

## LGA50D Standard Profile Series

### PROPOSED PRODUCT 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)

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



LGA50D-01DADJJ

LGA50D-01DADJSBJ

### SPECIAL FEATURES

- Two-phase design
- Dual or single output configuration possible
- High efficiency up to 95.5%
- Size 1" x 0.5" x 0.48"(JJ) or 0.42"(JSBJ)
- No minimum load requirement
- Wide operating temperature range
- Exceptional power density
- Analog or digital control
- Automatic loop compensation
- IPC9592B compliant @ Vin = 13.2 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 EN60950-1 and 62368-1

### 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 (Freq = 800Khz)	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)	



## Electrical Specifications (continued)

### Control and ambient temperatures

Operating ambient temperature	-40 °C to +85 °C
Storage temperatures	-40 °C to +125 °C
Switching frequency	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

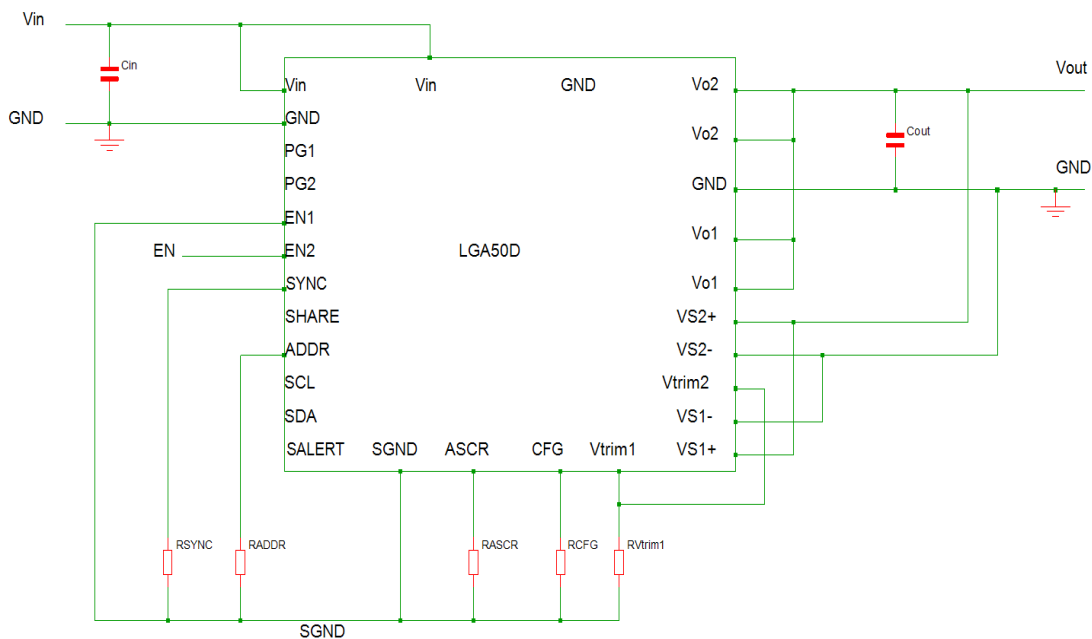
Model Number	Input Voltage	Output Voltage Set Point	Output Current	Efficiency
LGA50D-01DADJJ	7.5 - 14 Vdc	0.6 - 5.0 V	50 A max	See table
LGA50D-01DADJSBJ	7.5 - 14 Vdc	0.6 - 5.0 V	50 A max	See table

