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TDK·Lambda

RGA Series

250W, 9 to 40V, or 9 to 53V Input Non-Isolated Ruggedized DC-DC Buck Converters

https://product.tdk.com/en/power/rga
www.emea.lambda.tdk.com/rga

Industrial COTS Test COMM Broadcast Robotics



The rugged RGA non-isolated DC-DC step-down converters are encapsulated in a five-sided aluminum case and rated for up to 110˚C operation. The modules have the industry standard 1/16th brick pin-out, are qualified to MIL-STD-810G (shock and vibration) and designed for fan-less, conduction cooled applications. The series accepts a wide input range to support multiple DC bus and battery voltages. Standard and optional features include remote on/off, remote sense, power good, frequency synchronization and output sequencing, making the modules a truly versatile power solution. The wide output adjustment range allows one model to be used in multiple positions, assisting inventory and part number reduction.

Features	Benefits
• Up to 250W in a 1/16th Brick Pin-Out	• High Power Density, Less Board Area Needed
• Encapsulated in a 5-sided Aluminum case	• Improves EMI
• 110 ˚C maximum case temperature	• Ruggedized deployment in harsh environment with high shock & vibration exposure
• Efficiency - Up to 98%	• Longer Battery Life / Low Power Consumed
• Wide 3.3 to 15V, 3.3 to 24V or 3.3 to 40V Output Adjustment	• One Part Supports Multiple System Voltages
• Wide 9 to 40V or 9 to 53V Input Range	• Can Operate From Different DC Source Voltages
• Low Component Count With Minimal External Components	• Low Cost

Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Max Current (A)	Max Power (W)	Negative Logic On/Off	Full Feature*
RGA24250W014A-001	9 - 40	3.3 - 24	14	250	Yes	No
RGA24250W014A-003	9 - 40	3.3 - 24	14	250	Yes	Yes
RGA4W250W010A-001	9 - 53	3.3 - 40	10	250	Yes	No
RGA4W250W010A-003	9 - 53	3.3 - 40	10	250	Yes	Yes
RGA4W250W020A-001	9 - 53	3.3 - 15	20	250	Yes	No
RGA4W250W020A-003	9 - 53	3.3 - 15	20	250	Yes	Yes

Preferred model

* Full feature includes Power Good signal, Frequency Synchronization, Output Sequencing

Related Products

Type	Part Number	Description
Ruggedized DC-DC Buck Converter	RGB	400-750W, Input 9 to 18V or 18 up to 60V, Output 0.8-8V or 3.3V up to 24V
Ruggedized DC-DC Buck-Boost Converter	RGC	300W, Input 9-53V or 9-36V, Output 9.6-48V, 8A; 5-28V, 12.5A; or 8-24V, 20A
DC-DC Buck Converter	i7A	400-750W, Input 9-18V, 18 up to 60V, Output 0.8-8V, 3.3 up to 32V, 20A up to 60A
DC-DC Buck-Boost Converter	i7C	300W, Input 9-53V or 9-36V, Output 9.6-48V, 8A; 5-28V, 12.5A; or 8-24V, 20A
DC-DC Buck Converter	i6A4W	250W, Input 9-53V, Output 3.3-40V, 10A; 3.3-15V, 20A
Isolated DC-DC Converter	GQA	120W Industrial, Input 9-36V, Isolated Quarter Brick
Isolated DC-DC Converter	HQA	120W MIL-COTS, Input 9-40V, Isolated Quarter Brick
Evaluation Board	i367X-C01-EVK-S0	Evaluation Board with no module. Order required RGA part number separately.

