Features

Unregulated Converters

- High isolation 2W converter
- 3kVDC/1s and 4kVDC/1s isolation
- UL94 V-0 package material
- Optional continuous short circuit protected
- Efficiency up to 84%
- Suitable for IGBT applications

RECOM
DC/DC Converter

RKZ

2 Watt SIP7 Single and Dual Output

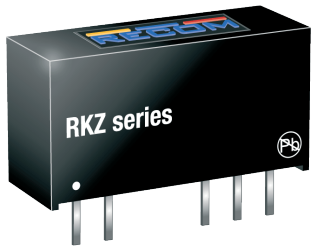
3 YEAR warranty

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



IEC/EN60950-1 certified
IEC/EN60601-1 certified
EN55032 compliant

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

RKZ- __ __ / __ __

- nom. Input Voltage
- Output Voltage
- Protection (3)
- Isolation Option (4)
- **S**ingle or **D**ual

Notes:

Note3: standard part is without Continuous Short Circuit Protection
add suffix „/P“ for Continuous Short Circuit Protection

Note4: add suffix „/H“ for 4kVDC/1s Isolation
or add suffix „/HP“ for 4kVDC/1s 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/1s isolation

PREFERRED ALTERNATIVES
For new medical applications:
REM2

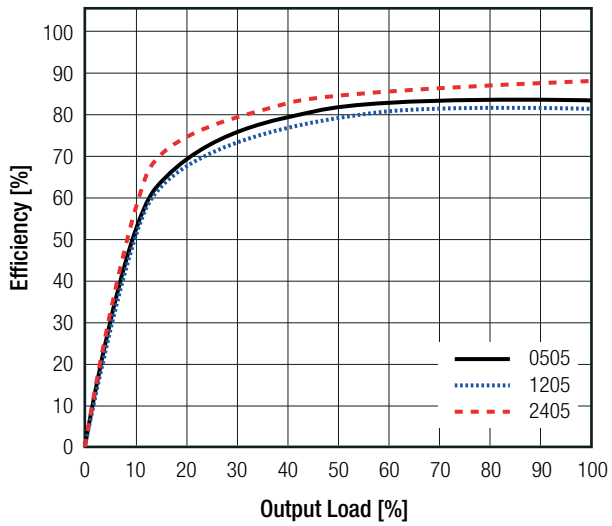
REF DESIGN available
www.recom-power.com/eval-ref-boards

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

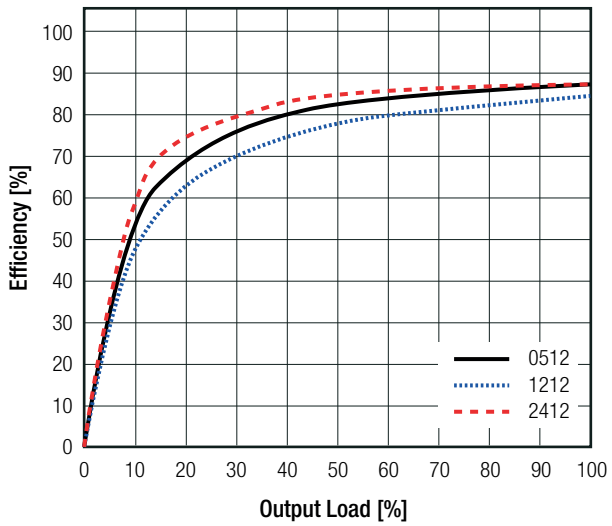
BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Internal Input Filter				capacitor
Input Voltage Range			±10%	
Minimum Load		0%		
Internal Operating Frequency	all others RKZ-xx1509D	20kHz 20kHz	50kHz 51kHz	85kHz
Output Ripple and Noise	20MHz BW			150mVp-p

