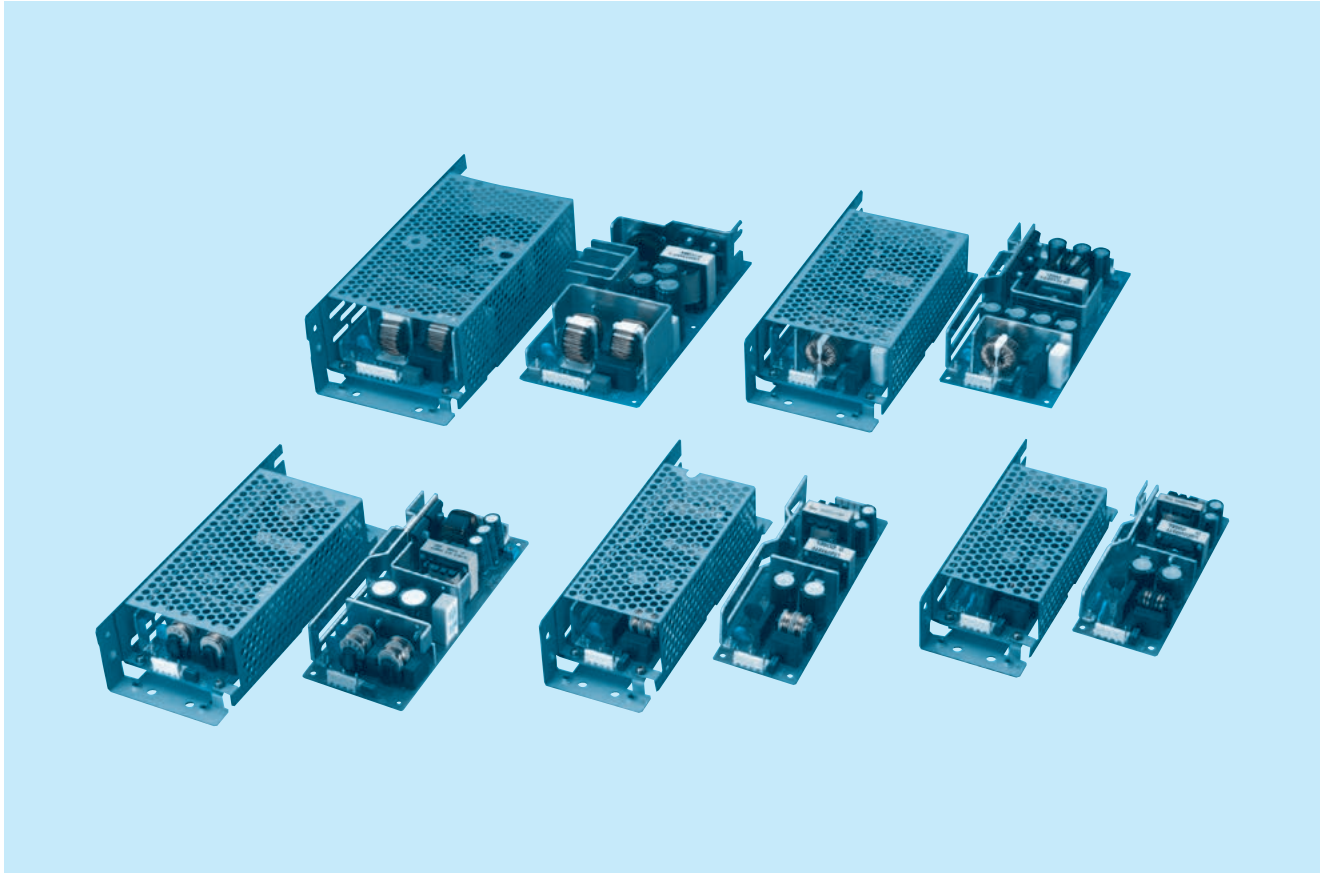


# LGA-series



## ■ Feature

Small and compact PCB construction  
Built-in inrush current, overcurrent and overvoltage protection circuits

## ■ Safety agency approvals

UL60950-1, C-UL(CSA60950-1) recognized, EN62368-1 approved  
Complies with DEN-AN

## ■ EMI

Complies with FCC-B, CISPR22-B, EN55011-B, EN55022-B, VCCI-B

## ■ 5-year warranty (refer to Instruction Manual)

## ■ CE marking

Low Voltage Directive  
RoHS Directive

## ■ UKCA marking

Electrical Equipment Safety Regulations  
RoHS Regulations

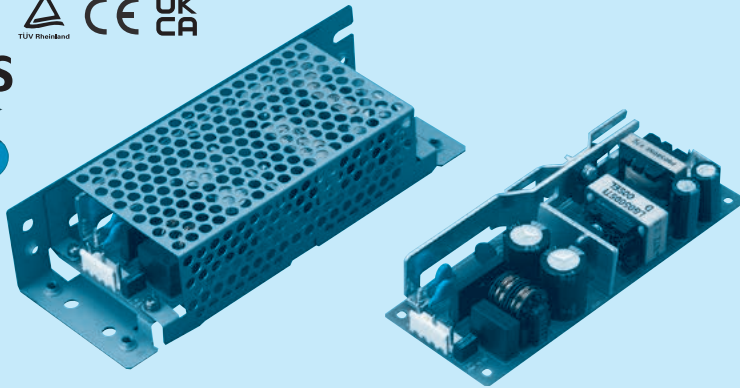
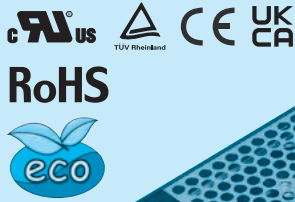
## ■ EMS Compliance : EN61204-3, EN61000-6-2

EN61000-4-2  
EN61000-4-3  
EN61000-4-4  
EN61000-4-5  
EN61000-4-6  
EN61000-4-8  
EN61000-4-11

# LGA50A

LG A 50 A -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-06-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ 100/120V input
- ⑤ Output voltage
- ⑥ Optional
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current (only 24V)
- J1 : VH(J.S.T.)connector type
- S : with Chassis
- SN:with Chassis & cover
- Y : with Potentiometer

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.  
\* Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LGA50A-3R3-Y	LGA50A-5	LGA50A-12	LGA50A-15	LGA50A-24	LGA50A-24-H	LGA50A-48
MAX OUTPUT WATTAGE[W]	33	50	51.6	52.5	60	60	62.4
DC OUTPUT	3.3V 10A	5V 10A	12V 4.3A	15V 3.5A	24V 2.5A	24V 2.5 (Peak 3.2) A	48V 1.3A

