

# Features

- High isolation 2W converter
- 3kVDC and 4kVDC basic isolation
- UL94V-0 package material
- Optional continuous short circuit protected
- Efficiency up to 84%
- Suitable for IGBT applications

# Unregulated Converters



## RKZ

**2 Watt  
SIP7  
Single and  
Dual Output**

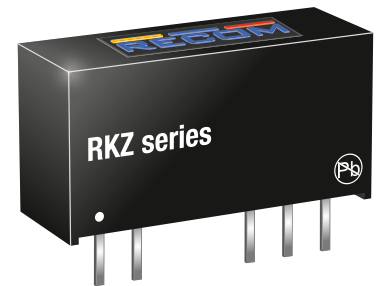


### Description

The RKZ Series of 2W DC/DC Converters are certified to EN60950-1. This makes them suitable for high end industrial applications such as IGBT driver circuitry. The RKZ converters are pin-compatible with the RK and RH converter series, offering a simple way to upgrade a 1W high isolation supply to 2W.

### Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RKZ-xx05S (3,4)	5, 12, 24	5	400	82-84	1500
RKZ-xx12S (3,4)	5, 12, 24	12	168	82-87	330
RKZ-xx15S (3,4)	5, 12, 24	15	132	82-84	330
RKZ-xx05D (3,4)	5, 12, 24	±5	±200	70-83	±680
RKZ-xx12D (3,4)	5, 12, 24	±12	±84	82-84	±220
RKZ-xx15D (3,4)	5, 12, 24	±15	±66	82-88	±220
RKZ-xx1509D (3,4)	5, 12, 24	+15/-9	+67/-111	70-81	±330

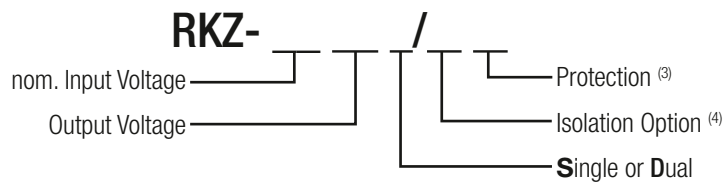


#### Notes:

- Note1: Efficiency is tested at nominal input and full load at +25°C ambient
- Note2: Max Cap Load is tested at nominal input and full resistive load and is defined as the capacitive load that will allow start up in under 1s without damage to the converter



### Model Numbering



#### Notes:

- Note3: standard part is without Continuous Short Circuit Protection  
add suffix „/P“ for Continuous Short Circuit Protection
- Note4: add suffix „/H“ for 4kVDC Isolation  
or add suffix „/HP“ for 4kVDC Isolation and Continuous Short Circuit Protection

#### Ordering Examples:

RKZ-0515S/P: 5VDC Input Voltage, 15VDC Output Voltage, Single Output with continuous short circuit protection  
 RKZ-0515D/HP: 5VDC Input Voltage, ±15VDC Output Voltage, Dual Output with continuous short circuit protection and 4kVDC isolation

UL60950-1 certified  
 CSA C22.2 No. 60950-1-07 certified  
 IEC/EN60950-1 certified  
 EN55032 compliant



[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)

