

ARTESYN LGA50D STANDARD PROFILE SERIES

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



LGA50D-01DADJJ



LGA50D-01DADJSBJ

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 95.5%
- Small size 1" x 0.5" x 0.48" (LxWxH)
- No minimum load requirement
- Wide operating temperature range
- Exceptional power density
- Analog or digital control
- Automatic loop compensation
- IPC9592B compliant @ $V_{in} = 12 \text{ Vdc}$
- Tape and reel packaging
- Reflow compatible
- Possible to stack up to 4 for 200 A
- I-mon and T-mon supported
- Two (2) variants supported:
 - Block pin termination
 - Solder bump termination
- 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 - 5.0 V
(standard profile)



ELECTRICAL SPECIFICATIONS

Input		
Input voltage range	7.5 -14 Vdc (0.6 Vo ≤ Vo ≤ 3.3 Vo) 10 - 14 Vdc (3.3 Vo < Vo ≤ 5.0 Vo) @ 800 KHz	
Max input current	20 A	
Input capacitor (internal)	28.2 μF	
Input capacitor (external) minimum	88 μF (See Note 1, Page 2)	
Input capacitor (external)	208 μF (See Note 1, Page 2)	
Output		
Independent output 1 and 2	Standard profile	
0.6 - 1 V	25 A V	
1.8 V	22.5 A	
2.5 V	20 A	
3.3 V	17.5 A	
5.0 V	12 A	
Combined output 1 and 2	Standard profile	
0.6 - 1 V	50 A	
1.8 V	45 A	
2.5 V	40 A	
3.3 V	35 A	
5.0 V	24 A	
Efficiency @ Vin=12 V, Freq=571 KHz & Ta=25 °C	Standard profile	
	Min	Nom
1.0 V	87.5%	88.2%
1.8 V	91%	92.2%
2.5 V	92.5%	93.7%
3.3 V	93.5%	94.6%
5.0 V	94%	95.5%
Max output power	120 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	JJ&JSBJ: 571 KHz @ 0.6 Vo ≤ Vo ≤ 3.3 Vo 800 KHz @ 3.3 Vo < Vo ≤ 5 Vo

Note 1:

Minimum: 4 x 22 μF/16 V ceramic cap (C2012X6S1C226M125AC or equivalent)

Recommended: 1 x 120 μF/16 V polymer caps (APXS160ARA121MH 70G or equivalent) + 4 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

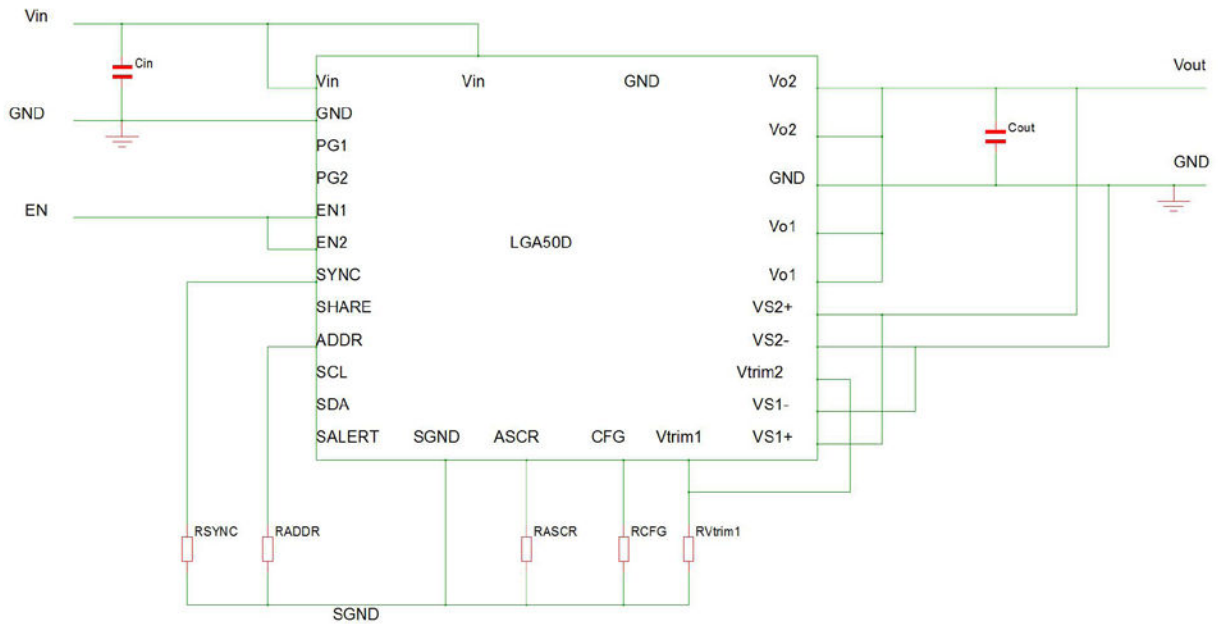
Model Number	Input Voltage	Output Voltage Set Point	Output Current	Efficiency
LGA50D-01DADJJ	7.5 - 14 Vdc	0.6 - 5.0 V	50 A max	See table
LGA50D-01DADJSBJ	7.5 - 14 Vdc	0.6 - 5.0 V	50 A max	See table

