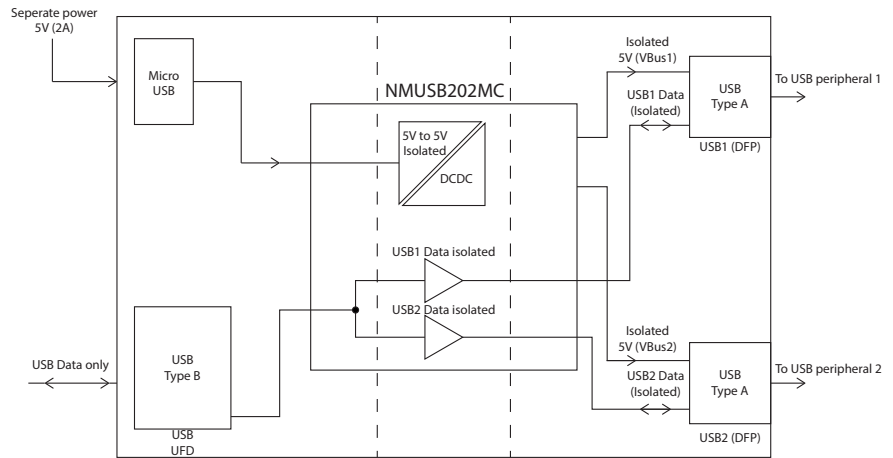


### FEATURES

- Isolated dual powered USB 2.0 compliant
- One upstream port, two isolated downstream ports
- Automatic switching between low (1.5Mbps) and full speed (12Mbps)
- Full 500mA available from isolated ports
- UL60950 recognised
- ANSI/AAMI ES60601-1 1MOPP/2MOOPs recognised
- temperature range -0°C to +50°C
- Short circuit/overload protected USB ports
- Power surge notification
- Patents protected



### SELECTION GUIDE

SELECTION GUIDE	
Order Code	<b>NMUSBEVALC</b>
	<b>NMUSBEVALEXC</b>

### PRODUCT OVERVIEW

The NMUSBEVALEXC is a standalone module which conveniently provides dual port USB data isolation from a single upstream port with full power (500mA) available from each downstream port. Isolation provides effective breaking of ground loops and immunity to EMI in harsh environments as found in industrial and medical applications. Full speed (12Mbps) and low speed (1.5Mbps) are supported with automatic switching. Input power of 5V is provided by an external 'adapter' or system voltage rail. The NMUSBEVALEXC has a conventional USB B type connection.

The NMUSBEVALC is a internal module which conveniently provides dual port USB data isolation from a single upstream port with full power (500mA) available from each downstream port. Isolation provides effective breaking of ground loops and immunity to EMI in harsh environments as found in industrial and medical applications. Full speed (12Mbps) and low speed (1.5Mbps) are supported with automatic switching. Input power of 5V is provided by an external system voltage rail. The NMUSBEVALC has a molex pin header which can be mounted to a system socket holder to create a dual port USB data isolater.



For full details go to  
[www.murata-ps.com/rohs](http://www.murata-ps.com/rohs)



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

### 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.

The NMUSBEVAL series has been recognised by Underwriters Laboratory to 250 Vrms Reinforced Insulation.

#### 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. 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.

### SAFETY APPROVAL

#### ANSI/AAMI ES60601-1

The NMUSBEVAL is recognised to ANSI/AAMI ES60601-1 and provides 1 MOPP (Means Of Patient Protection) and 2 MOOP (Means Of Operator Protection) based upon a working voltage of 250 Vrms max, between Primary and Secondary.

#### UL 60950

The NMUSBEVAL series has been recognised by Underwriters Laboratory (UL) to UL 60950 for reinforced insulation to a working voltage of 250Vrms.

#### FUSING

The NMUSBEVAL series of converters are not internally fused so to meet the requirements of UL an anti-surge input line fuse should always be used with ratings as defined below.

NMUSBEVAL - 2.5A (125Vdc rated)

All fuses should be UL recognised and rated to at least the maximum allowable DC input voltage.

