

# ARTESYN LGA50D LOW PROFILE SERIES

Dual O/P Non-isolated 50 A Digital DC/DC Converter



LGA50D-01DADJLPJ

Advanced Energy's Artesyn LGA50D is a non-isolated DC-DC converter that is designed for cost and space sensitive applications.

This non-isolated unit offers two independent and configurable 25 amp, 50 watt outputs, which can also be combined to a single configurable 50 amp, 100 watt output. With a footprint of 1 x 0.5 inches or 25.4 x 12.5 mm.

## SPECIAL FEATURES

- Two-phase design
- Dual or single output configuration possible
- High efficiency up to 92%
- Small size 1" x 0.5" x 0.24" (LxWxH)
- No minimum load requirement
- Wide operating temperature range
- Exceptional power density
- Analog or digital control
- Automatic loop compensation
- IPC9592B compliant @  $V_{in} = 12$  Vdc
- Tape and reel packaging
- Reflow compatible
- Possible to stack up to 4 for 200 A
- I-mon and T-mon supported
- Low-profile version
- Two year shelf life

## SAFETY

- Designed to meet IEC62368-1

## DATA SHEET

### Total Current:

50 A (single)  
25 A (dual)

### Input Voltage:

7.5 - 14 Vdc

### Variable Output:

0.6 - 3.3 Vdc  
(low profile)



## ELECTRICAL SPECIFICATIONS

Input		
Input voltage range	7.5 -14 Vdc (0.6 V ≤ Vo ≤ 3.3 V)	
Max input current	20 A	
Input capacitor (internal)	28.2 μF	
Input capacitor (external)	132 μF (See Note 1, Page 2)	
Output		
Independent output 1 and 2	Low profile	
0.6 - 1 V	25 A	
1.8 V	22 A	
2.5 V	17 A	
3.3 V	14 A	
Combined output 1 and 2	Low profile (TBC)	
0.6 - 1 V	50 A	
1.8 V	44 A	
2.5 V	34 A	
3.3 V	28 A	
Efficiency @ Vin=12 V & Ta=25 °C	Low profile (TBC)	
	Min	Nom
1.0 V at 50A & 615kHz	84%	85%
1.8 V at 44A & 800kHz	87.5%	88.5%
2.5 V at 34A & 800kHz	89%	90.5%
3.3 V at 28A & 800kHz	90%	91.1%
Max output power	92 W	
Output capacitor (external) required	2,200 μF, dual O/P mode Vo1 & Vo2 2,400 μF in single O/P mode (See Note 2, Page 2)	

Control and ambient temperatures	
Operating ambient temperature	-40 °C to +85 °C
Storage temperatures	-40 °C to +125 °C
Switching frequency	JLPJ: 615 kHz @ 0.6 V ≤ Vo ≤ 1 V 800 kHz @ 1 V < Vo ≤ 3.3 V

Note 1: 6 x 22 μF/16 V ceramic cap (C2012X6S1C226M125AC or equivalent)

Note 2: Dual mode (2 outputs): 2 x 680 μF/6.3 V Polymer Tan caps (T530X687M006ATE010 or equivalent)  
+8 x 100 μF/6.3 V ceramic caps (GRM32EC80J107ME20L or equivalent)  
+4 x 10 μF/10 V ceramic caps (GRM31CR71A106KA01L or equivalent)

Single mode (1 output): 2 x 680 μF/6.3 V Polymer Tan caps (T530X687M006ATE010 or equivalent)  
+10 x 100 μF/6.3 V ceramic caps (GRM32EC80J107ME20L or equivalent)  
+4 x 10 μF/10 V ceramic caps (GRM31CR71A106KA01L or equivalent)

## MODEL NUMBERS

Model Number	Input Voltage	Output Voltage Set Point	Output Current	Efficiency
LGA50D-01DADJLRJ	7.5 - 14 Vdc	0.6 - 3.3 Vdc	50 A max	See Specification table
LGA50D-01DADJLP1J	7.5 - 14 Vdc	0.6 - 3.3 Vdc	50 A max	See Specification table

