Embedded Power for
Business-Critical Continuity

LGA C Series

15-100 Watts

Total Power: 15-100 Watts
No. of Outputs: Single

EMERSON
Network Power
LGA10C-OOSADJJ

RoHS
2002/95/EC

Electrical Specifications

Special Features

- 3,6,10 and 20 A output current rating
- Wide input voltage range; up to 14.0 V
- Adjustable output voltage; 0.59-5.1 V
- Excellent transient response
- High efficiency
- Output margining
- Power enable
- Minimal airflow requirement
- Termination voltage capability
- Ultra compact profile and footprint
- RoHS compliant
- Remote sense

Output		3/6/10 A Models	20 A Model
Output voltage	See Page 3	0.59-5.1 V	
Output setpoint accuracy	0.1% trim resistors	±1.0%	
Load regulation		±0.5%	
Max Current Max Power		15/30/50 W	100 W
Overshoot	At turn-on	0%	
Undershoot	At turn-off	0 mV	
Ripple and noise 5 Hz to 20 MHz	See Note 1 V_{in} = 5 V, V_{out} = 2.5 V	20/25/30 mV	30 mV
Transient response	See Notes 1 and 2 V_{in} = 5 V, V_{out} = 2.5 V	100/160/160 mV 15 µs recovery to within regulation band	175 mV 15 µs recovery to within regulation band
Input			
Input voltage range[3]		3-14.0 Vdc	4.5-14.0 Vdc
Input current	Enable On at (0 A) Enable Off	50 mA 5 mA	
Start-up time	Power up Enable On/Off	3 ms 2 ms	
General			
Efficiency	V_{in}=5 V_{out}, Vo=2.5 V, I_{out} = 50% Imax	92% Typ.	
Switching frequency		1 MHz	800 kHz
Material flammability		UL94V-0	
MTBF	12 V @ 40 °C 100% load Bellcore 332	> 20,000,000 hours	
Coplanarity		150 µm	

Safety

Designed to meet EN60950

International Standards for Solderability: J-STD-002B
IEC-60068-2-58

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Electrical Specifications (cont'd)

Thermal performance See Technical Reference Note	Operating ambient Non-operating ambient	-40 °C to +85 °C -40 °C to +125 °C
Protection		
Short circuit		Hiccup, non-latching
Overvoltage		Hiccup, non-latching

Mininum Recommended System Capacitance	3/6/10 A Model	20 A Model
Input capacitance	1 μF	10 μF
Output capacitance	10 μF	50 μF

Operating Information

Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation Load	Standard Model Numbers
15 W	3-14.0 Vdc	0.59-5.1 Vdc	0A	3 A	92%	±0.5%	LGA03C-00SADJJ
30 W	3-14.0 Vdc	0.59-5.1 Vdc	0 A	6 A	92%	±0.5%	LGA06C-00SADJJ
50 W	3-14.0 Vdc	0.59-5.1 Vdc	0 A	10 A	92%	±0.5%	LGA10C-00SADJJ
100 W	4.5-14.0 Vdc	0.59-5.1 Vdc	0 A	20 A	91%	±0.5%	LGA20C-01SADJJ
NA	NA	NA	NA	NA	NA	NA	LGA-HTSK-KIT-XXX

Model Number System with Options

Product Family	Rated Output Current	Performance	Input Voltage	Type of Output	Options	RoHS Compliance
LGA	**XX**	**C**	**- 00**	**SADJ**	**X**	**J**
	Rated Output Current 03 = 3 Amp 06 = 6 Amp 10 = 10 Amp 20 = 20 Amp	**Performance** C = Cost Optimized	**Input Voltage** 00 = 3-14.0 V 01 = 4.5-14.0 V	**Type of Output** Single Adjustable Output	**Options** X = Various Options (see Sales Rep)	**RoHS Compliance** J = Pb free (RoHS 6/6 compliant)

Heatsink Number System with Options

Product Family	Product	Packaging	Height*
LGA	**- HTSK**	**- KIT**	**- XXX**
	Product HTSK = Heatsink	**Packaging** KIT = Heatsink and Adhesive	**Height*** LGA20 + Heatsink 045 = 0.45" 048 = 0.48" 050 = 0.50"

*Height is the total height of the LGA20C-00SADJJ with heatsink attached.

