

Features & Benefits

- Non-isolated, regulated DC-DC buck converter
- Up to 140 W, 7 A continuous
- 98% peak efficiency
- Input voltage range 18.6 – 36 V_{DC}
- Short-Circuit protection
- Overcurrent protection
- Undervoltage protection
- Conformal coated

Typical Applications

- Defense
- Aerospace
- Communications Systems
- Medical

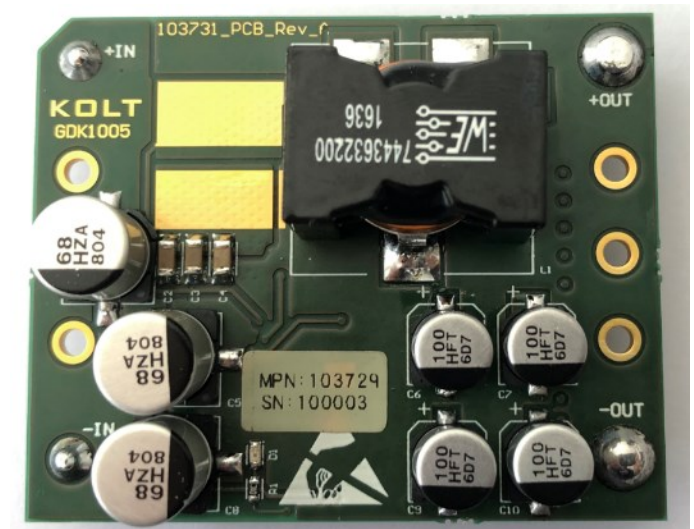
Product Ratings

VIN = 28 V (18.6 – 36 V)	POUT = 140 W
VOUT = 20 V	IOUT = 7 A

Product Description

GDK1005 is a 140 W DC/DC non-isolated point-of-load converter that operates at nominal 28 Vdc input and generates 20 Vdc output.

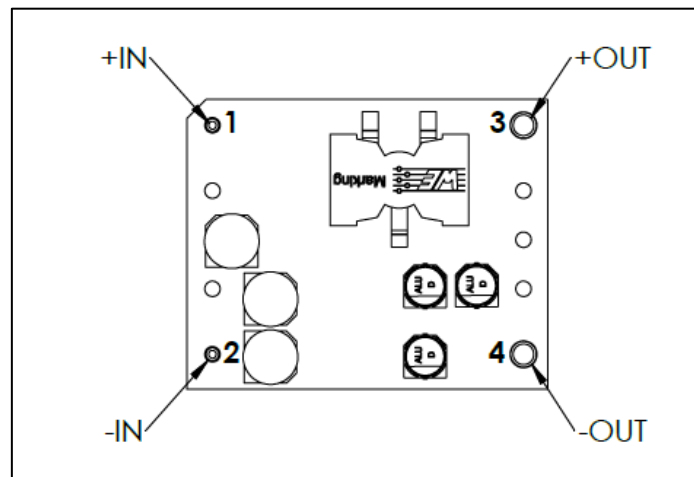
GDK1005 has a synchronous buck converter topology and due to this, it has a very high efficiency across all line and load conditions.



Size:

56 x 45 x 18.75 mm

Pin Configuration



Pin Descriptions

Power Pins		
Pin Number	Signal Name	Type
1	+ IN	Positive input power terminal
2	- IN	Negative input power terminal
3	+ OUT	Positive output power terminal
4	- OUT	Positive output power terminal

Absolute Maximum Ratings

The absolute maximum ratings below are stress ratings only. Operation at or beyond these maximum ratings can cause permanent damage to the device.

Parameter	Comments	Min	Max	Unit
Input Voltage	DC voltage	0	50	VDC
Operating Temperature		-40	100	°C
Storage Temperature		-40	100	°C

Electrical Characteristics

All data at nominal line and nominal load unless otherwise specified.