### RoHS COMPLIANCE, MSL AND PSL INFORMATION

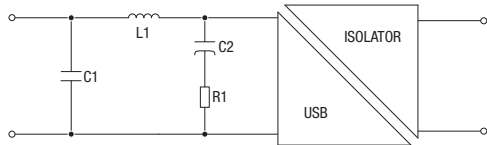


NMUSBEVAL is compatible with RoHS soldering systems with a peak reflow solder temperature of 245°C as per J-STD-020D.1. Please refer to [application notes](#) for further information. The pin termination finish on this product series is Gold with Nickel Pre-plate. The series is backward compatible with Sn/Pb soldering systems. The product has a Moisture Sensitivity Level (MSL) 3.

**EMC FILTERING AND SPECTRA**

**FILTERING**

The following filter circuit and filter table shows the input filters typically required to meet EN55022 Quasi-Peak Curve A or B.

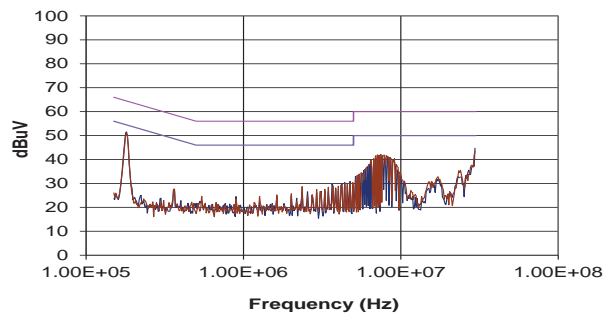


**C1** Ceramic capacitor

**C2** Electrolytic capacitor

TO MEET CURVE B				
Part Number	C1	L1	C2	R1
NMUSBEVALEXC	10 $\mu$ F	10 $\mu$ H	470 $\mu$ F	0.5 $\Omega$
NMUSBEVALC	10 $\mu$ F	10 $\mu$ H	470 $\mu$ F	0.5 $\Omega$

