

# Features

## Unregulated Converters

- Power Sharing
- High Isolation 3kVDC & 4kVDC for 1 minute
- Efficiency up to 87%
- Wide Operating Temperature Range from -40°C to +85°C
- UL 60950 (Pending)

## RKZ-xx2005D

**2 Watt  
SIP7 for  
SiC Application**



### Description

The RKZ-xx2005D series features DC/DC converters which are especially designed for SiC mosfet drivers. The modules are available with input voltages of 5, 12, 15, or 24VDC with two asymmetric outputs of +20VDC and -5VDC. A special feature of this converter is output power sharing: the RKZ-xx2005D can be used with equal power (asymmetrical current) or equal current (asymmetrical power) loads. The modules offer 3kVDC or 4kVDC isolation. The operating temperature range of -40C to +100°C (with derating) meets harsh environmental requirements.

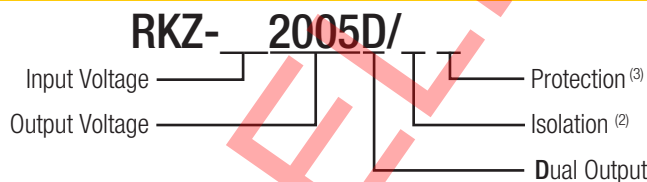
### Selection Guide

Part Number	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	max. Capacitive Load <sup>(1)</sup> (µF)
RKZ-052005D	5	20/-5	50/-200 +/-80	86 85	100/1500
RKZ-122005D	12	20/-5	50/-200 +/-80	86	100/1500
RKZ-152005D	15	20/-5	50/-200 +/-80	86	100/1500
RKZ-242005D	24	20/-5	50/-200 +/-80	87	100/1500

#### Notes:

Note1: Max. capacitive load is tested at nominal input voltage and full load.

### Model Numbering



#### Notes:

- Note2: without suffix, standard 3kVDC isolation  
 add suffix "/H" for higher 4kVDC isolation  
 Note3: without suffix, without Short Circuit Protection  
 add suffix "/P" for continuous short circuit protection

#### Examples:

- RKZ-052005D = 5Vin, 20/-5Vout, without SCP function + standard 3kVDC isolation  
 RKZ-12005D/HP = 12Vin, 20/-5Vout, with continuous SCP function + high 4kVDC isolation

### Specifications (measured at T<sub>a</sub> = 25°C, nominal Input and full load after warm-up time unless otherwise noted)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		-10%		+10%
Operating Frequency		20kHz		
Minimum Load			0%	
Output Ripple and Noise <sup>(4)</sup>			70mVp-p	150mVp-p

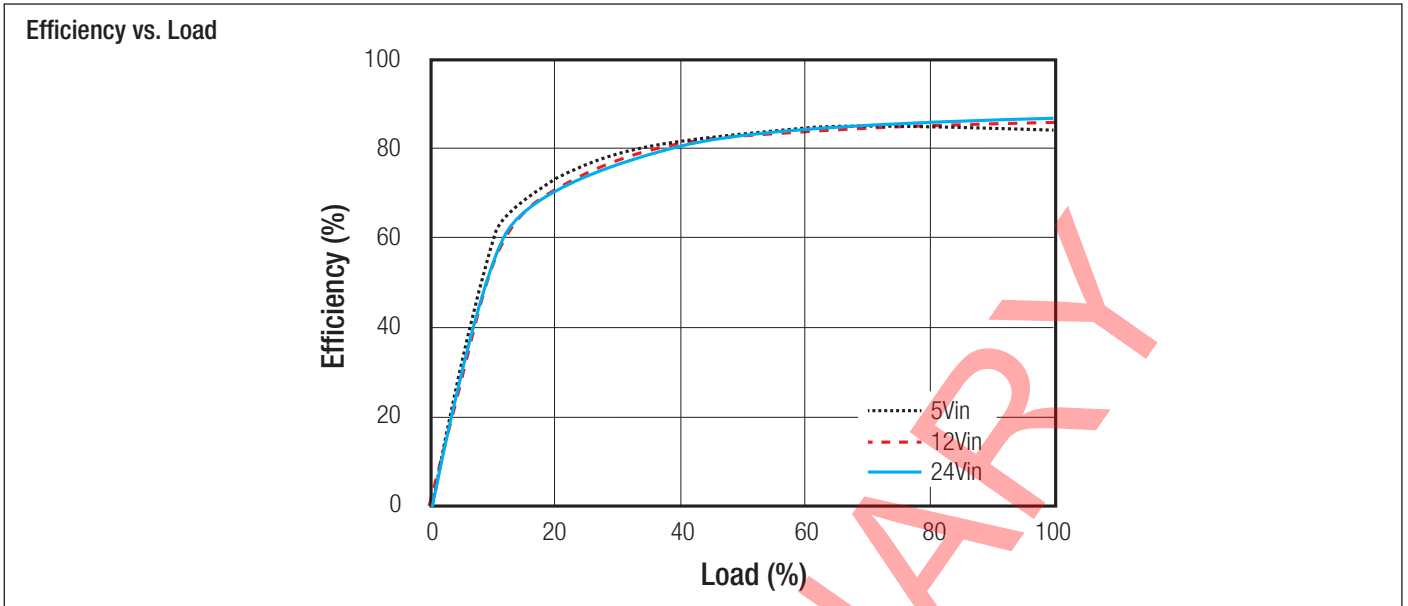
**Notes:**  
 Note4: Ripple and Noise is measured with a 20MHz bandwidth and a 0.1µF ceramic capacitor.

