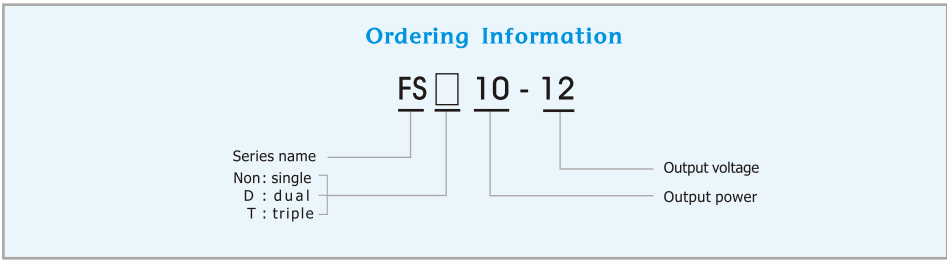
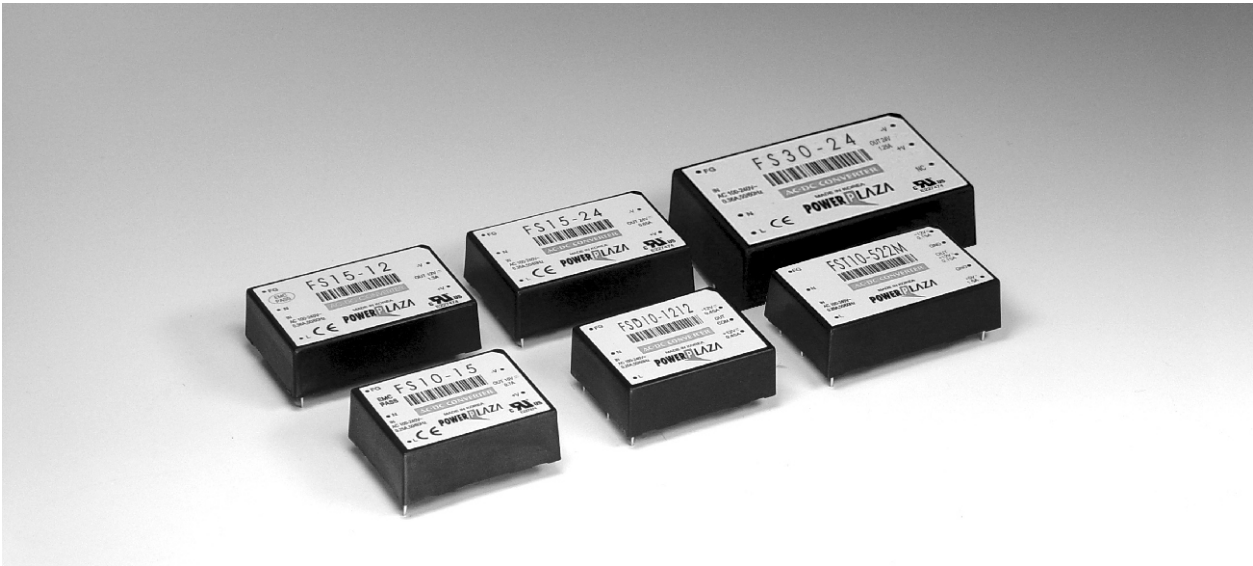


AC-DC CONVERTER (FS series)






INPUT	AC85~264V (or DC 110~340V)
OUTPUT	3.3V, 5V, 12V, 15V, 24V, ±12V, ±15, 5V / ±12V, 5V / ±15V

Features

- RoHS directive compliance
- Single, dual and Triple output
- Encapsulated small and compact size
- High efficiency
- Universal input
- Short circuit protection
- Thermal shut down
- Inrush current limit
- Built-in EMI filter
- Surface mounting technology
- Isolated output
- Approved by **UL** (UL 60950, CSA C 22.2 NO. 60950) / **CE** (EN 60950) / **CB** (IEC 60950) / **CE** (EN 61204-3 class B, EN 61000-3-2, 3-3) -through TÜV (10W, 15W single)
- 2 years warranty