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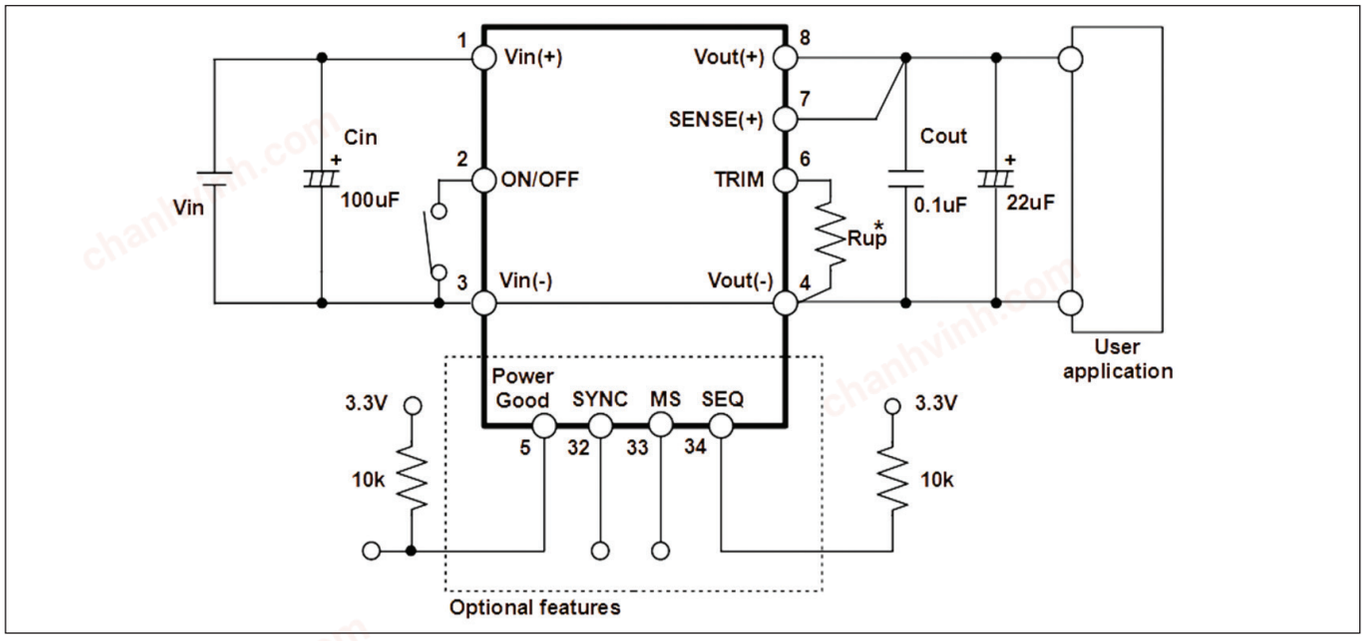
Specification

Model		RGA24250W014A	RGA4W250W010A	RGA4W250W020A
Input				
Input Voltage Range	Vdc	9 - 40	9 - 53	
Input Current (max)	A	15	20	
Standby Input Current (typ)	mA	1.5		
Turn-ON Input Voltage	Vdc	8		
Turn-OFF Input Voltage	Vdc	7 - 9		
Efficiency	%	92.5 - 98	94 - 97.5	90 - 97
Safety Certifications and Markings	-	CE, UKCA Mark		
Output				
Output Voltage Tolerance	%	± 4		
Switching Frequency	kHz	400		
Line Regulation	%	0.3	0.3	0.4
Load Regulation	%	1	0.9	1.2
External Load Capacitance	uF	0 - 2200	0 - 1500	0 - 1800
Ripple & Noise	mVpp	20	50	20
Overcurrent Protection Threshold (typ)	A	22	15	27
Overtemperature Protection	-	Yes		
Output Voltage Adjustment Range	-	See full specifications for output trim equation.		
Remote Sense	-	(+) Sense, compensating up to 5% of output voltage		
Remote On/Off	-	Negative Logic		
Power Good	-	Optional (Full Feature Version)		
Frequency Synchronization (SYNC)	-	Optional (Full Feature Version)		
Output Sequencing (SEQ)	-	Optional (Full Feature Version)		
Environmental				
Operating Temperature (Tcase)	°C	-40 to 110		
Storage Temperature	°C	-55 to 125		
Humidity (non condensing)	%RH	5 - 95 (Operating & Storage)		
Altitude (2)	m	2000		
Cooling	-	Conduction Cooling		
Shock	-	MIL-STD-810G 516.6 Procedure I & IV		
Vibration	-	MIL-STD-810G 514.6 Procedure I, Cat 10		
Thermal Cycling Test (TCT)	-	Qualified to 700 cycles / -40 to 125˚C, 60˚C/min ramp, 30 min dwell time		
Other				
Weight (Typ)	g	42.5 max		
Size (LxWxH)	mm	35.6 x 35.6 x 13.0 35.6 x 25.6 x 13.0 (Mounting tab excluded)		
Size (LxWxH)	Inches	1.40 x 1.40 x 0.51 1.40 x 1.01 x 0.51 (Mounting tab excluded)		
MTBF - Telcordia SR-332	-	> 12 MHrs; 100% Load; Ta = 40 °C		
Warranty	yrs	3 years		

Notes
(1) See website for detailed product specification.
(2) Contact Technical Support for operation at higher altitudes.