## Ordering Information

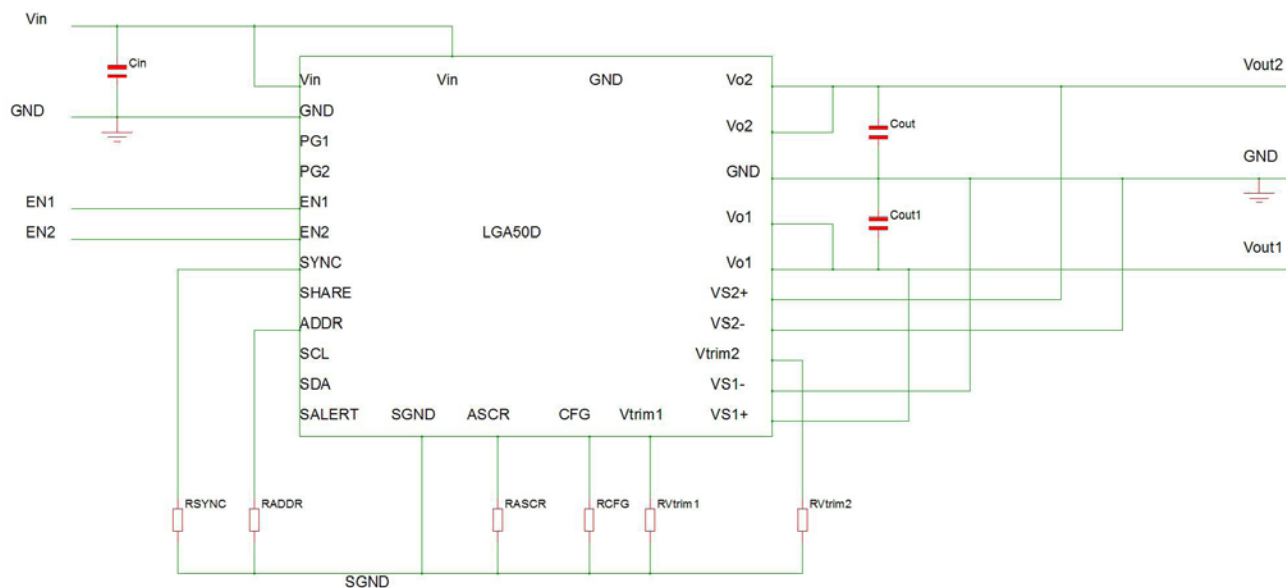
Product Family	Rated Output Current	Performance		Input Voltage	Number of Outputs	Output Type	Pin Termination Type	Protection Mode	RoHS Compliance
LGA	50	D	-	01	D	ADJ	Blank, SB	Blank	J
Series Name	Rated output current = 50 A	Digital POL		7.5 - 14.0 V input voltage range	Dual Outputs	Adjustable output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

