



FEATURES

- RoHS compliant
- UL 94V-0 package material
- No heatsink required
- Industry standard pinout
- 1kVDC isolation
- Internal SMD construction
- Fully encapsulated with toroidal magnetics
- No external components required
- No electrolytic or tantalum capacitors

DESCRIPTION

The LME0305SC is optimized for low-power applications and is ideally suited to generating a negative supply where only a positive rail exists.

SELECTION GUIDE

| Order Code | Nominal Input Voltage | Output Voltage | Output Current | Efficiency | Isolation Capacitance | Package Style |
|------------|-----------------------|----------------|----------------|------------|-----------------------|---------------|
| | V | V | mA | % | pF | |
| LME0305SC | 3.3 | 5 | 50 | 70 | 25 | SIP |

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|--|------|------|------|-------|
| Voltage range | Continuous operation, 3.3V input types | 2.97 | 3.3 | 3.63 | V |

OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|----------------------------|---|------|------|------|--------|
| Rated Power ¹ | T _A =0°C to 70°C | | | 0.25 | W |
| Voltage Set Point Accuracy | See tolerance envelope | | | | |
| Line regulation | High V _{IN} to low V _{IN} | | 1.0 | 1.2 | %/% |
| Load Regulation | 10% load to rated load | | 3.5 | 15 | % |
| Ripple and Noise | BW=DC to 20MHz | | | 75 | mV p-p |

ISOLATION CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------------|---------------------------|------|------|------|-------|
| Isolation test voltage | Flash tested for 1 second | 1000 | | | VDC |
| Resistance | Viso= 500V | 1 | 10 | | GΩ |

GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------|------|------|------|-------|
| Switching frequency | | | 100 | | kHz |

TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|------------------|------|------|------|-------|
| Specification | All output types | 0 | | 70 | °C |
| Storage | | -50 | | 130 | |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|-------|
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Input voltage V _{IN} | 5.5V |

APPLICATION NOTES

Minimum Load

The minimum load to meet datasheet specification is 10% of the full rated load across the specified input voltage range. Lower than 10% minimum loading will result in an increase in output voltage, which may rise to typically double the specified output voltage if the output load falls to less than 5%.

1. See derating graph.

All specifications typical at T_A=25°C, nominal input voltage and rated output current unless otherwise specified.



For full details go to
www.murata-ps.com/rohs

RoHS COMPLIANCE INFORMATION



The LME0305SC is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems. For further information, please visit www.murata-ps.com/rohs

TECHNICAL NOTES

ISOLATION VOLTAGE

'Hi Pot Test', 'Flash Tested', 'Withstand Voltage', 'Proof Voltage', 'Dielectric Withstand Voltage' & 'Isolation Test Voltage' are all terms that relate to the same thing, a test voltage, applied for a specified time, across a component designed to provide electrical isolation, to verify the integrity of that isolation.

Murata Power Solutions LME0305SC DC/DC converter is 100% production tested at their stated isolation voltage. This is 1kVDC for 1 second.

A question commonly asked is, "What is the continuous voltage that can be applied across the part in normal operation?"

For a part holding no specific agency approvals, such as the LME0305SC, both input and output should normally be maintained within SELV limits i.e. less than 42.4V peak, or 60VDC. The isolation test voltage represents a measure of immunity to transient voltages and the part should never be used as an element of a safety isolation system. The part could be expected to function correctly with several hundred volts offset applied continuously across the isolation barrier; but then the circuitry on both sides of the barrier must be regarded as operating at an unsafe voltage and further isolation/insulation systems must form a barrier between these circuits and any user-accessible circuitry according to safety standard requirements.

