

# Features

# Unregulated Converters

- Power sharing
- High isolation 3kVDC & 4kVDC for 1 second
- Efficiency up to 87%
- Wide operating temperature range from -40°C to +85°C
- UL60950 certified
- IEC/EN60950-1 certified



## 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.

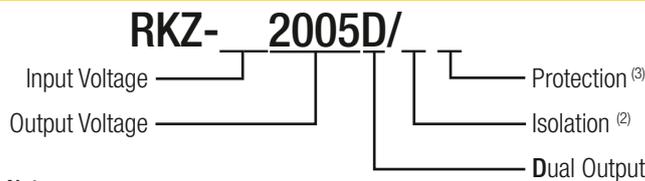
### Selection Guide

Part Number	nom. 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 @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range			±10%	
Internal 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

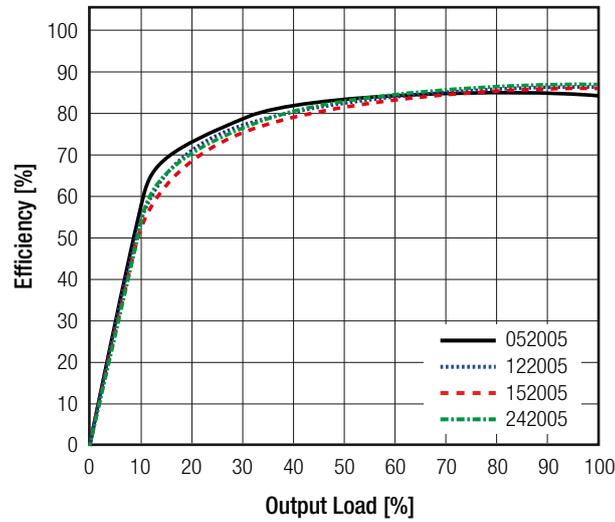
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[www.recom-power.com/eval-ref-boards](http://www.recom-power.com/eval-ref-boards)

**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

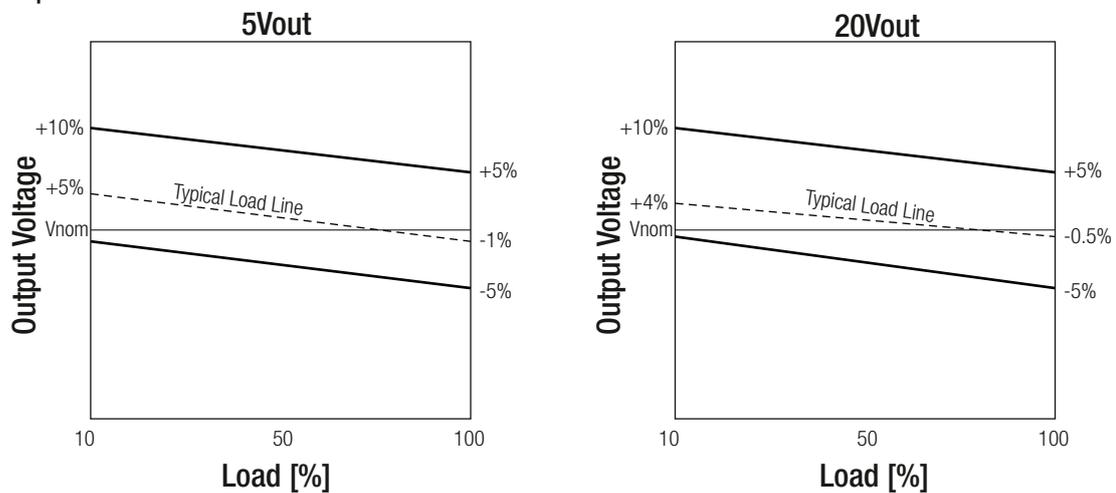
Efficiency vs. Load



**REGULATIONS**

Parameter	Condition	Values
Output Accuracy		±5.0% max.
Line Regulation	low line to high line, full load	±1.2% of 1.0% Vin typ.
Load Regulation	10% to 100% load	±5.0% typ. / ±10% max.