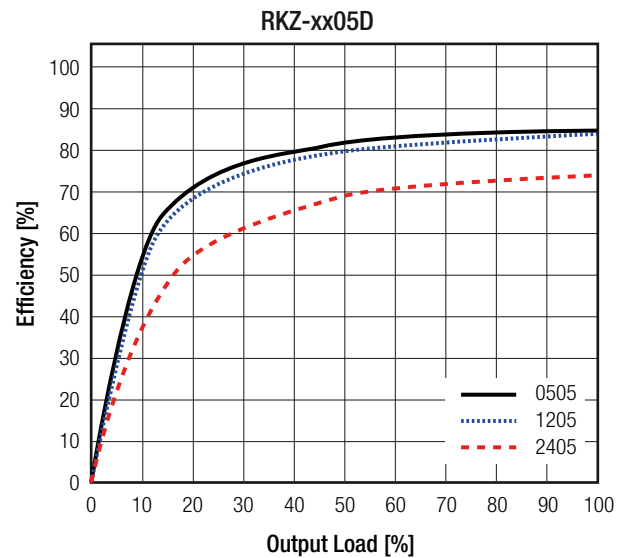
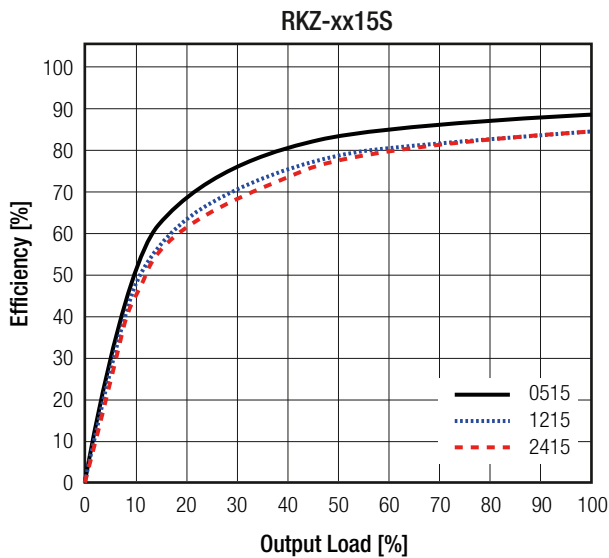
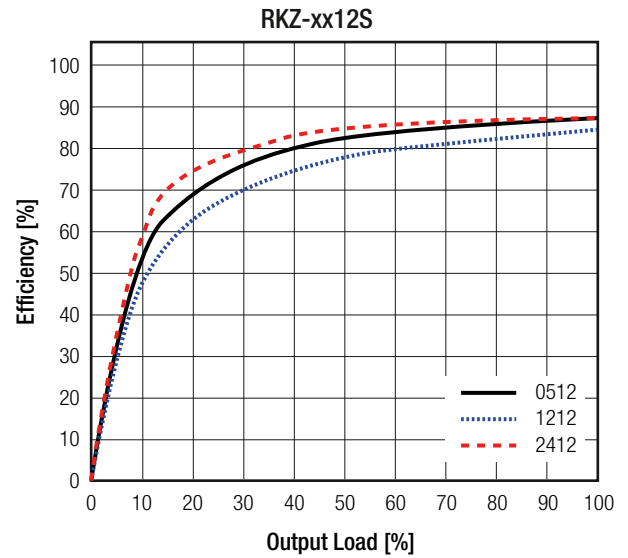
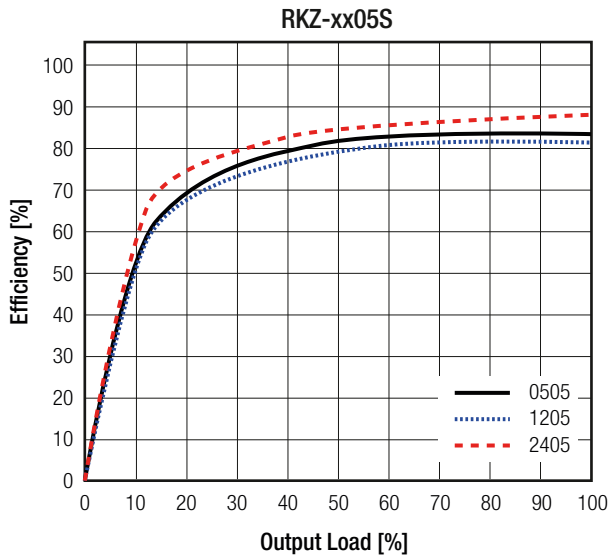
### BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				capacitor
Input Voltage Range			±10%	
Minimum Load <sup>(5)</sup>		0%		
Internal Operating Frequency	all others RKZ-xx1509D	20kHz 20kHz	50kHz 51kHz	85kHz
Output Ripple and Noise	20MHz BW			150mVp-p

**Notes:**

Note5: Operation below 10% load will not harm the converter, but specifications may not be met