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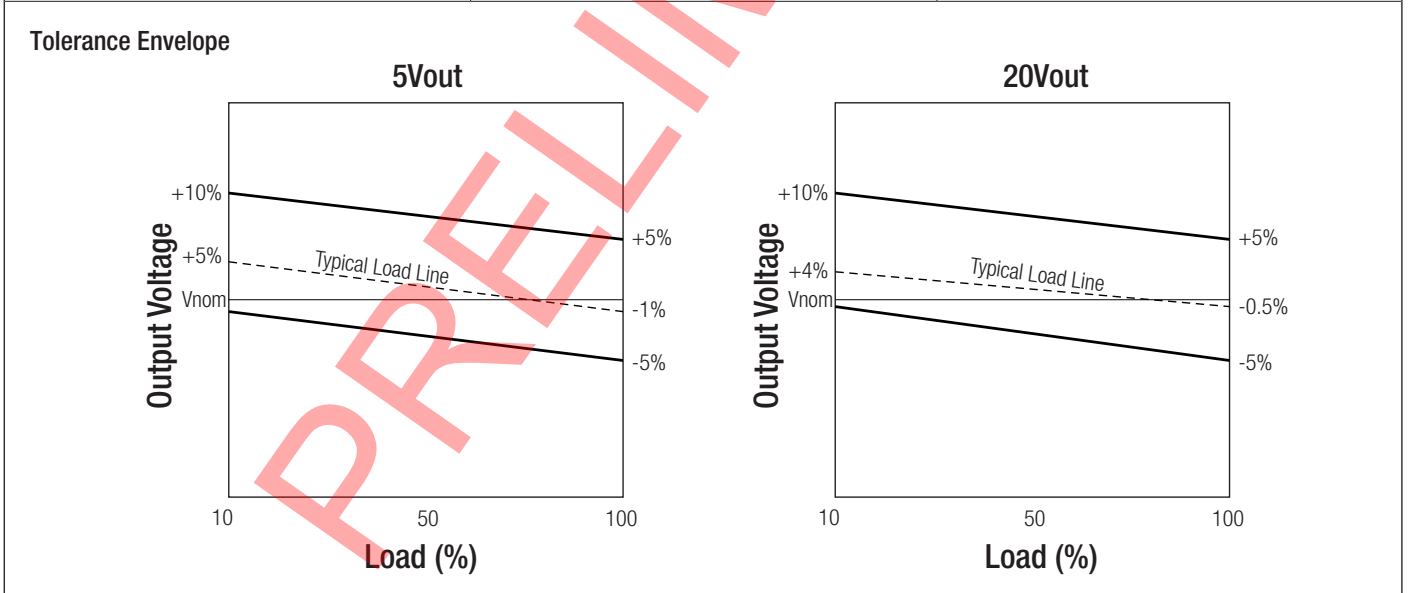


**UL**  
E358085

**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal Input and full load after warm-up time unless otherwise noted)



REGULATIONS		
Parameter	Condition	Values
Output Voltage Accuracy		$\pm 5\%$ max.
Line Voltage Regulation	low line to high line, full load and 1%Vin	$\pm 1.2\%$ typ.
Load Voltage Regulation	10% to 100% load	$\pm 5\%$ typ. / $\pm 10\%$ max.