Tolerance Envelope



**PROTECTIONS**

Parameter	Condition			Value
Short Circuit Protection (SCP)	only with "/P" suffix			continuous, automatic recovery
Isolation Voltage <sup>(5)</sup>	I/P to O/P	tested for 1 second	without suffix with suffix "/H"	3kVDC / 1 second 4kVDC / 1 second
Isolation Capacitance				135pF max.
Isolation Resistance				10GΩ min.

**Notes:**

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

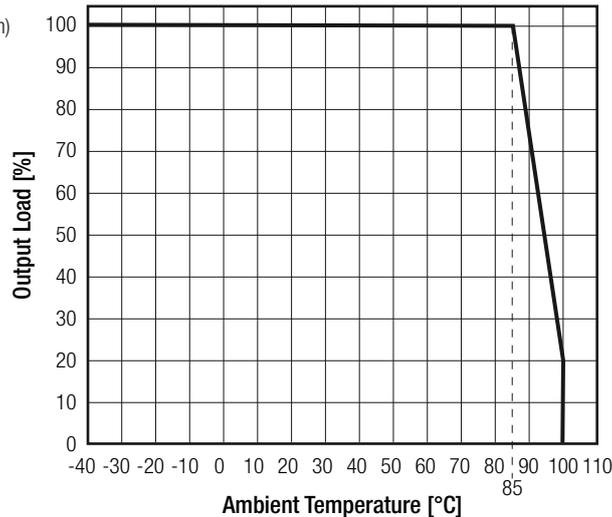
Note6: An input fuse is required if the mains supply is not over-current protected. Recommended fuse: T2A slow blow type

**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL		
Parameter	Condition	Value
Operating Temperature Range	with derating @ free air convection (see graph)	-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 +85°C 1800 x 10 <sup>3</sup> hours 560 x 10 <sup>3</sup> hours

### Derating Graph

(@ nominal Vin at chamber and free air convection)

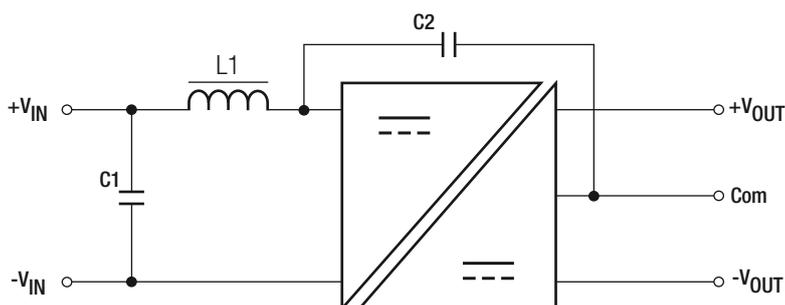


### SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	1602031	EN60950-1:2006 + A2:2013 IEC60950-1:2005; 2nd Edition + A2:2013
Information Technology Equipment, General Requirements for Safety	E358085	UL60950-1, 2nd Edition, 2007 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2006
Medical Electric Equipment, General Requirements for Safety and Essential Performance	MDD1205098-4	IEC60601-1, 3rd Edition, 2005 EN60601-1, 1st Edition, 2006
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS 2+		RoHS-2011/65/EU + AM-2015/863