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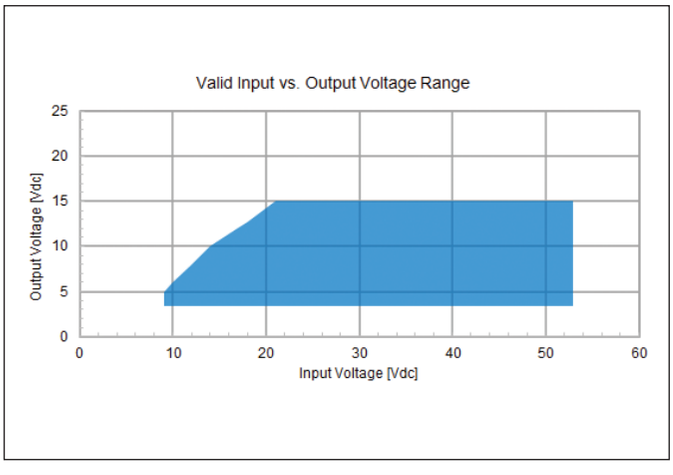
Typical Application Circuit (RGA)



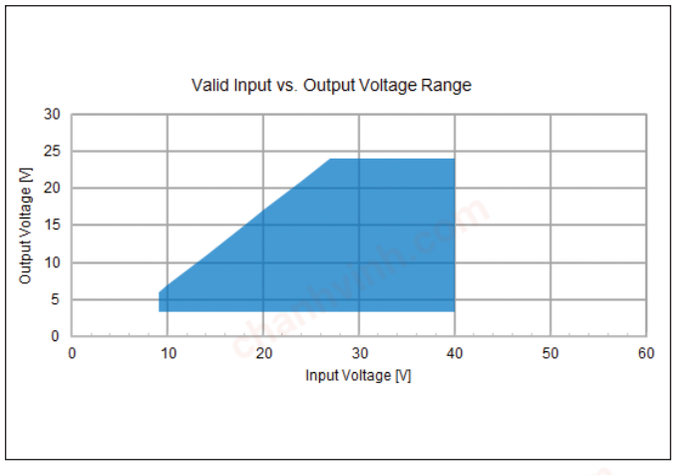
Recommendation

1. TRIM resistor Rup should be connected as close as possible to the power module.

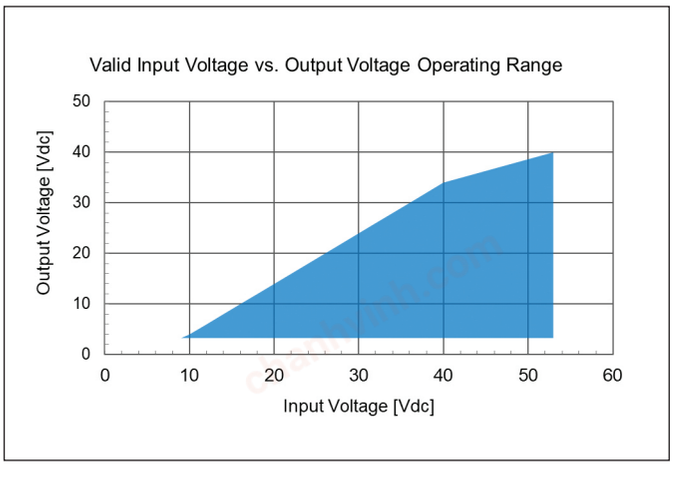
Operating Range (RGA4W250W020A-xxx)



Operating Range (RGA24250W014A-xxx)



Operating Range (RGA4W250W010A-xxx)