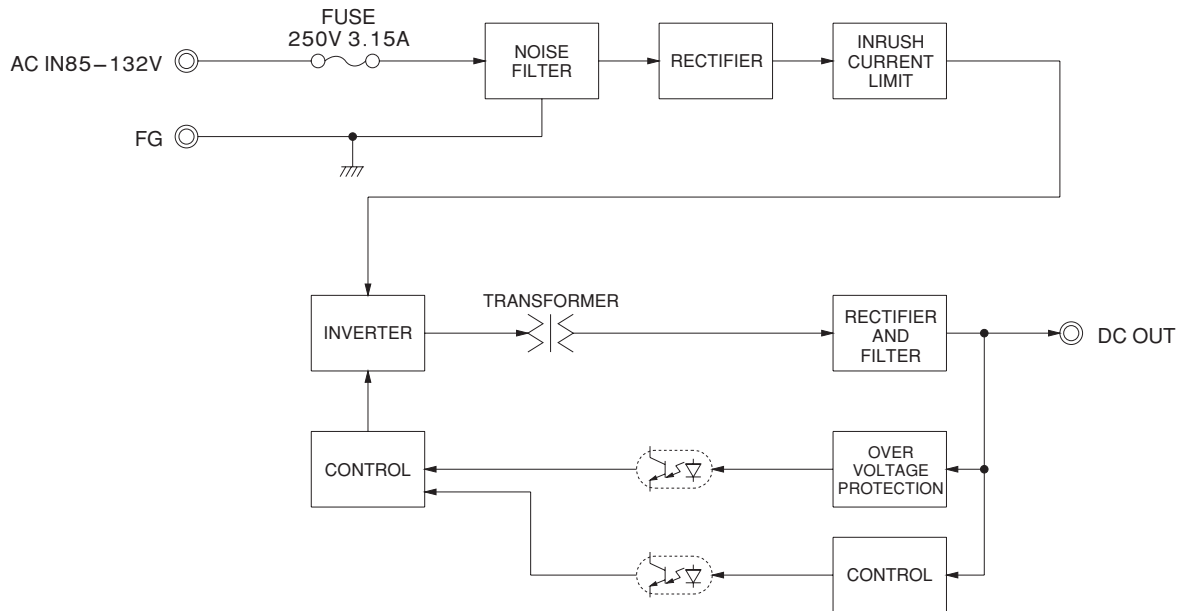
## SPECIFICATIONS

	MODEL	LGA50A-3R3-Y	LGA50A-5	LGA50A-12	LGA50A-15	LGA50A-24	LGA50A-24-H	LGA50A-48	
INPUT	VOLTAGE[V]	AC85 - 132 1 φ (Refer to "Derating", Instruction Manual 1 and 3)							
	CURRENT[A]	ACIN 100V 0.8typ (Io=100%)	1.3typ (Io=100%)						
	FREQUENCY[Hz]	47 - 440 (Refer to Instruction Manual 1.1)							
	EFFICIENCY[%]	ACIN 100V 74.0typ (Io=100%)	79.0typ (Io=100%)	82.0typ (Io=100%)	83.0typ (Io=100%)	85.0typ (Io=100%)	85.0typ (Io=100%)	85.0typ (Io=100%)	
	INRUSH CURRENT[A]	ACIN 100V 30typ (Io=100%), (At cold start), (Ta= 25°C)							
	LEAKAGE CURRENT[ma]	0.5max (ACIN 100V, 60Hz, Io=100%, According to IEC62368-1 and DEN-AN)							
OUTPUT	VOLTAGE[V]	3.3	5	12	15	24	24	48	
	CURRENT[A]	*3 10.0	10.0	4.3	3.5	2.5	2.5 (Peak 3.2)	1.3	
	LINE REGULATION[mV]	20max	20max	48max	60max	96max	96max	192max	
	LOAD REGULATION[mV]	40max	40max	100max	120max	150max	150max	300max	
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	240max	150max
		-10 - 0°C *1	140max	140max	160max	160max	160max	320max	200max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	300max	350max
		-10 - 0°C *1	160max	160max	180max	180max	180max	360max	400max
	TEMPERATURE REGULATION[mV]	0 to +50°C *4	50max	50max	120max	150max	240max	240max	480max
		-10 to +50°C *4	60max	60max	150max	180max	290max	290max	600max
	DRIFT[mV]	*2 20max	20max	48max	60max	96max	96max	192max	
	START-UP TIME[ms]	200max (ACIN 100V, Io=100%)							
HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)								
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.85 - 3.63	Fixed ("Y" which can be adjusted the output is available as optional ± 10%)							
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	4.90 - 5.30	11.50 - 12.50	14.40 - 15.60	23.00 - 25.00	23.00 - 25.00	46.00 - 50.00		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically							
	OVERVOLTAGE PROTECTION	4.00 - 5.25	5.75 - 7.00	13.80 - 16.80	17.30 - 21.00	27.60 - 35.00	27.60 - 35.00	55.20 - 67.20	
	OPERATING INDICATION	Not provided							
	REMOTE SENSING	Not provided							
ISOLATION	REMOTE ON/OFF	Not provided							
	INPUT-OUTPUT	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)							
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)							
ENVIRONMENT	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)							
	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +60°C, 20 - 90%RH (Non condensing) (Refer to "Derating", Instruction Manual 3), 3,000m (10,000feet) max							
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max							
	VIBRATION	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis							
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis							
	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1 Complies with DEN-AN							
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B							
OTHERS	CASE SIZE/WEIGHT	50 X 28.5 X 132mm [1.97 X 1.12 X 5.2 inches] (W X H X D) / 160g max (with chassis & cover : 320g max)							
	COOLING METHOD	Convection (Refer to "Derating", Instruction Manual 3)							

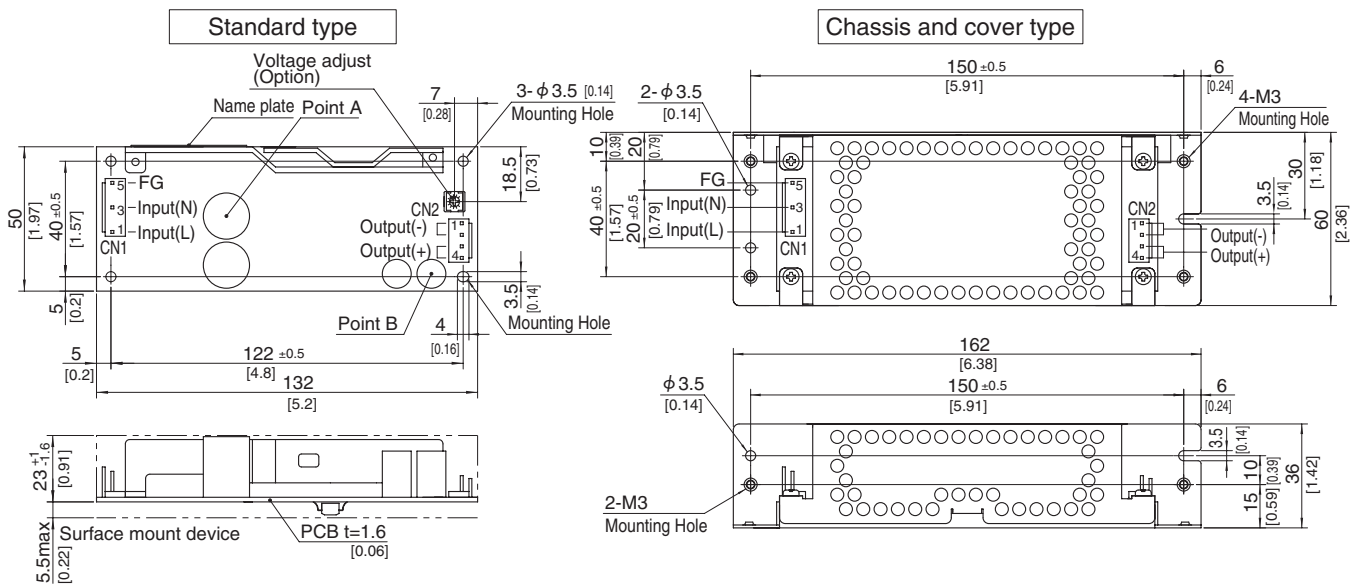
\*1 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.  
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM-103).  
\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.  
\*3 Peak loading for 10sec. And Duty 35% max. or less is acceptable if the total wattage is less than the rated wattage (24V:60W).  
Refer to instruction Manual 6. In detail.

\*4 Only output 24V and 48V DC models are applied that the upper temperature limit is 45°C.  
\* Avoid prolonged use under over - load.  
\* Parallel operation with other model is not possible.  
\* Derating is required when operated with chassis and cover.  
\* A sound may occur from power supply at pulse loading.

Block diagram



External view



- ※ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care. Take care for SMD parts on the back to come in contact because of the vibration and not to break down.
- ※ Use the spacer of 8mm length or more.
- ※ 4 Mounting holes are existing.

※Mounting torque:0.6N.m(6.3kgf.cm)max

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1
		Loose 1318912-1
CN2	1-1123723-4	Chain 1123721-1
		Loose 1318912-1

(Mfr:Tyco Electronics AMP)

※I/O Connector is Mfr Tyco Electronics AMP  
 ※Option:-J1:VH(J.S.T) connector type.  
 Refer to instruction Manual 6.

<PIN CONNECTION>

CN1		CN2	
Pin No.	Input	Pin No.	Output
1	AC(L)	1, 2	-V
2			
3	AC(N)	3, 4	+V
4			
5	FG		

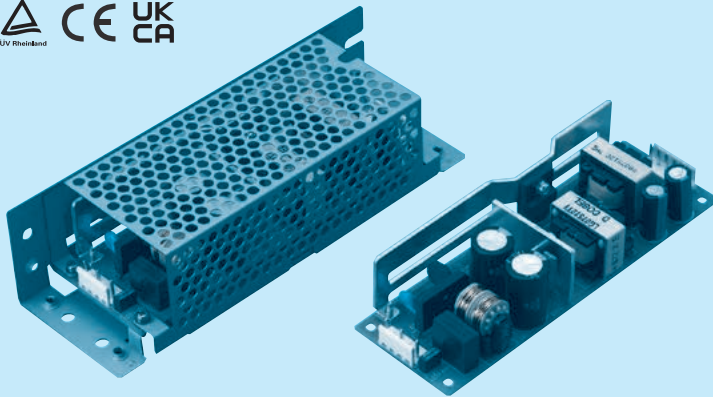
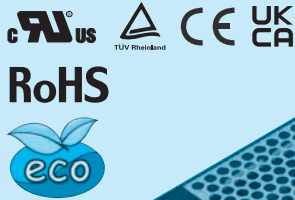
※Keep drawing current per pin below 5A for CN2.

- ※Tolerance : ±1 [±0.04]
- ※Weight : 160g max (with chassis & cover : 320g max)
- ※PCB material / thickness : CEM3 / 1.6mm [0.06]
- ※Optional chassis and cover material : Electric galvanizing steel board.
- ※Dimensions in mm, [ ]=inches

# LGA75A

LG A 75 A -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-06-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ 100/120V input
- ⑤ Output voltage
- ⑥ Optional
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current (only 24V)
- J1 : VH(J.S.T.)connector type
- S : with Chassis
- SN:with Chassis & cover
- Y : with Potentiometer

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.  
\* Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

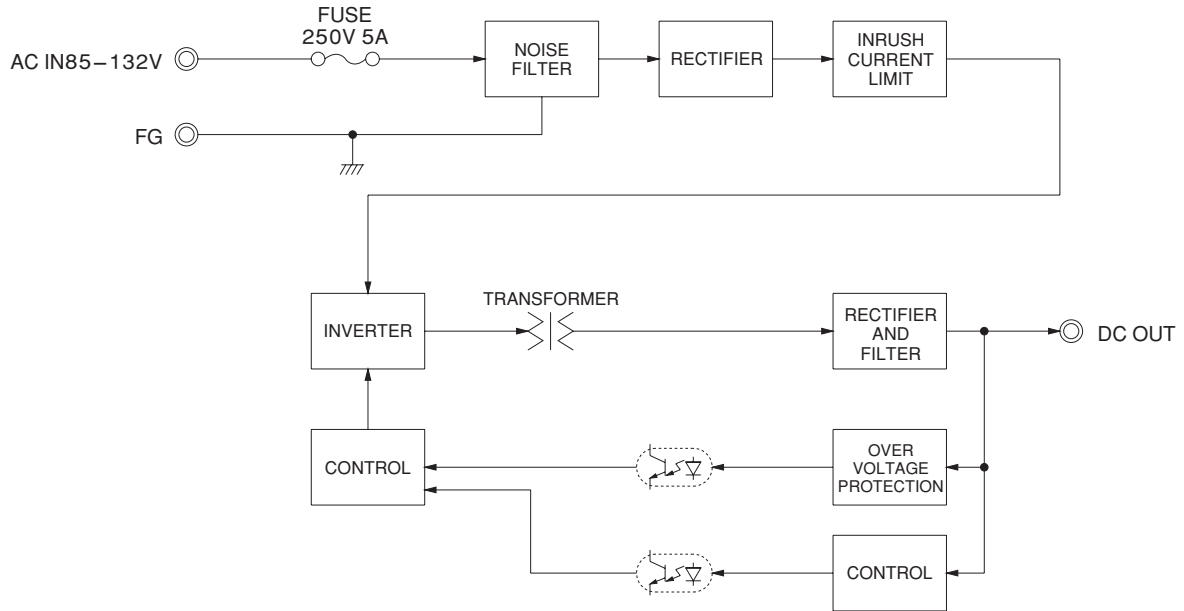
MODEL	LGA75A-3R3-Y	LGA75A-5	LGA75A-12	LGA75A-15	LGA75A-24	LGA75A-24-H	LGA75A-48
MAX OUTPUT WATTAGE[W]	49.5	75	75.6	75	76.8	76.8	76.8
DC OUTPUT	3.3V 15A	5V 15A	12V 6.3A	15V 5A	24V 3.2A	24V 3.2 (Peak 4.2) A	48V 1.6A

