dB(500kHz) ,	-	UPP3728-05k
HFE100-461-100 (active)	80 ~ 120	1.0	≥ 96%	≥ 40dB(1MHz) ,	≤ 3	FPP6438-12ad
HFE100-461-300 (active)	80 ~ 120	3.0	≥ 96%	≥ 35dB(2MHz)	≤ 9	FPP6438-12ad

### Product Name



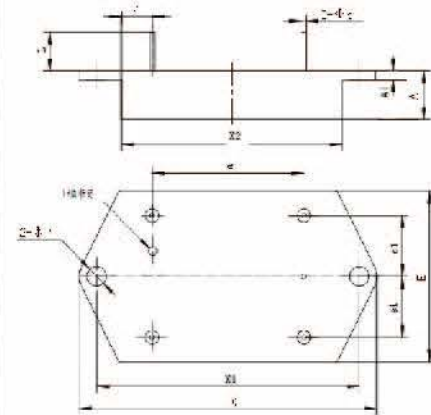
Schematic diagram of EMI filter names for HFH100-461-50 and HFH100-461-80 HFE100-461-100 and HFE100-461-300 anti-radiation EMI filters

### Outline Dimensions and Pin Definitions

#### UPP3728-05k Dimensions

Symbol	Value (in mm)		
	Minimal	Nominal	Maximal
A	-	-	8.90
A1a	-	1.50	-
$\phi b$ b	-	0.76	-
e a	-	25.40	-
e1 a	-	10.16	-
E	-	28.44	28.94
L	6.35	6.35	-
$\phi P$ a	-	3.30	-
X1 a	-	43.95	-
X2	-	36.83	37.33
Z a	4.91	5.21	5.51

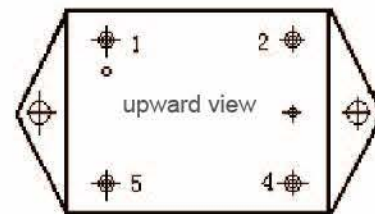
A Tolerance is  $\pm 0.30$ ; B Tolerance is  $\pm 0.13$ .



Outline dimensions of EMI filter housings for models HFH100-461-50 and HFH100-461-80

Pin Terminal Number	Symbol	Function
1	$V_i$	Input Positive
2	$V_o$	Positive output terminal
3	$GND_c$	Package ground
4	$GND_o$	Output Common
5	$GND_i$	Input ground

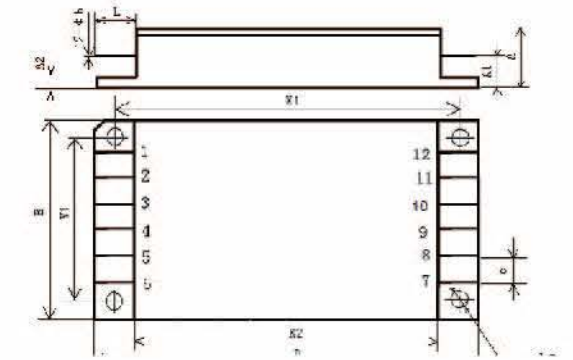
Pin definitions for the HFH100-461-50 and HFH100-461-80 EMI filters



### Case Model III: FPP 6438-12

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.66
A1a	-	5.59	-
A2 a	-	1.27	-
$\phi b$ b	-	1.00	-
D	-	76.20	76.70
e a	-	5.08	-
E	-	38.10	38.60
L	5.35	5.85	-
$\phi P$ a	-	3.30	-
X1 a	-	70.10	-
X2	-	63.50	64.00
Y1 a	-	32.00	-

A Tolerance is  $\pm 0.30$ ; B Tolerance is  $\pm 0.13$ .



Outline Dimensions for the Enclosures of the HFE100-461-100 and HFE100-461-300 EMI Filters

Serial Number	Symbol	Function	Serial Number	Symbol	Function
1	$V_{IN+}$	Input Positive	7	$V_{O-}$	Negative output side
2	$V_{IN+}$	Input Positive	8	$V_{O-}$	Negative output side
3	GV	Gate Voltage Output	9	$V_{O-}$	Negative output side
4	INH	Inhibited End (High Shutdown)	10	$V_{O+}$	Positive output terminal
5	$V_{IN-}$	Input Negative	11	$V_{O+}$	Positive output terminal
6	$V_{IN-}$	Input Negative	12	$V_{O+}$	Positive output terminal



Pin definitions for HFE100-461-100 and HFE100-461-300 EMI filters

### Product Picture



(Package UPP3728-05K Weight: 35  $\pm$  5g)



(Package FPP6438-12ad Weight: 80  $\pm$  5g)



## 5V Input Radiation Hardened Point of Load

### Functional Overview

Input DC voltage range: 4.5V ~ 5.5V, nominal value 5V
Output voltage: 0.8V ~ 3.3V adjustable
Output current: 10A, 16A
Full load efficiency: 89% ~ 92%
Auxiliary function: Short Circuit Protection, Inhibit (low level)

### Features

Operating Mode: Constant Frequency Control
Thick film process, all metal sealing packaging
Input and output isolation: input and output are not isolated;
Circuit structure: Buck topology;
Operating frequency: fixed (395kHz ~ 585 kHz), typical 500kHz;
MTBF: $\geq 3 \times 10^4$ h;