Pinout

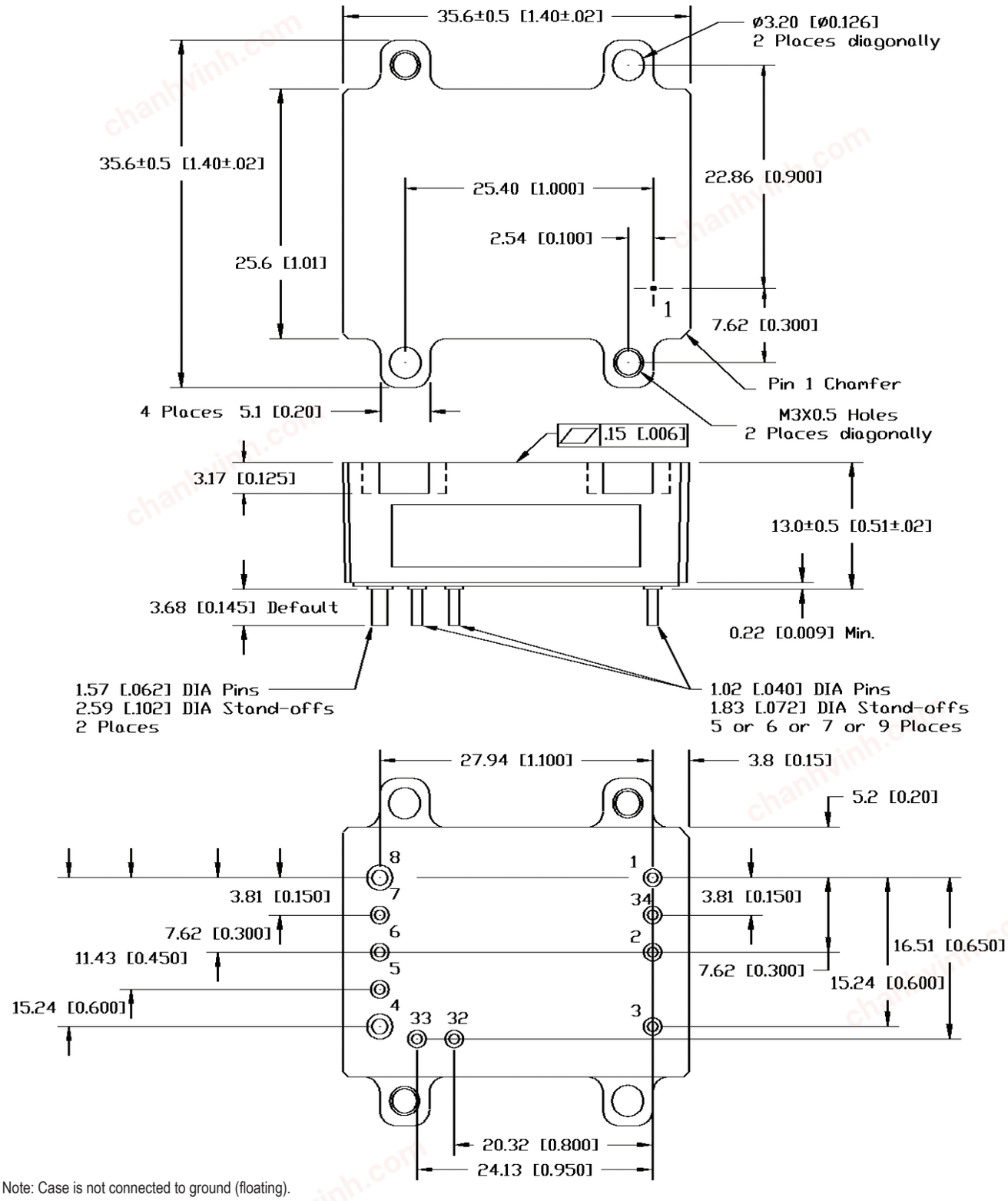
PIN	Function	PIN	Function
1	VIN (+)	7	SENSE +
2	ON / OFF	8	VOUT (+)
3	VIN (-) / GND	32	SYNC (Option)
4	VOUT (-) / GND	33	MS (Option)
5	Power Good (Option)	34	SEQ (Option)
6	TRIM		

Pin base material is brass or copper with gold over nickel plating.

