

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection ⁴	1 second
Wave Solder	Wave Solder profile not to exceed the profile recommended in IEC 61760-1 Section 6.1.3. Please refer to application notes for further information.
Lead temperature 1.5mm from case for 10 seconds	260°C
Input Voltage V_{IN} , NMT0572SC	7V
Input voltage V_{IN} , NMT1272SC	15V

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Efficiency	All channels or any single channel	75	85		%
Switching frequency			85		kHz

TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating temperature		-40		85	°C
Storage		-50		125	
Case temperature rise above ambient	1 litre static air chamber		27		

OUTPUT VOLTAGE CONFIGURATION

Although the output is described for negative rails, the input and output circuits are internally isolated hence positive rails can also be generated, or a mixture of positive and negative. The output $+V_{OUT}$ rail reference can be taken from any of the output terminals to give the range of outputs as described in the Output Voltage Configurations table below.

Channel Name	Standard Ref	Option 1	Option 2	Option 3
$+V_{OUT}$	0V	+24V	+48V	+72V
$-V_{OUT1}$	-24V	0V	+24V	+48V
$-V_{OUT2}$	-48V	-24V	0V	+24V
$-V_{OUT3}$	-72V	-48V	-24V	0V

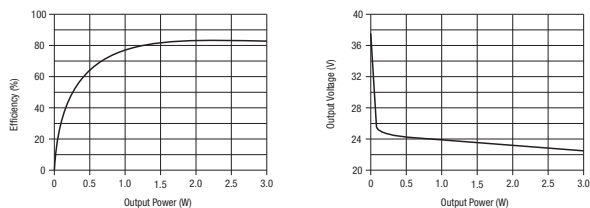
POWER SHARING

The 3W total power delivery can be taken from either a single channel, or from any combination of all three channels. This allows an enormous amount of flexibility, especially when combined with the selectable output 0V reference. For example, using the option 2 output configuration; -24V at 0.5W, +24V at 1W and +48V at 1.5W power supplies are available from a single NMT device.

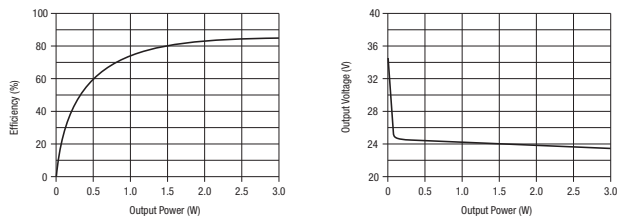
4. Supply voltage must be disconnected at the end of the short circuit duration.

PERFORMANCE CHARACTERISTICS

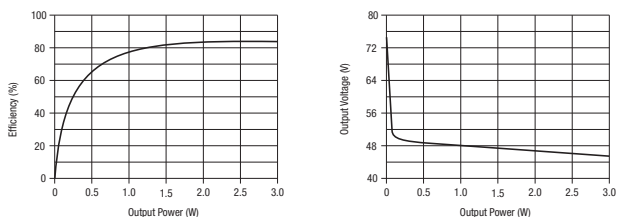
NMT0572SC - Channel -V_{OUT1} (24V NOM)



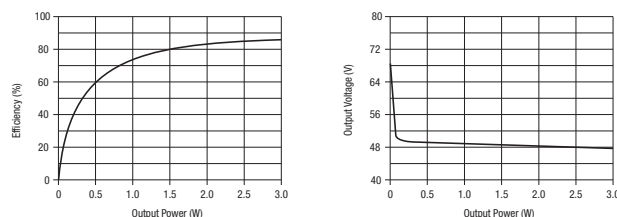
NMT1272SC - Channel -V_{OUT1} (24V NOM)



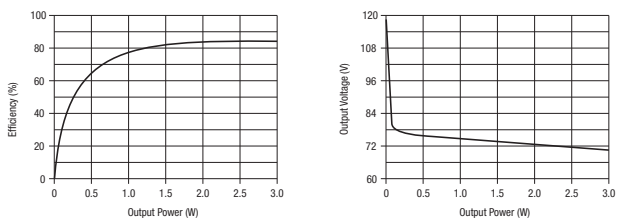
NMT0572SC - Channel -V_{OUT2} (48V NOM)



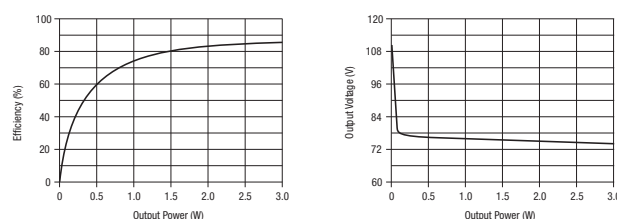
NMT1272SC - Channel -V_{OUT2} (48V NOM)



NMT0572SC - Channel -V_{OUT3} (72V NOM)



NMT1272SC - Channel -V_{OUT3} (72V NOM)



APPLICATION NOTES

RIPPLE SPECIFICATION

The output ripple for the NMT series is higher than standard for a Murata Power Solutions DC-DC converter. This is due to using low value ceramic capacitors internally for longer life performance of the component and the superimposition of ripples between each output channel. Consequently with a maximum 400mV ripple per output channel, at -72V the ripple is potentially three times this value (1.2V). The ripple will always be additively superimposed since the output windings are synchronised.