Module Input Specifications

Power Input Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Operating Input Voltage	18.6	28	36	VDC	Output tracks input voltage below 20 V.
Under voltage Turn-on	18.3	18.5	18.7	VDC	
Under voltage Turn-off	17.4	17.7	18	VDC	
No-Load Specifications					
Disabled Power Dissipation			3.7	mW	
Enabled Power Dissipation	43.7	47.6	122	mW	

Module Output Specifications

Parameter	Min	Typ	Max	Unit	Notes
Output Voltage	19.98	20.00	20.10	VDC	at Input Voltage over 20 VDC
Output Voltage Set Point			±0.5	%	Full load, 25 °C, Nominal Input
Rated Output Power			140	W	
Line Regulation		±0.02	±0.20	%	Low line to high line, Full load
Efficiency	97.20	98.00	99.00	%	Full load
Ripple and Noise		65	74	mV	Full load, Nominal Input
Load Regulation		±0.20	±0.25	%	Low line to high line, Full load
Load Current			7	A	
Current Limit			16.66	A	

General Characteristics

Attribute	Symbol	Conditions/Notes	Min	Typ	Max	Unit
Mechanical						
Length	L			56		mm
Width	W			45		mm
Height	H			22.75		mm
Weight	W			-		g
Pin Material		Brass				
Pin Finish		Tin over Nickel	5		40	µm
Thermal						
Operating Temperature	Top		-40		70	°C
Storage Temperature	Tst		-40		90	°C
Board Max. Component Temp. @ 25 °C					53	°C
Safety						
MTBF		MIL-HDBK-217Plus Parts Count-25°C Ground Benign, Stationary, Indoors/Computer		TBD		MHrs
Assembly						
Pin Soldering Temperature	°C	<4 sec., hand soldering		390		°C

Application Characteristics

Measurements are taken at nominal conditions (25 °C).