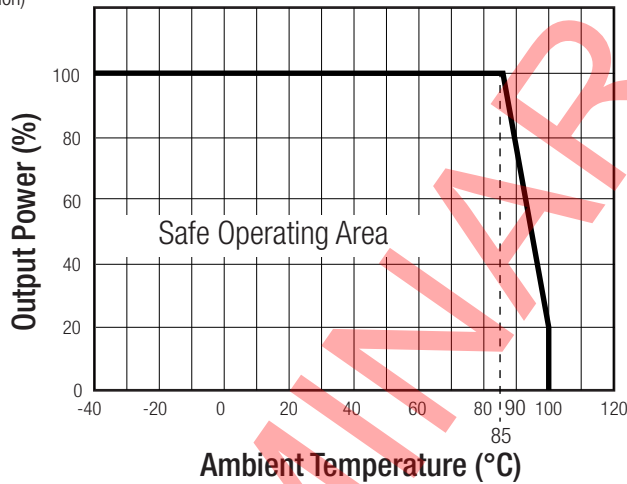


PROTECTIONS		
Parameter	Condition	Value
Short Circuit Protection (SCP)	only with "/P" suffix	continuous, automatic recovery
Isolation Voltage	I/P to O/P without suffix with suffix "/H"	3kVDC / 1 second 4kVDC / 1 second
Isolation Capacitance		135pF max.
Isolation Resistance		10G $\Omega$ min.

**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal Input and full load after warm-up time unless otherwise noted)

ENVIRONMENTAL		
Parameter	Condition	Value
Operating Temperature Range	free air convection, with derating	-40°C to +100°C
Operating Humidity	non-condensing	5% - 95% RH max.
Vibration		MIL-STD-202G
MTBF	according to MIL-HDBK-217F	+25°C: 1800 x 10 <sup>3</sup> hours +85°C: 560 x 10 <sup>3</sup> hours

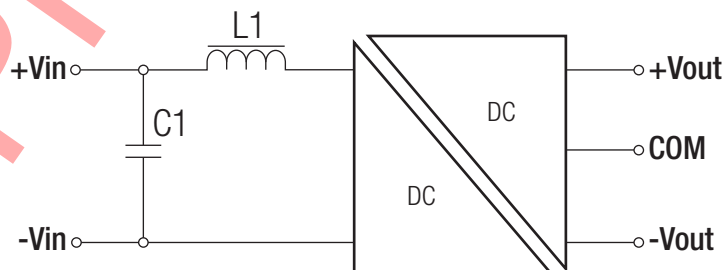
**Derating Graph**  
(@ nominal  $V_{in}$  at chamber and free air convection)



SAFETY AND CERTIFICATIONS		
Certificate Type	Report / File Number	Standard
UL General Safety	(Pending)	UL-60950-1
CAN/CSA General Safety		C22.2 No. 60950

EMI Compliance	Condition	Standard / Criterion
EMI	with external components (see filter suggestions)	EN55022, Class B