(Package PP2727-09e Weight: 16 - 18g)



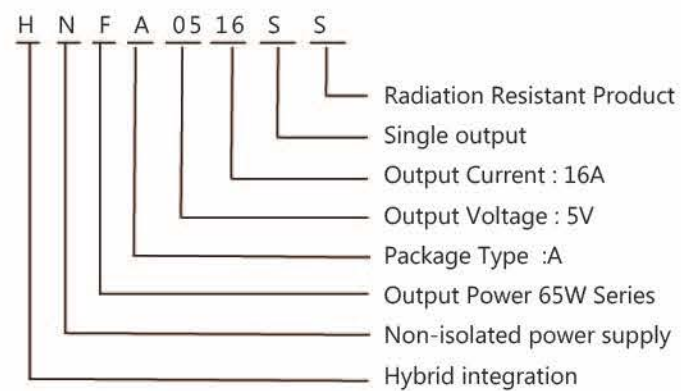
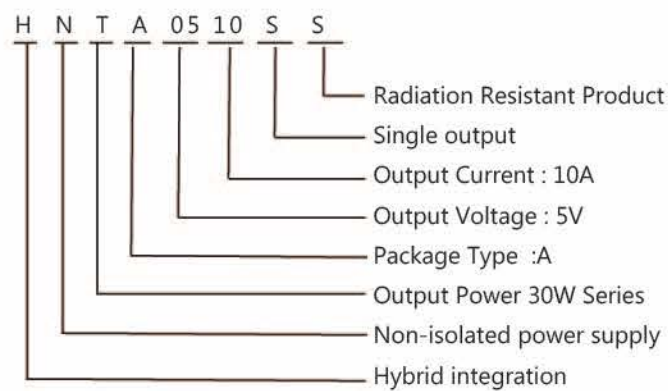
(Package PP2727-09e Weight: 16 - 18g)

### Radiation Index

Total dose: 100 krad (Si);
Single event effect: 75 MeV · cm <sup>2</sup> /mg;

### Applications

It can be used to supply power to FPGA, DSP, MCU, ASIC and other load terminals in space vehicles.



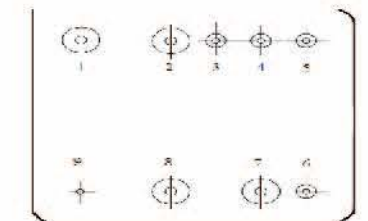
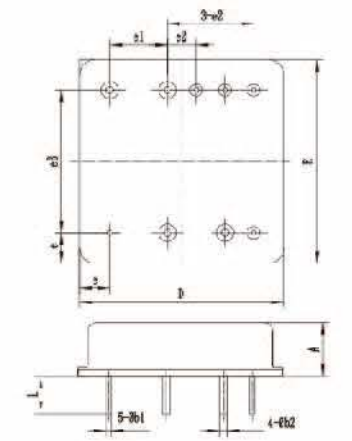
### Product List

Model	Output Voltage (V)	Output Current (A)	Full load efficiency (%)	Enclosure package size(mm3)	Encapsulation type
HNTA0510SS	0.8~3.3	10	92	27.57×27.57×8.90	Metal
HNFA0516SS	0.8~3.3	16	89	(PP2727-09e)	Dual in line plug-in

### Outline Dimensions and Pin Definitions

Dimension Symbol	Numeric		
	Minimal	Nominal	Maximal
A	-	7.86	8.90
Φb1	0.51	0.64	0.77
Φb2	0.87	1.00	1.13
D	-	27.07	27.57
E	-	27.07	27.57
e	3.71	4.01	4.31
e1 a	-	7.62	-
e2 a	-	3.81	-
e3 a	-	19.05	-
L	4.05	5.08	-

Pin Terminal	Symbol	5W single channel
1	V <sub>i</sub>	Input positive
2	GND	Input/Output Common
3	INH	Inhibit End
4	SS	Soft-Start Time trim Adjustment Terminal
5	Sense+	Output Positive sense
6	Trim	Output trimmable End
7	GND	Input/Output Common
8	V <sub>o</sub>	Positive output
9	GNDc	Case ground



## High Power Radiation Hardened DC/DC Converters

### Functional Overview

#### 28V Bus series:

Input DC voltage range: 20V ~ 50V, normal value 28V
Output Voltage: 3.3V, 5V, 6.3V, 12V, 15V, ± 5V, ± 12V, ± 15V, 28V
Output power: 66W, 100W, 110W, 120W
Full load efficiency: 76% ~ 85%
Accessibility: synchronous input, synchronous output, primary inhibit, secondary inhibit, Output over-current protection, input under-voltage protection, output short circuit protection, current sharing

#### 100V Bus series:

Input DC voltage range: 80V ~ 120V, nominal value 100V
Output voltage: 5V, 12V, 15V, ± 5V, ± 12V, ± 15V, 28V
Output power: 100W, 110W, 120W
Full load efficiency: 80% ~ 86%
Accessibility: synchronous input, synchronous output, primary inhibit, secondary inhibit, Output over-current protection, input under-voltage protection, output short circuit protection, current sharing