## SPECIFICATIONS

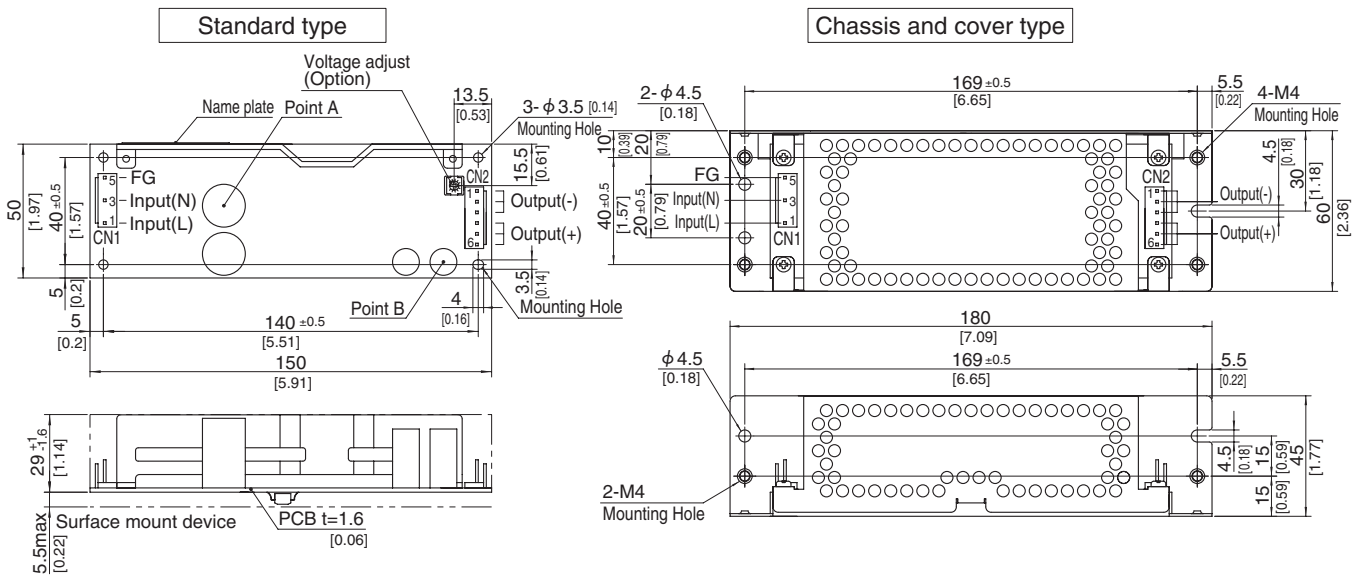
MODEL	LGA75A-3R3-Y	LGA75A-5	LGA75A-12	LGA75A-15	LGA75A-24	LGA75A-24-H	LGA75A-48											
INPUT	VOLTAGE[V]																	
	AC85 - 132 1 φ (Refer to "Derating", Instruction Manual 1 and 3)																	
	CURRENT[A]		ACIN 100V															
			1.3typ (Io=100%)		1.7typ (Io=100%)													
	FREQUENCY[Hz]																	
47 - 440 (Refer to Instruction Manual 1.1)																		
EFFICIENCY[%]		ACIN 100V																
		75.0typ (Io=100%)		79.0typ (Io=100%)		83.0typ (Io=100%)		84.0typ (Io=100%)		86.0typ (Io=100%)		86.0typ (Io=100%)		86.0typ (Io=100%)				
INRUSH CURRENT[A]		ACIN 100V		30typ (Io=100%), (At cold start), (Ta= 25°C)														
LEAKAGE CURRENT[ma]		0.5max (ACIN 100V, 60Hz, Io=100%, According to IEC62368-1 and DEN-AN)																
OUTPUT	VOLTAGE[V]		3.3		5		12		15		24		24		48			
	CURRENT[A]		*3		15.0		15.0		6.3		5.0		3.2		3.2 (Peak 4.2)		1.6	
	LINE REGULATION[mV]		20max		20max		48max		60max		96max		96max		192max			
	LOAD REGULATION[mV]		40max		40max		100max		120max		150max		150max		300max			
	RIPPLE[mVp-p]		0 to +50°C *1		80max		80max		120max		120max		120max		240max		150max	
			-10 - 0°C *1		140max		140max		160max		160max		160max		320max		200max	
	RIPPLE NOISE[mVp-p]		0 to +50°C *1		120max		120max		150max		150max		150max		300max		350max	
			-10 - 0°C *1		160max		160max		180max		180max		180max		360max		400max	
	TEMPERATURE REGULATION[mV]		0 to +50°C		50max		50max		120max		150max		240max		240max		480max	
			-10 to +50°C		60max		60max		150max		180max		290max		290max		600max	
	DRIFT[mV]		*2		20max		20max		48max		60max		96max		96max		192max	
	START-UP TIME[ms]		200max (ACIN 100V, Io=100%)															
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)															
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 - 3.63		Fixed ("Y" which can be adjusted the output is available as optional ± 10%)														
OUTPUT VOLTAGE SETTING[V]		3.30 - 3.40		4.90 - 5.30		11.50 - 12.50		14.40 - 15.60		23.00 - 25.00		23.00 - 25.00		46.00 - 50.00				
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically															
	OVERVOLTAGE PROTECTION		4.00 - 5.25		5.75 - 7.00		13.80 - 16.80		17.30 - 21.00		27.60 - 35.00		27.60 - 35.00		55.20 - 67.20			
	OPERATING INDICATION		Not provided															
	REMOTE SENSING		Not provided															
REMOTE ON/OFF		Not provided																
ISOLATION	INPUT-OUTPUT		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)															
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)															
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)															
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE		-10 to +60°C, 20 - 90%RH (Non condensing) (Refer to "Derating", Instruction Manual 3), 3,000m (10,000feet) max															
	STORAGE TEMP., HUMID. AND ALTITUDE		-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max															
	VIBRATION		10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis															
	IMPACT		196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis															
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL60950-1, C-UL (CSA60950-1), EN62368-1 Complies with DEN-AN															
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B															
OTHERS	CASE SIZE/WEIGHT		50 X 34.5 X 150mm [1.97 X 1.36 X 5.91 inches] (W X H X D) / 200g max (with chassis & cover : 410g max)															
	COOLING METHOD		Convection (Refer to "Derating", Instruction Manual 3)															

\*1 This is the value that measured on measuring board with capacitor of 22 μ F at 150mm from output terminal.  
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM-103).  
\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.  
\*3 Peak loading for 10sec. And Duty 35% max. or less is acceptable if the total wattage is less than the rated wattage.  
Refer to instruction Manual 6. In detail.  
\* Avoid prolonged use under over - load.  
\* Parallel operation with other model is not possible.  
\* Derating is required when operated with chassis and cover.  
\* A sound may occur from power supply at pulse loading.

## Block diagram



## External view



※ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care. Take care for SMD parts on the back to come in contact because of the vibration and not to break down.

※ Use the spacer of 8mm length or more.

※ 4 Mounting holes are existing.

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1
		Loose 1318912-1
CN2	1-1123723-6	Chain 1123721-1
		Loose 1318912-1

(Mfr: Tyco Electronics AMP)

※ I/O Connector is Mfr Tyco Electronics AMP

※ Option: -J1: VH(J.S.T) connector type.

Refer to instruction Manual 6.

※ Mounting torque: 1.5N•m(16kgf•cm)max

### <PIN CONNECTION>

CN1		CN2	
Pin No.	Input	Pin No.	Output
1	AC(L)	1 to 3	-V
2			
3	AC(N)	4 to 6	+V
4			
5	FG		

※ Tolerance : ±1 [±0.04]

※ Weight : 200g max (with chassis & cover : 410g max)

※ PCB material / thickness : CEM3 / 1.6mm [0.06]

※ Optional chassis and cover material : Electric galvanizing steel board.

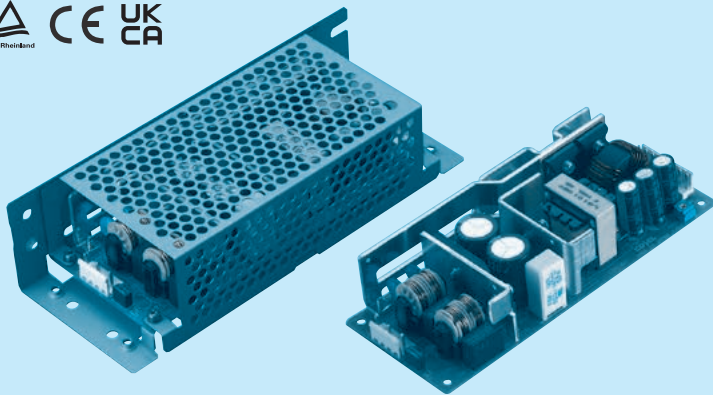
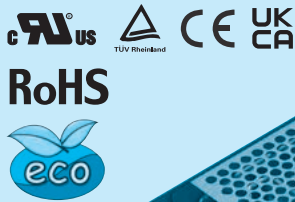
※ Dimensions in mm, [ ] = inches

※ Keep drawing current per pin below 5A for CN2.