EMI Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter	EN55032, Class B

### EMC filter suggestion for EN55032 Class B



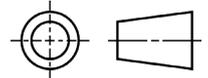
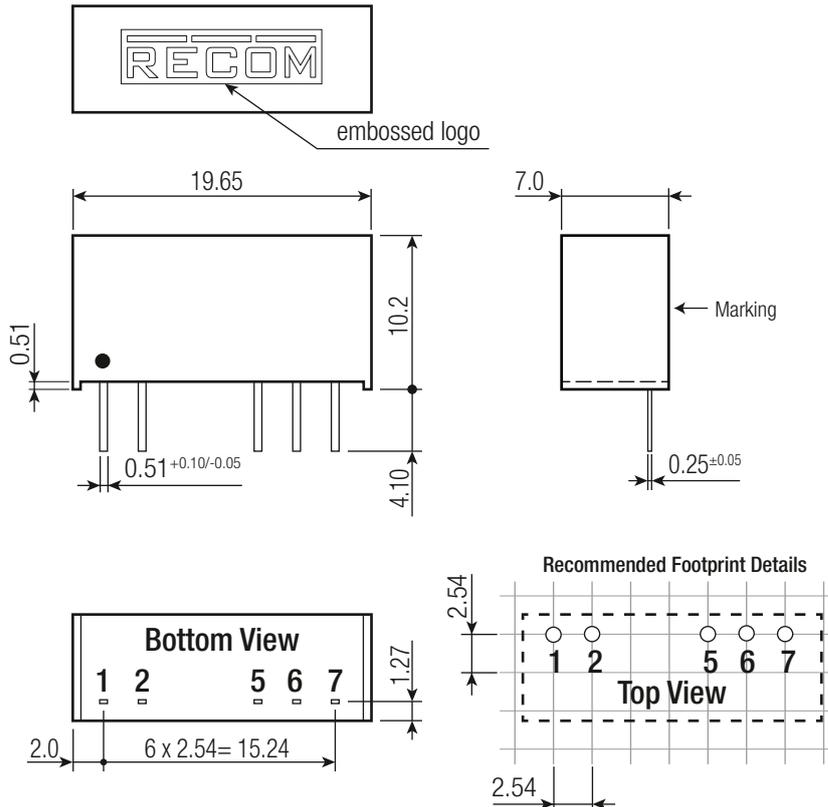
MODEL	C1	C2	L1
RKZ-052005D	10µF	470pF, 4kVDC	4.7µH
RKZ-122005D	4.7µF		22µH
RKZ-152005D	4.7µF		22µH
RKZ-242005D	2.2µF		47µH

**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting	non-conductive black plastic, (UL94 V-0) epoxy, (UL94 V-0)
Package Dimension (LxWxH)		19.65 x 7.05 x 10.2mm
Package Weight		2.8g

#### Dimension Drawing (mm)



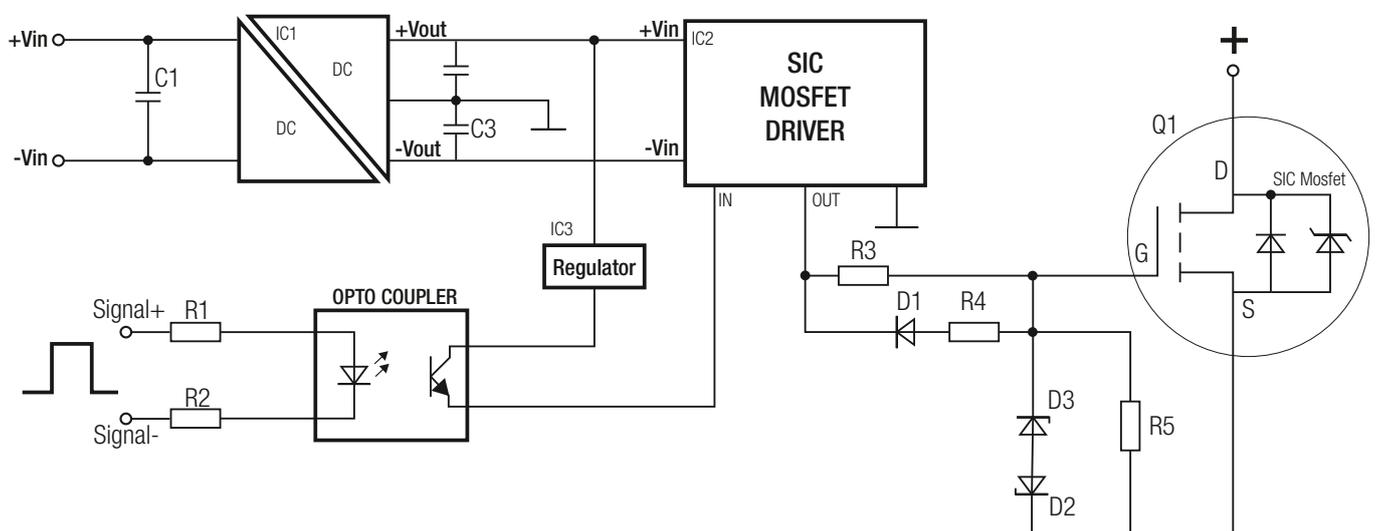
#### Pin Connections

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

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.35mm

### INSTALLATION AND APPLICATION

#### Typical Application Circuit



**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

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

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