FS SERIES

Series Name	Input Voltage	Output1	Output2	Output3	Model	Page
FS 10 	AC85~264V or DC110~340V	3.3V / 2.00A 5.0V / 2.00A 12.0V / 0.90A 15.0V / 0.70A 24.0V / 0.45A			FS 10	55
		+12.0V / 0.45A +15.0V / 0.35A	-12.0 / 0.45A -15.0 / 0.35A		FSD 10	
		5.0V / 1.5A 5.0V / 1.5A	+12.0 / 0.15A +15.0 / 0.12A	-12.0 / 0.15A -15.0 / 0.12A	FST 10M	
FS 15 	AC85~264V or DC110~340V	3.3V / 3.00A 5.0V / 3.00A 12.0V / 1.30A 15.0V / 1.00A 24.0V / 0.65A			FS 15	57
		+12.0V / 0.65A +15.0V / 0.50A	-12.0V / 0.65A -15.0V / 0.50A		FSD 15	
FS 30 	AC85~264V or DC110~340V	3.3V / 6.00A 5.0V / 6.00A 12.0V / 2.50A 15.0V / 2.00A 24.0V / 1.25A			FS 30	59
		+12.0V / 1.25A +15.0V / 1.00A	-12.0V / 1.25A -15.0V / 1.00A		FSD 30	

FS 10

FS10 Series AC/DC Converters(Power tank)

Total power 10 Watts
Input voltages AC85~264V or DC110~340V
#of outputs Single, Dual, Triple output



SPECIAL FEATURES

- **UL, C-UL, CB, CE** Marking
- Encapsulated, compact case
- High efficiency
- Universal input
- Surface mounting technology
- Built - in EMI filter
- Inrush current limit
- 67KHz fixed frequency
- Fixed output voltage
- Thermal shutdown
- Output short circuit protection
- Low output ripple & noise
- Isolated output
- 2Years warranty

ENVIRONMENTAL

- Operating temperature range -10 °C ~60 °C
 - Storage temperature range -20 °C ~70 °C
 - Humidity 20%~90%RH
 - Vibration 10~55Hz at 10G 3minutes period
 - Impact 50G for 11ms, once on each X, Y and Z-axis
 - Cooling method Natural air
 - MTBF (MIL-HDBK-217F) 3.5×10^5 hrs
 - Safety (single output) *Approved
 - UL (UL60950, CSA C22.2 NO.60950) : E227474 / CB (IEC 60950) / CE (EN 60950) - through TÜV
 - EMC (Single output) *Approved
 EN 61204-3 class B / EN 61000-3-2 / EN 61000-3-3 - through TÜV
- * To meet the standard of EN61204-3 class-B, use the external noise filter Between L and N (Refer to manual)

ELECTRICAL SPECIFICATIONS

INPUT

- Voltage AC85~264V (or DC 110~340V) (note1)
- Current 0.21A max. @ 110VAC / 0.11A max. @ 220VAC
- Frequency 47~440Hz max. (50~60Hz typ.)
- Efficiency 73% typ.
- Inrush current (at cold start) 30A max. @ 110VAC. / 60A max. @ 220VAC
- Leakage current 0.5mA max. @ 110VAC / 0.75mA max. @ 220VAC

OUTPUT

- Voltage tolerance $\pm 2\%$ (single and uncomplementary dual)
 $\pm 3\%$ (complementary dual)
- Ripple and noise $\pm 1\%$ typ.
- Line regulation $\pm 1\%$ typ.
- Load regulation $\pm 1\%$ typ. @ Output1 / $\pm 2\%$ typ. @ Output2, 3
- Dynamic load regulation $\pm 3\%$ typ. @ Output1
- Temperature drift $\pm 1\%$ typ.
- Rising time 400ms max.
- Holding time 10ms min.

PROTECTION CIRCUIT

- Output short circuit protection Work at over 105% of rating & recovers automatically
- Over temperature protection 145 °C typ.

ELECTRICALLY ISOLATED

- Input - Output AC 3KV, 1minute, 10mA / DC 500V, 100MOhms min.
- Input - FG AC 2KV, 1minute, 10mA / DC 500V, 100MOhms min.
- Output - FG AC 0.5KV, 1minute, 10mA / DC 500V, 70MOhms min.

NOTE 1. For cases where conformance to various safety specs (UL, CSA, CE, CB etc) are required input voltage and frequency range will be 100-240 VAC, 50-60Hz.

