

# ISO6125R-33

## High Voltage Insulated DC-DC Power Supply for Railway Line Gate Driver Families

### Product Highlights

#### Highly Integrated, Compact Footprint

- Ready-to-use DC-DC converter solution for IGBT drivers up to 3300V
- 10 W output power at maximum ambient temperature
- Electrical primary-side interface with basic insulation
- -40 °C to +85 °C operating ambient temperature

#### Protection / Safety Features

- Creepage distance 21 mm
- Clearance distance 21 mm
- No electrolytic capacitors
- Outstanding coupling capacitance 10 pF
- Applied double sided conformal coating (by using ELPEGUARD SL 1307 FLZ/2 from Lackwerke Peters)

#### Full Safety and Regulatory Compliance

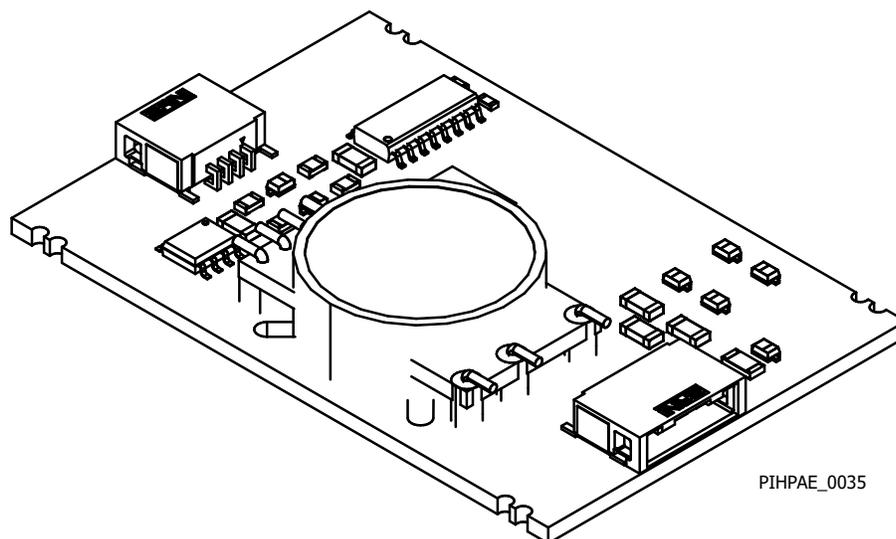
- 100% production partial discharge and HIPOT test of transformer
- Clearance and creepage distances meet requirements for basic insulation.

#### Applications

- Traction inverter
- Industrial drives
- Other industrial applications

### Description

The ISO6125R-33 is a single channel insulated DC-DC converter, suitable as a power supply for 3300 V IGBT drivers.



PIHPAE\_0035

Figure 1. 3D-Picture.