# LGA100A

LG A 100 A -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-06-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ 100/120V input
- ⑤ Output voltage
- ⑥ Optional
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current (only 24V)
- J1 : VH(J.S.T.)connector type
- S : with Chassis
- SN:with Chassis & cover
- Y : with Potentiometer

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

\* Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LGA100A-3R3-Y	LGA100A-5-Y	LGA100A-12	LGA100A-15	LGA100A-24	LGA100A-24-H	LGA100A-48
MAX OUTPUT WATTAGE[W]	66	100	102	105	103.2	103.2	100.8
DC OUTPUT	3.3V 20A	5V 20A	12V 8.5A	15V 7A	24V 4.3A	24V 4.3 (Peak 5.4) A	48V 2.1A

## SPECIFICATIONS

MODEL	LGA100A-3R3-Y	LGA100A-5-Y	LGA100A-12	LGA100A-15	LGA100A-24	LGA100A-24-H	LGA100A-48
INPUT	VOLTAGE[V]						
	AC85 - 132 1 φ (Refer to "Derating", Instruction Manual 1 and 3)						
	CURRENT[A]	ACIN 100V 1.6typ (Io=100%)		2.4typ (Io=100%)			
	FREQUENCY[Hz]						
	47 - 440 (Refer to Instruction Manual 1.1)						
OUTPUT	EFFICIENCY[%]						
	ACIN 100V 76.0typ (Io=100%) 80.0typ (Io=100%) 83.0typ (Io=100%) 84.0typ (Io=100%) 85.5typ (Io=100%) 85.5typ (Io=100%) 85.5typ (Io=100%)						
	INRUSH CURRENT[A]						
	ACIN 100V 15typ (Io=100%, More than 10sec. to re-start)						
	LEAKAGE CURRENT[ma]						
	0.5max (ACIN 100V, 60Hz, Io=100%, According to IEC62368-1 and DEN-AN)						
	VOLTAGE[V]						
	3.3 5 12 15 24 24 48						
	CURRENT[A]						
	*3 20.0 20.0 8.5 7.0 4.3 4.3 (Peak 5.4) 2.1						
	LINE REGULATION[mV]						
	20max 20max 48max 60max 96max 96max 192max						
	LOAD REGULATION[mV]						
	40max 40max 100max 120max 150max 150max 300max						
	RIPPLE[mVp-p]						
0 to +50°C *1 80max 80max 120max 120max 120max 240max 150max							
-10 - 0°C *1 140max 140max 160max 160max 160max 320max 200max							
RIPPLE NOISE[mVp-p]							
0 to +50°C *1 120max 120max 150max 150max 150max 300max 350max							
-10 - 0°C *1 160max 160max 180max 180max 180max 360max 400max							
TEMPERATURE REGULATION[mV]							
0 to +50°C 50max 50max 120max 150max 240max 240max 480max							
-10 to +50°C 60max 60max 150max 180max 290max 290max 600max							
DRIFT[mV]							
*2 20max 20max 48max 60max 96max 96max 192max							
START-UP TIME[ms]							
200max (ACIN 100V, Io=100%)							
HOLD-UP TIME[ms]							
20typ (ACIN 100V, Io=100%)							
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]							
2.85 - 3.63 4.50 - 5.50 Fixed ("Y" which can be adjusted the output is available as optional ±10%)							
OUTPUT VOLTAGE SETTING[V]							
3.30 - 3.40 5.00 - 5.15 11.50 - 12.50 14.40 - 15.60 23.00 - 25.00 23.00 - 25.00 46.00 - 50.00							
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION						
	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically						
	OVERVOLTAGE PROTECTION						
	4.00 - 5.25 5.75 - 7.00 13.80 - 16.80 17.30 - 21.00 27.60 - 35.00 27.60 - 35.00 55.20 - 67.20						
OPERATING INDICATION							
Not provided							
REMOTE SENSING							
Not provided							
REMOTE ON/OFF							
Not provided							
ISOLATION	INPUT-OUTPUT						
	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)						
	INPUT-FG						
AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)							
OUTPUT-FG							
AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)							
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE						
	-10 to +60°C, 20 - 90%RH (Non condensing) (Refer to "Derating", Instruction Manual 3), 3,000m (10,000feet) max						
	STORAGE TEMP., HUMID. AND ALTITUDE						
	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max						
VIBRATION							
10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis							
IMPACT							
196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis							
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS						
	UL60950-1, C-UL (CSA60950-1), EN62368-1 Complies with DEN-AN						
CONDUCTED NOISE							
Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B							
OTHERS	CASE SIZE/WEIGHT						
	62 X 35.5 X 155mm [2.44 X 1.4 X 6.1 inches] (W X H X D) / 300g max (with chassis & cover : 530g max)						
COOLING METHOD							
Convection (Refer to "Derating", Instruction Manual 3)							

\*1 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.

Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM-103).

\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

\*3 Peak loading for 10sec. And Duty 35% max. or less is acceptable if the total wattage is less than the rated wattage.

Refer to instruction Manual 6. In detail.

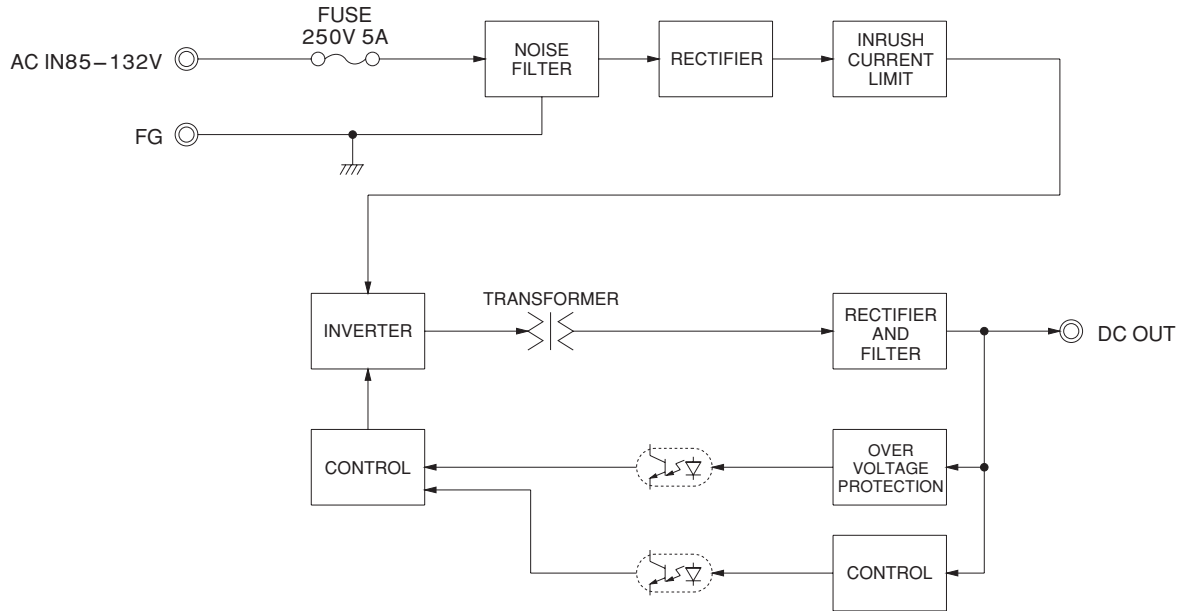
\* Avoid prolonged use under over-load.

\* Parallel operation with other model is not possible.

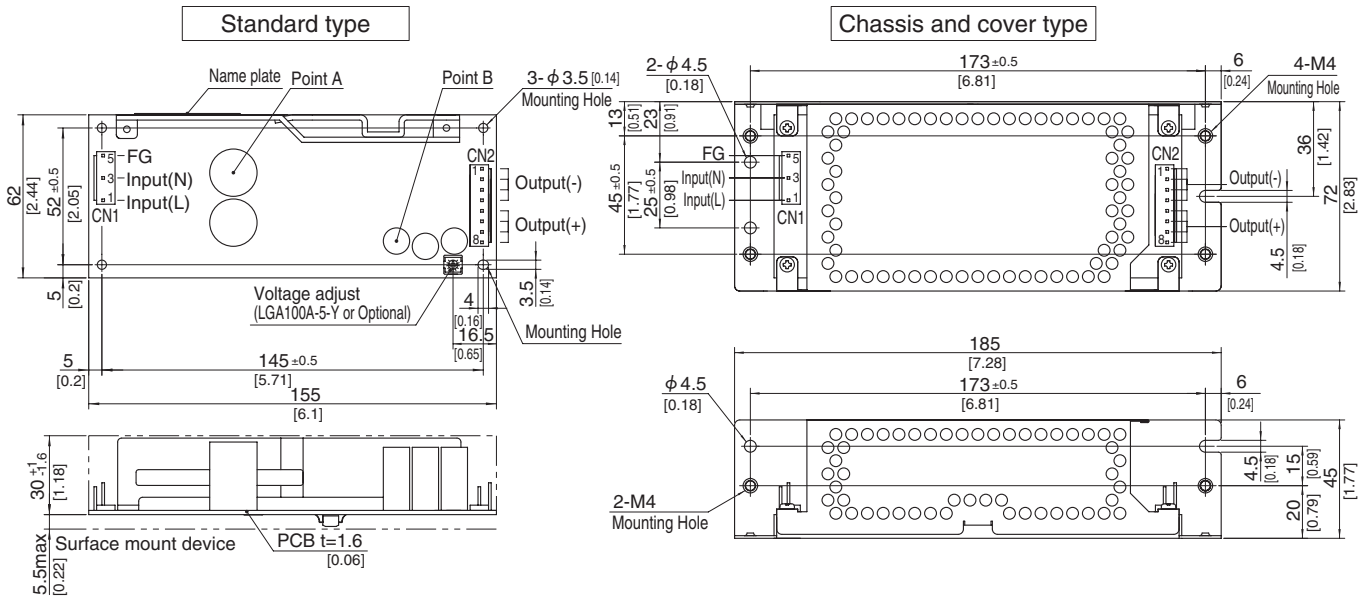
\* Derating is required when operated with chassis and cover.

\* A sound may occur from power supply at pulse loading.

## Block diagram



## External view



- ※ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care. Take care for SMD parts on the back to come in contact because of the vibration and not to break down.
- ※ Use the spacer of 8mm length or more.
- ※ 4 Mounting holes are existing.

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1
		Loose 1318912-1
CN2	1-1123723-8	Chain 1123721-1
		Loose 1318912-1

(Mfr: Tyco Electronics AMP)

- ※ I/O Connector is Mfr Tyco Electronics AMP
- ※ Option: J1: VH(J.S.T) connector type. Refer to instruction Manual 6.

### <PIN CONNECTION>

CN1		CN2	
Pin No.	Input	Pin No.	Output
1	AC(L)	1 to 4	-V
2			
3	AC(N)	5 to 8	+V
4			
5	FG		

※ Keep drawing current per pin below 5A for CN2.