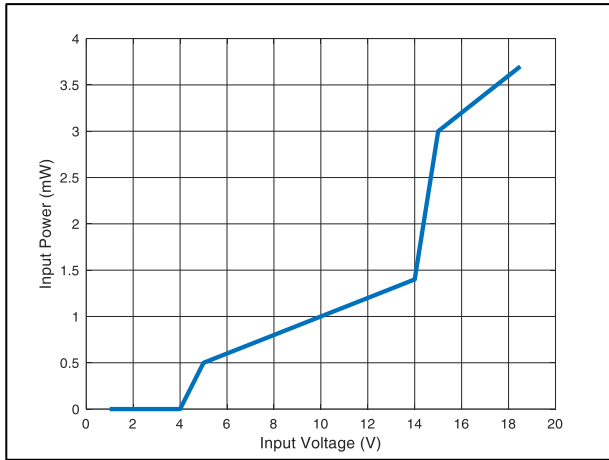


Figure 1. Disabled Power Dissipation vs V_{IN}

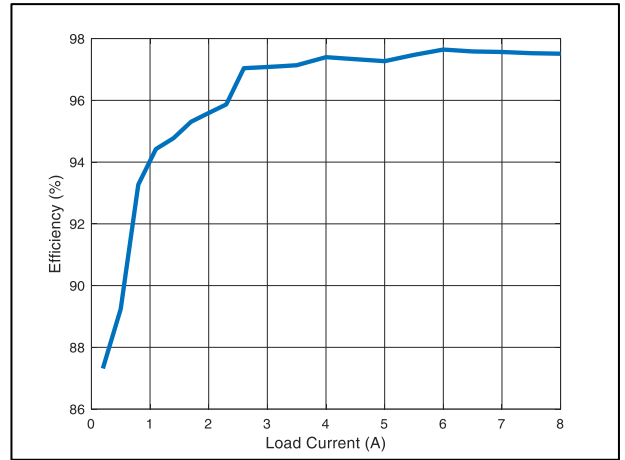


Figure 4. Efficiency vs Load

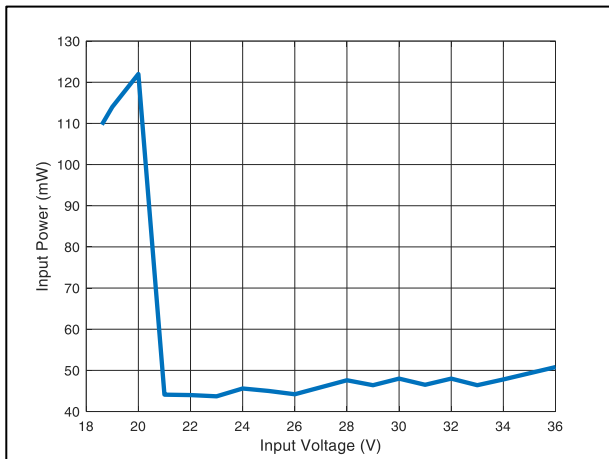


Figure 2. Enabled Power Dissipation vs V_{IN}

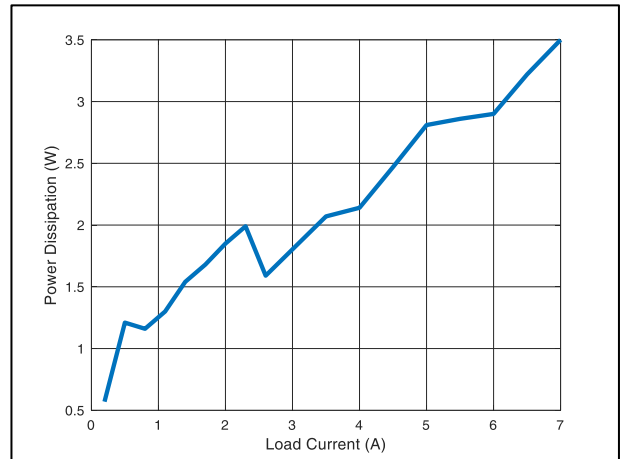


Figure 5. Power Dissipation vs Load

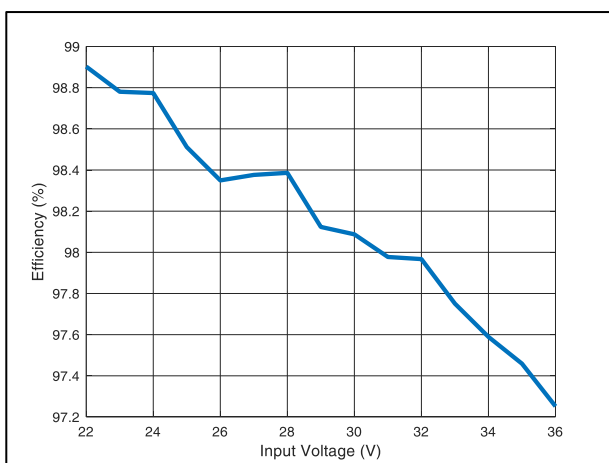


Figure 3. Full Load Efficiency vs V_{IN}

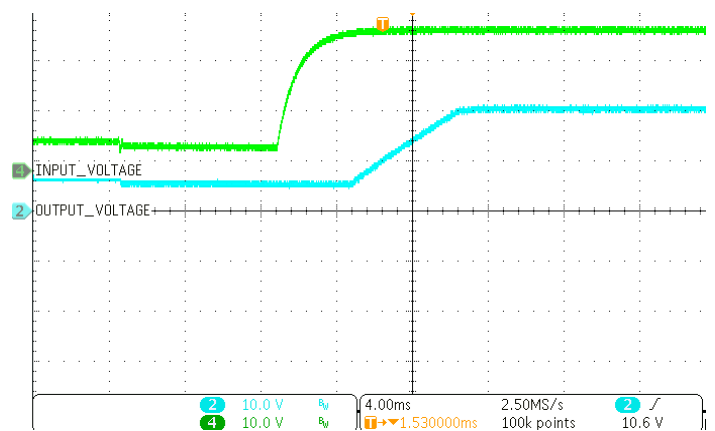