## Block Diagrams

### Single Unit, Single O/P Configuration

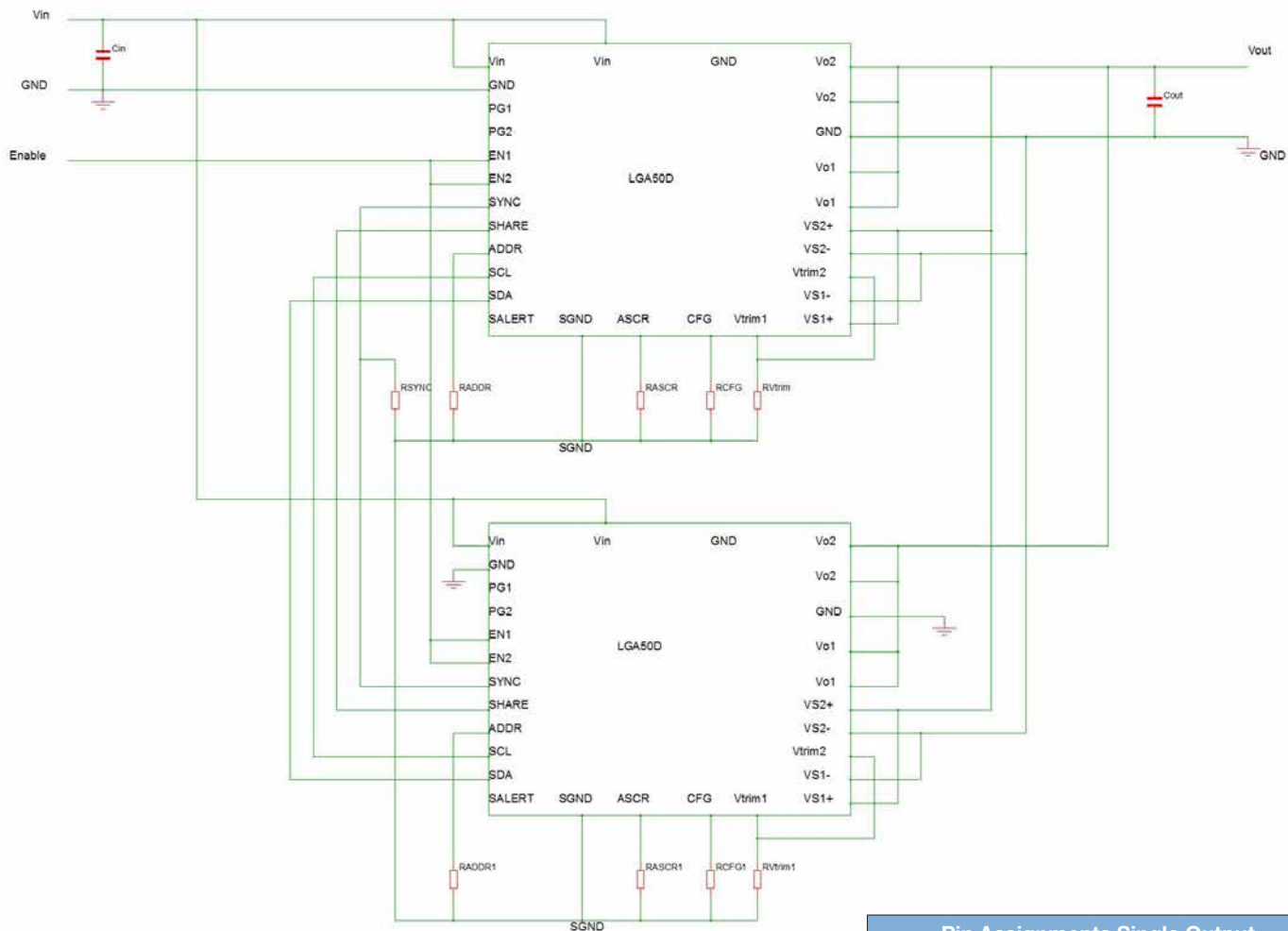


### Single Unit, Dual O/P Configuration



## Block Diagrams

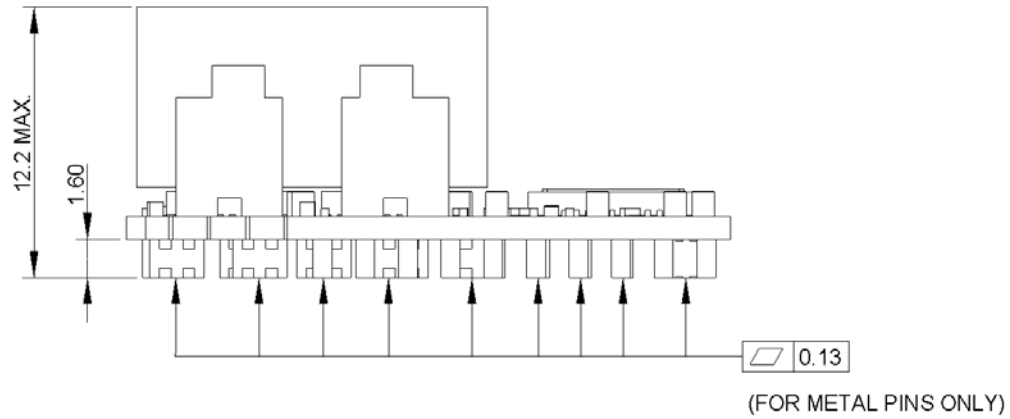