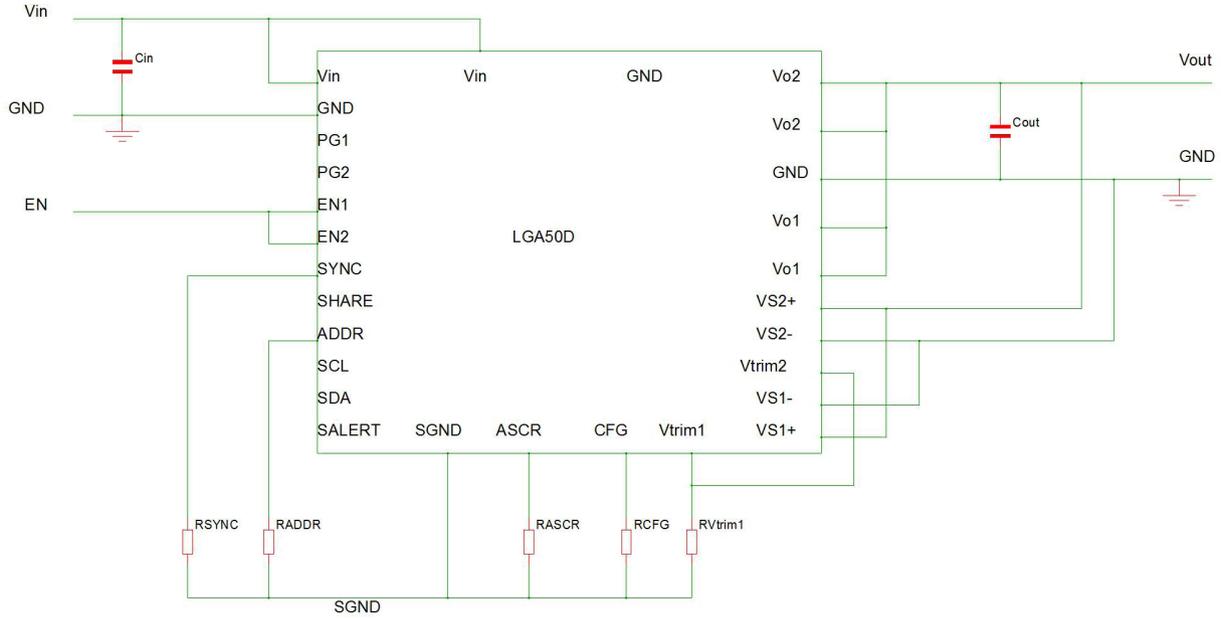
## ORDERING INFORMATION

Product Family	Rated Output Current	Performance	Input Voltage	Number of Outputs	Output Type	Pin Termination Type	Protection Mode	RoHS Compliance
LGA	50	D	- 01	D	ADJ	LP	Blank, 1*	J
Series Name	Rated output current = 50 A	Digital POL	7.5 - 14.0 Vdc input voltage range	Dual Outputs	Adjustable output	LP = Low-profile solder bump	Blank: Latching 1*: Auto-recovery	Pb free (RoHS 6/6 compliant)