Efficiency vs. Load

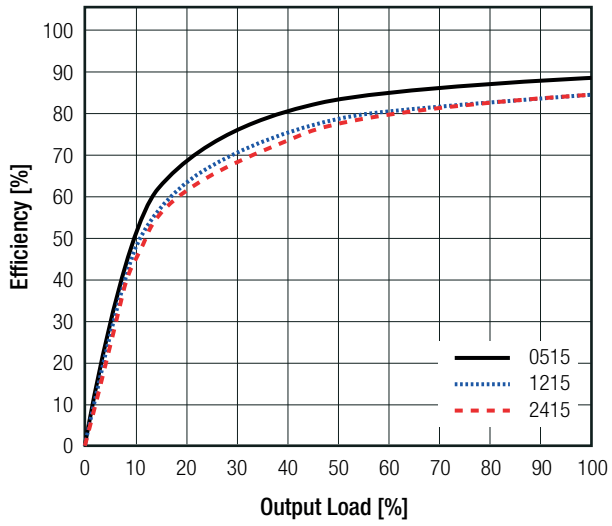
RKZ-xx05S



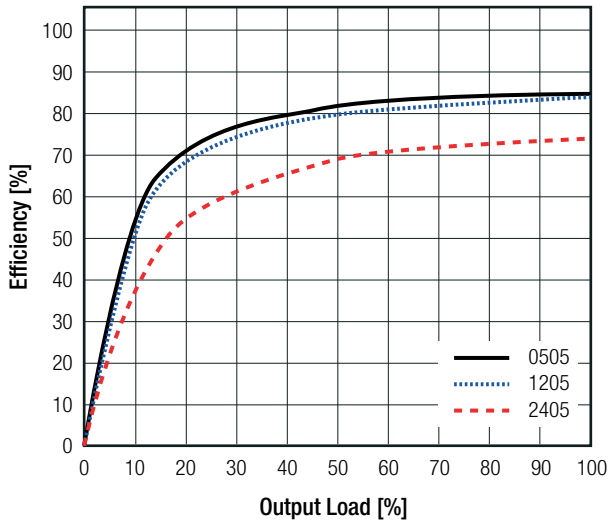
RKZ-xx12S



RKZ-xx15S



RKZ-xx05D

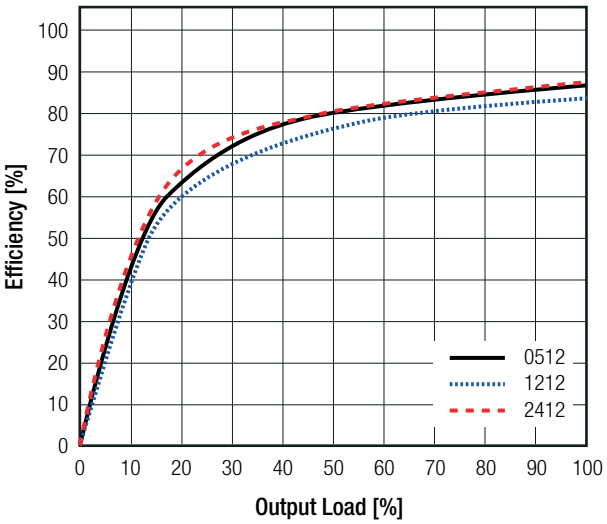


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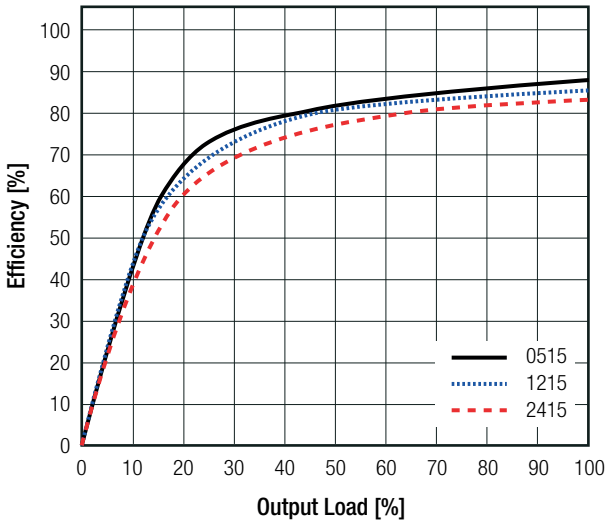
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Efficiency vs. Load