Interface Description

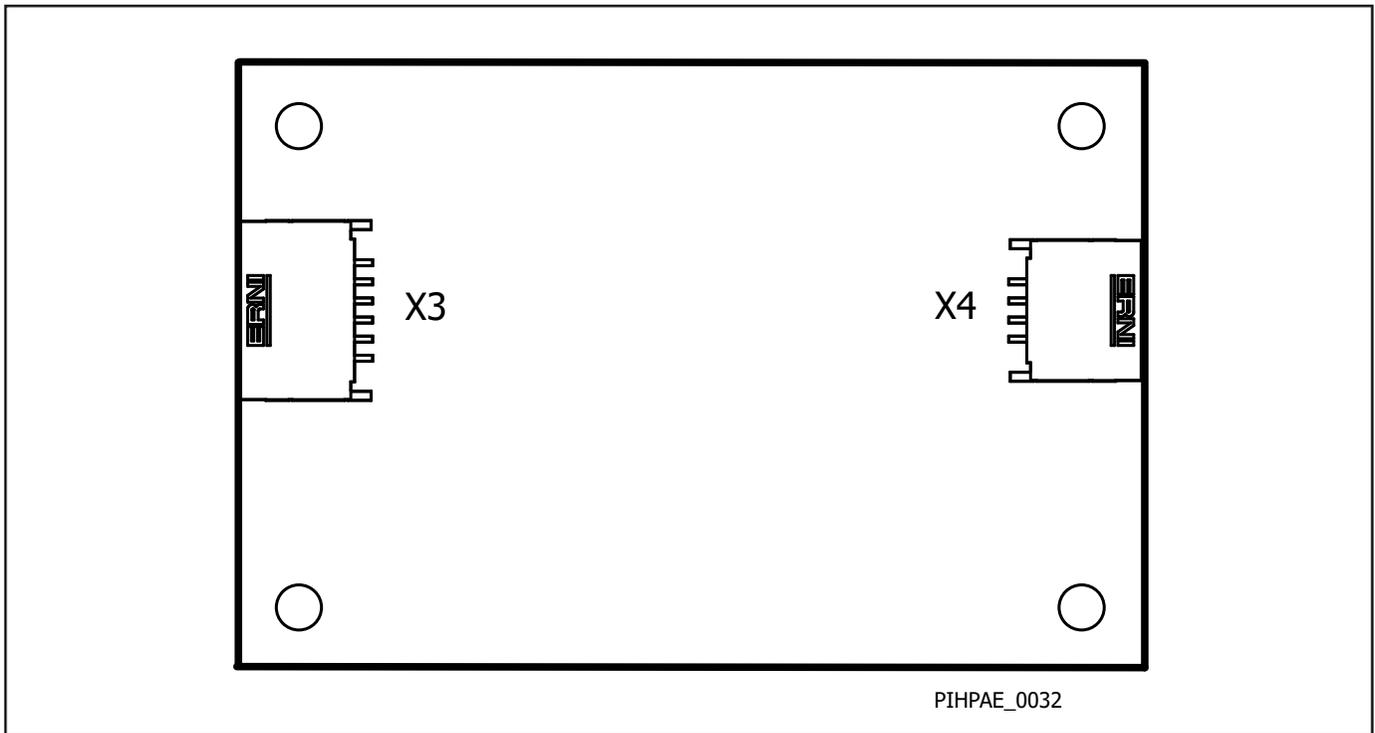


Figure 2. Interface.

**Connector X3**

Erni pin interface to connect main driver.

Part number: Erni 504275, 6 pin, right angle.

**NC (Pin 1, 4)**

This pin is not connected.

**VISO (Pin 2, 6)**

This pin is the secondary side positive supply voltage.

**COM (Pin 3, 5)**

This pin provide secondary side negative supply voltage.

**Connector X4**

Erni pin interface to connect external power supply.

Part number: Erni 504255, 4 pin, right angle.

**GND (Pin 1, 4)**

This pin is the connection for primary side ground potential.

**VDC (Pin 2, 3)**

This pin is the primary side supply voltage connection.

## Absolute Maximum Ratings

Parameter	Symbol	Conditions $T_A = -40\text{ °C to }85\text{ °C}$	Min	Max	Units
<b>Absolute Maximum Ratings<sup>1</sup></b>					
Input voltage	$V_{VDC}$	VDC must be applied with respect to GND		16	V
Average input current <sup>2</sup>	$I_{VDC}$	Average supply current at full load		900	mA
Average output current	$I_{VISO-COM}$	Average supply current at full load		450	mA
Output power <sup>3</sup>	$P_{Out}$			10	W
Storage temperature <sup>4</sup>	$T_{st}$		-40	50	°C
Operating ambient temperature	$T_A$		-40	85	°C
Surface temperature <sup>5</sup>	$T$			125	°C
Relative humidity	$H_r$	No condensation		93	%
Altitude of operation <sup>6</sup>	$A_{op}$			2000	m

Parameter	Symbol	Conditions $T_A = -40\text{ °C to }85\text{ °C}$	Min	Typ	Max	Units
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**Recommended Operating Conditions**
**Power Supply**

<b>Primary-Side Supply Voltage</b>	$V_{VDC}$	VDC to GND	14.5	15	15.5	V
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**Characteristics**

Parameter	Symbol	Conditions $T_A = +25\text{ °C}$	Min	Typ	Max	Units
<b>Input Characteristics</b>						
<b>Supply current</b>	$I_{VDC}$	$V_{VDC} = 15\text{ V, no load}$		46		mA
		$V_{VDC} = 15\text{ V, }I_{OUT} = I_{VISO} = 55\text{ mA}$		135		
		$V_{VDC} = 15\text{ V, }I_{OUT} = I_{VISO} = 450\text{ mA}$		810		
<b>Output Characteristics</b>						
<b>Output voltage</b>	$V_{VISO-COM}$	$V_{VDC} = 15\text{ V, no load}$		25.3		V
		$V_{VDC} = 15\text{ V, }I_{OUT} = I_{VISO} = 55\text{ mA}$		25		
		$V_{VDC} = 15\text{ V, }I_{OUT} = I_{VISO} = 450\text{ mA}$		24.2		
<b>Electrical Insulation</b>						
<b>Test voltage<sup>7</sup></b>	$V_{VISO,PS}$	Primary-side to secondary side	6			kV <sub>RMS</sub>
<b>Partial voltage extinct voltage<sup>8</sup></b>	$P_{D,PS}$	Primary-side to secondary side	3.63			kV <sub>pk</sub>
<b>Coupling capacitance</b>	$C_C$			10		pF
<b>Creepage distance</b>	$CPG_{P-S}$	Primary-side to secondary side	21			mm
<b>Clearance distance</b>	$CLR_{P-S}$	Primary-side to secondary side	21			mm

**NOTES:**

- Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device.
- Refers to the static case. The input current increases with decreasing temperature. The maximum value refers to an operating temperature of -40°C.
- The output voltage is not regulated and decreases with increasing load current. The DC/DC converter is not protected against overload.
- The storage temperature inside the original package or in case the coating material of coated products may touch external parts must be limited to the given value. Otherwise, it is limited to 85°C.
- The component surface temperature, which may strongly vary depending on the actual operating conditions, must be limited to the given value for coated gate driver versions to ensure long-term reliability of the coating material.
- Operation above this level requires a voltage derating to ensure proper insulation coordination.
- The transformer of every production sample has undergone 100% testing at the given value for 1s.
- Partial discharge measurement is performed on each transformer.