#### 50V Bus series:

Input DC voltage range: 30V ~ 80V, nominal value 50V
Output voltage: 5V, 8V, 9V, 12V, 15V, ± 12V, ± 15V
Output power: 80W, 90W, 110W, 120W
Full load efficiency: 80% ~ 84%
Accessibility: synchronous input, synchronous output, primary inhibit, secondary inhibit, Output over-current protection, input under-voltage protection, output short circuit protection, current sharing

### Features

Operating Mode: Constant Frequency Control
Thick film process and all metal sealing packaging process
INPUT AND OUTPUT ISOLATION: input, output and shell are isolated from each other
Circuit structure: single-ended topology, magnetic isolation feedback
Primary and secondary isolation: 3300pF ~ 6800pF/1000V
Operating frequency: fixed (400 kHz ~ 600 kHz), typically 500 kHz;
MTBF: $\geq 2 \times 10^5$ h

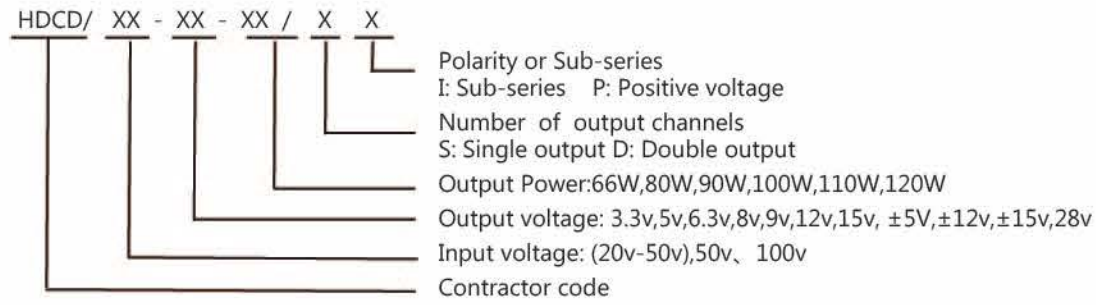
### Functional Overview

Total dose: 100 krad (Si)
Single event effect: 75 MeV · cm <sup>2</sup> /mg

### Applications

Aerospace, aviation and other space vehicles.

### Naming Rule



### Naming Rule

**Table 1 28V bus series**

Pin Terminal	Output Power	Output Voltage	Full Load Efficiency	Encapsulation
HDCD/(20-50)-3R3-66/SP	66W	3.3V	76%	FPP6438-12
HDCD/(20-50)-5-100/SP	100W	5V	79%	FPP6438-12
HDCD/(20-50)-6R3-100/SP	100W	6.3V	82%	FPP6438-12
HDCD/(20-50)-12-110/SP	110W	12V	85%	FPP6438-12
HDCD/(20-50)-15-120/SP	120W	15V	85%	FPP6438-12
HDCD/(20-50)-28-120/SP	120W	28V	85%	FPP6438-12
HDCD/(20-50)-5-100/D1	100W	±5V	79%	FPP6438-12
HDCD/(20-50)-12-110/D1	110W	±12V	84%	FPP6438-12
HDCD/(20-50)-15-120/D1	120W8	±15V	85%	FPP6438-12

**Table 2 50V bus series**

Pin Terminal	Output Power	Output Voltage	Full Load Efficiency	Encapsulation
HDCD/50-5-80/SP	80W	5V	80%	FPP6438-12
HDCD/50-8-80/SP	80W	8V	81%	FPP6438-12
HDCD/50-9-90/SP	90W	9V	82%	FPP6438-12
HDCD/50-12-110/SP	110W	12V	83%	FPP6438-12
HDCD/50-15-120/SP	120W	15V	84%	FPP6438-12
HDCD/50-12-110/D1	110W	±12V	82%	FPP6438-12
HDCD/50-15-120/D1	120W	±15V	83%	FPP6438-12

**Table 3 100V bus series**

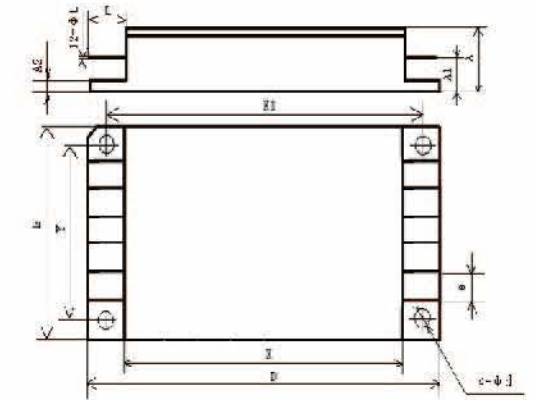
Pin Terminal	Output Power	Output Voltage	Full Load Efficiency	Encapsulation
HDCD/100-5-100/SP	100W	5V	80%	FPP6438-12
HDCD/100-12-120/SP	120W	12V	85%	FPP6438-12
HDCD/100-15-120/SP	120W	15V	86%	FPP6438-12
HDCD/100-28-120/SP	120W	28V	85%	FPP6438-12
HDCD/100-5-100/D1	100W	±5V	80%	FPP6438-12
HDCD/100-12-110/D1	110W	±12V	85%	FPP6438-12
HDCD/100-15-120/D1	120W	±15V	86%	FPP6438-12