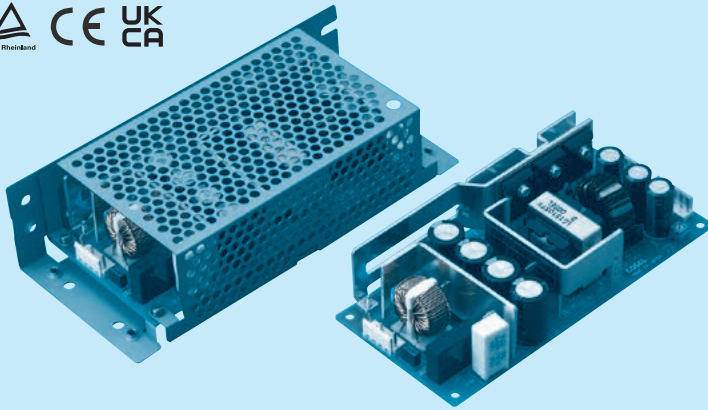
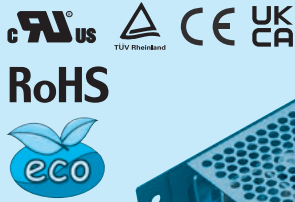
※ Mounting torque: 1.5N•m (16kgf•cm) max

- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 300g max (with chassis & cover : 530g max)
- ※ PCB material / thickness : CEM3 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, [ ] = inches

# LGA150A

LG A 150 A -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-06-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ 100/120V input
- ⑤ Output voltage
- ⑥ Optional
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current (only 24V)
- J1 : VH(J.S.T.)connector type
- S : with Chassis
- SN:with Chassis & cover
- Y : with Potentiometer

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.  
\*Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LGA150A-3R3-Y	LGA150A-5-Y	LGA150A-12	LGA150A-15	LGA150A-24	LGA150A-24-H	LGA150A-48
MAX OUTPUT WATTAGE[W]	99	150	150	150	151.2	151.2	153.6
DC OUTPUT	3.3V 30A	5V 30A	12V 12.5A	15V 10A	24V 6.3A	24V 6.3 (Peak 7.9) A	48V 3.2A

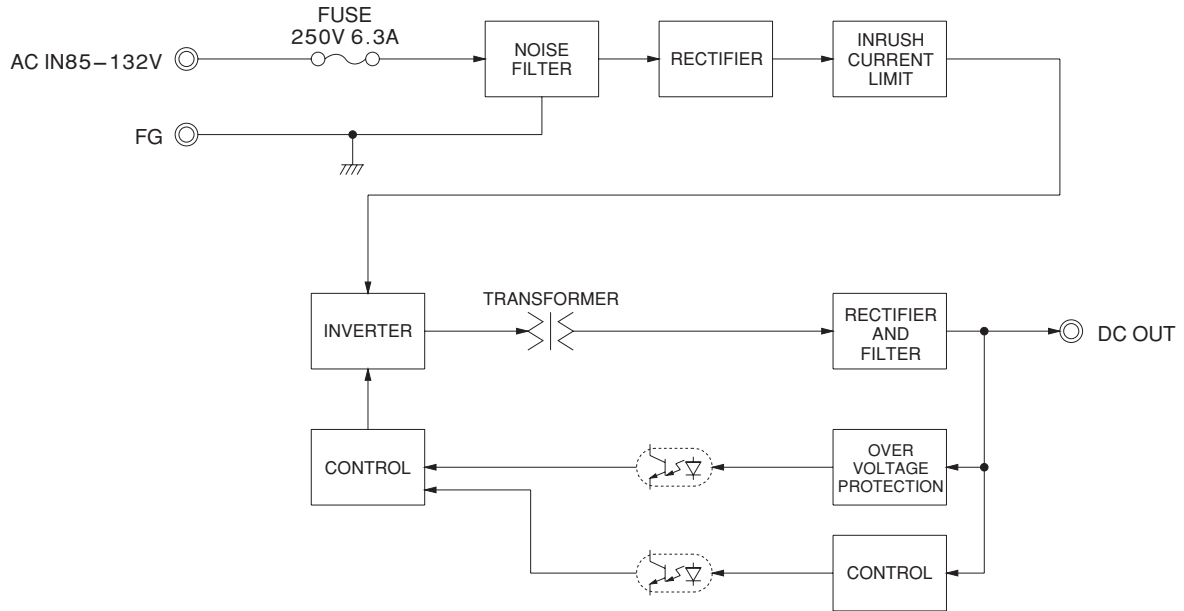
## SPECIFICATIONS

MODEL	LGA150A-3R3-Y	LGA150A-5-Y	LGA150A-12	LGA150A-15	LGA150A-24	LGA150A-24-H	LGA150A-48	
INPUT	VOLTAGE[V]							
	AC85 - 132 1 φ (Refer to "Derating", Instruction Manual 1 and 3)							
	CURRENT[A]	ACIN 100V 2.6typ (Io=100%)		3.6typ (Io=100%)				
	FREQUENCY[Hz]							
	47 - 440 (Refer to Instruction Manual 1.1)							
OUTPUT	EFFICIENCY[%]	ACIN 100V 76.0typ (Io=100%)	82.0typ (Io=100%)	84.5typ (Io=100%)	85.5typ (Io=100%)	87.0typ (Io=100%)	87.0typ (Io=100%)	
	INRUSH CURRENT[A]	ACIN 100V 15 / 15 typ (Primary / Secondary Surge Current, Io=100%, More than 10sec. to re-start)						
	LEAKAGE CURRENT[ma]	0.5max (ACIN 100V, 60Hz, Io=100%, According to IEC62368-1 and DEN-AN)						
	VOLTAGE[V]	3.3	5	12	15	24	24	48
	CURRENT[A]	*3 30.0	30.0	12.5	10.0	6.3	6.3 (Peak 7.9)	3.2
	LINE REGULATION[mV]	20max	20max	48max	60max	96max	96max	192max
	LOAD REGULATION[mV]	40max	40max	100max	120max	150max	150max	300max
	RIPPLE[mVp-p]	0 to +40°C *1	80max	80max	120max	120max	120max	150max
		-10 - 0°C *1	140max	140max	160max	160max	160max	200max
	RIPPLE NOISE[mVp-p]	0 to +40°C *1	120max	120max	150max	150max	150max	350max
		-10 - 0°C *1	160max	160max	180max	180max	180max	400max
	TEMPERATURE REGULATION[mV]	0 to +40°C	50max	50max	120max	150max	240max	480max
		-10 to +40°C	60max	60max	150max	180max	290max	600max
DRIFT[mV]	*2 20max	20max	48max	60max	96max	96max	192max	
START-UP TIME[ms]	200max (ACIN 100V, Io=100%)							
HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)							
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.85 - 3.63	4.50 - 5.50	Fixed ("Y" which can be adjusted the output is available as optional ± 10%)					
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	5.00 - 5.15	11.50 - 12.50	14.40 - 15.60	23.00 - 25.00	23.00 - 25.00	46.00 - 50.00	
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically						
	OVERVOLTAGE PROTECTION	4.00 - 5.25	5.75 - 7.00	13.80 - 16.80	17.30 - 21.00	27.60 - 35.00	27.60 - 35.00	55.20 - 67.20
	OPERATING INDICATION	Not provided						
	REMOTE SENSING	Not provided						
ISOLATION	REMOTE ON/OFF	Not provided						
	INPUT-OUTPUT	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)						
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)						
ENVIRONMENT	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)						
	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +60°C, 20 - 90%RH (Non condensing) (Refer to "Derating", Instruction Manual 3), 3,000m (10,000feet) max						
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max						
	VIBRATION	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis						
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis						
	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1 Complies with DEN-AN						
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B						
OTHERS	CASE SIZE/WEIGHT	75 X 39 X 160mm [2.95 X 1.54 X 6.3 inches] (W X H X D) / 420g max (with chassis & cover : 650g max)						
	COOLING METHOD	Convection (Refer to "Derating", Instruction Manual 3)						

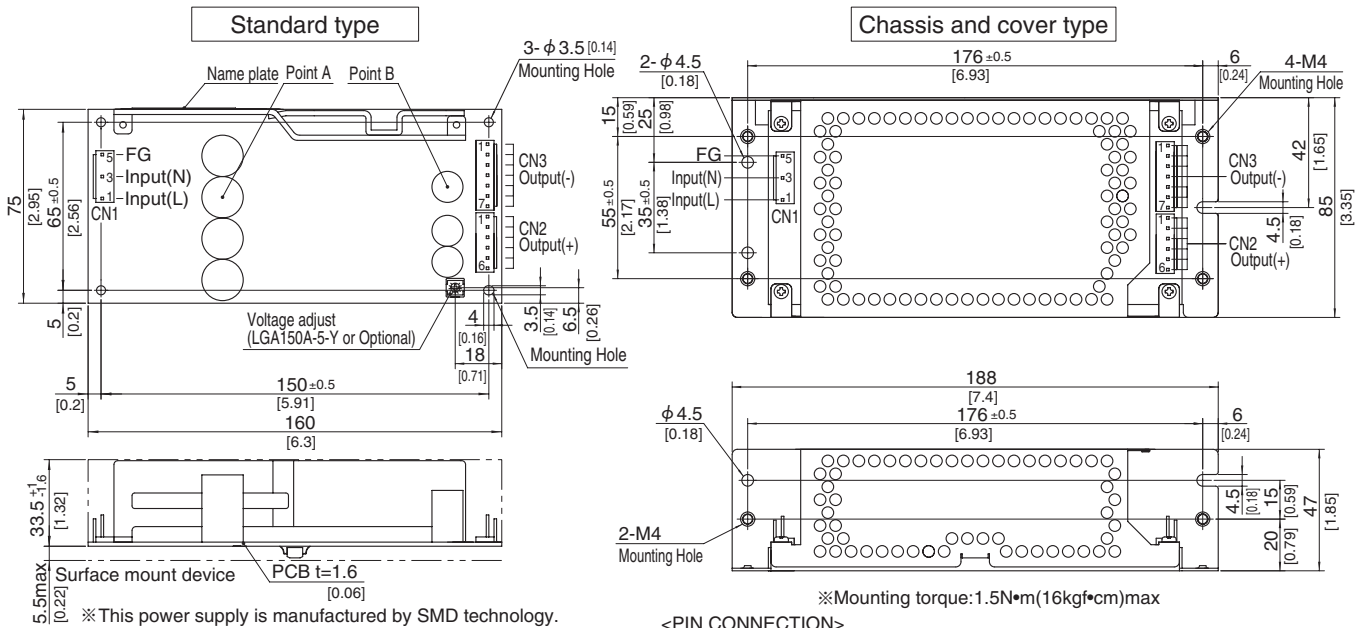
\*1 This is the value that measured on measuring board with capacitor of 22 μ F at 150mm from output terminal.  
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM-103).  
\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.  
\*3 Peak loading for 10sec. And Duty 35% max. or less is acceptable if the total wattage is less than the rated wattage.  
Refer to instruction Manual 6. In detail.  
\* Avoid prolonged use under over - load.  
\* Parallel operation with other model is not possible.  
\* Derating is required when operated with chassis and cover.  
\* A sound may occur from power supply at pulse loading.