RKZ-xx12D



RKZ-xx15D



REGULATIONS

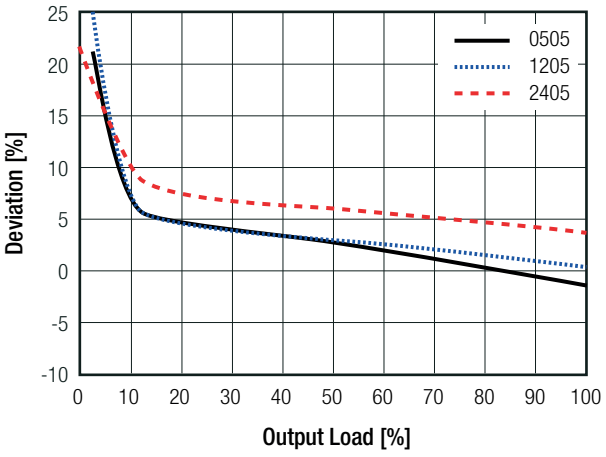
Parameter	Condition		Value
Output Accuracy			±5.0% max.
Line Regulation	low line to high line		±1.2% of 1.0% Vin typ.
Load Regulation [5]	10% to 100% load	5Vout	15.0% max.
		12, 15, 24Vout and RKZ-xx1509D	10.0% max.

Notes:

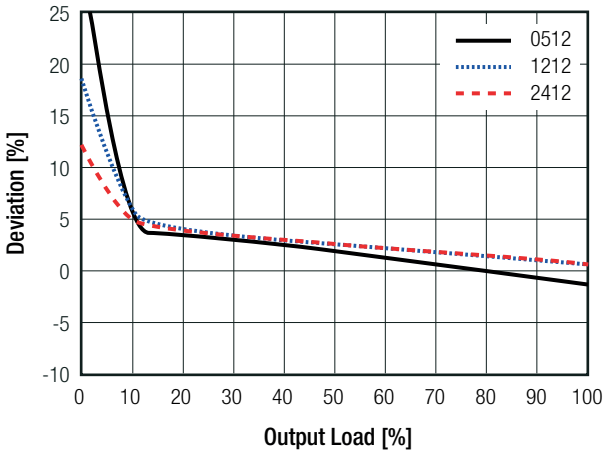
Note5: Operation below 10% load will not harm the converter, but specifications may not be met

Deviation vs. Load

RKZ-xx05S



RKZ-xx12S

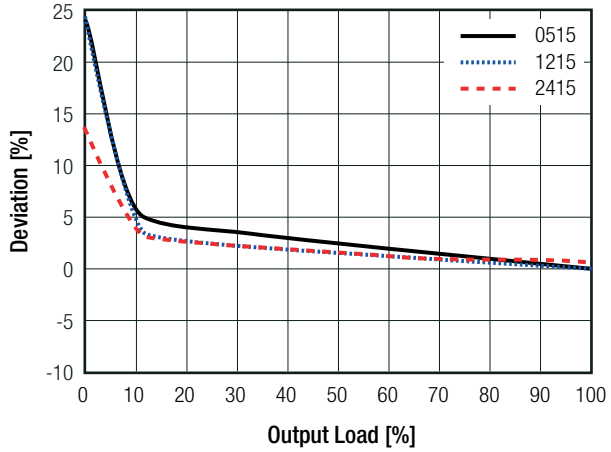


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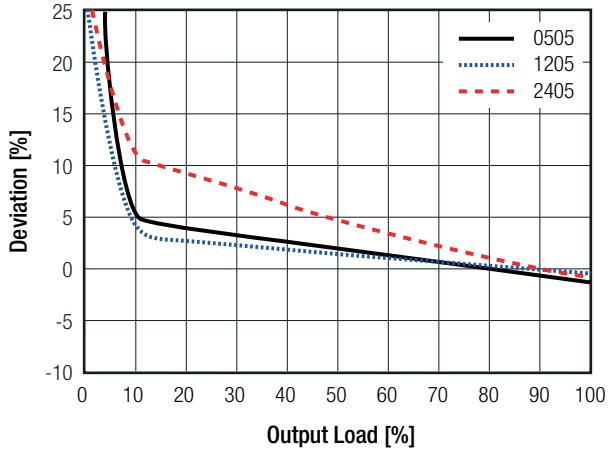
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Deviation vs. Load