**NMUSBEVAL**

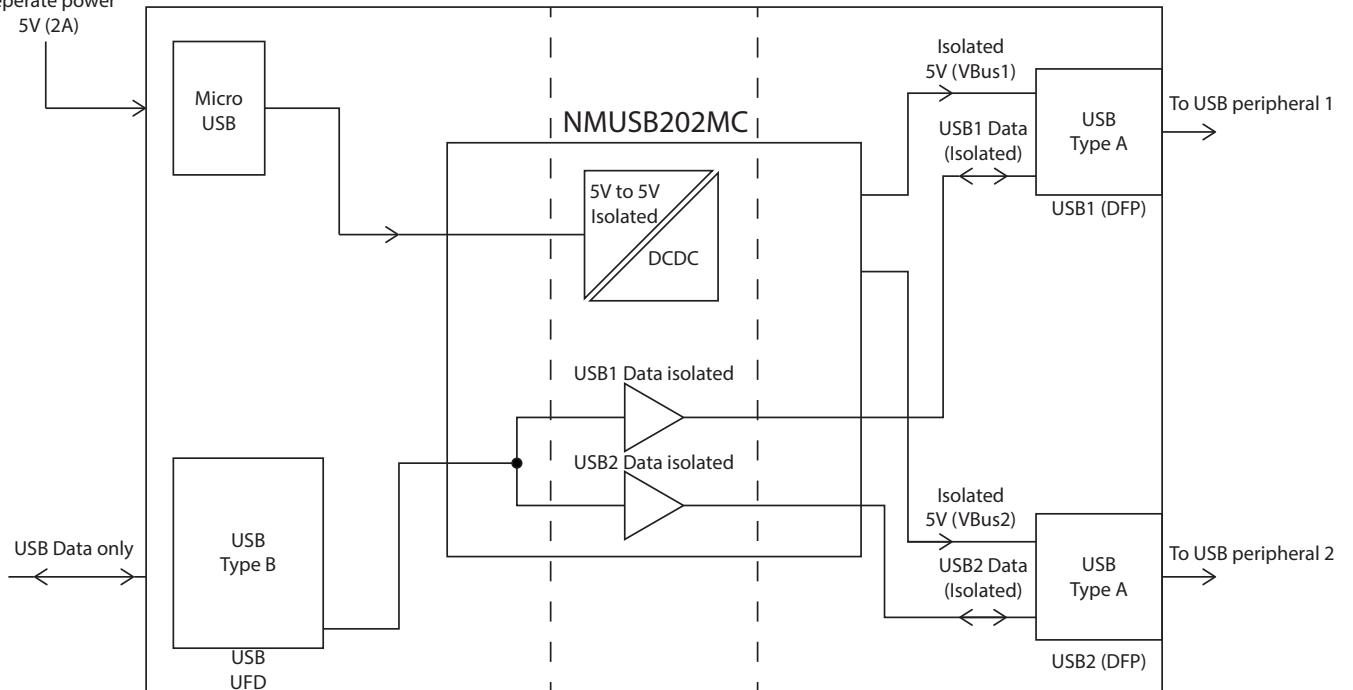


**APPLICATION NOTES**

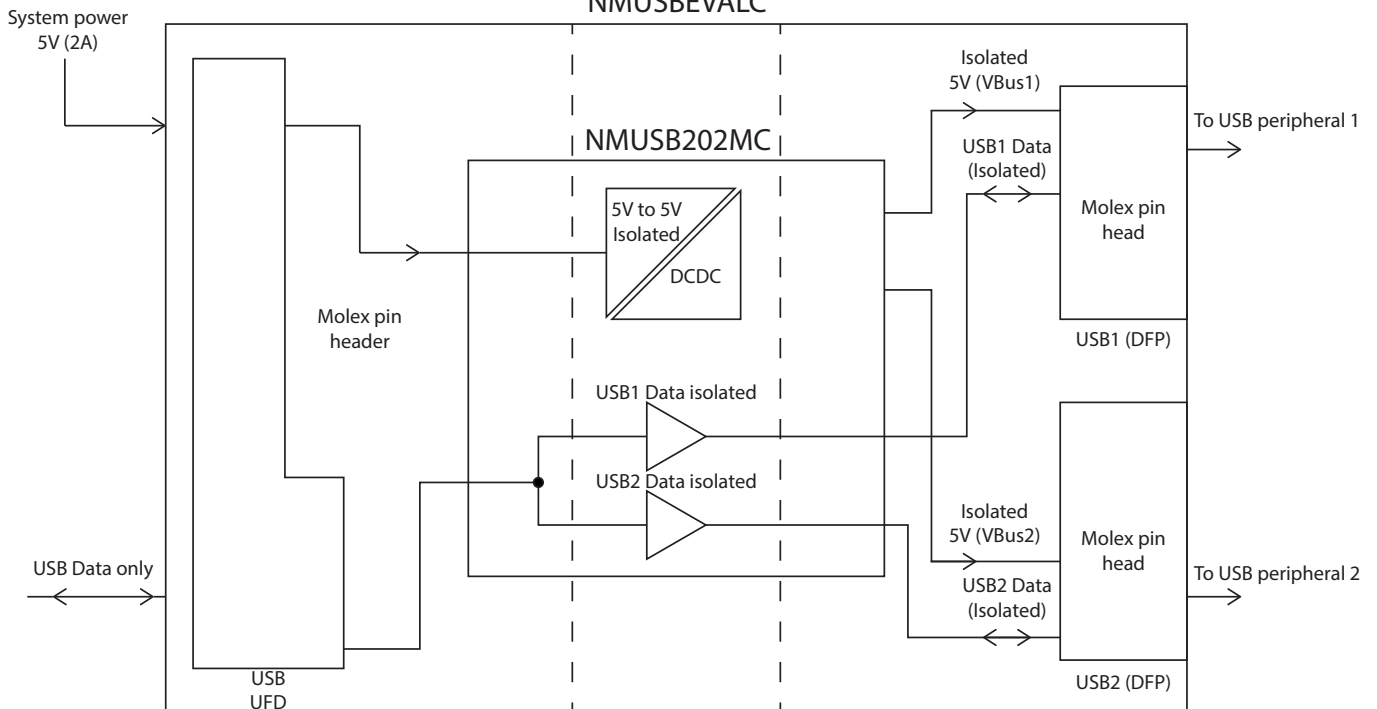
Typical Implementation:

**C1, C2** 100µF 10V (low ESR type)  
 Murata P/N: GRM32ER61A107ME20L  
 Separate power  
 5V (2A)

**NMUSBEVALEXC**

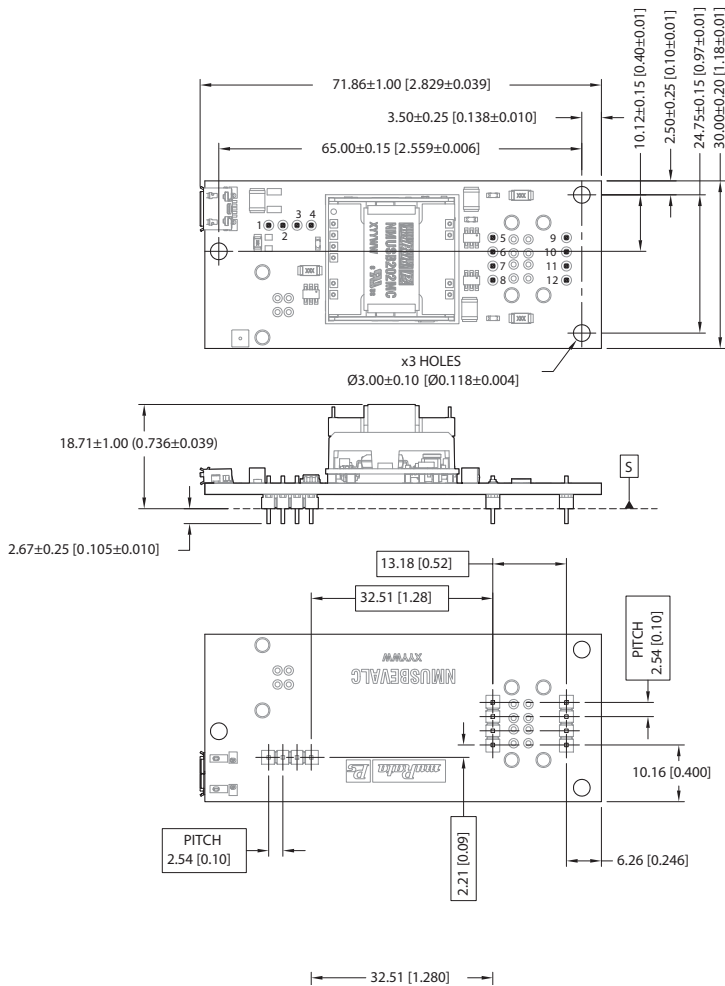


**NMUSBEVALC**



**PACKAGE SPECIFICATIONS**

**MECHANICAL DIMENSIONS**



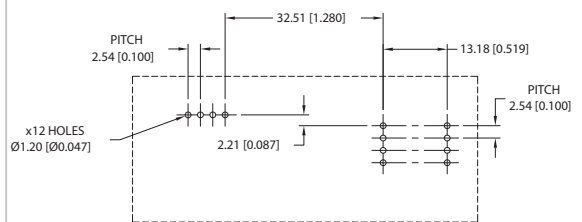
All dimensions in mm (inches), Controlling dimensions is mm.

Weight: 21.3g (EVALC)

**PIN CONNECTIONS**

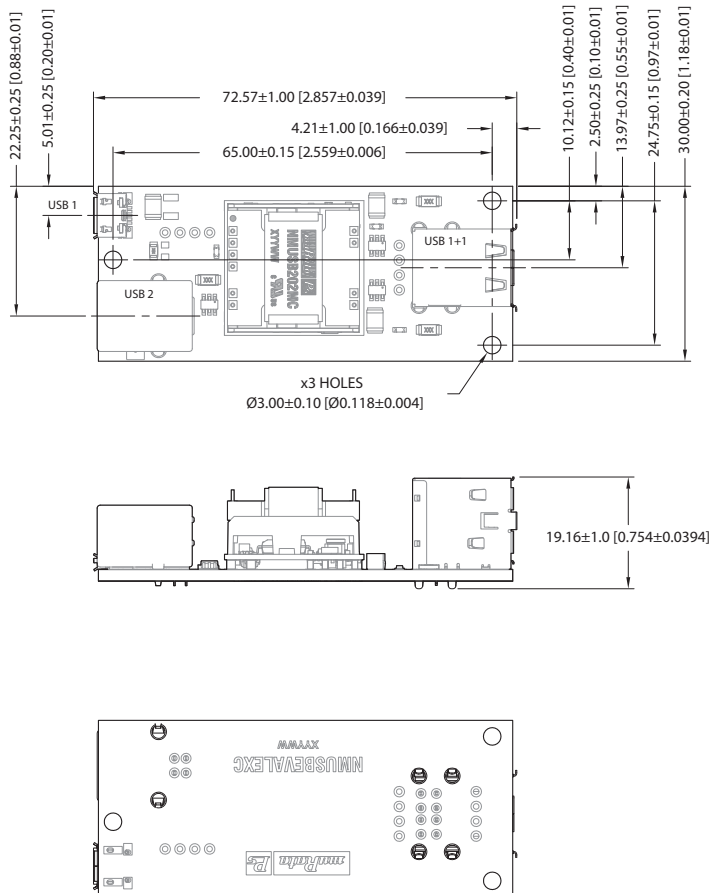
Pin	Function
1	+5V
2	D-IN
3	D+IN
4	GND
5	GND OUT2
6	D+ OUT2
7	D- OUT2
8	+5V OUT2
9	GND OUT1
10	D+ OUT1
11	D- OUT1
12	+5V OUT 1