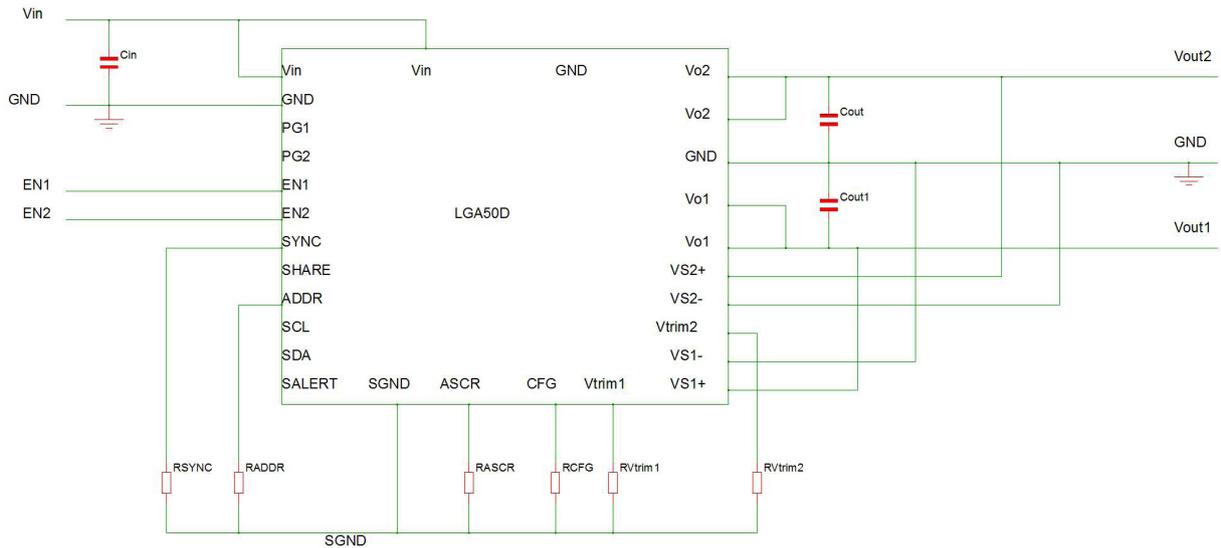
\*Current sharing with auto-recovery mode for 1 module only