Application Equations

Setting Output Voltage

Default output voltage: 0.591 V

The outut voltage may be adjusted with a resistor placed between the "Trim" and "-Sense" pin.

The formula for calcuating the value of this resistor is:

$$R_{trim}(k\Omega) = \frac{1.182}{V_{out} - 0.591}$$

See Technical Reference Note for other trimming methods.

Setting Under Voltage Lock Out - 3, 6, 10 A Models

Default Turn-on voltage: 2.9 V (300 mV Hysteresis)

The Turn-on voltage may be adjusted with a resistor placed between the "Enable" and "Ground" pins.

The formula for calculating the value of this resistor is:

$$R_{uvlo}(k\Omega) = \frac{14.81 * 6.81}{(6.81 * V_{Turn\_on}) - 18.16}$$

*ONLY USE WITH OPEN COLLECTOR DEVICE
*DO NOT DRIVE PIN WITH A VOLTAGE

Setting Under Voltage Lock Out - 15 and 20 A Models

Default Turn-on voltage: 4.3 V (300 mV Hysteresis)

The Turn-on voltage may be adjusted with a resistor placed between the "Enable" and "Ground" pins.

The formula for calculating the value of this resistor is:

$$R_{uvlo}(k\Omega) = \frac{30.1 * 4.22}{(8.577 * V_{Turn\_on}) - 34.32}$$

*ONLY USE WITH OPEN COLLECTOR DEVICE
*DO NOT DRIVE PIN WITH A VOLTAGE

Setting Margin Control

To margin the output up, pull the margin control pin high. To margin down, pull the margin control pin low. If the pin is left floating, the feature is disabled. The maximum margining range is ±33% of the oputput default voltage setting, with maximum output at 5.5 V

$$V_{margin\_up} = 0.1182 * \frac{R_{margin}}{R_{ofs+}} * \frac{R_{trim} + 2k}{R_{trim}}$$

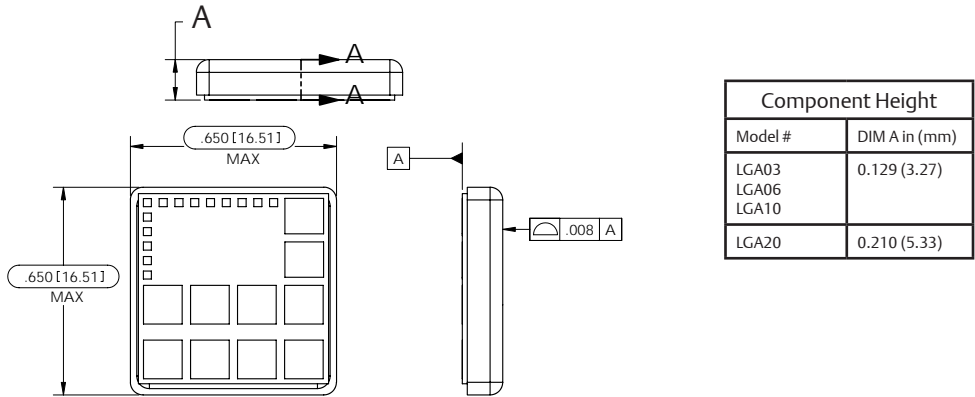$$V_{margin\_down} = 0.1182 * \frac{R_{margin}}{R_{ofs-}} * \frac{R_{trim} + 2k}{R_{trim}}$$
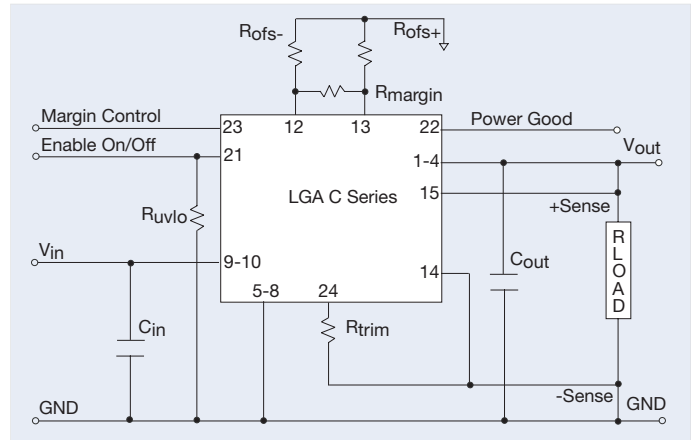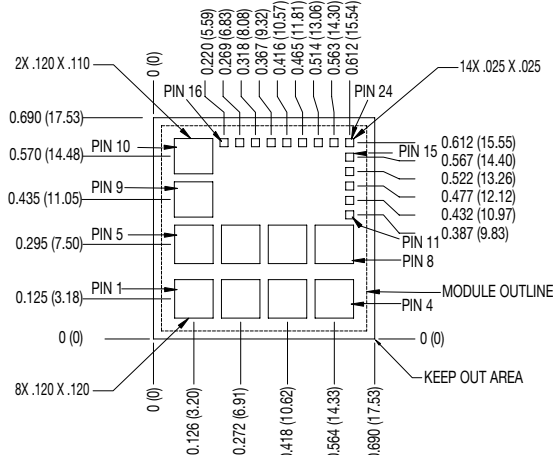