**RECOMMENDED FOOTPRINT DETAILS**



**PACKAGE SPECIFICATIONS (Continued)**

**MECHANICAL DIMENSIONS**



All dimensions in mm (inches), Controlling dimensions is mm.

Weight: 30.3g (EVALEXC)

**PIN CONNECTIONS**

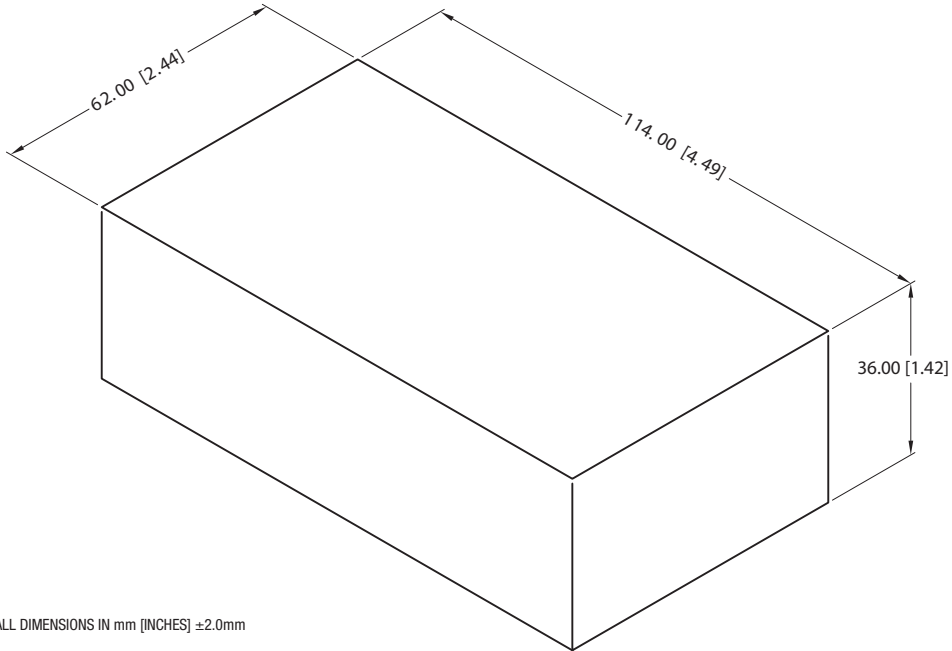
Pin	Function
USB 1	+5V SUPPLY 2 A
USB 2	USB UFP (UPSTREAM FACING PORT)
USB 1+1	USB DFP (DOWNSTREAM FACING PORT)

**USB connector metal frame**

The metal frame of the fixed USB connectors on the NMUSBEVALEXC board are floating for maximum user flexibility. As the screen of attached USB cables connects to the frame, the user should consider whether and where the cable screen should be grounded for optimum EMC performance.

**BOX SPECIFICATIONS**

TAPE OUTLINE DIMENSIONS



UNLESS OTHERWISE STATED ALL DIMENSIONS IN mm [INCHES]  $\pm 2.0\text{mm}$   
CARDBOARD - ESD  
QUANTITY: 1

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