ORDERING INFORMATION

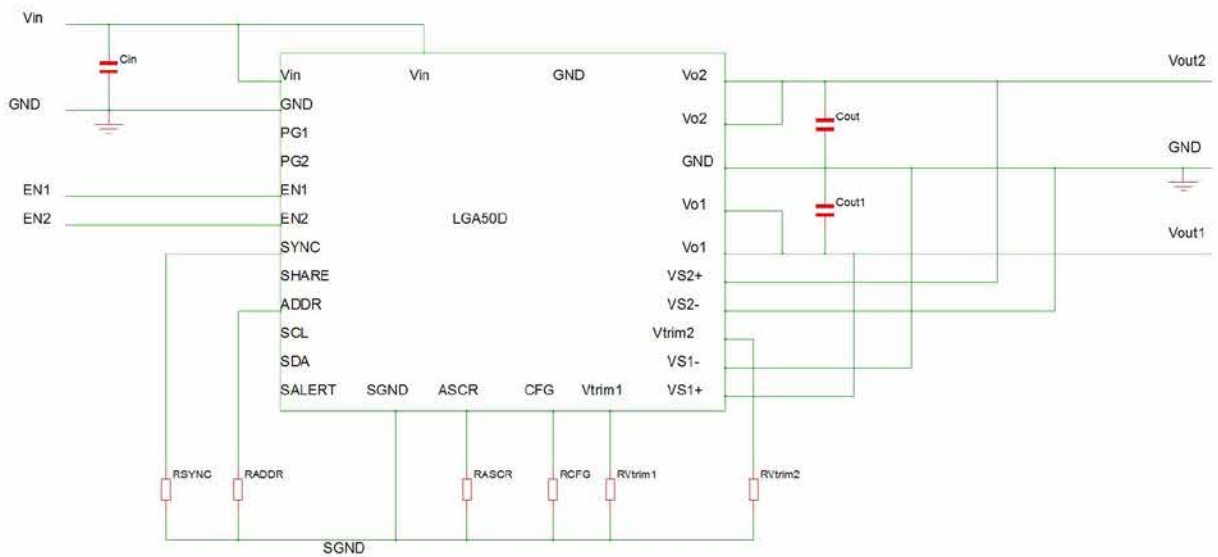
Product Family	Rated Output Current	Performance	Input Voltage	Number of Outputs	Output Type	Pin Termination Type	Protection Mode	RoHS Compliance
LGA	50	D	- 01	D	ADJ	Blank, SB	Blank	J
Series Name	Rated output current = 50 A	Digital POL	7.5 - 14.0 V input voltage range	Dual Outputs	Adjustable output	Blank = Standard metal-block SB = Standard solder bump	Blank; Latching	Pb free (RoHS 6/6 compliant)