Figure 6. Input Voltage Start up No Load

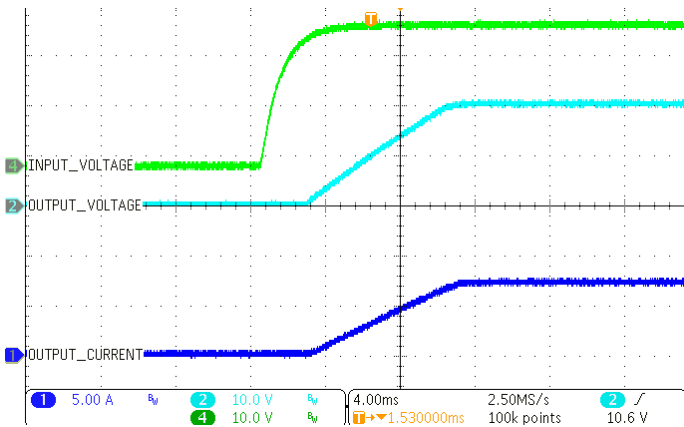


Figure 7. Input Voltage Start up Full Load

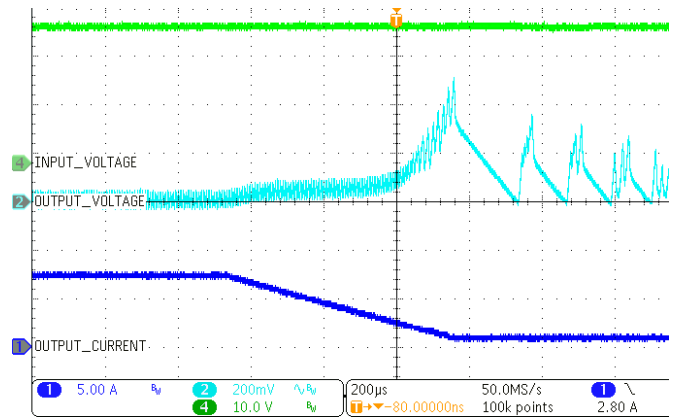


Figure 10. 100-10% Load Transient Response at Nom. V_{IN}

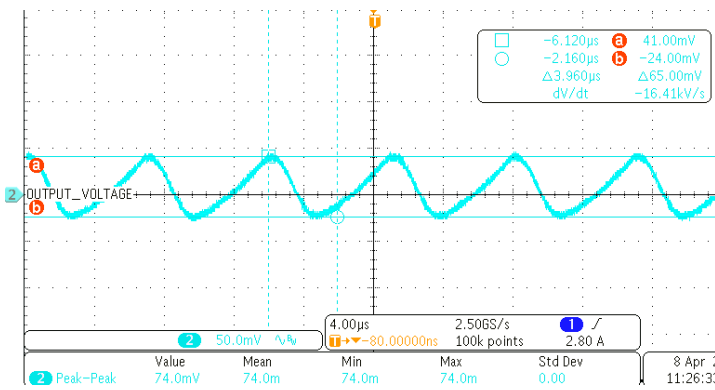


Figure 8. Output Ripple Full Load

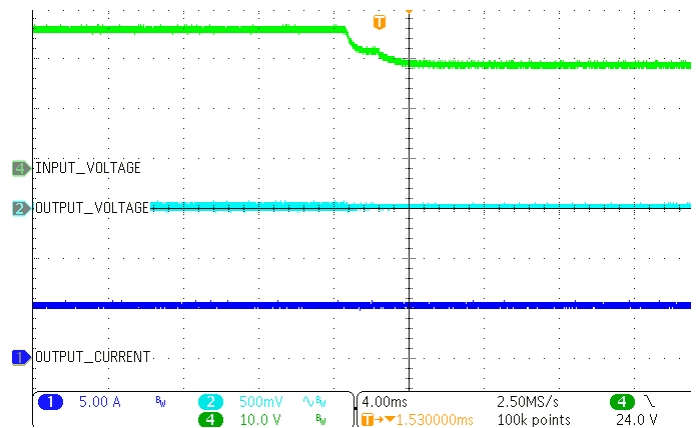


Figure 11. 28V-21V Line Transient Response at 4 ohm Load

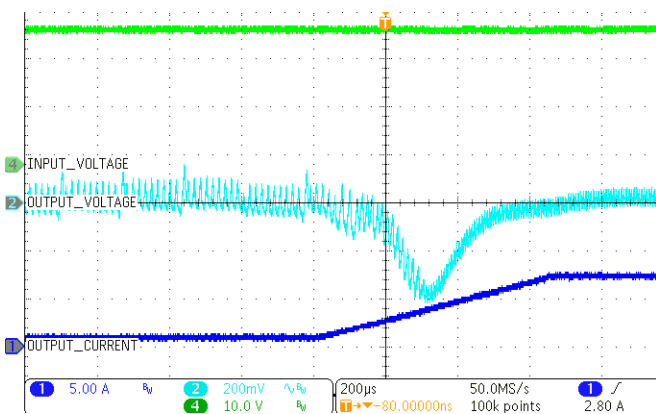


