

# Features

## Unregulated Converters

- 1:1 Input Range
- Efficiency up to 80%
- 3kVDC and 4kVDC Isolation Option
- Approved for Medical Applications
- -40°C to +100°C Operating Temperature Range
- Continuous Short Circuit Protection

### Selection Guide

Part Number SMD	Isolation Voltage (kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (typ.)	Capacitive Load (max.)
RAM-0505S*	3	5	5	200	78%	1000µF
RAM-1205S*	3	12	5	200	80%	1000µF
RAM-2405S*	3	24	5	200	80%	1000µF

\* add Suffix "/H" for Isolation 4kVDC/1min. e.g. RAM-0505S/H

\* add Suffix "-R" for tape&reel packing e.g. RAM-1205S-R or RAM-2405S/H-R

### Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage and rated output current unless otherwise specified)

Input Voltage Range		±10%
Output Voltage Accuracy		-1% typ., ±5% max.
Line Voltage Regulation	(low line to high line at max. load)	1.2% typ., 1.5% max.
Load Voltage Regulation	(10% to 100% full load)	10% typ., 15% max.
Output Ripple and Noise (20MHz BW limited)		50mVp-p typ., 100mVp-p max.
Operating Frequency ( $V_{in}$ =nominal input)		20kHz min. / 50kHz typ. / 90kHz max.
Efficiency		see Selection Guide
Minimum Load = 0%		Specifications valid for 10% minimum load only
Isolation Voltage	(tested for 1 minute)	3000 VDC
	(tested for 1 second)	3750 VDC
Isolation Voltage	H-Suffix (tested for 1 minute)	4000 VDC
	H-Suffix (tested for 1 second)	5000 VDC
Isolation Capacitance		4pF typ., 10pF max.
Isolation Resistance	( $V_{iso}$ =500V)	15GΩ min.
Short-Circuit Protection		continuous
Operating Temperature Range		-40°C to +100°C
Storage Temperature		-55°C to +125°C
Reflow Temperature	RoHS compliant	245°C (30 sec.), Peak 255°C (5sec.) max.
Vapour Phase Process	(for more details see Application Notes)	230°C (90 sec.) max.
Relative Humidity		95% RH
Package Weight		1.3g
Packing Quantity	All Types	27 pcs per Tube
	All Types	500 pcs per Reel
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F
MTBF (+85°C)		using MIL-HDBK 217F
Certifications		
EN Medical Safety	Report: MDD1112018 + RM1112018	IEC/EN 60601-1 3rd Edition
	Medical Report + ISO14971 Risk Assessment	
EN General Safety		EN60950-1, 2nd Edition

#### Notes

Note 1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

# ECONOLINE

DC/DC-Converter

# RECOM

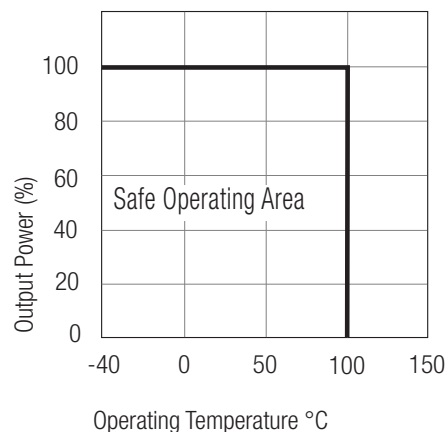
## 1 Watt SMD Single Output



**EN-60601-1 Certified**  
**EN-60950-1 Certified**

# RAM

## Derating-Graph (Ambient Temperature)

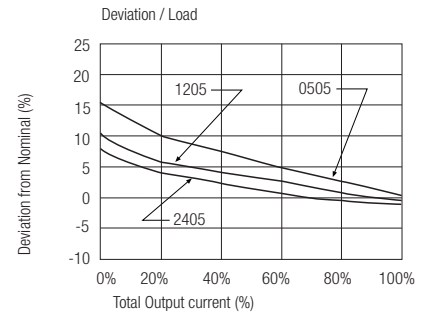
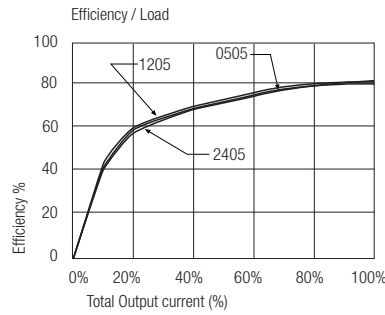
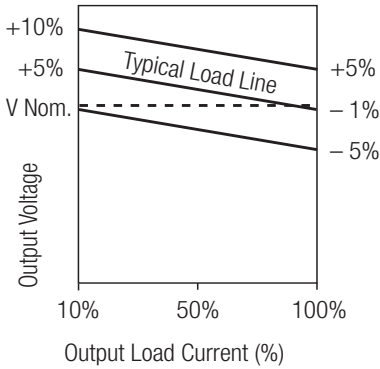


Refer to Application Notes

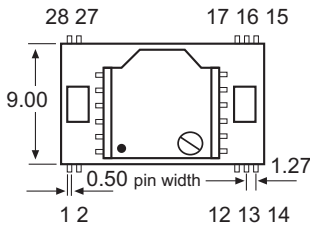
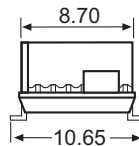
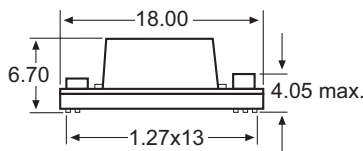
**Typical Characteristics**

**Tolerance Envelope**

**RAM-xx05S**



**Package Style and Pinning**



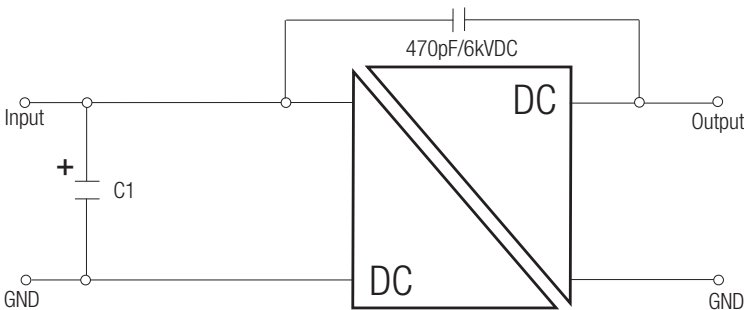
**Pin Connections**

Pin #	Function
1	+Vin
2	-Vin
12	-Vout
13	+Vout
14-17	NC
27,28	NC

NC = No Connection

Unit: mm  
Tolerance: ± 0.25 mm

**EMC Filtering - Suggestion for EN55022 Class B**



Input Voltage	Inductance/ Capacitance (C1)
5V	10µF
12V	4.7µF
24V	22µF