To reduce ripple, external capacitors are recommended with a value of 1 μ F per channel (see Figure 1). This typically reduces the ripple to 50mV per channel. Further ripple reduction can be achieved by use of series inductors on each output channel plus additional external capacitors to form a pi-filter with the internal capacitors of the device.

SLIC CIRCUITS

The primary application for the NMT series is in subscriber line interface circuits (SLIC's), particularly for the Integrated Services Digital Network (ISDN). The NMT can also be used in standard telecommunications circuits where a local power source is preferred to the telephone system power due to either the power quality of the telecommunications system power supply or to avoid potential power line disturbances, such as lightning strikes and access switching, which will effect the target circuit function.

Another application area is in fibre-in-the-loop (FITL) or radio-in-the-loop (RITL) interfacing via a standard telecommunication SLIC, where the usual telecommunication battery voltage is not available due to the transmission media in use (fibre or radio). In particular, FITL/RITL interfaces directly on PC cards, in local monitor and boost circuits and at exchanges between the fibre/radio and wire media.

The supply rails can be used for ringing generators as well as SLIC circuits or where both are combined, such as in the AMD AM79R79 Ringing SLIC device (see Figure 2). The -72V rail is used primarily for the generation of the ringing signal (V_{BAT1}), the -48V rail is used to supply in line access circuitry (V_{BAT2}) and the -24V supply for the on-chip regulator for the logic interface (V_{NEG}). Alternative devices from other manufacturers could use the -24V output for their internal circuit supply and -72V for ringing.

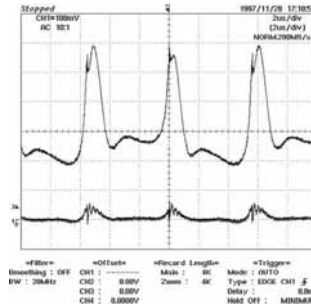


Figure 1. V_{out3} Output Ripple
Top: No external capacitors
Bottom: 1 μ F per channel external capacitors

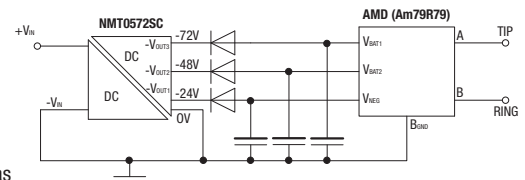


Figure 2. Supply for Ringing SLIC Device

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 NMT series of DC-DC converters are all 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 NMT series, 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.

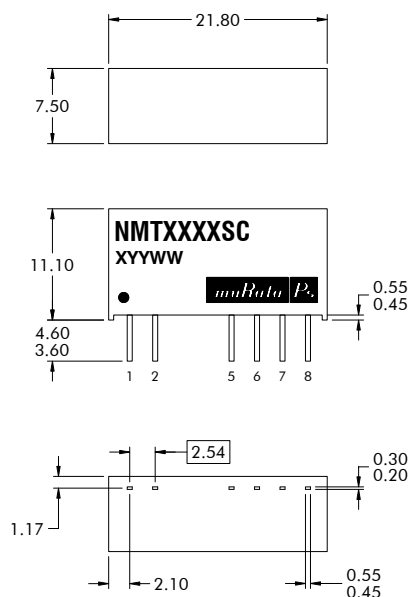
REPEATED HIGH-VOLTAGE ISOLATION TESTING

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 NMT series has toroidal isolation transformers, with no additional insulation between primary and secondary windings of enamelled 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 recognised 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

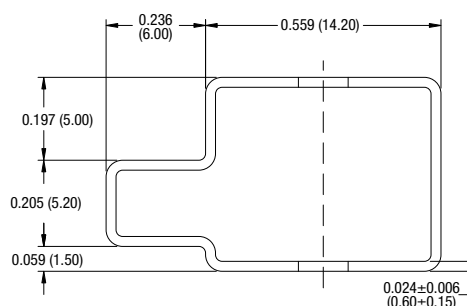


All dimensions in mm ± 0.25 mm. All pins on a 2.54 pitch and within ± 0.25 of true position. Weight: 3.85g

PIN CONNECTIONS - 8 PIN SIP

Pin	Function
1	+V _{IN}
2	-V _{IN}
5	+V _{OUT}
6	-V _{OUT1}
7	-V _{OUT2}
8	-V _{OUT3}

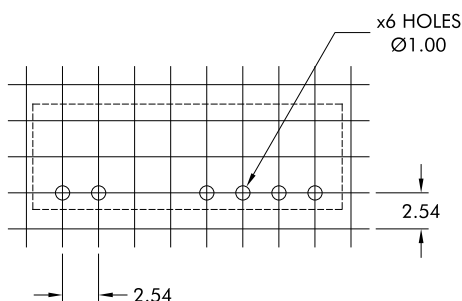
TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in inches ± 0.02 (mm ± 0.5 mm).
Tube length : 20.47 ± 0.079 (520mm ± 2 mm).

Tube Quantity : 23

RECOMMENDED FOOTPRINT DETAILS



Unless otherwise stated all dimensions in mm ± 0.5 mm.

RoHS COMPLIANT INFORMATION



This series is compatible with RoHS soldering systems with a peak wave solder temperature of 260°C for 10 seconds. Please refer to [application notes](#) for further information. The pin termination finish on this product series is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The series is backward compatible with Sn/Pb soldering systems.

For further information, please visit www.murata-ps.com/rohs

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