## Outline Dimensions and Pin Definitions

**Package model: FPP6438-12bv**

Dimension Symbol	Dimension Symbol		
	Minimal	Nominal	Maximal
A	-	-	10.16
A1	5.29	-	5.89
A2	1.07	-	1.47
φb	0.87	-	1.13
φd	3.10	-	3.50
D	-	-	76.33
E	-	-	38.23
e	-	5.08	-
L	4.85	-	-
X	-	-	64.00
X1	69.90	-	70.30
Y	31.70	-	32.30

Note: E is interchangeability dimensions, ensured and inspected by the package manufacturer.



Pin Terminal Number	Symbol	Single Channel Function
1	VI	Input Positive
2	GNDI	Input Ground
3	TRIM	Adjusting End
4	INH1	Inhibited Terminal 1
5	SYNCout	Synchronous Output Terminal
6	SYNC in	Synchronous Input
7	VO	Positive output terminal
8	GNDO	Output Common
9	SENSE-	Negative sense Terminal
10	SENSE+	Positive sense End
11	SHARE	Current Sharing Terminal



Pin Terminal Number	Symbol	DUAL FUNCTION
1	VI	Input Positive
2	GNDI	Input Ground
3	CASE	Package
4	INH1	Inhibited Terminal 1
5	SYNCout	Synchronous Output Terminal
6	SYNCin	Synchronous Input
7	VO1	Positive output terminal
8	GNDO	Output Common
9	VO2	Negative output side
10	TRIM	Adjusting End
11	SHARE	Current Sharing Terminal

# Radiation hardened and High and Low Temperature Resistant Optical Cable

## Product Introduction

Irradiation and high/low temperature resistant optical fiber cable is a special kind of optical fiber cable specially designed for application in harsh environments such as radiation, high/low temperature, etc. This kind of optical fiber cable has the advantages of stable transmission under the conditions of gamma radiation and extreme high/low temperature, low transmission loss, wide transmission band, electromagnetic interference resistance, radiation resistance, high/low temperature resistance, etc. It is mainly used in the internal network communication of space vehicles, and can be widely used in other radiation and harsh working environments such as unmanned radiation detection, nuclear power, nuclear reactor, etc.

## Product Application

Spacecraft networking or interconnection communication, various radiation, high and low temperature and other complex environments.

## Product Features

- Low attenuation constant
- Irradiation Resistance
- High and low temperature resistance

## Product Dimension

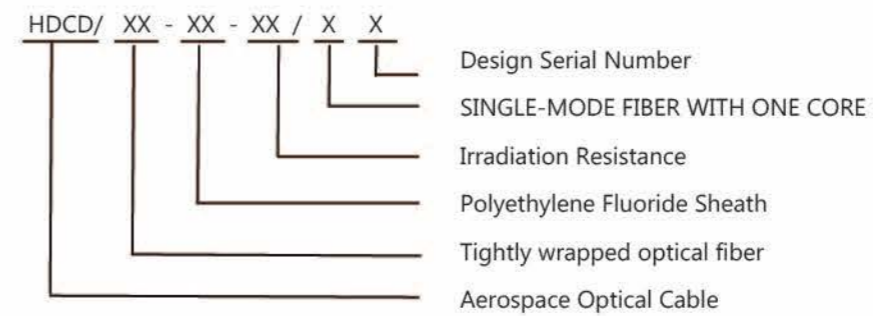
1.80mm±0.10mm



## Technical Index

Performance	Parameter	Unit
Optical Properties	/	/
Operating Wavelength	1310	nm
Optical Cable attenuation	≤0.5	dB/km
Mechanical Properties	/	/
Tensile strength	≥200	N
Environmental Performance	/	/
Radiation Tolerance Dose	200	krad(Si)
IRRADIATION INDUCED LOSS	$\Delta\alpha_{1310nm} \leq 2.0$	dB/100m
Working temperature	-55~125	°C
THERMAL VACUUM GAS-RELEASABILITY	TML≤1.00% CVCM≤0.10%	/
Physical Properties	/	/
Weight per unit length	≤4.0	g/m
Outside diameter	1.80±0.10	mm

## Ordering Information



GKJFR-1B-2 is a radiation-resistant optical fiber cable (cabin) with operating wavelength of 1310nm, single mode fiber core number of one core and outer diameter of 1.8mm.

# Radiation Hardened Cable Assembly

## Radiation Handened (outer) Fiber Optic Cable Assembly Product Introduction

The aerospace cable assembly consists of a plug (seat) connector, a fiber optic cable, and a pigtail connector. The plug and socket adopt the space connector J599III series housing, the fiber optic cable adopts radiation-resistant optical cable, and the pigtail connector has standard single-core movable connectors such as FC, ST and DIN. The module has the characteristics of high anti-irradiation dose, wide operating temperature range, aerospace application requirements such as thermal vacuum outgassing, material toxicity, detachable contacts and small insertion loss. Used in spacecraft, satellite, space station cabin optical communication systems.