### Two Units, Single O/P Configuration



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



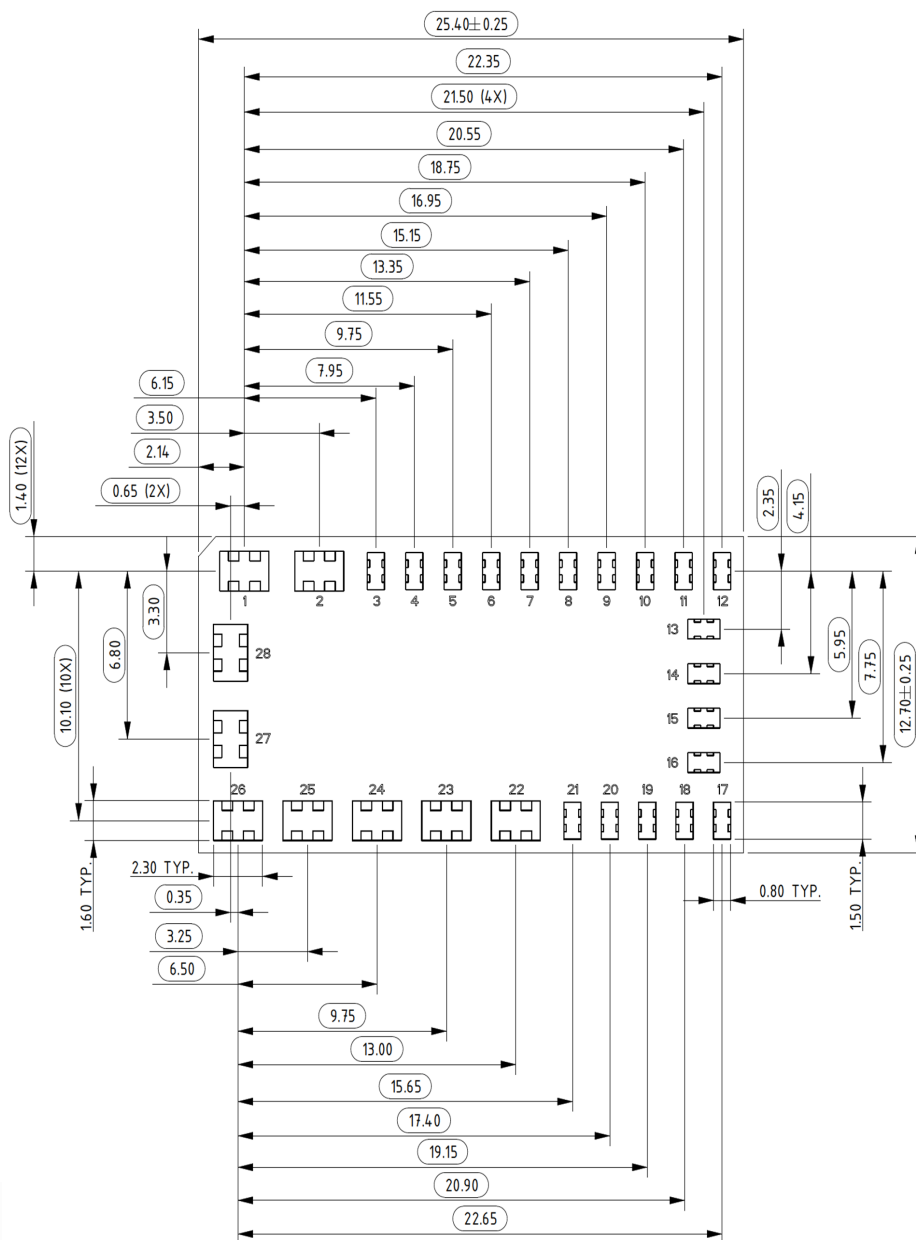
Side view of standard profile solder bump termination type (LGA50D-01DADJSBJ)