**EMC Filtering - Suggestions for Class B**



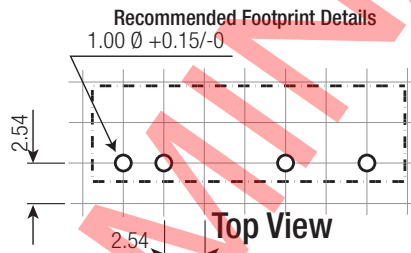
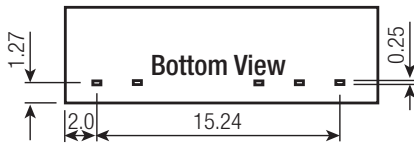
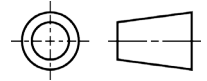
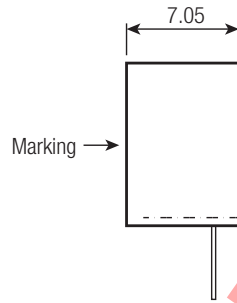
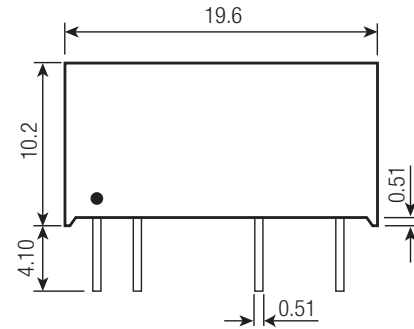
Input Voltage	C1	L1
5VDC	10µF	4.7µH
12VDC	4.7µF	22µH
15VDC	4.7µF	22µH
24VDC	2.2µF	47µH

**Specifications** (measured at  $T_a=25^\circ\text{C}$ , nominal Input and full load after warm-up time unless otherwise noted)

### DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Potting	Plastic, (UL94V-0) Epoxy, (UL94V-0)
Package Dimension (LxWxH)		19.65 x 7.05 x 10.2mm
Package Weight		2.8g

#### Dimension Drawing (mm)



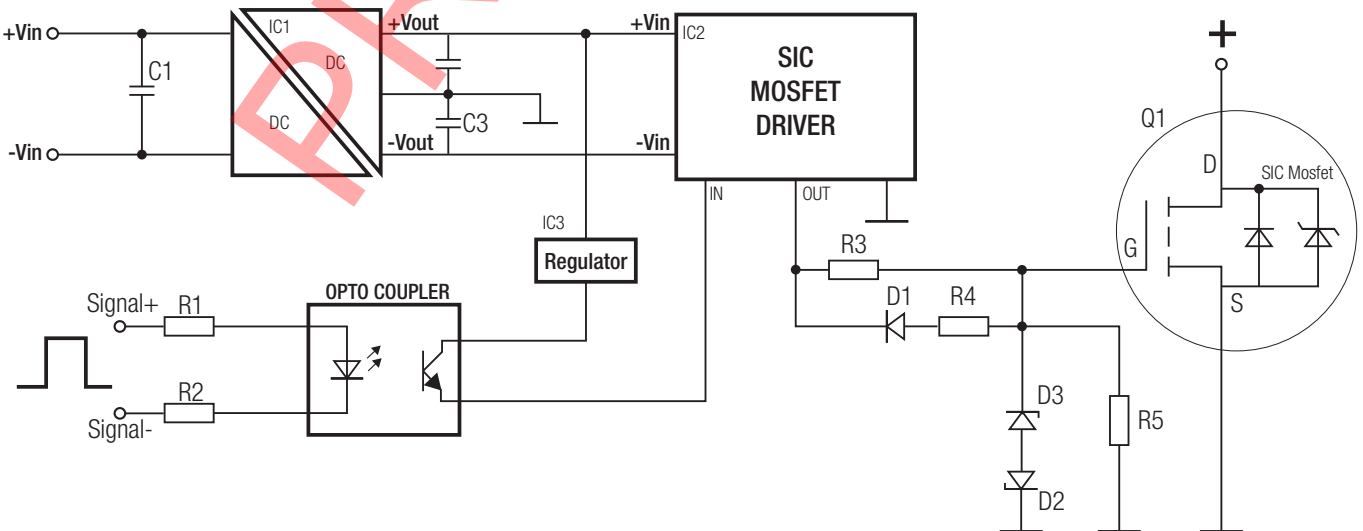
#### Pin Connections

Pin #	Dual
1	+Vin
2	-Vin
5	-Vout
6	Com
7	+Vout

Tolerance: xx.x=  $\pm 0.5\text{mm}$   
xx.xx=  $\pm 0.35\text{mm}$   
Pin:  $\pm 0.05\text{mm}$

### INSTALLATION AND APPLICATION

#### Typical Application Circuit



**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input and full load after warm-up time unless otherwise noted)

PACKAGING INFORMATION		
Packaging Dimension (LxWxH)	Tube	520.0 x 16.5 x 9.3mm
Packaging Quantity	Tube	25pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity		5% to 95% RH

PRELIMINARY