## Block diagram



## External view



- ※ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care. Take care for SMD parts on the back to come in contact because of the vibration and not to break down.
- ※ Use the spacer of 8mm length or more.
- ※ 4 mounting holes are existing.

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1
		Loose 1318912-1
CN2	1-1123723-6	Chain 1123721-1
		Loose 1318912-1
CN3	1-1123723-7	Chain 1123721-1
		Loose 1318912-1

(Mfr: Tyco Electronics AMP)

- ※ I/O Connector is Mfr Tyco Electronics AMP
- ※ Option: J1: VH(J.S.T) connector type. Refer to instruction Manual 6.

※ Mounting torque: 1.5N•m (16kgf•cm) max

### <PIN CONNECTION>

CN1		CN2		CN3	
Pin No.	Input	Pin No.	Output	Pin No.	Output
1	AC(L)	1 to 6	+V	1 to 7	-V
2					
3	AC(N)				
4					
5	FG				

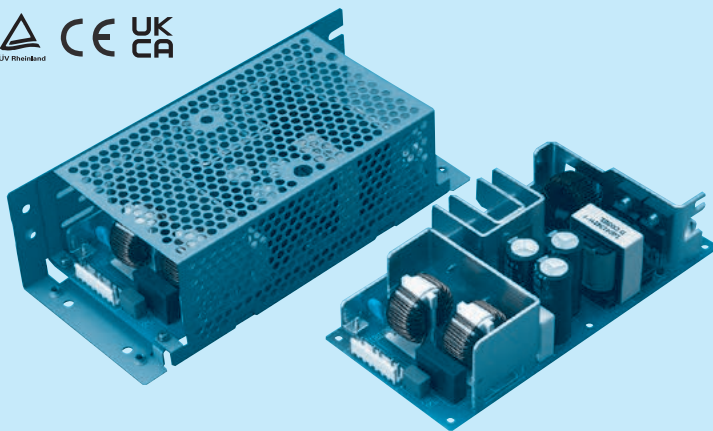
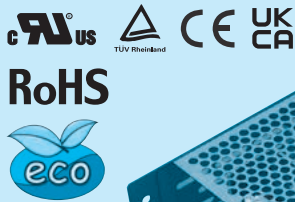
※ Keep drawing current per pin below 5A for CN2, CN3.

- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 420g max (with chassis & cover : 650g max)
- ※ PCB material / thickness : CEM3 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, [ ]=inches

# LGA240A

LG A 240 A -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-16-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ 100/120V input
- ⑤ Output voltage
- ⑥ Optional
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current (only 24V)
- J1 : VH(J.S.T.)connector type
- S : with Chassis
- SN:with Chassis & cover
- T : Vertical terminal block
- Y : with Potentiometer

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.  
\* Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

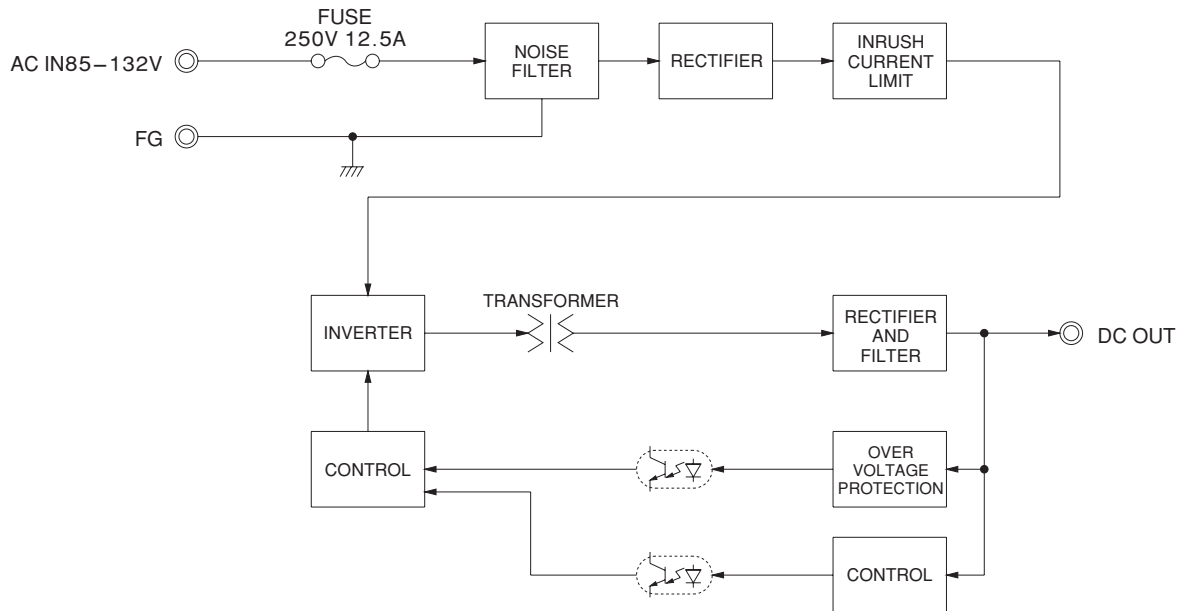
MODEL	LGA240A-24	LGA240A-24-H
MAX OUTPUT WATTAGE[W]	240	240
DC OUTPUT	24V 10A	24V 10 (Peak 12.5) A

## SPECIFICATIONS

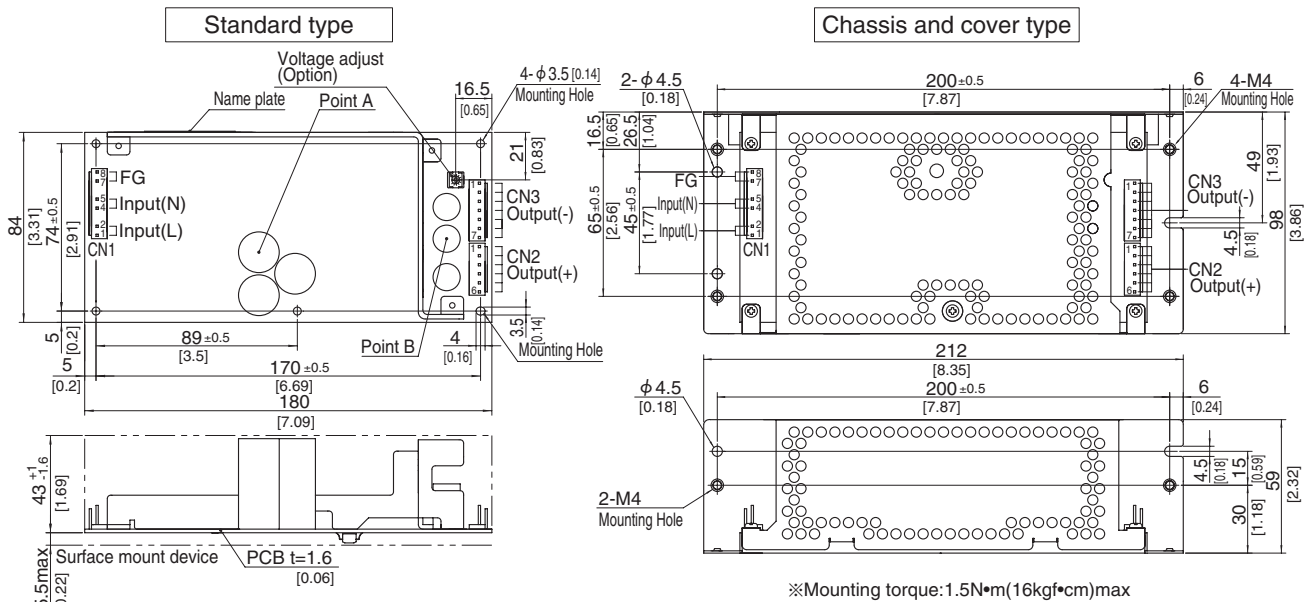
	MODEL	LGA240A-24	LGA240A-24-H	
INPUT	VOLTAGE[V]	AC85 - 132 1 φ (Refer to "Derating", Instruction Manual 1 and 3)		
	CURRENT[A]	ACIN 100V	5.0typ (Io=100%)	
	FREQUENCY[Hz]	47 - 440 (Refer to Instruction Manual 1.1)		
	EFFICIENCY[%]	ACIN 100V	86.5typ (Io=100%)	86.5typ (Io=100%)
	INRUSH CURRENT[A]	ACIN 100V	15 / 20 typ (Primary / Secondary Surge Current, Io=100%, More than 10sec. to re-start)	
	LEAKAGE CURRENT[ma]	0.5max (ACIN 100V, 60Hz, Io=100%, According to IEC62368-1 and DEN-AN)		
OUTPUT	VOLTAGE[V]	24		
	CURRENT[A]	*3	10.0	10.0 (Peak 12.5)
	LINE REGULATION[mV]	96max		
	LOAD REGULATION[mV]	150max		
	RIPPLE[mVp-p]	0 to +40°C *1	120max	240max
		-10 - 0°C *1	160max	320max
	RIPPLE NOISE[mVp-p]	0 to +40°C *1	150max	300max
		-10 - 0°C *1	180max	360max
	TEMPERATURE REGULATION[mV]	0 to +40°C	240max	240max
		-10 to +40°C	290max	290max
	DRIFT[mV]	*2	96max	96max
	START-UP TIME[ms]	200max (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)		
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	Fixed ("Y" which can be adjusted the output is available as optional ±10%)			
OUTPUT VOLTAGE SETTING[V]	23.00 - 25.00	23.00 - 25.00		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically		
	OVERVOLTAGE PROTECTION	27.60 - 35.00	27.60 - 35.00	
	OPERATING INDICATION	Not provided		
	REMOTE SENSING	Not provided		
ISOLATION	REMOTE ON/OFF	Not provided		
	INPUT-OUTPUT	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
ENVIRONMENT	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)		
	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +60°C, 20 - 90%RH (Non condensing) (Refer to "Derating", Instruction Manual 3), 3,000m (10,000feet) max		
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max		
	VIBRATION	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis		
	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1 Complies with DEN-AN		
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B		
OTHERS	CASE SIZE/WEIGHT	84 × 48.5 × 180mm [3.31 × 1.91 × 7.09 inches] (W × H × D) / 590g max (with chassis & cover : 880g max)		
	COOLING METHOD	Convection (Refer to "Derating", Instruction Manual 3)		

\*1 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.  
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM-103).  
\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.  
\*3 Peak loading for 10sec. And Duty 35% max. or less is acceptable if the total wattage is less than the rated wattage.  
Refer to instruction Manual 6. In detail.  
\* Avoid prolonged use under over - load.  
\* Parallel operation with other model is not possible.  
\* Derating is required when operated with chassis and cover.  
\* A sound may occur from power supply at pulse loading.