## Mechanical Drawings

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

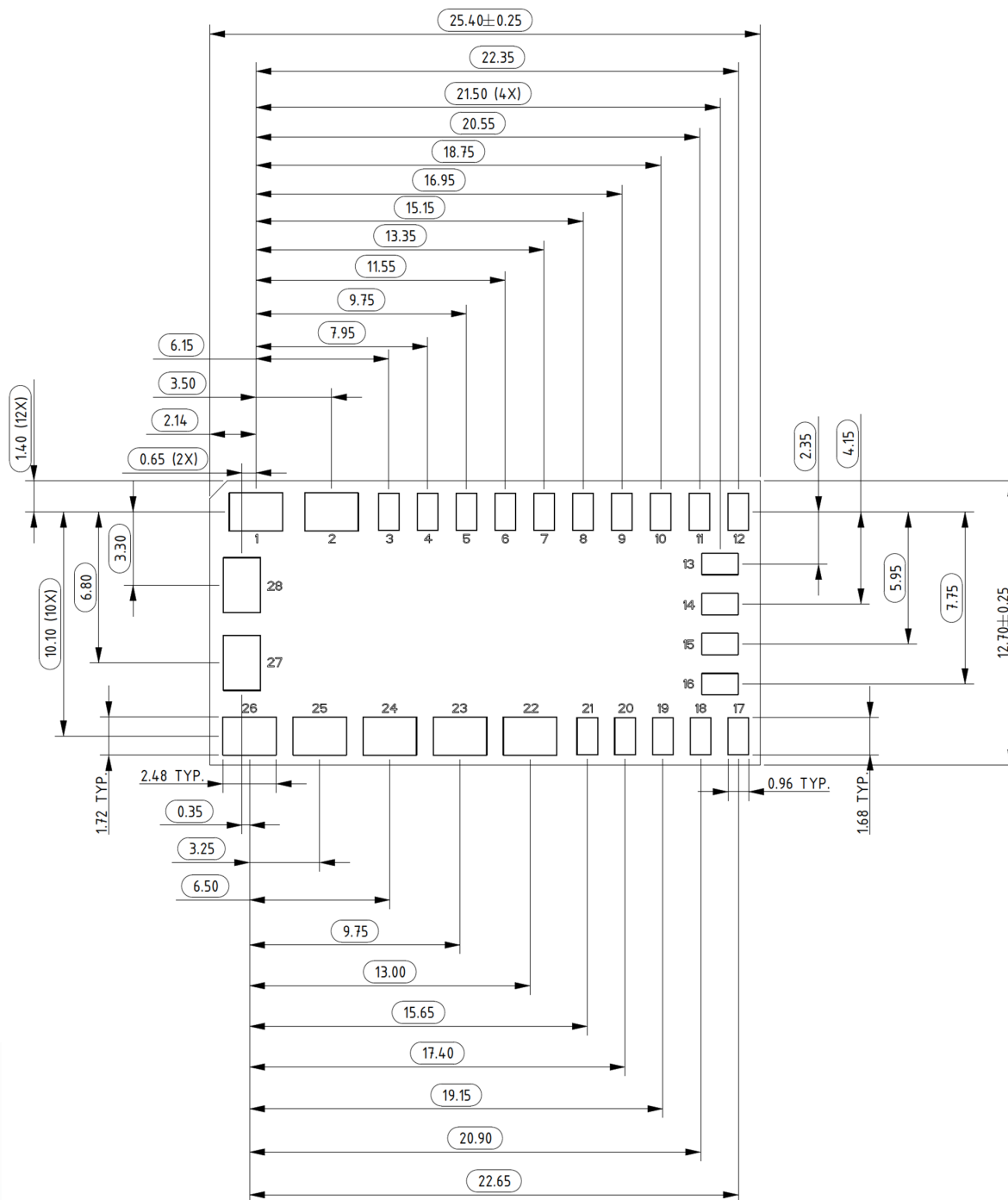


FOOTPRINT DRAWING OF METAL PINS (BOTTOM VIEW)