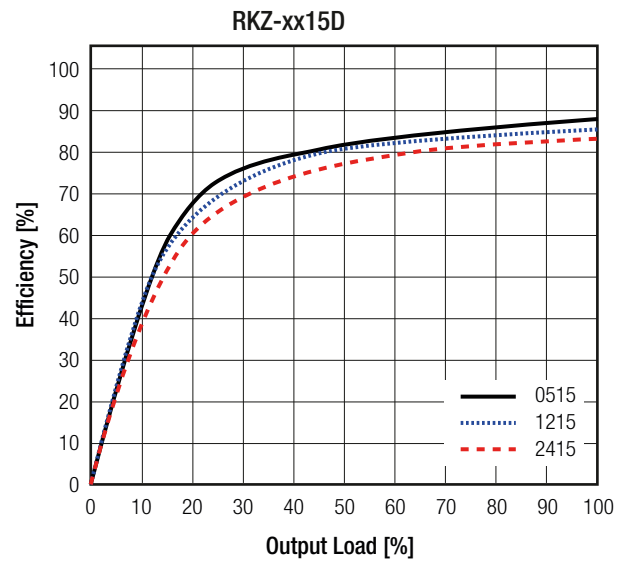
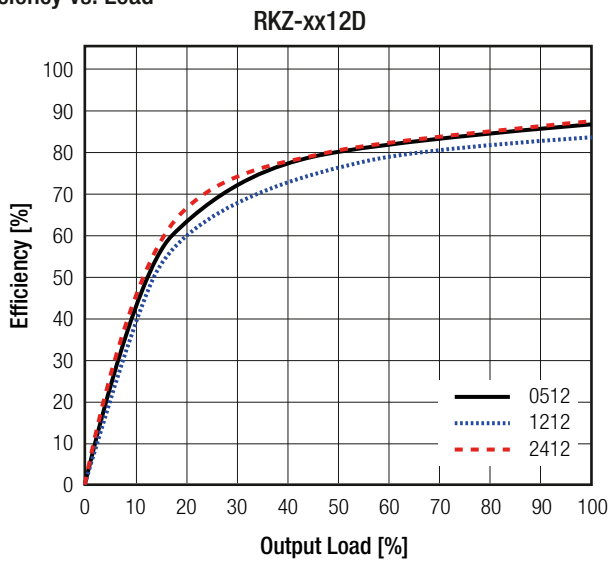
### Efficiency vs. Load



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

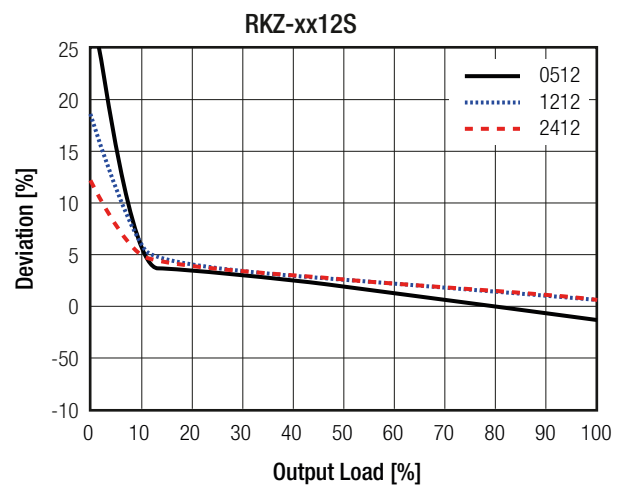
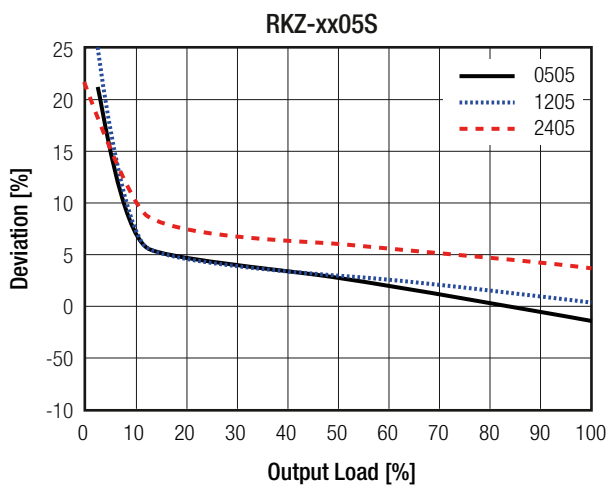
Efficiency vs. Load



## REGULATIONS

Parameter	Condition	Value
Output Accuracy		±5.0% max.
Line Regulation	low line to high line	±1.2% of 1.0% Vin typ.
Load Regulation	10% to 100% load	5Vout
		12, 24Vout and RKZ-xx1509D
		15.0% max.
		10.0% max.

