

### FEATURES

- Analog Devices ADM2482E/ADM2487E compatible
- 4.0kVDC isolation 'Hi Pot Test'
- UL 94 V-0 package materials
- Low profile
- Toroidal construction
- Fully encapsulated
- Industrial temperature range
- Backward compatible with Sn/Pb soldering systems

### DESCRIPTION

The 782482 series of converter transformers are specifically designed for use with Analog Devices chipsets to provide isolated RS-485 and RS-422 interfaces. Carefully controlled turns ratios ensure consistent performance whilst a toroidal construction minimises EMI.

### SELECTION GUIDE

Order Code	Nominal Input Voltage	Nominal Output Voltage	Turns Ratio	Package Style
	V	V		
<b>782482/33VC</b>	3.3	3.3	1CT:1.33CT	DIL
<b>782482/53VC</b>	5.0	3.3	1.14CT:1CT	DIL

### CHARACTERISTICS

Parameter	Conditions	782482/33VC		782482/53VC		Units
		Min.	Max.	Min.	Max.	
Primary Inductance, $L_p$ <sup>1</sup>	100kHz, 20mV	190	310	150	260	μH
Leakage Inductance, $L_L$ <sup>1</sup>	100kHz, 250mV		8		8	μH
Interwinding Capacitance, $C_{ww}$	100kHz, 250mV		8		8	pF
Primary DC Resistance, $R_{DC}$ <sup>1</sup>	<0.1VDC		600		600	mΩ
Volt-time Product, $Et$ <sup>2</sup>	5kHz, 5V	13		13		Vμs

### ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Production tested for 2 seconds	4000			VDC

### TEMPERATURE CHARACTERISTICS

Operating free air temperature range	-40°C to 85°C
Storage temperature range	-40°C to 125°C
Isolation voltage (flash tested for 1 second)	4.0kVdc

### 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.

All products in this series are 100% production tested at their stated isolation voltage.

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 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. This 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.

All specifications typical at  $T_A = 25^\circ\text{C}$  unless otherwise specified.

- 1  $L_p$ ,  $L_L$  and  $R_{DC}$  measured between pins 1-3.
- 2 Where pulse applied across pins 1 and 2.



For full details go to  
<https://www.murata.com/en-global/products/power/rohs>

## APPLICATION NOTES

### Typical applications

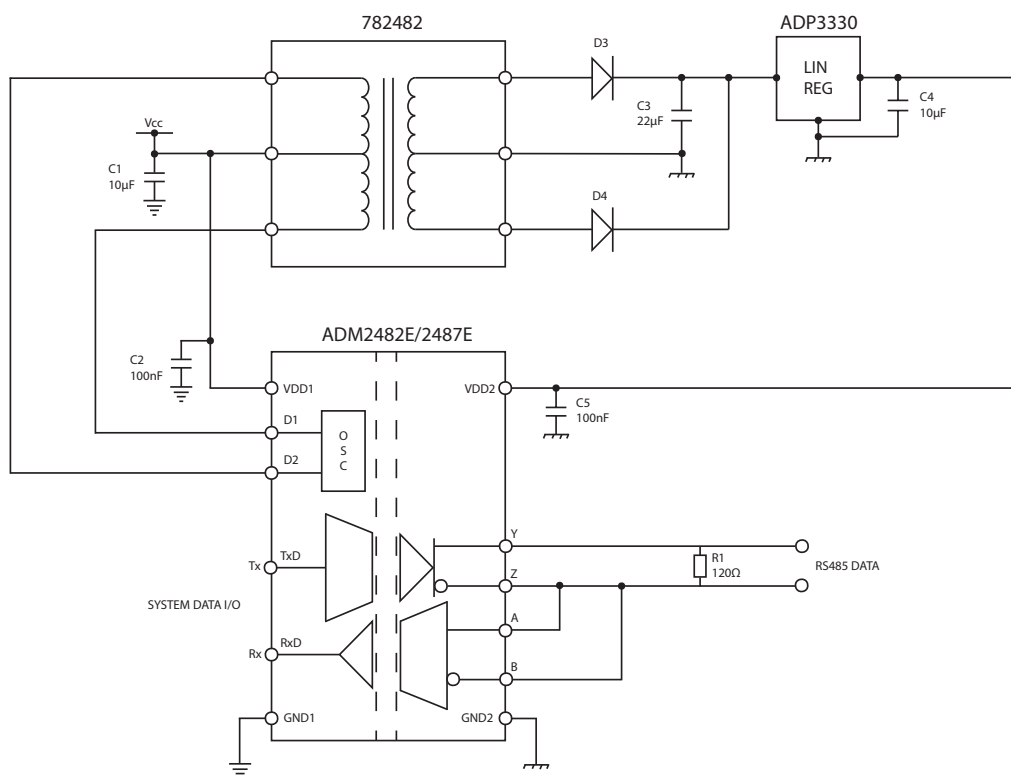
The 782482 transformers are designed as companion power transformers for the Analog Devices Inc (ADI) ADM2482E and ADM2487E Isolated 485 Transceiver IC's.

The transformers are designed to operate from the 2 driver outputs of the oscillator within the ADM2482E/ADM2487E IC (D1 and D2) to drive the primary side of the 782482 transformers, with the centre-tapped pin connected to the input supply line (Vcc) as shown in Figure 1.