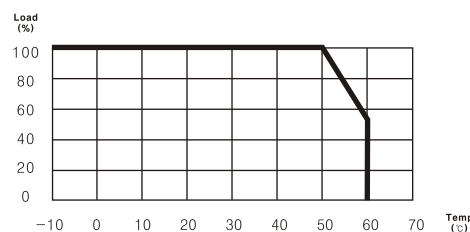
Ordering Information

Input	Output1	Output2	Output3	Maximum Power	Ripple&Noise max	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@2.0A 5V@2.0A 12V@0.9A 15V@0.7A 24V@0.45A			6.6W 10.0W 10.8W 10.5W 10.8W	80mVp-p 80mVp-p 120mVp-p 150mVp-p 200mVp-p	73% 73% 75% 75% 75%	FS10-3R3 FS10-5 FS10-12 FS10-15 FS10-24
	+12V@0.45A +15V@0.35A	-12V@0.45A -15V@0.35A		10.8W 10.5W	120/120mVp-p 150/150mVp-p	75% 75%	FSD10-1212 FSD10-1515
	5V@1.5A 5V@1.5A	+12V@0.15A +15V@0.12A	-12V@0.15A -15V@0.12A	11.1W 11.1W	80/120/120mVp-p 80/150/150mVp-p	75% 75%	FST10-522M FST10-5FFM

Pin assignments

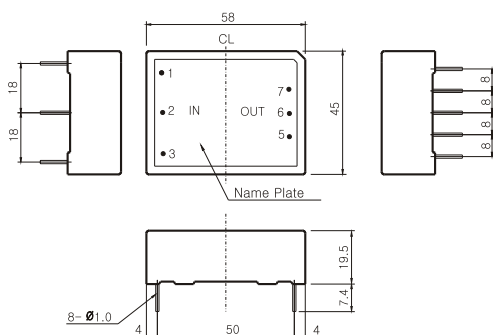
Single Output	Dual Output	Triple Output
1. FG 2. AC(N) 3. AC(L)	1. FG 2. AC(N) 3. AC(L)	1. FG 2. AC(N) 3. AC(L)
4. No pin 5. Output 1 6. No pin 7. Gnd 8. No pin	4. No pin 5. Output 1 6. Gnd 7. Output 2 8. No pin	4. Output 1 5. Gnd 6. Output 2 7. Gnd 8. Output 3

Derating curve

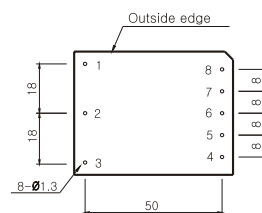
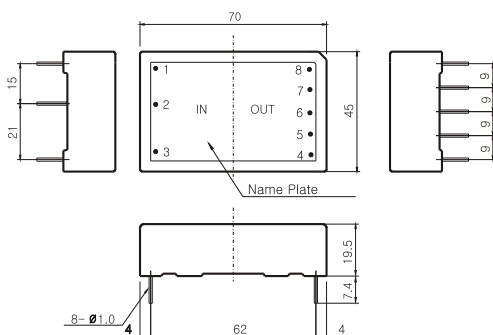


Dimensions

► Single, Dual Output



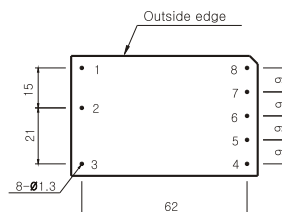
► Triple Output



※ Mounting hole top view

NOTES

1. All dimensions are mm.
2. Weight : 90g or less (single, dual)
100g or less (triple)

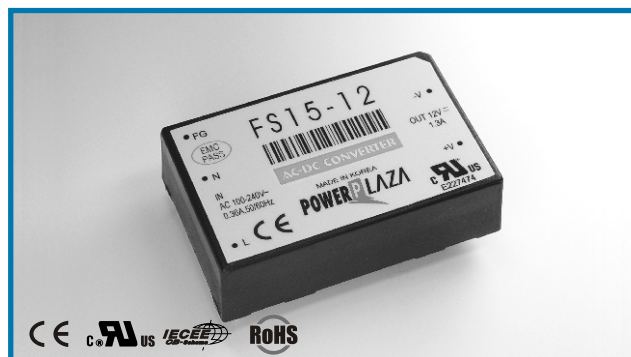


※ Mounting hole top view

FS 15

FS 15 Series AC/DC Converters (Power tank I)

Total power 15 Watts
Input voltages AC85~264V or DC110~340V
#of outputs Single, Dual output