Outboard component

In-cabin component

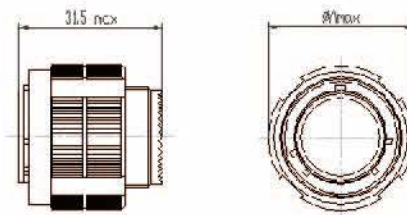
### Main Technical Performance Index

Project Name	Index
FIBER NUMBER	FIBER NUMBER
package type	package type
Operating Wavelength	Operating Wavelength
INSERTION LOSS	INSERTION LOSS
Return Loss	Return Loss
Working temperature	Working temperature
Storage temperature	Storage temperature
Irradiation Resistance	Irradiation Resistance
Neutron Displacement	Neutron Displacement
Working Life	Working Life
Tensile strength	Tensile strength

Note: Aerospace class, meeting the requirements of vacuum gas release, material toxicity and other aerospace applications.

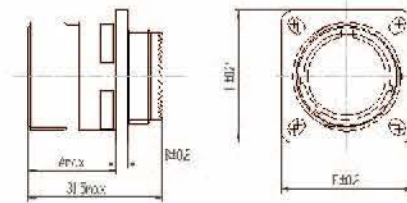
#### Plug

Core Number	2	4	6	8
Shell Number	11	13	15	17
A	25.2	29.6	32.6	35.85



#### Socket

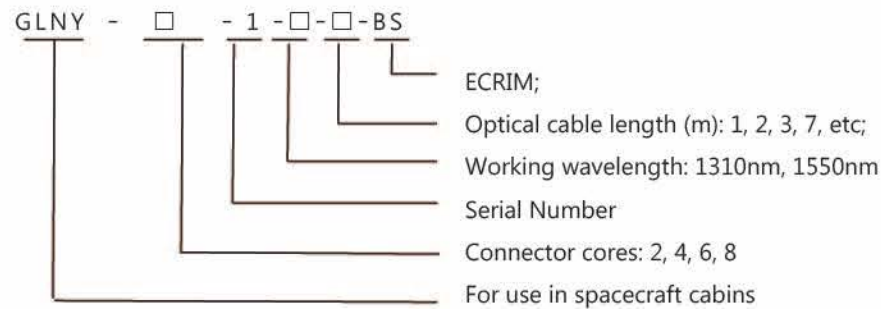
Core Number	Shell Number	A	E	N	M	K	P
2	11	20.9	26.2	15.88	20.22	20.62	3.5
4	13	20.9	28.6	19.05	23.42	23.01	3.5
6	15	20.9	31.0	23.01	26.59	24.61	3.5
8	17	20.9	33.33	25.81	30.96	26.97	3.5



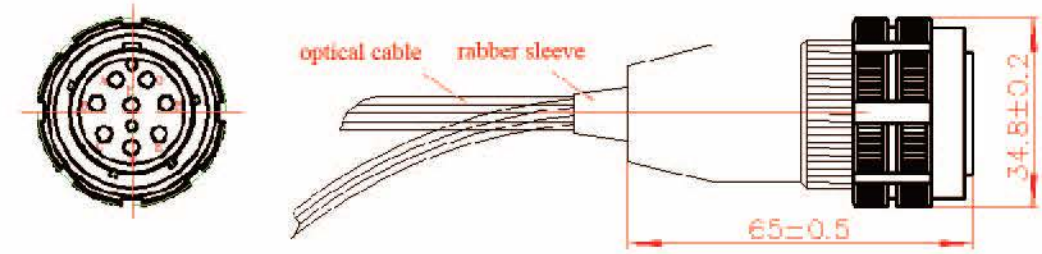
Note: The length of optical cable can be customized according to customers' requirements.