BLOCK DIAGRAMS

Single Unit, Single O/P Configuration

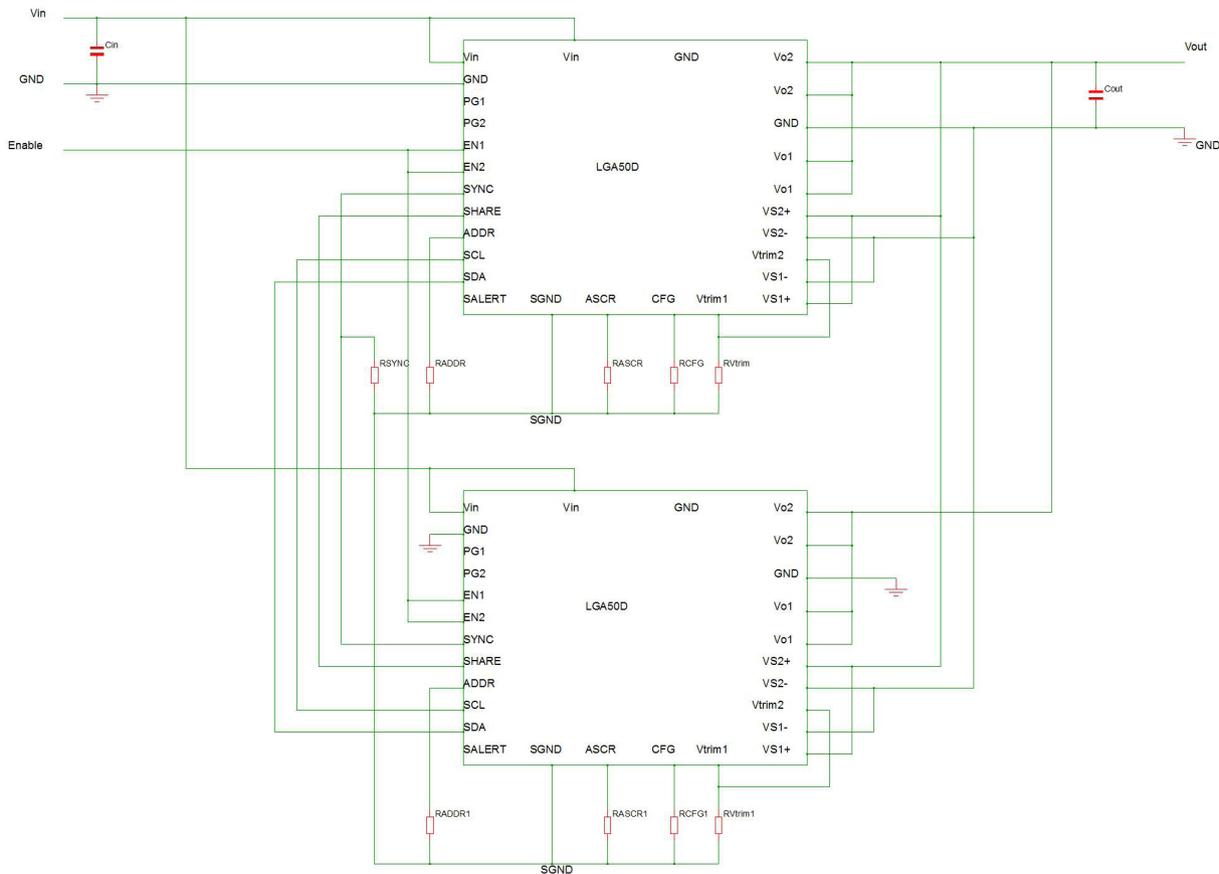


Single Unit, Dual O/P Configuration



**BLOCK DIAGRAMS (CONTINUED)**

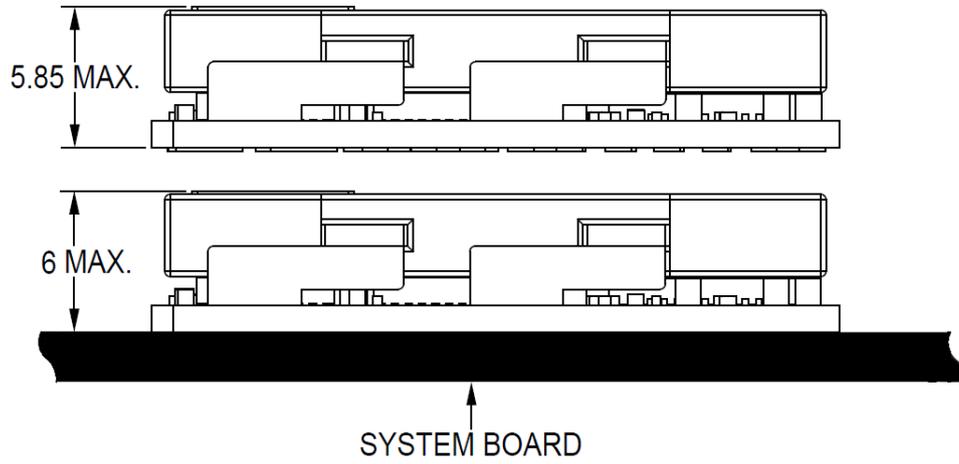
**Two Units, Single O/P Configuration**



Pin Assignments Single Output			
Pin #	Function	Pin #	Function
1	Vin	15	CFG
2	GND	16	Vtrim1
3	PG1	17	VS1+
4	PG2	18	VS1-
5	EN1	19	Vtrim2
6	EN2	20	VS2-
7	SYNC	21	VS2+
8	SHARE	22	Vo1
9	ADDR	23	Vo1
10	SCL	24	GND
11	SDA	25	Vo2
12	SALERT	26	Vo2
13	SGND	27	GND
14	ASCRCFG	28	Vin