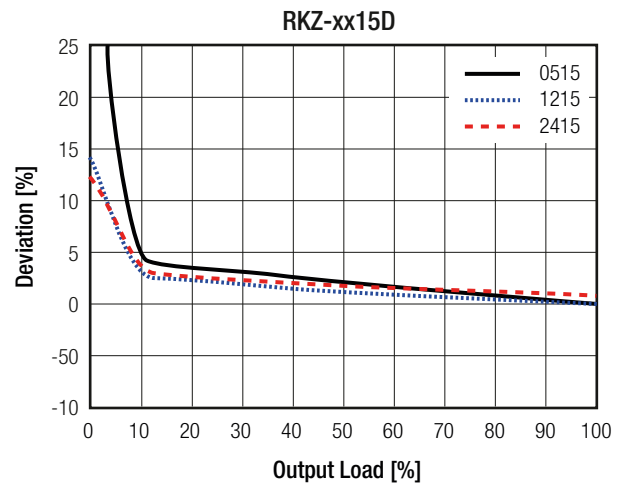
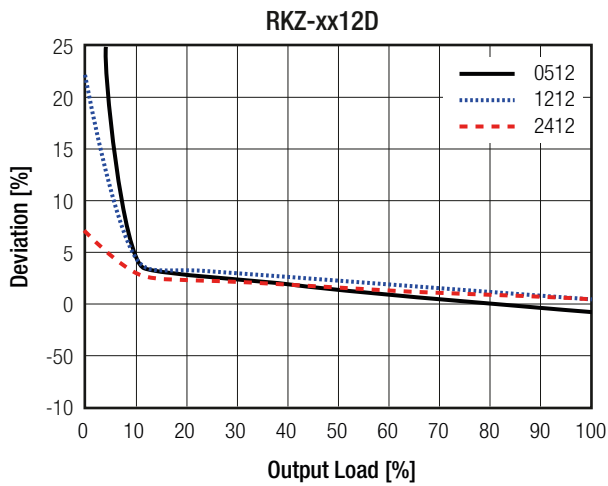
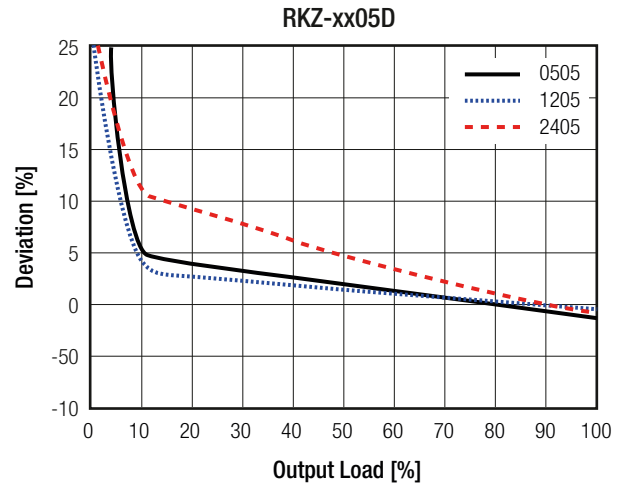
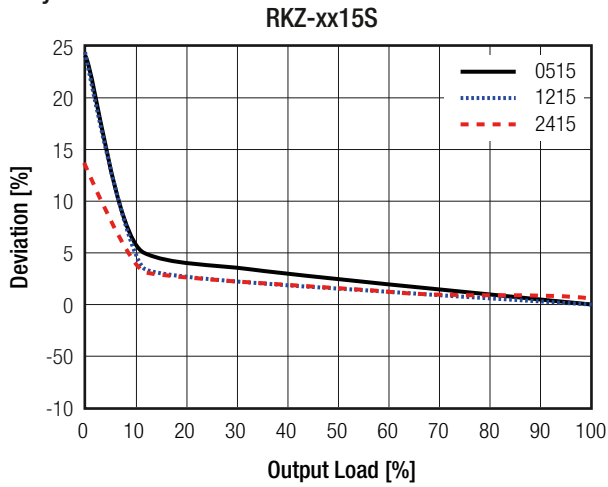
Deviation vs. Load