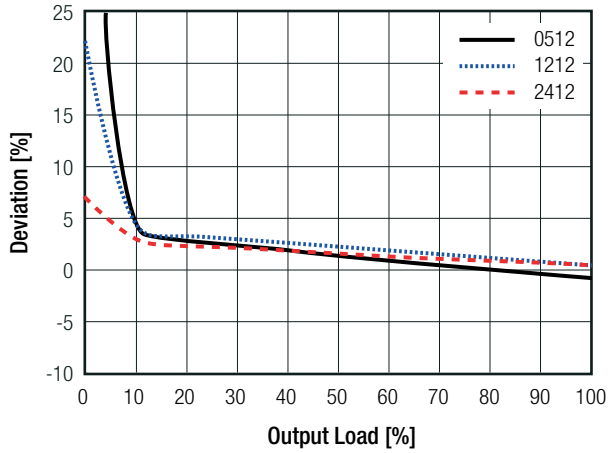
RKZ-xx15S



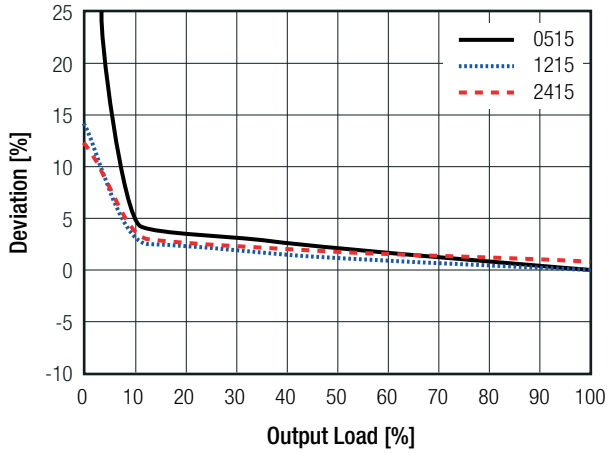
RKZ-xx05D



RKZ-xx12D



RKZ-xx15D



PROTECTIONS				
Parameter	**Type**			**Value**
Short Circuit Protection (SCP)	without suffix with suffix "/P"			1 second continuous
Isolation Voltage [6]	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	according to 60950-1			basic

Notes:

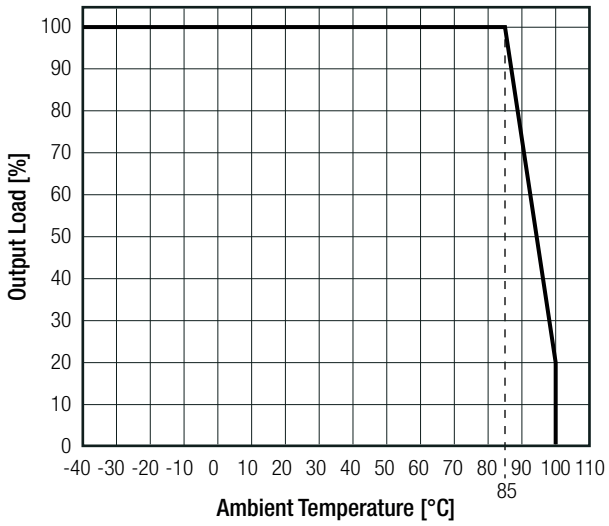
Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage

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			3000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	18300 x 10^3 hours 8070 x 10^3 hours

Derating Graph
(@ free air convection)



SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	**Report / File Number**	**Standard**
Information Technology Equipment, General Requirements for Safety	SPCLVD1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Medical electrical equipment Part 1: General requirements for basic safety and essential performance	SPC1007090 (8)	IEC 60601-1:1988 + A2:1995 EN 60601-1:1990 + A13 :1996
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS2		RoHS-2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter (see filter suggestion below)	EN55032, Class B EN55032, Class A

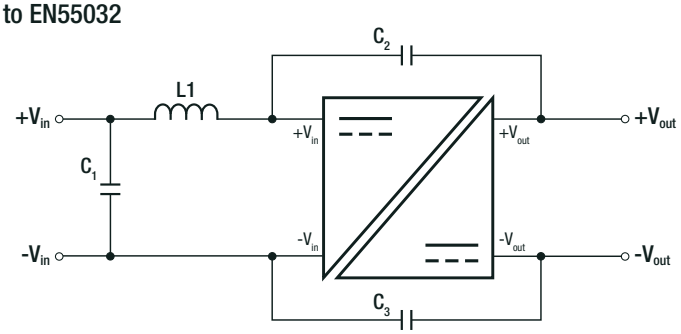
Notes:

Note8: excluded +15/-9 version

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

EMC Filter Suggestion according to EN55032



Component List Class A

MODEL	C1	L1	C2 (safety)	C3 (safety)
RKZ-0505S	10µF 100V MLCC	N/A	N/A	N/A
RKZ-1205S				
RKZ-2405S				

Component List Class B

MODEL	C1	L1	C2 (safety)	C3 (safety)
RKZ-0505S	10µF 100V MLCC	12µH choke RLS-126	470pF	1nF
RKZ-1205S		22µH choke RLS-226		
RKZ-2405S				

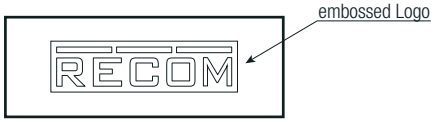
Notes:

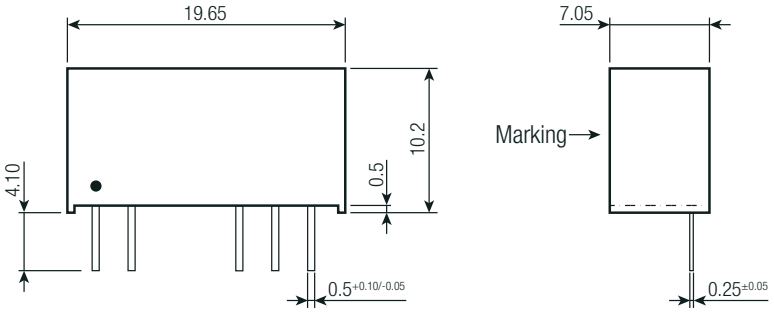
Note9: Filter suggestions are valid for indicated part numbers only. For other part numbers, please contact RECOM tech support for advice

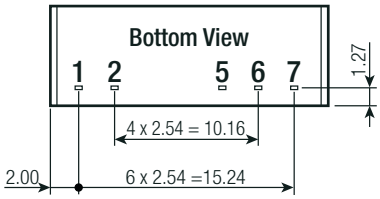
DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting PCB	non-conductive black plastic (UL94 V-0) epoxy, (UL94 V-0) FR4, (UL94 V-0)
Dimension (LxWxH)		19.65 x 7.05 x 10.2mm
Weight		2.8g typ.

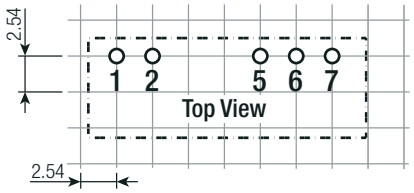
Dimension Drawing (mm)







Recommended Footprint Details



Pinning information

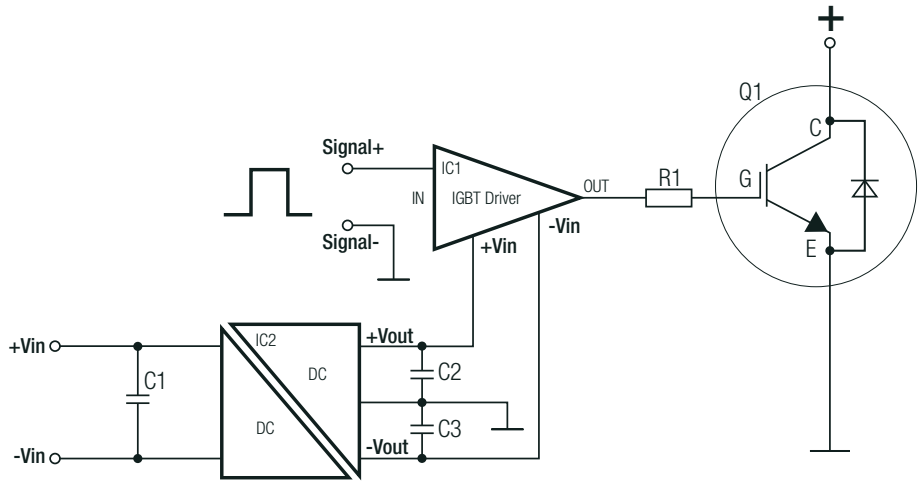
Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	no pin	Com
7	+Vout	+Vout

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

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		25pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	95% RH max.

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