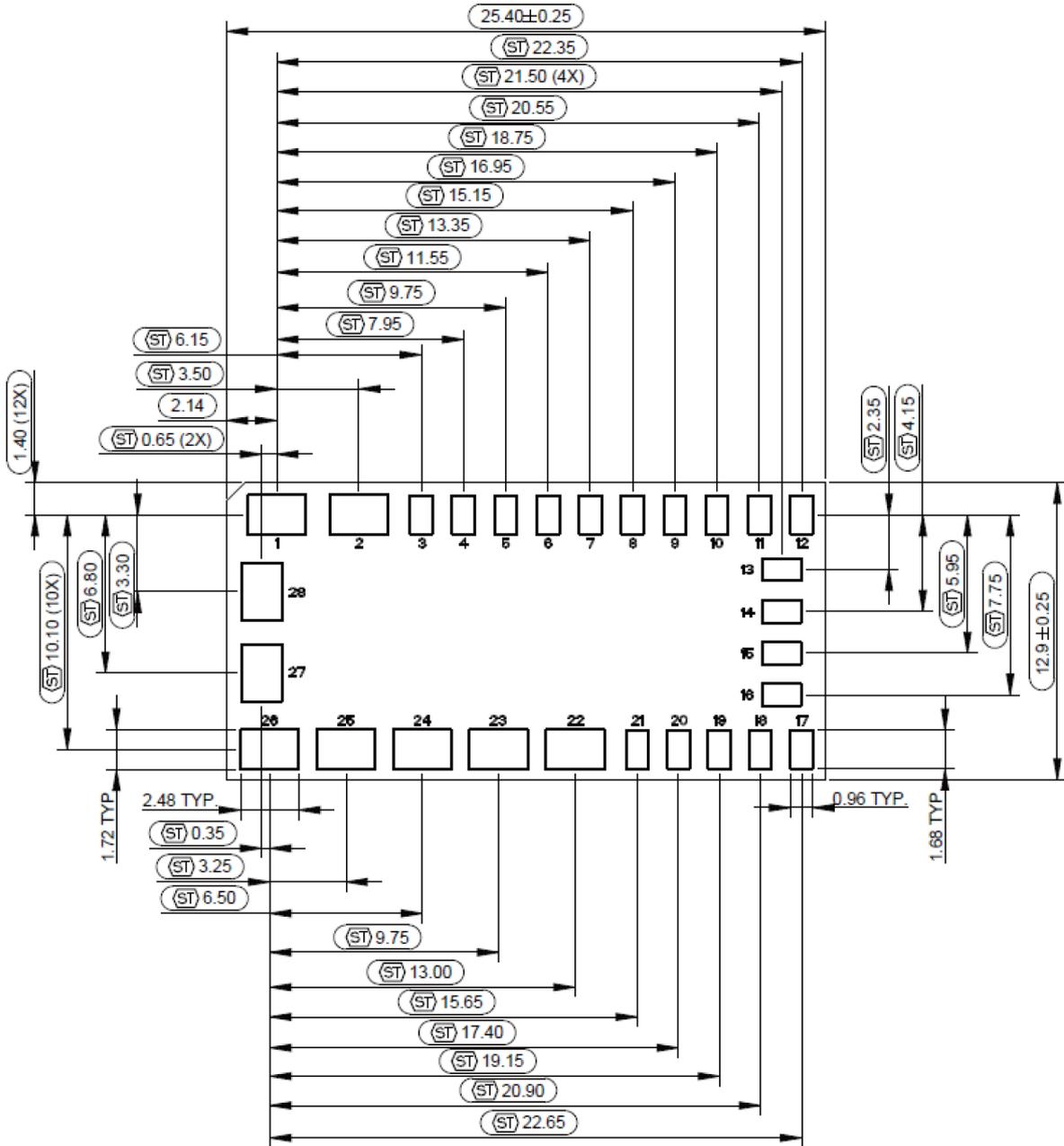
MECHANICAL DRAWINGS

Side view of low-profile solder bump termination type (LGA50D-01DADJLPJ, LGA50D-01DADJLP1J)



MECHANICAL DRAWINGS (CONTINUED)

For low-profile solder bump termination (LGA50D-01DADJLPJ, LGA50D-01DADJLP1J)