External input fusing is recommended.

Notes:
1. Measured as per recommended minimum system capacitance.
2. di/dt = 10 A/ μs,12 Vin = Norm, Tc = 25 °C, load change = 50% lo 100% Imax.
3. Internal input capacitance is rated 16 Vdc maximum.

Mechanical Drawing and Footprint

.650 [16.51] MAX

.650 [16.51] MAX

.008 | A

Component Height	
Model #	DIM A in (mm)
LGA03
LGA06
LGA10	0.129 (3.27)
LGA20	0.210 (5.33)

Recommended System Board Footprint

0.220 (5.59)
0.269 (6.83)
0.318 (8.08)
0.367 (9.32)
0.416 (10.57)
0.465 (11.81)
0.514 (13.06)
0.563 (14.30)
0.612 (15.54)

2X .120 X .110
0 (0)
PIN 16
PIN 24
14X .025 X .025

0.690 (17.53)
0.570 (14.48)   PIN 10
PIN 15   0.612 (15.55)
0.567 (14.40)
0.435 (11.05)   PIN 9
0.522 (13.26)
0.477 (12.12)
0.295 (7.50)   PIN 5
0.432 (10.97)
PIN 11   0.387 (9.83)
PIN 8
0.125 (3.18)   PIN 1
MODULE OUTLINE
PIN 4
0 (0)   0 (0)

8X .120 X .120
KEEP OUT AREA

0 (0)
0.126 (3.20)
0.272 (6.91)
0.418 (10.62)
0.564 (14.33)
0.690 (17.53)

Recommended Solder Paste Stencil
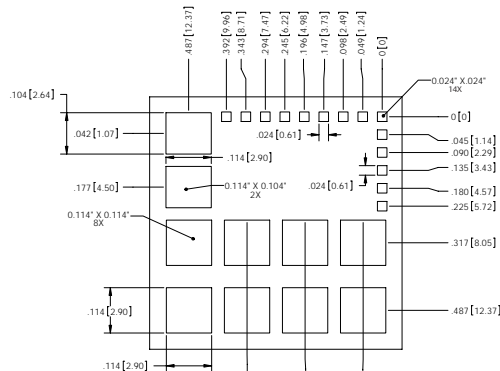
.487 [12.37]
.392 [9.96]
.343 [8.71]
.294 [7.47]
.245 [6.22]
.196 [4.98]
.147 [3.73]
.098 [2.49]
.049 [1.24]
0 [0]

.104 [2.64]
0.024" X .024"
14X
.042 [1.07]
.024 [0.61]
0 [0]
.045 [1.14]
.090 [2.29]
.114 [2.90]
.135 [3.43]
.177 [4.50]
0.114" X 0.104"
2X
.024 [0.61]
.180 [4.57]
.225 [5.72]
0.114" X 0.114"
8X
.317 [8.05]
.114 [2.90]
.487 [12.37]
.114 [2.90]
.340 [8.64]
.194 [4.93]
.048 [1.22]

Tolerance Note: ±0.010 (0.25)

Pin Assignments

Single Output

1	Vout
2	Vout
3	Vout
4	Vout
5	GND
6	GND
7	GND
8	GND
9	Vin
10	Vin
11	NC
12	- Offset
13	+ Offset
14	- Sense
15	+ Sense
16	NC
17	NC
18	NC
19	NC
20	NC
21	Enable
22	Power Good
23	Margin Control
24	Trim

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