There are 2-transformers in the series that are chosen depending on the system supply voltage (Vcc), with a 3.3V supply the 782482/33VC should be used and if a 5V supply is provided the 782482/53VC should be used. Both transformers provide an unregulated 4.3V output on their secondary terminals, this reduces to approximately 3.3V after rectification (D3 and D4 in Figure 1), which can then be regulated with a linear regulator, or if using a suitable pi-filter may be able to work without linear regulation.

The regulator shown in Figure 1 is the ADI ADP3330 3V linear regulator, however, any suitable low drop-out device could be used capable of supplying at least 75mA of current with a set voltage regulation from 3.3V to 3.0V (e.g. MAX881, TLV7003DCKR, NCP160-D and TSL9A12V33CX5).

### Typical application circuit

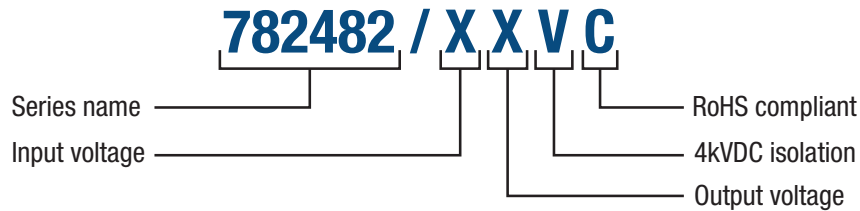


### Other applications

The transformers could be used in other switching applications where a step-down from 5V to 4.3V or step-up from 3.3V to 4.3V at the transformer (before the rectification) is required, typically giving a 3.3V regulated output. Operating frequencies from around 100kHz to 500kHz for the 3.3V input and 200kHz to 600kHz for the 5V input version in a centre-taped push-pull configuration can be supported. The maximum output current on the secondary windings is 200mA, therefore after regulation typically a 660mW total output power at 3.3V may be possible with a different driver. Hence any other IC or a discrete oscillator with this frequency range and current switching capability could be used to produce an isolated power supply for an isolated data interface or any other suitable isolated application using these transformers.

Note: if using a discrete or alternative IC ensure that there is a small "dead-time" between switching cycles and that both drivers are not "on" at the same time (however, both can be "off" at the same time).

## PART NUMBER STRUCTURE



## RoHS COMPLIANCE AND WAVE SOLDERING INFORMATION

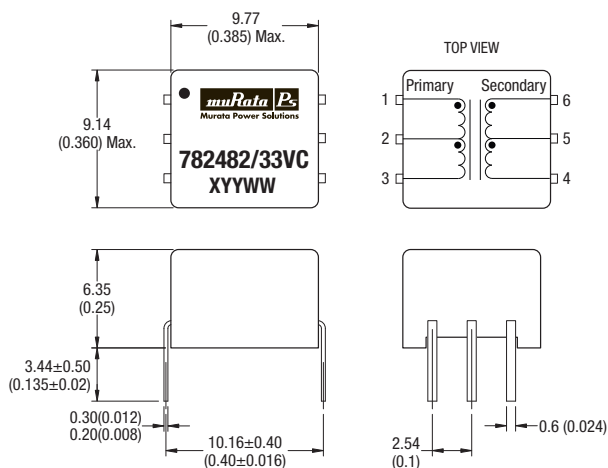


This series is compatible with RoHS soldering systems with a peak wave solder temperature of 260°C for 10 seconds. Wave solder profile not to exceed the profile recommended in IEC 61760-1 Section 6.1.3. The pin termination finish on this product series is Matte Tin. The 782482 series is backward compatible with Sn/Pb soldering systems.

For further information, please visit [www.murata.com/en-global/products/power/rohs](http://www.murata.com/en-global/products/power/rohs)

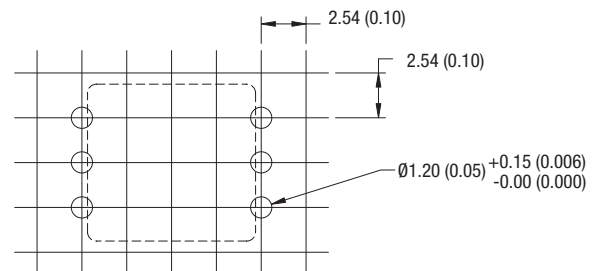
## PACKAGE SPECIFICATIONS

### MECHANICAL DIMENSIONS



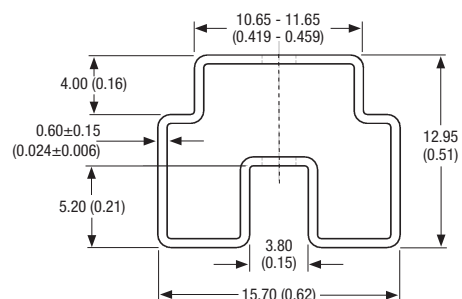
Unless otherwise stated all dimensions in mm (inches) ±0.25 (0.01).  
All pins on a 2.54 (0.1) pitch and within ±0.25 (0.01) of true position.  
Package Weight 1.1g TYP.

### RECOMMENDED FOOTPRINT DETAILS



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

### TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in mm (inches) ±0.25 (0.01).  
Tube length: 500±2 (19.7±0.08)  
Tube quantity: 50  
Tube material: Antistatic coated clear PVC.

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