SPECIAL FEATURES

- **UL, C-UL, CB, CE** Marking
- Encapsulated, compact case
- High efficiency
- Universal input
- Surface mounting technology
- Built - in EMI filter
- Inrush current limit
- 67KHz fixed frequency
- Fixed output voltage
- Thermal shutdown
- Output short circuit protection
- Low output ripple & noise
- Isolated output
- 2 Years warranty

ENVIRONMENTAL

- Operating temperature range -10 °C ~60 °C
 - Storage temperature range -20 °C ~70 °C
 - Humidity 20%~90%RH
 - Vibration 10~55Hz at 10G 3minutes period
 - Impact 50G for 11ms, once on each X, Y and Z-axis
 - Cooling method Natural air
 - MTBF (MIL-HDBK-217F) 3.5×10^5 hrs
 - Safety (single output) *Approved
 - └ UL (UL60950, CSA C22.2 NO.60950) : E227474 /
 - └ CB (IEC 60950) / CE (EN 60950) - through TÜV
 - EMC (Single output) *Approved
 EN 61204-3 class B / EN 61000-3-2 / EN 61000-3-3 - through TÜV
- * To meet the standard of EN61204-3 class-B, use the external noisefilter Between L and N (Refer to manual)

ELECTRICAL SPECIFICATIONS

INPUT	<ul style="list-style-type: none"> • Voltage AC85~264V (or DC 110~340V) (note1) • Current 0.31A max. @ 110VAC / 0.16A max. @ 220VAC • Frequency 47~440Hz max. (50~60Hz typ.) • Efficiency 75% min. • Inrush current (at cold start) 30A max. @ 110VAC / 60A max. @ 220VAC • Leakage current 0.5mA max. @ 110VAC / 0.75mA max. @ 220VAC
OUTPUT	<ul style="list-style-type: none"> • Voltage tolerance $\pm 2\%$ (single and uncomplementary dual) $\pm 3\%$ (complementary dual) • Ripple and noise $\pm 1\%$ typ. • Line regulation $\pm 1\%$ typ. • Load regulation $\pm 1\%$ typ. • Dynamic load regulaion $\pm 3\%$ typ. • Temperature drift $\pm 1\%$ typ. • Rising time 400ms max. • Holding time 10ms min.
PROTECTION CIRCUIT	<ul style="list-style-type: none"> • Output short circuit protection Work at over 105% of rating & recovers automatically • Over temperature protection 145 °C typ.
ELECTRICALLY ISOLATED	<ul style="list-style-type: none"> • Input - Output AC 3KV, 1minute, 10mA / DC 500V, 100MOhms min. • Input - FG AC 2KV, 1minute, 10mA / DC 500V, 100MOhms min. • Output - FG AC 0.5KV, 1minute, 10mA / DC 500V, 70MOhms min.

NOTE 1. For cases where conformance to various safety specs (UL, CSA, CE, CB etc) are required input voltage and frequency range will be 100-240 VAC, 50-60Hz.

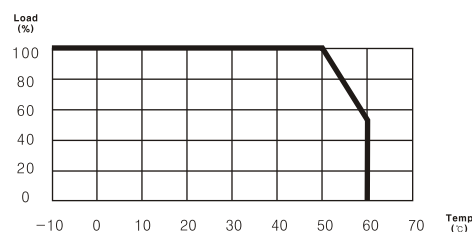
Ordering Information

Input	Output1	Output2	Maximum Power	Ripple&Noise max	Efficiency Typ.	Model Number	
AC 85 ~ 264V or DC 110 ~340V	3.3V@3.0A 5V@3.0A 12V@1.3A 15V@1.0A 24V@0.65A		9.9W	80mVp-p	71%	FS15-3R3 FS15-5 FS15-12 FS15-15 FS15-24	
			15.0W	80mVp-p	75%		
			15.6W	120mVp-p	78%		
			15.0W	150mVp-p	78%		
			15.6W	200mVp-p	78%		
	+12V@0.65A +15V@0.5A	-12V@0.65A -15V@0.5A	15.6W	120/120mVp-p	75%	FSD15-1212 FSD15-1515	
			15.0W	150/150mVp-p	75%		