Dimensions are in millimeters  
Tolerances: Decimal .XX ±0.25

## Mechanical Drawings

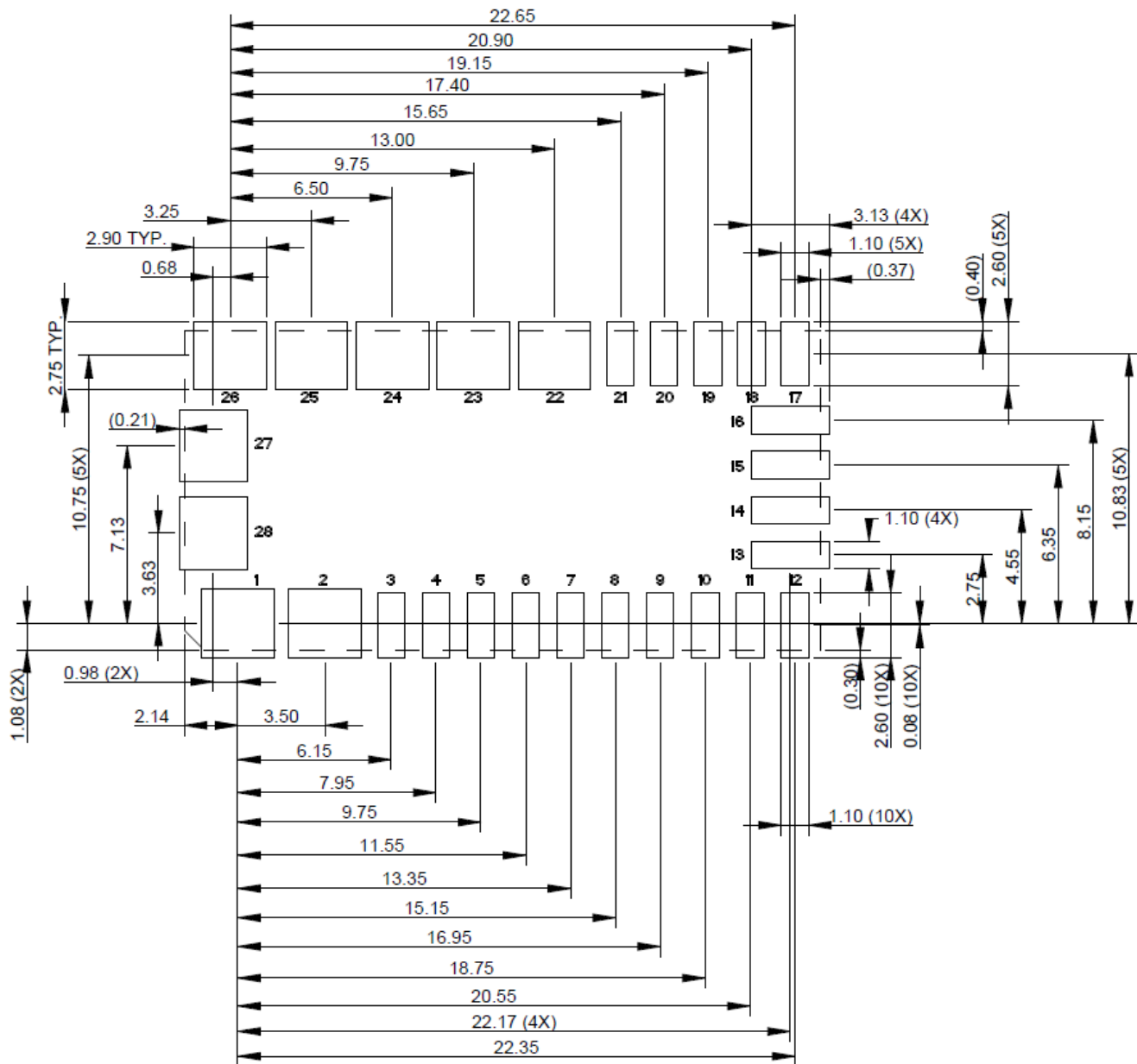
For standard solder bump termination (LGA50D-01DADJSBJ)



Dimensions are in millimeters  
Tolerances: Decimal .XX ±0.25

## Mechanical Drawings

Proposed solder pad macros 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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