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

**Accuracy vs. Load**



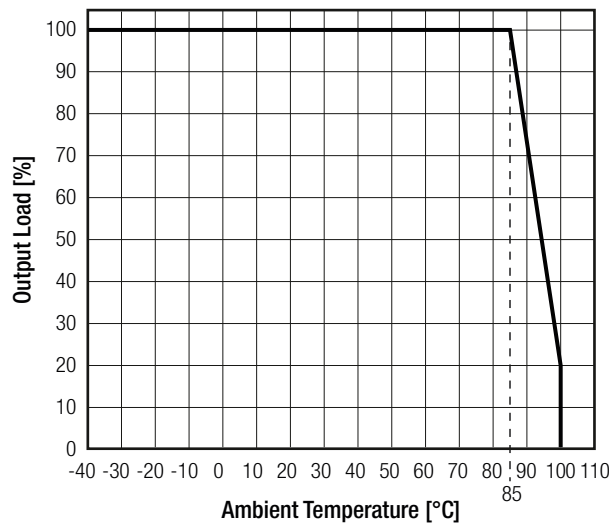
PROTECTIONS				
Parameter	Type		Value	
Short Circuit Protection (SCP)	without suffix with suffix "/P"		1 second continuous	
Isolation Voltage <sup>(6)</sup>	I/P to O/P	without suffix	tested for 1 second rated for 1 minute	3kVDC 1.5kVAC / 60Hz
		with suffix "/H"	tested for 1 second rated for 1 minute	4kVDC 2kVAC / 60Hz
Isolation Resistance			10GΩ min.	
Isolation Capacitance			120pF max.	
Insulation Grade			basic	
<b>Notes:</b>				
Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage				
Note7: Refer to local safety regulations if input over-current protection is required. Recommended fuse: 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	full load @ free air convection (see graph)		-40°C to +85°C
Maximum Case Temperature			+110°C
Temperature Coefficient			±0.03%/K typ.
Thermal Impedance			40K/W typ.
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	18300 x 10 <sup>3</sup> hours
		+85°C	8070 x 10 <sup>3</sup> hours

**Derating Graph**  
(@ free air convection)



**SAFETY AND CERTIFICATIONS**

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Information Technology Equipment, General Requirements for Safety	E358085-A4-UL	UL60950-1, 2nd Edition:2007 CAN/CSA C22.2 No. 60950-1-03, 2nd Edition:2007
EAC	RU-AT.49.09571	TP TC 004/2011
RoHs 2+		RoHS-2011/65/EU + AM-2015/863

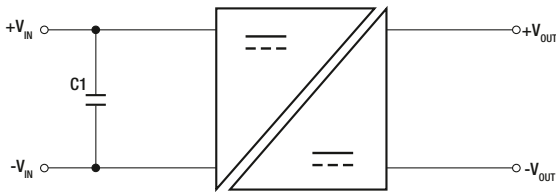
EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	with external filter	EN55032, Class A EN55032, Class B

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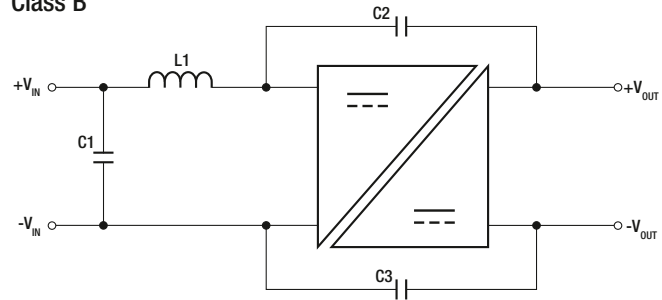
**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