Outline and installation dimension drawing of square disc socket

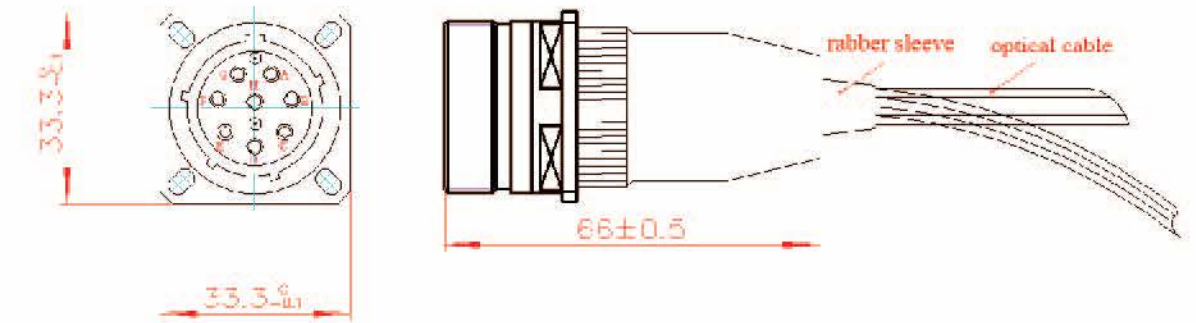
### Model Name



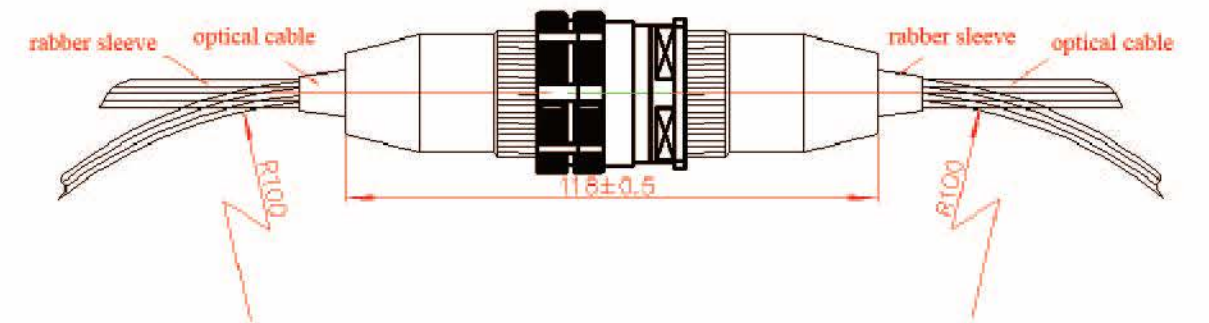
Example: GLNY-2-1-1310-3-BS: 2-core optical fiber connector for spacecraft cabin, operating wavelength 1310nm, optical cable length 3m



Plug dimensions for type GLLP-J599-8s-01 extravehicular optical cable assemblies

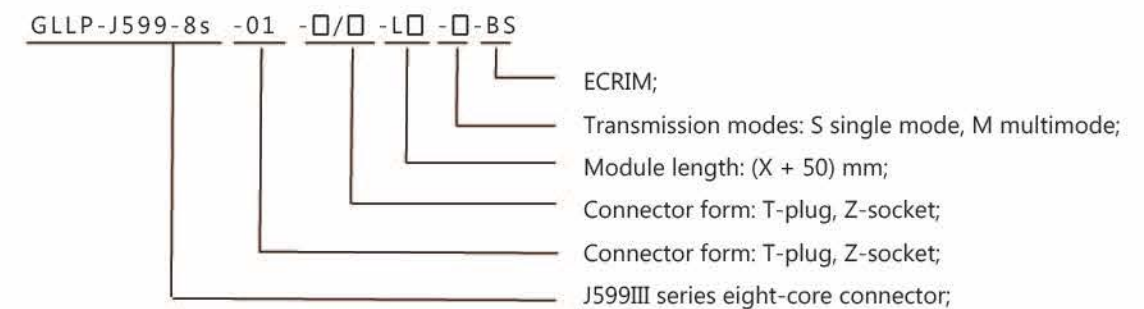


Socket dimensions for GLLP-J599-8s-01 extravehicular optical cable assemblies



Type GLLP-J599-8s-01 connector for extravehicular optical cable

### Type Designation of Extravehicular Components



## Radiation hardened Polarization Maintaining Optical Cable Assembly Product Introduction

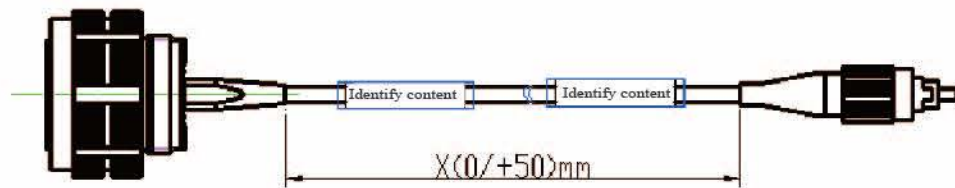
J599III series interface, five-key positioning, anti-misinsertion, anti-vibration ability. Low loss, high polarization retention. FC, SMA and other polarization-maintaining connectors. High Power Tolerance. It can be used in space-borne communication with earth, intersatellite interconnection, space flight vehicle cabin optical equipment.

### Main technical performance index

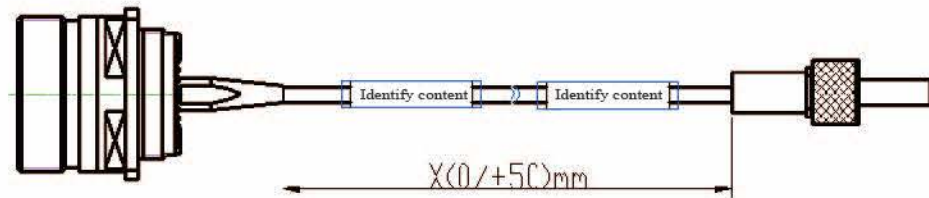
Project Name	Indicator (PM1550)
INSERTION LOSS	≤0.3dB
Return Loss	≤-40dB
Extinction Ratio	≥22dB
Tolerant Power	10w
Working temperature	-10°C~+55°C
Mechanical Environment	Meet on-board requirements
Thermal Vacuum Environment	-30 °C ~ + 70 °C; ambient pressure ≤ 6.6510E-3Pa
Total Radiation Dose	200kRad (Si)