BLOCK DIAGRAMS

Single Unit, Single O/P Configuration

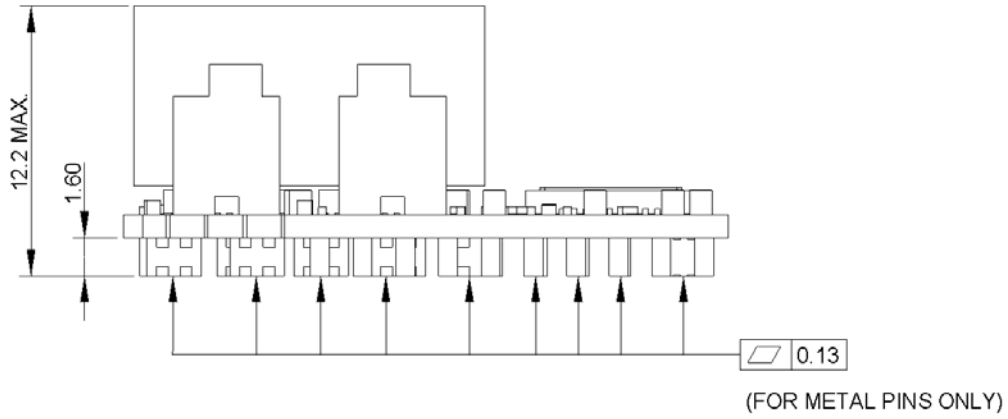


Single Unit, Dual O/P Configuration



MECHANICAL DRAWINGS

Side view of standard profile metal-block pin termination type (LGA50D-01DADJJ)

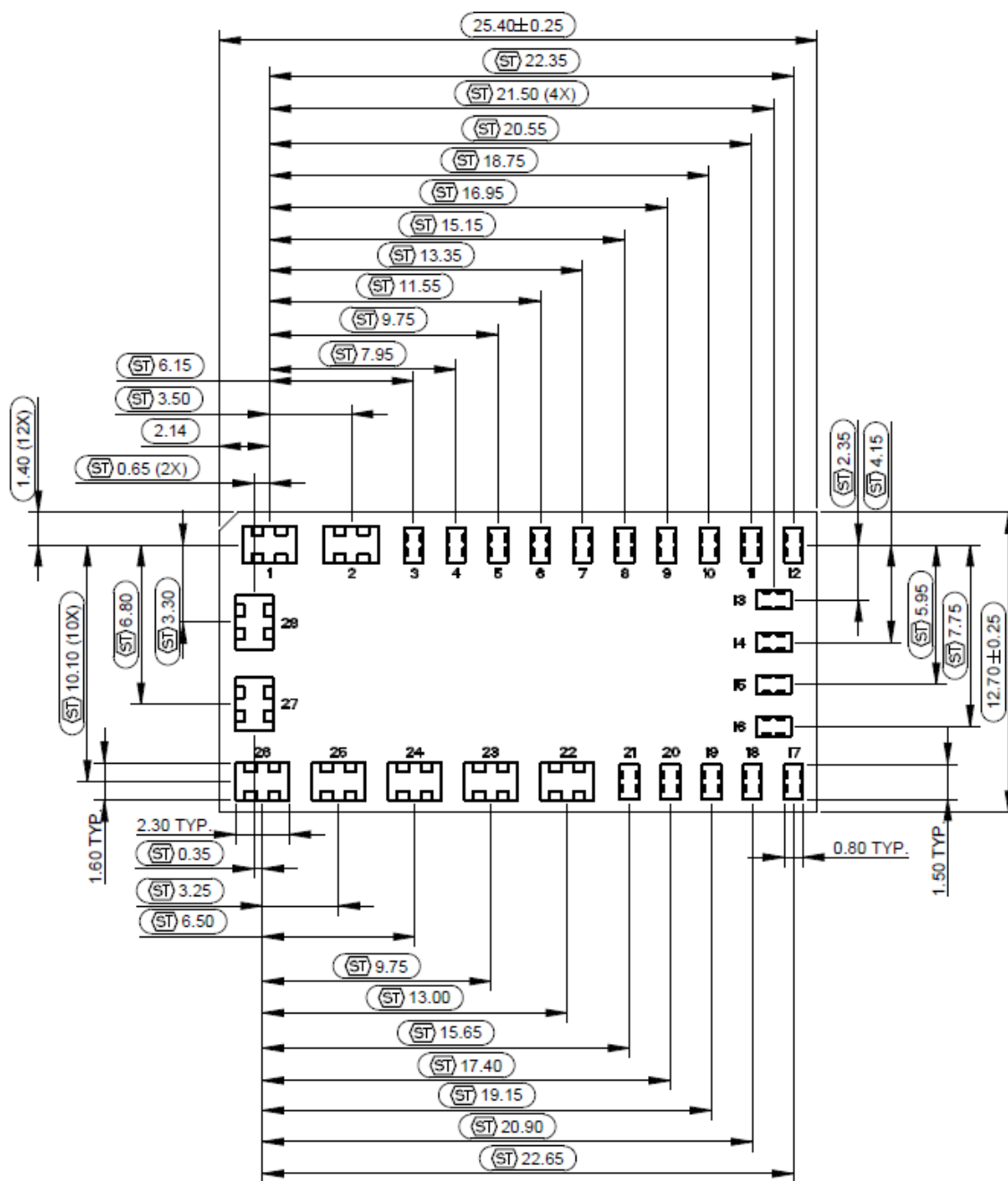


Side view of standard profile solder bump termination type (LGA50D-01DADJSBJ)