**EMC Filtering Suggestions according to EN55032**

**Class A**



**Class B**



**Component List Class A**

Model	L1	C1	C2	C3
all types	NA	10µF 100V, MLCC	NA	NA

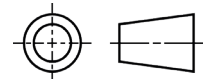
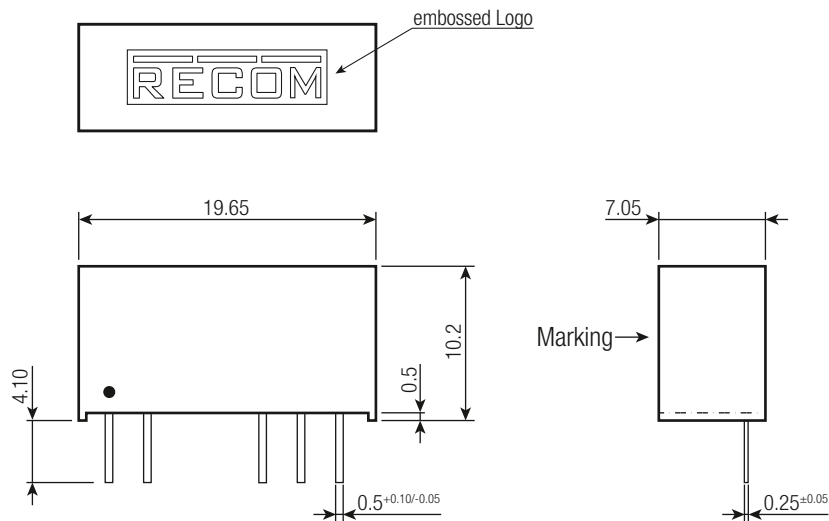
**Component List Class B**

Model	L1	C1	C2 (safety)	C3 (safety)
5Vout	12µH, PR4532Z-120K	10µF 100V, MLCC	470pF	1nF
12, 15Vout	22µH, PR4532Z-220K		5kV	5kV

**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 typ.

**Dimension Drawing (mm)**

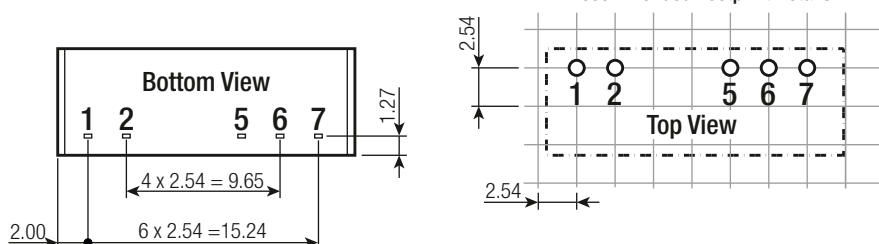


**Pinning information**

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	no pin	Com
7	+Vout	+Vout

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.25mm

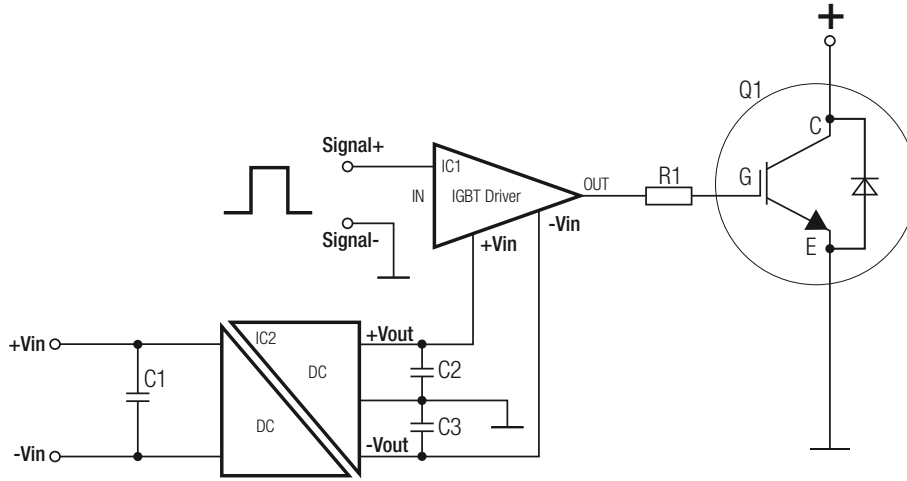
**Recommended Footprint Details**



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

**INSTALLATION AND APPLICATION**

**IGBT Application Circuit**



**PACKAGING INFORMATION**

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 16.0 x 9.0mm
Packaging Quantity	tube	25pcs
Storage Temperature Range		-55°C to + 125°C
Storage Humidity		95% RH max.

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