### Product Dimension



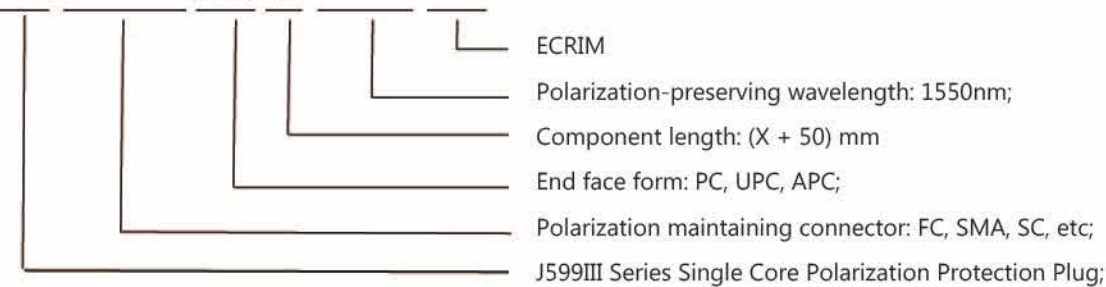
J599/26FA01N-FC/PC-LX-PM1550-BS Polarization Maintaining Cable Assembly (Plug)



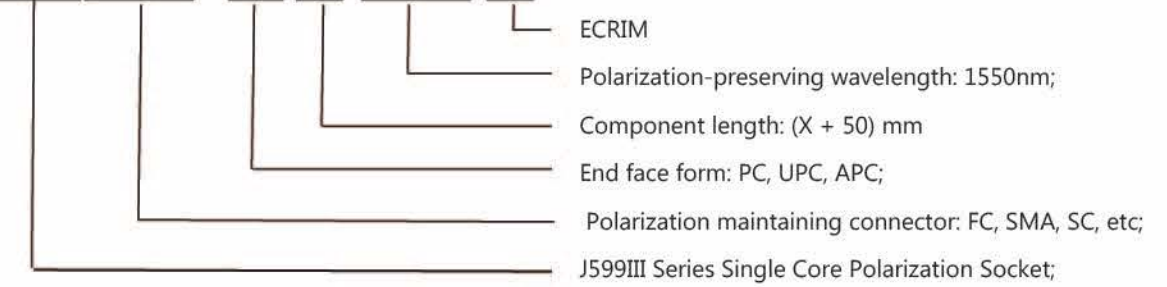
J599/20FA01N-SMA905/PC-LX-PM1550-BS Polarization Maintaining Cable Assembly (Socket)

### Model Name

J599/26FA01N-□/□-L□-PM1550-BS



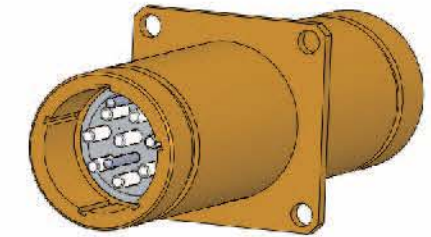
J599/ 20FA01N- □/□- L□ -PM1550 -BS



## Perforating Cabin light-Fibre Gas Seal Adapter

### Product Introduction

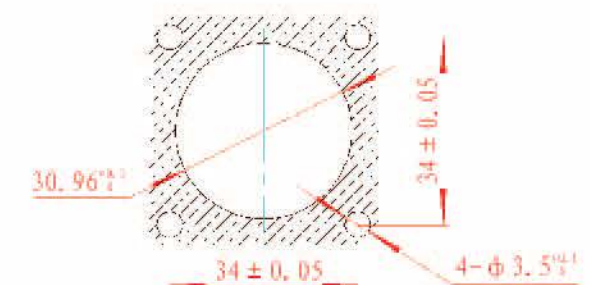
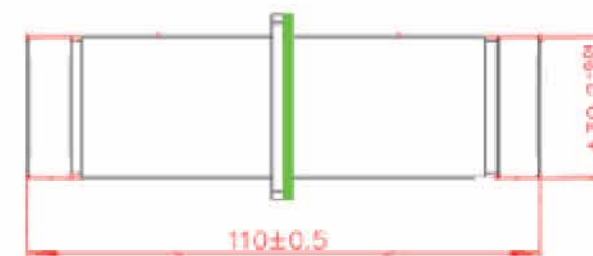
- Low gas-tight leakage rate
- Low loss, high total irradiation dose
- Large temperature and wide, long life.
- J599III series interface, anti-vibration ability.
- Application in Airtight Penetration Cabin of Spacecraft