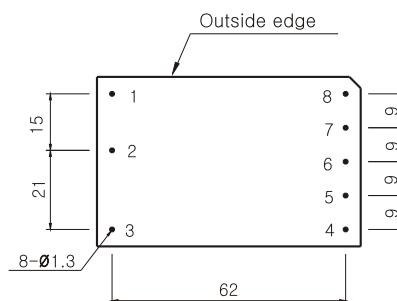
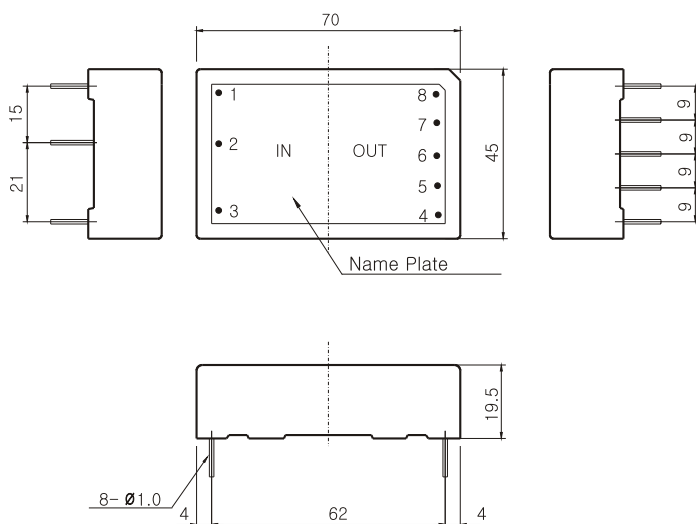
Pin assignments

Single Output	Dual Output
1. FG	1. FG
2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)
4. No pin	4. No pin
5. Output 1	5. Output 1
6. No pin	6. Gnd
7. Gnd	7. Output 2
8. No pin	8. No pin

Derating curve



Dimensions



※ Mounting hole top view

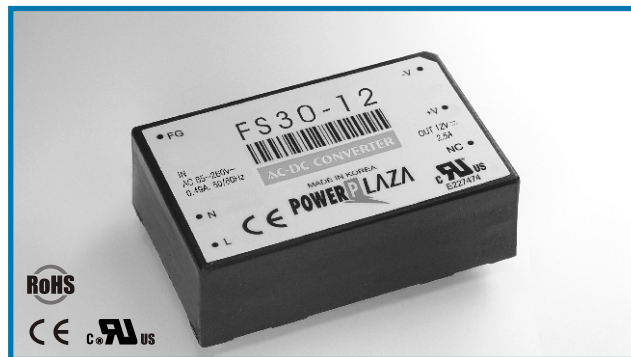
NOTES

1. All dimensions are mm.
2. Weight : 100g or less

FS 30

FS 30 Series AC/DC Converters (Power tank II)

Total power 30 Watts
Input voltages AC85~264V or DC110~340V
#of outputs Single, Dual output



SPECIAL FEATURES

- Encapsulated, compact case
- High efficiency
- Universal input
- Surface mounting technology
- Built - in EMI filter
- Inrush current limit
- 100kHz fixed frequency
- Fixed output voltage
- Thermal shutdown
- Output short circuit protection
- Low output ripple & noise
- Isolated output
- 2 Years warranty

ENVIRONMENTAL

- Operating temperature range -10°C~60°C
- Storage temperature range -20°C~70°C
- Humidity 20%~90%RH
- Vibration 10~55Hz at 10G 3minutes period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling method Natural air
- MTBF (MIL-HDBK-217F) 3.0×10^5 hrs
- Safety (single output) *Approved
 - UL (UL60950, CSA C22.2 NO.60950) : E227474 /
 - CE (EN 60950) - through TÜV
- Noise Meets FCC class

ELECTRICAL SPECIFICATIONS

INPUT	<ul style="list-style-type: none"> • Voltage AC85~264V (or DC 110~340V) • Current 0.49A max. @ 110VAC / 0.25A max. @ 220VAC • Frequency 47~440Hz max. (50~60Hz typ.) • Efficiency 80% min. • Inrush current (at cold start) 30A max. @ 110VAC / 60A max. @ 220VAC • Leakage current 0.5mA max. @ 110VAC / 0.75mA max. @ 220VAC
OUTPUT	<ul style="list-style-type: none"> • Voltage tolerance $\pm 2\%$ (single and uncomplementary dual) $\pm 3\%$ (complementary dual) • Ripple and noise $\pm 1\%$ typ. • Line regulation $\pm 1\%$ typ. • Load regulation $\pm 1\%$ typ. • Dynamic load regulaion $\pm 3\%$ typ. • Temperature drift $\pm 1\%$ typ. • Rising time 400ms max. • Holding time 10ms min.
PROTECTION CIRCUIT	<ul style="list-style-type: none"> • Output short circuit protection Work at over 105% of rating & recovers automatically • Over temperature protection 145°C typ.
ELECTRICALLY ISOLATED	<ul style="list-style-type: none"> • Input - Output AC 3KV, 1minute, 10mA / DC 500V, 100MOhms min. • Input - FG AC 2KV, 1minute, 10mA / DC 500V, 100MOhms min. • Output - FG AC 0.5KV, 1minute, 10mA / DC 500V, 70MOhms min.