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Mechanical Specification

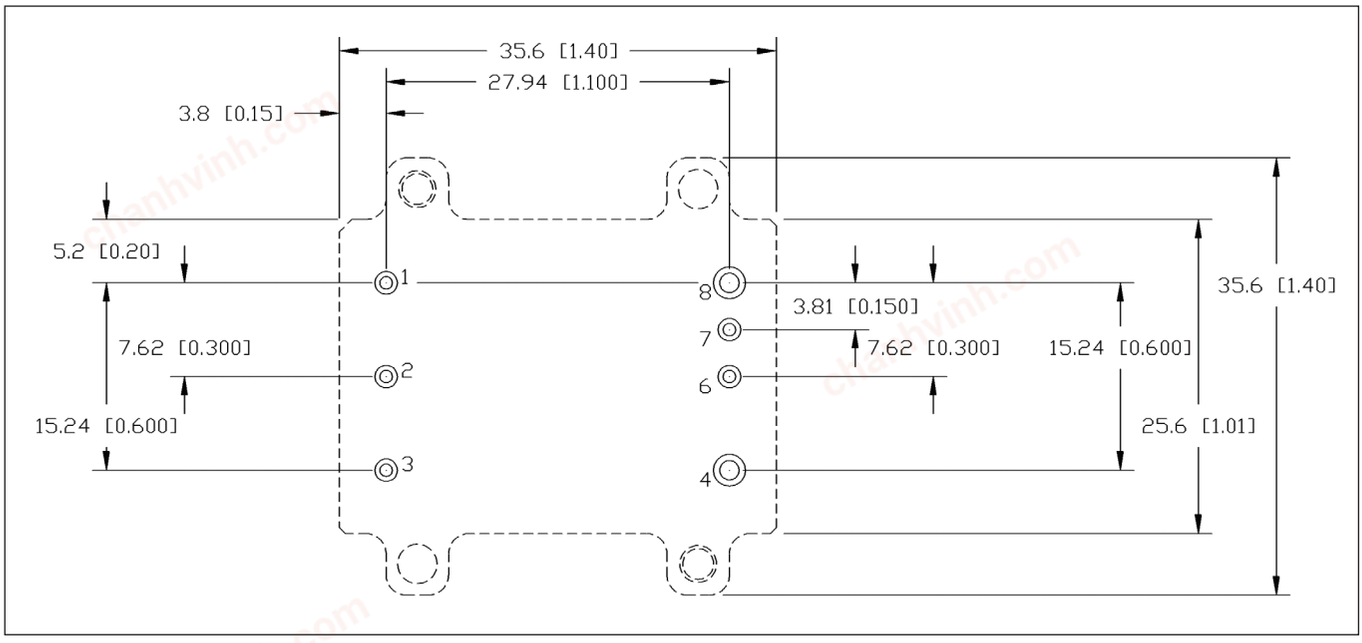
Dimensions are in mm [in]. Unless otherwise specified tolerances are: x.x ± 0.5 [0.02], x.xx ± 0.25 [0.010].



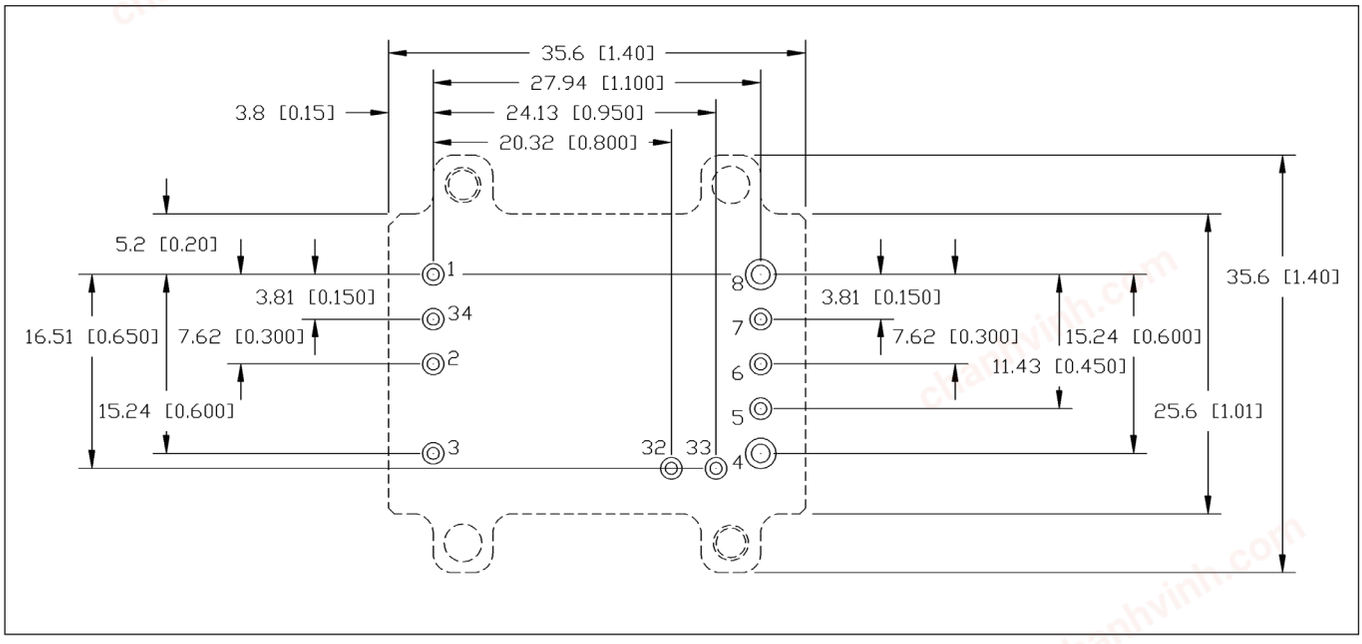
Note: Case is not connected to ground (floating).

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Recommended Hole Pattern (Suffix -001)



Recommended PCB Hole Pattern (Suffix -003)



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