### Main Technical Performance Index

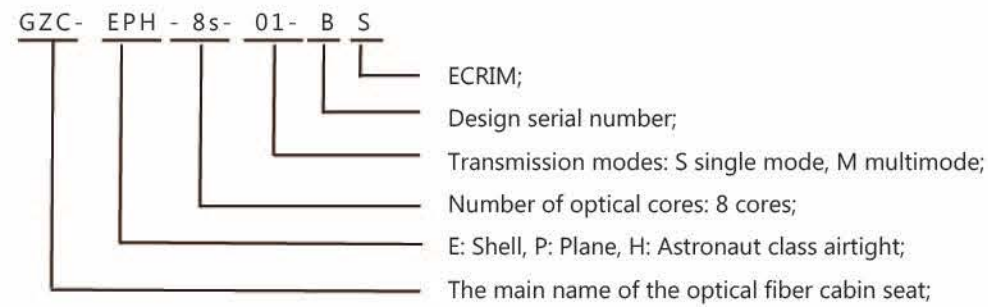
Project Name	Index
GAS SEAL LEAKAGE	≤1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s
Operating Wavelength	1550 nm±20 nm
Core Number	8-core
INSERTION LOSS	≤ 1.8 dB (normal temperature), ≤ 2.1 dB (full temperature);
Return Loss	≥ 40 dB (room temperature)
Number of pluggings	200 times
Life	15 years (design value)
Working temperature	-65°C ~ +100°C
Storage temperature	-65°C ~ +100°C
Total Radiation Dose	18000 kRad(si)
Neutron Displacement	5×10 <sup>10</sup> (1Mev neutrons)/cm <sup>2</sup> ;
Shock and vibration	Meet the requirements of GJB1217A-2009 electrical connector test method.
Execution Standard	GJB4411-2002 General Specification for Optical Cable Assemblies
Quality Grade	It meets the requirements of thermal vacuum gas release, material toxicity and other aerospace applications.

### Product Dimensions and Recommended Installation Dimensions



GZC-EPH-8s-01 Type Transfixion Sealing Adapter

### Model Name



## BSOT6301 Gigabit Integrated Optical Transceiver Module

### Product Introduction

BSOT6301 gigabit integrated optical transceiver module can be used in high-speed optical interconnection of switches, high-speed signal interconnection of high density, radar processor interconnection and other high-density and high-data rate optical fiber communications.

### Product Introduction

J599E Integrated Light-receiving and Light-emitting Module in the Shell  
 Two incoming and two outgoing per module  
 Supports speeds up to 1Gbps per individual channel.  
 Compact structural design, high density and high capacity.  
 3.3V power supply for low power consumption and high reliability in aerospace applications



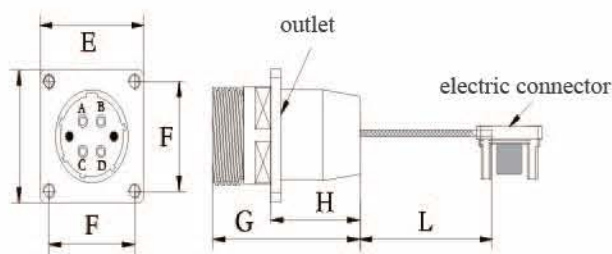
### Main Performance Index

Parameter	Symbol	Minimum Value	Typical Value	Maximal Value	Unit
Output Wavelength	$\lambda_{out}$	1300	1310	1320	nm
Input Wavelength	$\lambda_{in}$	1300	1310	1320	nm
Extinction Ratio	ER	9	/	/	dB
Average optical power	PAVG	-2	0	+1	dBm
Sensitivity BER = 10 <sup>-12</sup>	Pin	/	/	-19	dBm
Overload Optical Power	OL	0	/	/	dBm
Optical Return Loss	RL	/	/	-40	dB
Working temperature	TA	-40	/	+85	°C
Supply Voltage	VCC	3.15	3.3	3.45	V
Power consumption (1.25 Gbps)	/	/	1.1	1.5	W

### Product Dimension

(Dimensions in mm)

Symbol	E	F	G	H	L
Maximal Value	33.4	27.05	67	46	23
Nominal Value	33.3	27	66	45	21
Minimum Value	33.2	26.95	65	44	19



## BSOT6302 10 Gigabit Integrated Optical Transceiver Module

### Product Introduction

BSOT6302 10G integrated optical transceiver module can be used in high-speed optical interconnection of switches, high-speed signal interconnection of high density, radar processor interconnection and other high-density and high-data rate optical fiber communications.

### Product Characteristics

J599E Integrated Light-receiving and Light-emitting Module in the Shell  
 Two incoming and two outgoing per module  
 Supports speeds up to 10Gbps per individual channel.  
 Compact structural design, high density and high capacity.  
 3.3V power supply for low power consumption and high reliability in aerospace applications



### Main Performance Index

Parameter	Symbol	Minimum Value	Typical Value	Maximal Value	Unit
Output Wavelength	$\lambda_{out}$	1300	1310	1320	nm
Input Wavelength	$\lambda_{in}$	1300	1310	1320	nm
Extinction Ratio	ER	9	/	/	dB
Average optical power	PAVG	-2	0	+1	dBm
Sensitivity BER = 10 <sup>-12</sup>	Pin	/	/	-19	dBm
Overload Optical Power	OL	0	/	/	dBm
Optical Return Loss	RL	/	/	-40	dB
Working temperature	TA	-40	/	+85	°C
Supply Voltage	VCC	3.15	3.3	3.45	V
Power consumption (1.25 Gbps)	/	/	1.1	1.5	W

### Product Dimension

(Dimensions in mm)

Symbol	E	F	G	H	L
Maximal Value	33.4	27.05	67	46	23
Nominal Value	33.3	27	66	45	21
Minimum Value	33.2	26.95	65	44	19