## Product Dimensions

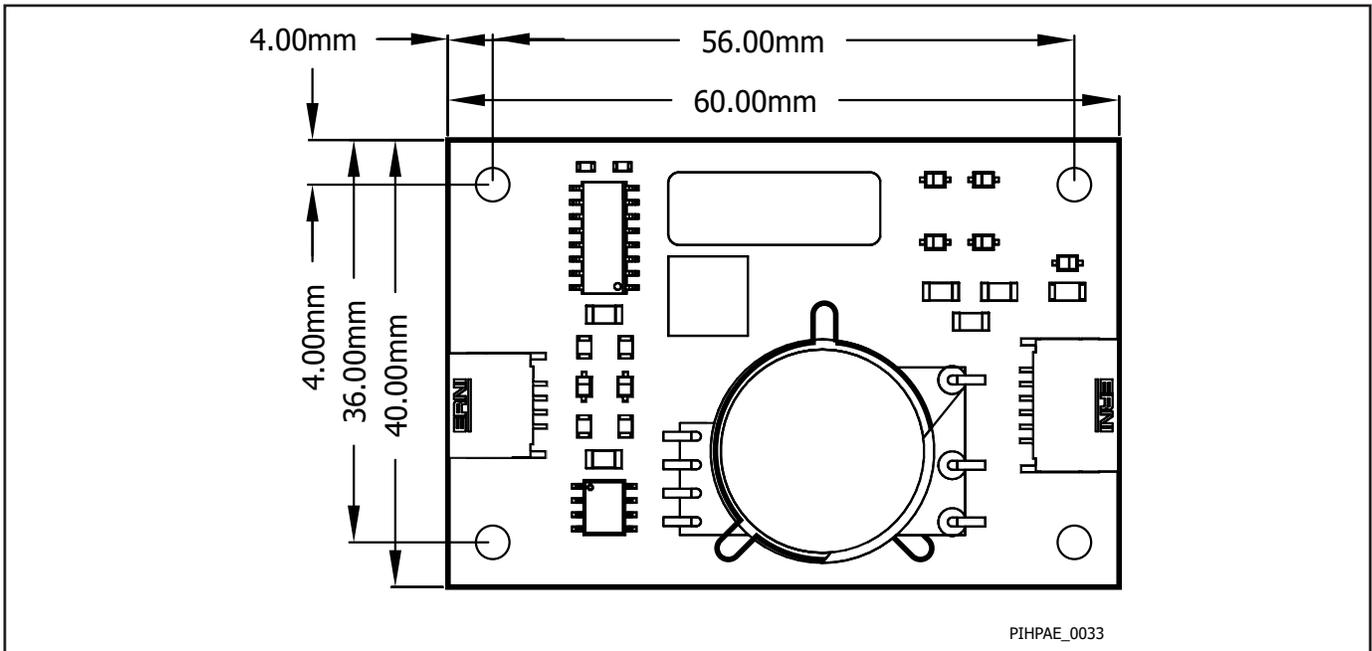


Figure 3. Top View.

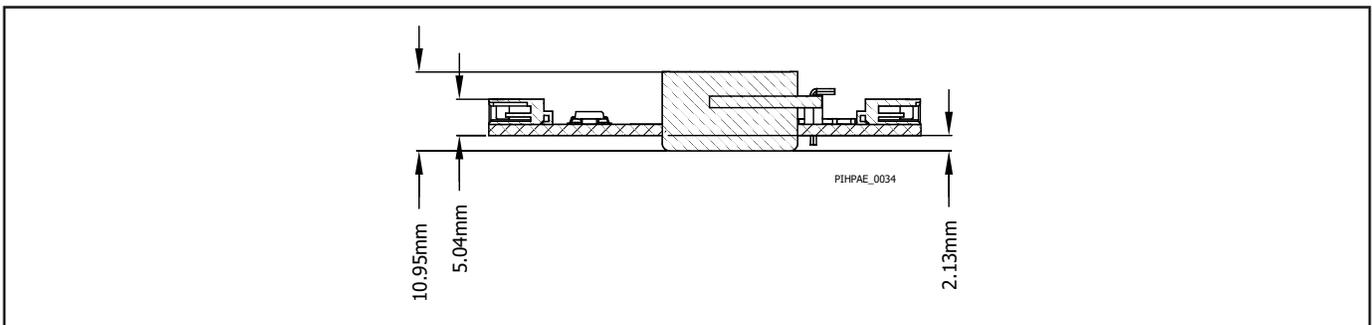


Figure 4. Side View.

## Transportation and Storage Conditions

For transportation and storage conditions refer to Power Integrations' Application Note AN-1501.

## RoHS Statement

We hereby confirm that the product supplied does not contain any of the restricted substances according Article 4 of the RoHS Directive 2011/65/EU in excess of the maximum concentration values tolerated by weight in any of their homogeneous materials.

Additionally, the product complies with RoHS Directive 2015/863/EU (known as RoHS 3) from 31 March 2015, which amends Annex II of Directive 2011/65/EU.

Revision	Notes	Date
A	Final Datasheet	05/21

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