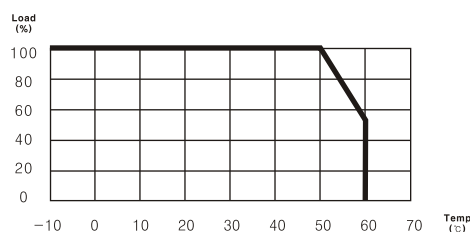
Ordering Information

Input	Output1	Output2	Maximum Power	Ripple&Noise max	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~340V	3.3V@6.0A 5V@6.0A 12V@2.5A 15V@2.0A 24V@1.25A		19.8W 30W 30W 30W 30W	80mVp-p 80mVp-p 120mVp-p 150mVp-p 200mVp-p	78% 80% 83% 83% 86%	FS30-3R3 FS30-5 FS30-12 FS30-15 FS30-24
	+12V@1.25A +15V@1.0A	-12V@1.25A -15V@1.0A	30W 30W	120/120mVp-p 150/150mVp-p	80% 80%	FSD30-1212 FSD30-1515

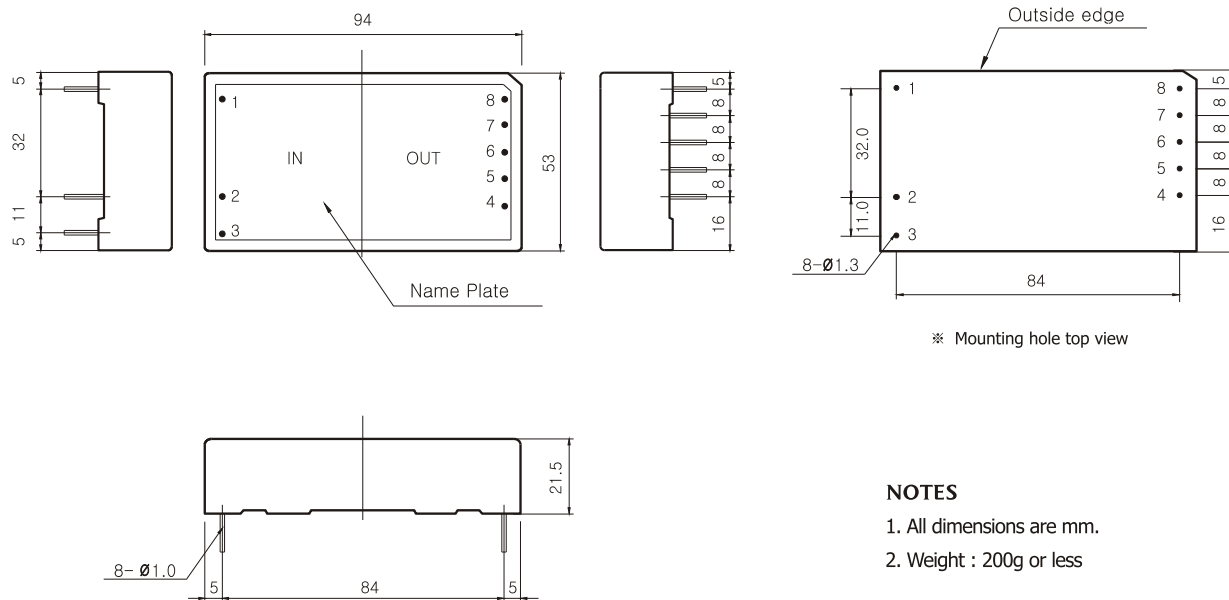
Pin assignments

Single Output	Dual Output
1. FG	1. FG
2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)
4. No connect	4. No pin
5. No pin	5. Output 1
6. Output1	6. Gnd
7. No pin	7. Output 2
8. GND	8. No pin

Derating curve



Dimensions



NOTES

1. All dimensions are mm.
2. Weight : 200g or less