MECHANICAL DRAWINGS (CONTINUED)

For standard metal-block pin termination (LGA50D-01DADJJ)

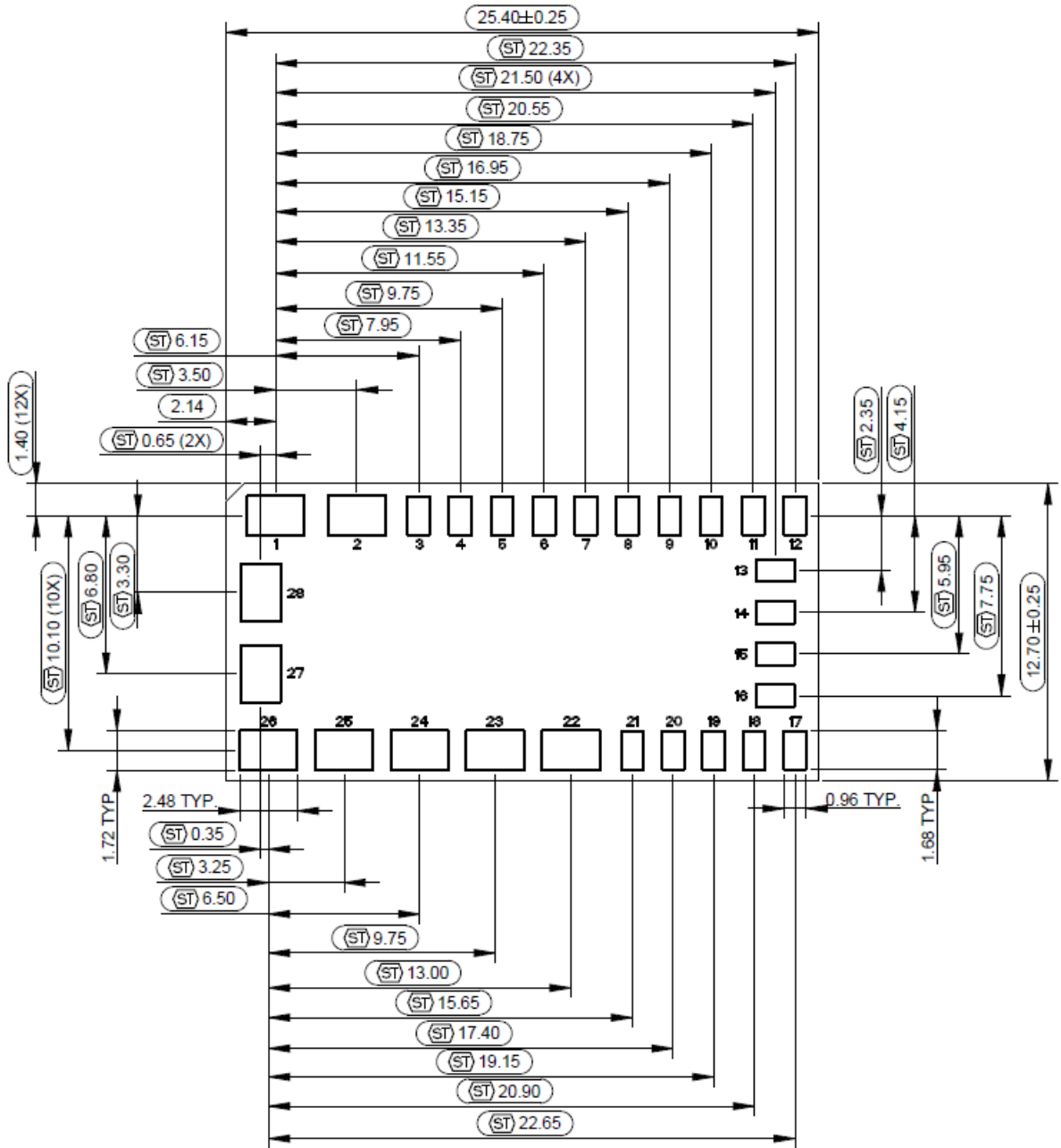


FOOTPRINT DRAWING OF METAL PINS (BOTTOM VIEW)

Dimensions are in millimeters
Tolerances: Decimal .XX ±0.25

MECHANICAL DRAWINGS (CONTINUED)