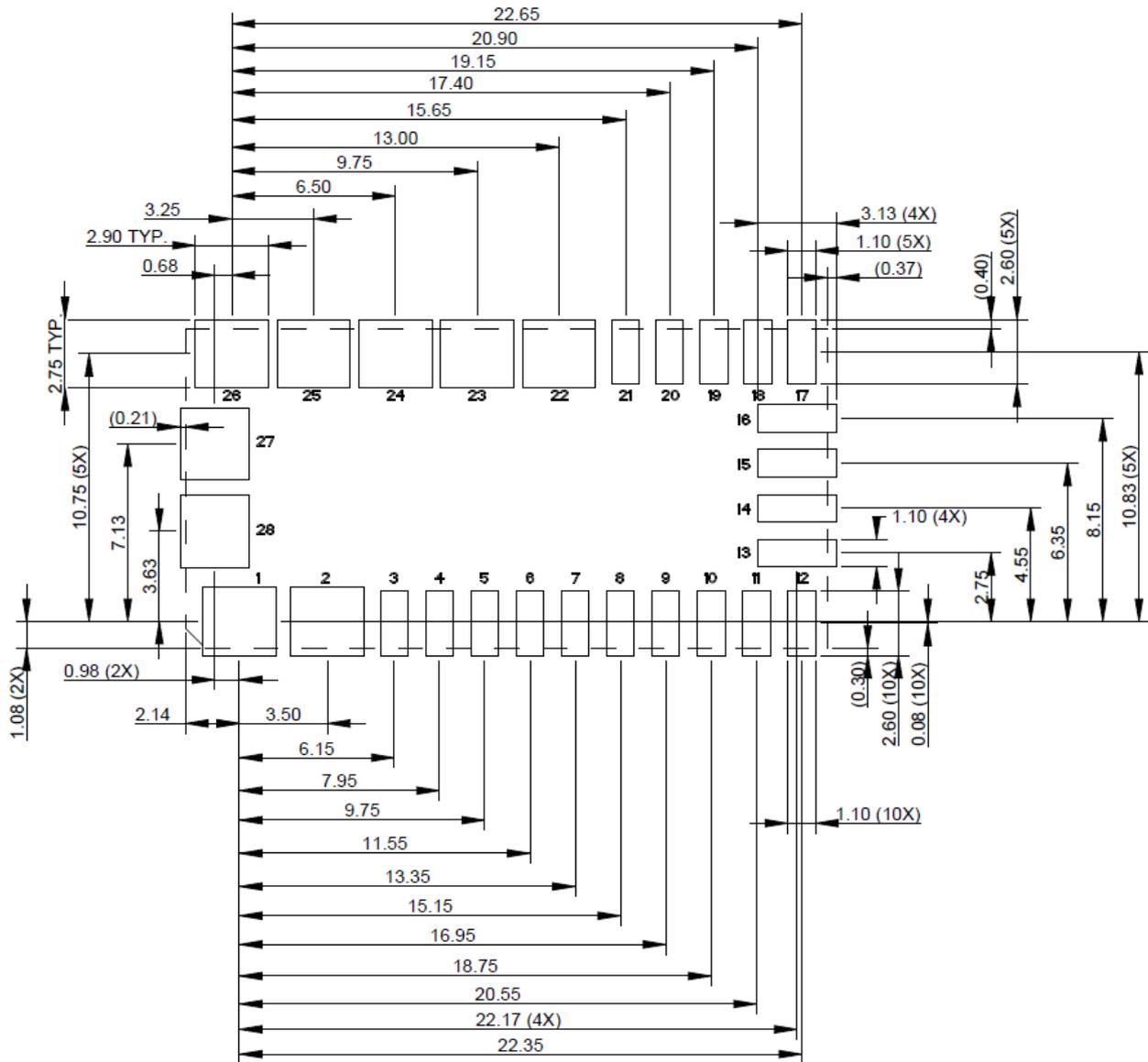


FOOTPRINT DRAWING OF SOLDER BUMP (BOTTOM VIEW)

Dimensions are in millimeters  
Tolerances: Decimal .XX ±0.25

MECHANICAL DRAWINGS (CONTINUED)

Proposed solder pad macros (TBC after Artesyn Internal qualification) for low-profile solder bump termination (LGA50D-01DADJLPJ, LGA50D-01DADJLP1J).



PROPOSED PAD LAYOUT

Dimensions are in millimeters  
 Tolerances: Decimal .XX ±0.25  
 Dotted line represents LGA50D module outline



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

**PRECISION | POWER | PERFORMANCE**

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