Figure 9. 10-100% Load Transient Response at Nom. V_{IN}

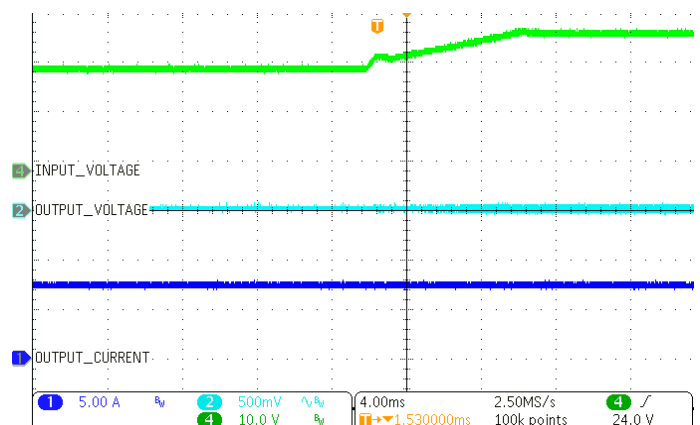
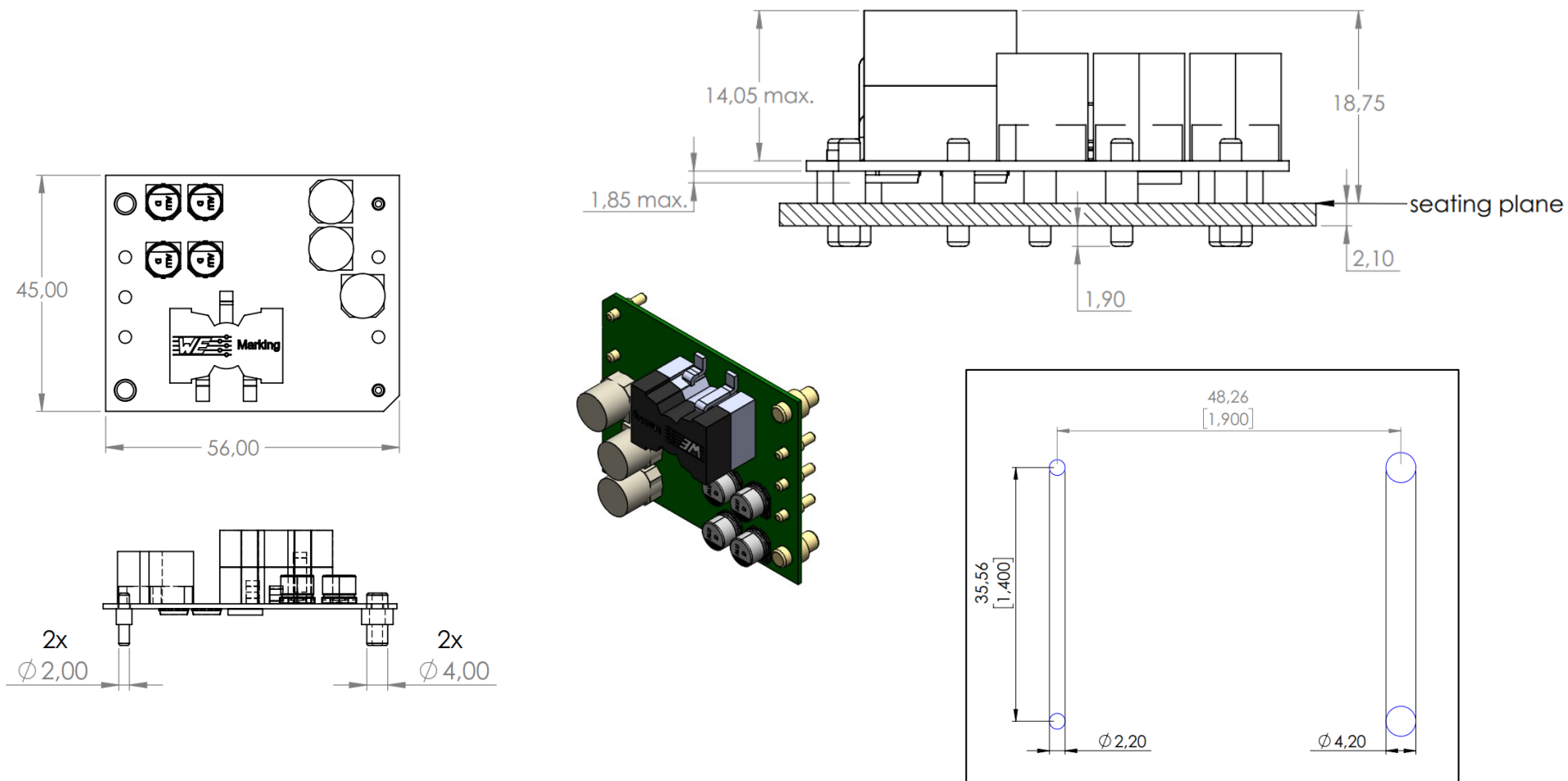


Figure 12. 21V-28V Line Transient Response at Full Load

Mechanical Drawing



PCB Footprint Pattern

Part Ordering Information

Manufacturer	Manufacturer Part Number	Option Field
KOLT	GDK1005	-

Revision History

Revision	Date	Description	Page Number(s)
A-PC1	04.04.2020	Initial Release	N/A
A-PC2	09.04.2020		