## Block diagram



## External view



- ※ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care. Take care for SMD parts on the back to come in contact because of the vibration and not to break down.
- ※ Use the spacer of 8mm length or more.
- ※ 5 Mounting holes are existing.

I/O Connector	Mating connector	Terminal	
CN1	7-1565036-6	1-1123722-8	Chain 1123721-1
			Loose 1318912-1
CN2	1-1123723-6	1-1123722-6	Chain 1123721-1
			Loose 1318912-1
CN3	1-1123723-7	1-1123722-7	Chain 1123721-1
			Loose 1318912-1

(Mfr: Tyco Electronics AMP)

- ※ I/O Connector is Mfr Tyco Electronics AMP
- ※ Option: -J1: VH(J.S.T) connector type. Refer to instruction Manual 6.

※ Mounting torque: 1.5N•m(16kgf•cm) max

### <PIN CONNECTION>

CN1		CN2		CN3	
Pin No.	Input	Pin No.	Output	Pin No.	Output
1, 2	AC(L)	1 to 6	+V	1 to 7	-V
3					
4, 5	AC(N)				
6					
7, 8	FG				

※ Keep drawing current per pin below 5A for CN1, CN2 and CN3.

※ Tolerance : ±1 [±0.04]

※ Weight : 590g max (with chassis & cover : 880g max)

※ PCB material / thickness : CEM3 / 1.6mm [0.06]

※ Optional chassis and cover material : Electric galvanizing steel board.

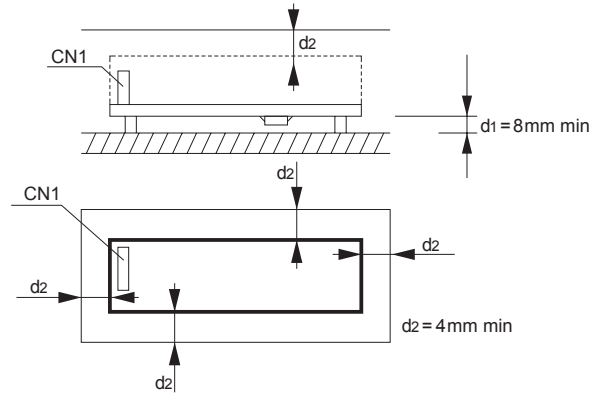
※ Dimensions in mm, [ ]=inches

Assembling and Installation Method

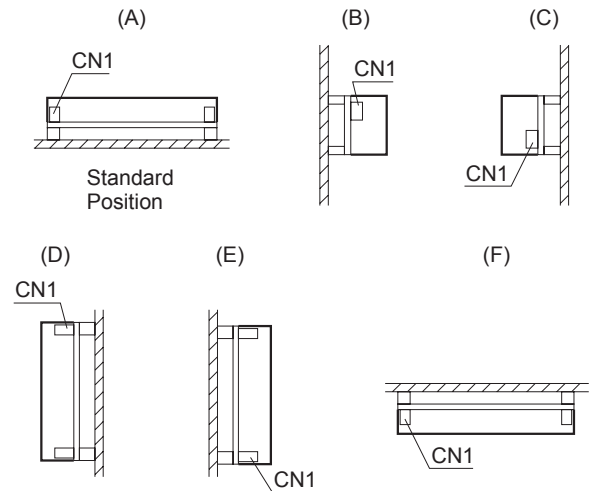
Installation method

■ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

■ In case of metal chassis, keep the distance between d1 & d2 for to insulate between lead of component and metal chassis, use the spacer of 8mm or more between d1. If it is less than d1 & d2, insert the insulation sheet between power supply and metal chassis.

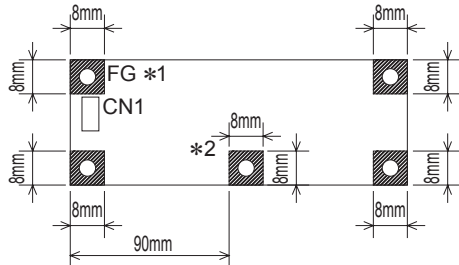


■ (F) mounting should be operated by Forced air.



Mounting screw

■ The mounting screw should be M3. The hatched area shows the allowance of metal parts for mounting.

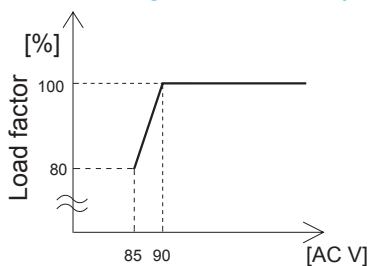


\*1 Recommendation to electrically connect FG to metal reducing noise.  
 \*2 LGA240A only Refer to External view for location

■ If metallic fittings are used on the component side of the board, ensure there is no contact with surface mounted components.

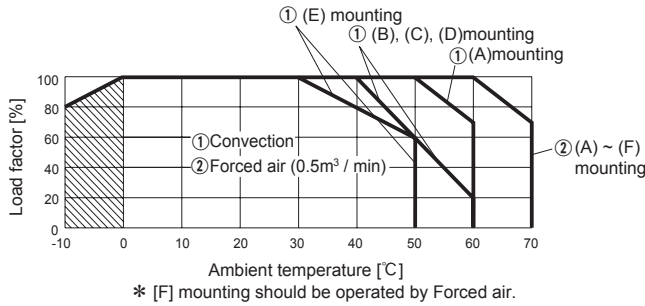
Derating

● Derating curve for input voltage

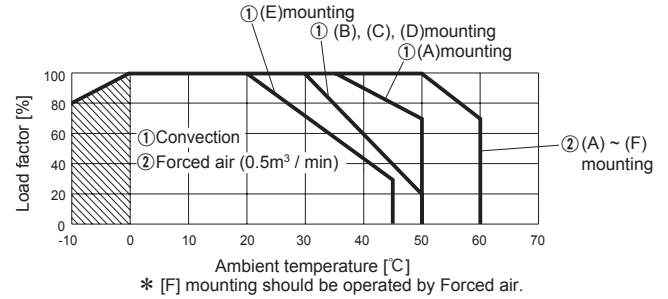


Derating

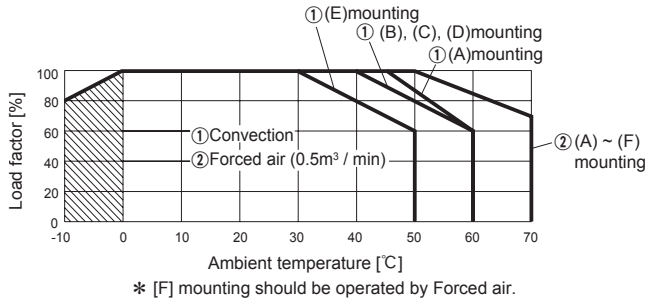
● LGA50A-3R3-Y, -5, -12, -15  
Ambient temperature derating curve



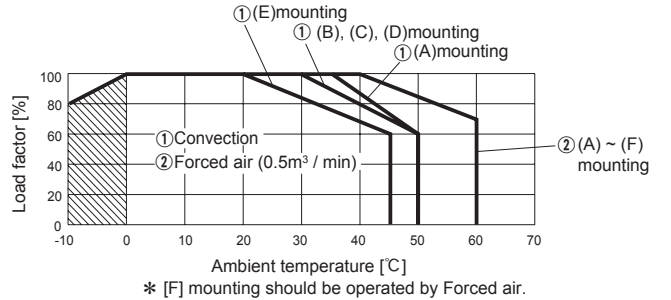
● LGA50A-3R3-Y, -5, -12, -15 -SN (with Chassis & Cover)  
Ambient temperature derating curve



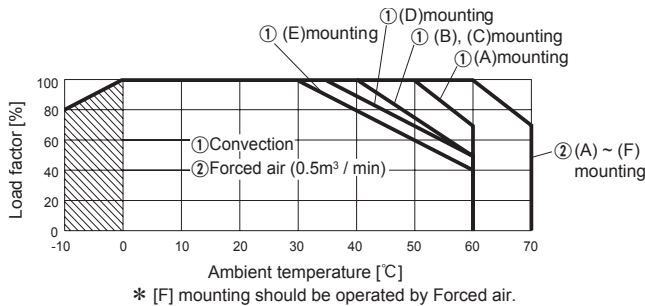
● LGA50A-24, -48  
Ambient temperature derating curve



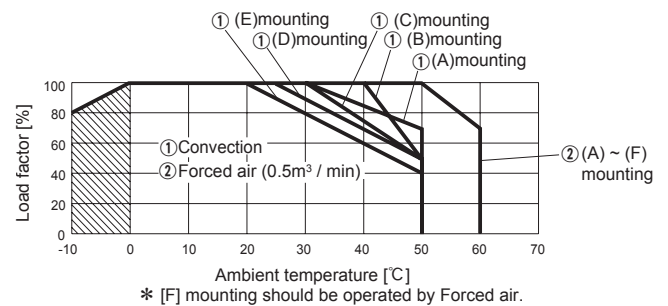
● LGA50A-24, -48 -SN (with Chassis & Cover)  
Ambient temperature derating curve