For standard solder bump termination (LGA50D-01DADJSBJ)

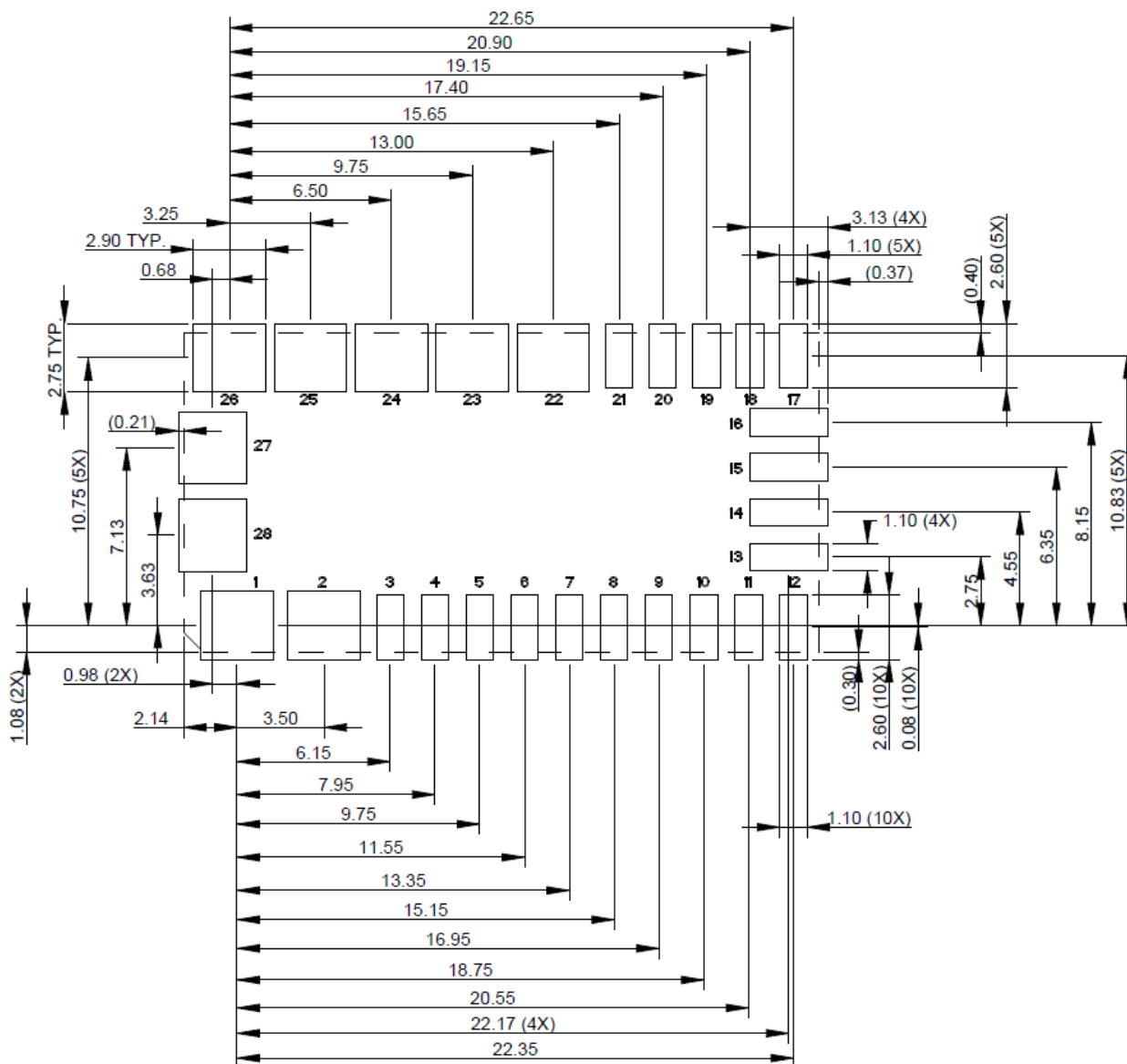


FOOTPRINT DRAWING OF SOLDER BUMP (BOTTOM VIEW)

Dimensions are in millimeters
Tolerances: Decimal .XX ±0.25

MECHANICAL DRAWINGS (CONTINUED)

Proposed solder pad macros (TBC after Artesyn Internal qualification) for standard solder bump termination (LGA50D-01DADJSBJ). It is adopted for standard metal-block pin termination (LGA50D-01DADJJ)



PROPOSED PAD LAYOUT

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



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