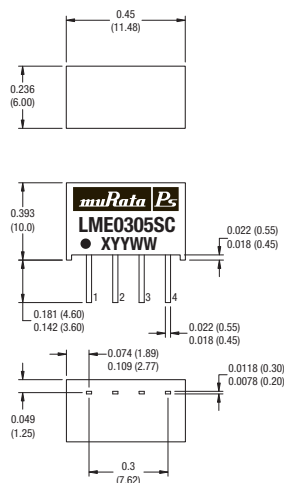
REPEATED HIGH-VOLTAGE ISOLATION TESTING

It is well known that repeated high-voltage isolation testing of a barrier component can actually degrade isolation capability, to a lesser or greater degree depending on materials, construction and environment. The LME0305SC has a toroidal isolation transformer, with no additional insulation between primary and secondary windings of enameled wire. While parts can be expected to withstand several times the stated test voltage, the isolation capability does depend on the wire insulation. Any material, including this enamel (typically polyurethane) is susceptible to eventual chemical degradation when subject to very high applied voltages thus implying that the number of tests should be strictly limited. We therefore strongly advise against repeated high voltage isolation testing, but if it is absolutely required, that the voltage be reduced by 20% from specified test voltage.

This consideration equally applies to agency recognized parts rated for better than functional isolation where the wire enamel insulation is always supplemented by a further insulation system of physical spacing or barriers.

PACKAGE SPECIFICATIONS

MECHANICAL DIMENSIONS



All dimensions in inches ± 0.01 (mm ± 0.25 mm). All pins on a 0.1 (2.54) pitch and within ± 0.01 (0.25) of true position.

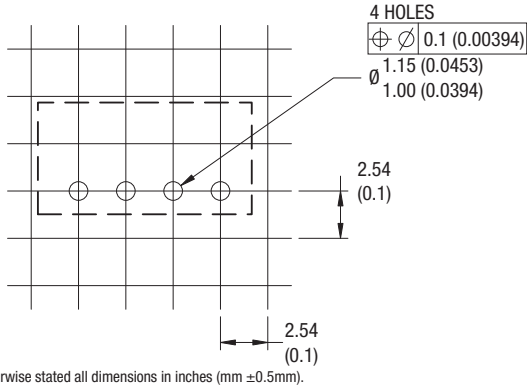
Weight: 1.30g

PIN CONNECTIONS

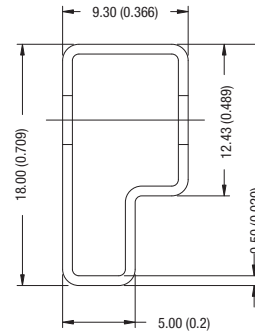
| Pin | Function |
|-----|----------|
| 1 | -VIN |
| 2 | +VIN |
| 3 | -VOUT |
| 4 | +VOUT |

PACKAGE SPECIFICATIONS (continued)

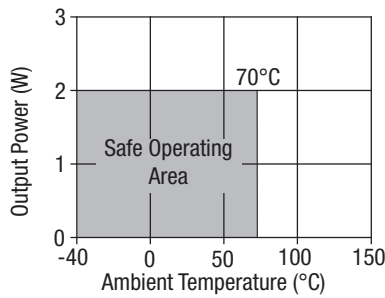
RECOMMENDED FOOTPRINT DETAILS



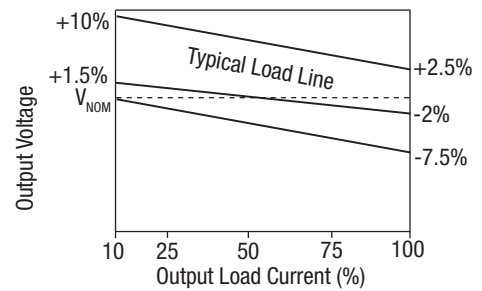
TUBE OUTLINE DIMENSIONS



TEMPERATURE DERATING GRAPH



TOLERANCE ENVELOPE



The voltage tolerance envelope shows typical load regulation characteristics for this product series. The tolerance envelope is the maximum output voltage variation due to changes in output loading.

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 ISO 9001 and 14001 REGISTERED



This product is subject to the following [operating requirements](#) and the [Life and Safety Critical Application Sales Policy](#).
 Refer to: <http://www.murata-ps.com/requirements/>

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