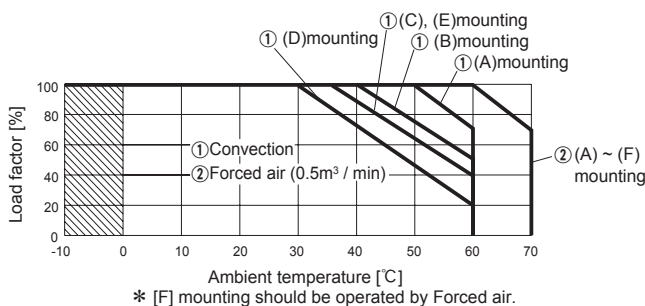
● LGA75A-□  
Ambient temperature derating curve



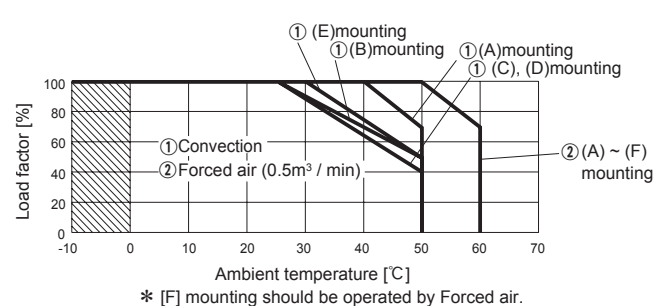
● LGA75A-□-SN (with Chassis & Cover)  
Ambient temperature derating curve



● LGA100A-□  
Ambient temperature derating curve

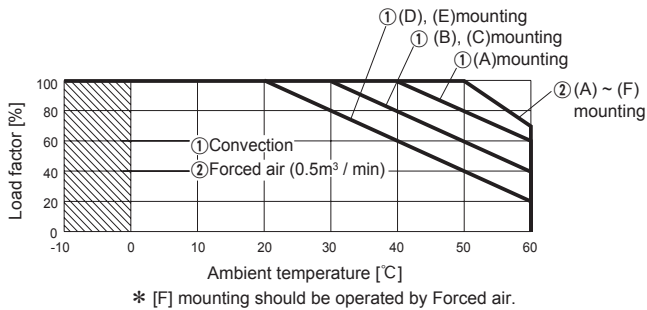


● LGA100A-□-SN (with Chassis & Cover)  
Ambient temperature derating curve

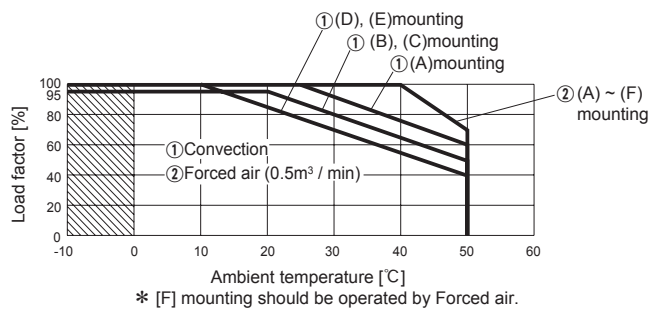


Derating

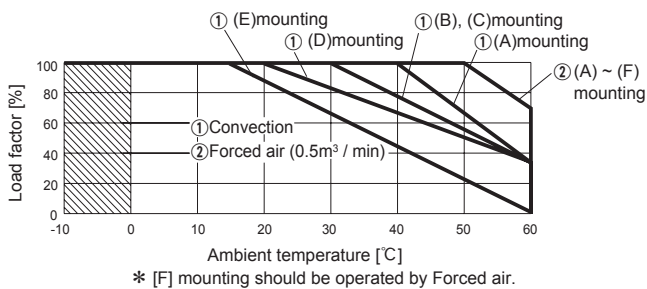
● LGA150A-□ Ambient temperature derating curve



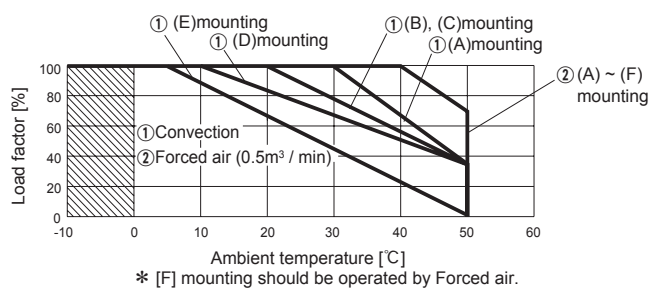
● LGA150A-□-SN (with Chassis & Cover) Ambient temperature derating curve



● LGA240A-□ Ambient temperature derating curve



● LGA240A-□-SN (with Chassis & Cover) Ambient temperature derating curve



■ The operative ambient temperature is different by with / without chassis cover or mounting position.

Note: In the hatched area, the specification of Ripple, Ripple Noise is different from other area.

■ Make sure the temperature at point A and point B is less than the temperatures shown in Instruction Manual 3.

■ The ambient temperature should be measured 5 to 10 cm away from the power supply so that it won't be influenced by the heat from the power supply. Please consult us for more details.

Instruction Manual

◆ It is necessary to read the "Instruction Manual" and "Before using our product" before you use our product.

Instruction Manual <https://www.cosel.co.jp/redirect/catalog/en/LGA/>  
 Before using our product <https://en.cosel.co.jp/technical/caution/index.html>

LGA



NOTICE



Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current *1 [A]	Inrush current protection	PCB/Pattern			Series/Parallel operation availability *2	
					Material	Single sided	Double sided	Series operation	Parallel operation
LGA50A	Forward Converter	130	1.3	Thermistor	CEM-3	Yes		Yes	No
LGA75A	Forward Converter	130	1.7	Thermistor	CEM-3	Yes		Yes	No
LGA100A	Forward Converter	130	2.4	SCR	CEM-3	Yes		Yes	No
LGA150A	Forward Converter	130	3.6	SCR	CEM-3	Yes		Yes	No
LGA240A	Forward Converter	130	5.0	SCR	CEM-3	Yes		Yes	No

\*1 The value of input current is at ACIN 100V and rated load.

\*2 Refer to Instruction Manual 2.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Cosel:

[LGA75A-12-S](#) [LGA100A-24-HSN](#) [LGA75A-5-C](#) [LGA100A-24-SNJ1](#) [LGA150A-12-GJ1](#) [LGA75A-24-SNJ1](#) [LGA50A-12-SY](#) [LGA150A-24-Y](#) [LGA50A-24-SNJ1](#) [LGA240A-24-SNJ1Y](#) [LGA50A-12-G](#) [LGA100A-24-HJ1Y](#) [LGA240A-24-SJ1](#) [LGA50A-5-SNJ1](#) [LGA50A-5-Y](#) [LGA150A-48-C](#) [LGA75A-5-J1](#) [LGA100A-5-J1Y](#) [LGA75A-24-S](#) [LGA50A-12-SN](#) [LGA150A-12-Y](#) [LGA50A-24-J1Y](#) [LGA100A-12-C](#) [LGA100A-24-GJ1](#) [LGA75A-5-SN](#) [LGA150A-24-HSNJ1](#) [LGA150A-24-J1Y](#) [LGA150A-12-S](#) [LGA240A-24-HSNJ1](#) [LGA150A-5-GY](#) [LGA150A-24-SNJ1](#) [LGA50A-5](#) [LGA100A-24-C](#) [LGA150A-5-SNY](#) [LGA240A-24-HSJ1](#) [LGA50A-24-GJ1](#) [LGA75A-24-CJ1](#) [LGA150A-24-C](#) [LGA100A-24-Y](#) [LGA100A-24-HSNY](#) [LGA75A-12-GJ1](#) [LGA150A-24-HJ1](#) [LGA50A-3R3-Y](#) [LGA50A-5-SJ1Y](#) [LGA50A-12](#) [LGA100A-24-S](#) [LGA240A-24-H](#) [LGA100A-12-Y](#) [LGA100A-12-GJ1](#) [LGA50A-24-SJ1](#) [LGA50A-5-G](#) [LGA100A-12-SNC](#) [LGA75A-24-H](#) [LGA100A-5-SNY](#) [LGA50A-12-Y](#) [LGA50A-24-SN](#) [LGA100A-24-HSNJ1](#) [LGA50A-12-C](#) [LGA150A-12-SN](#) [LGA50A-24-HJ1Y](#) [LGA100A-24-H](#) [LGA50A-24-SNJ1Y](#) [LGA100A-3R3-Y](#) [LGA50A-12-SCJ1](#) [LGA240A-24-T](#) [LGA50A-5-J1](#) [LGA75A-12-SNJ1Y](#) [LGA240A-24-C](#) [LGA150A-15](#) [LGA100A-24-CJ1Y](#) [LGA50A-12-SNJ1](#) [LGA75A-5-J1Y](#) [LGA150A-12-J1](#) [LGA75A-5-CY](#) [LGA75A-12-SJ1](#) [LGA75A-24-G](#) [LGA50A-24-H](#) [LGA150A-24-H](#) [LGA150A-12-SNJ1](#) [LGA75A-12-SNJ1](#) [LGA240A-24](#) [LGA50A-24-HSN](#) [LGA100A-12-S](#) [LGA100A-5-SJ1Y](#) [LGA150A-3R3-Y](#) [LGA75A-24-SN](#) [LGA50A-5-SNY](#) [LGA150A-5-SY](#) [LGA100A-12-SJ1Y](#) [LGA100A-12-CJ1Y](#) [LGA75A-12](#) [LGA75A-5-Y](#) [LGA75A-3R3-Y](#) [LGA150A-24-S](#) [LGA75A-24-HGJ1](#) [LGA100A-5-SY](#) [LGA50A-24-HJ1](#) [LGA150A-24-CJ1Y](#) [LGA75A-24-SNJ1Y](#) [LGA50A-12-J1](#)