

# Introduction

## Purpose

- To describe the features and applications of the Sumida ESMIT-4180 Series isolation shunt transformers

## Objectives

- Provide product details, including key features and specifications, and available types.
- Discuss common applications

## Content

- 7 pages

## Learning Time

- 5 minutes

# Sumida ESMIT-4180/C

## SMD Signal Isolation Transformer

A toroidal surface-mounted transformer, to provide isolation in embedded circuits.

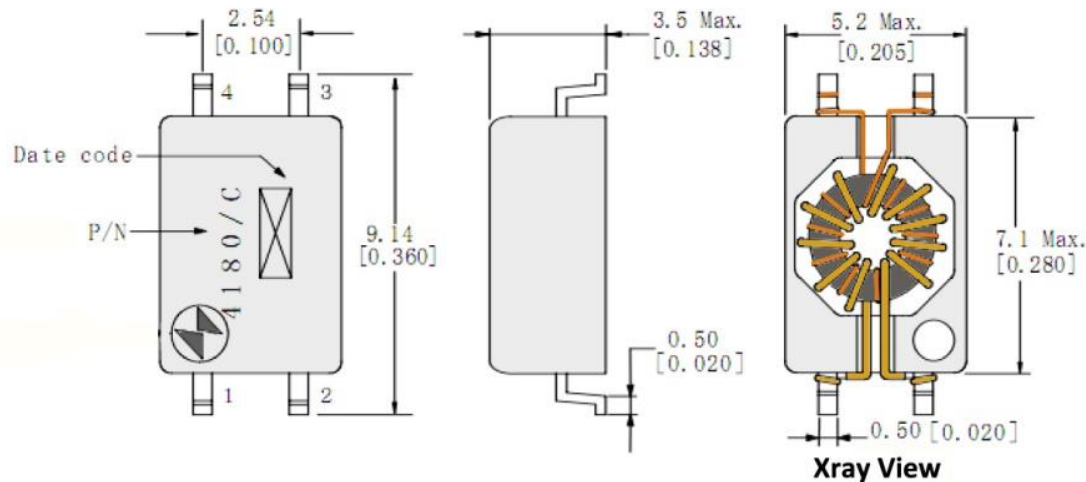
- Low profile
- AEC—Q200 Qualified
- 3,750 Vrms isolation
- -40°C to +125°C operating temperature



# Design Characteristics

- Footprint is 5.2 x 7.1mm with a very low profile height of 3.5mm
- The toroidal transformer is entirely encapsulated
- Core material has been optimized for low temperature operation

**Dimension – mm [inch]**



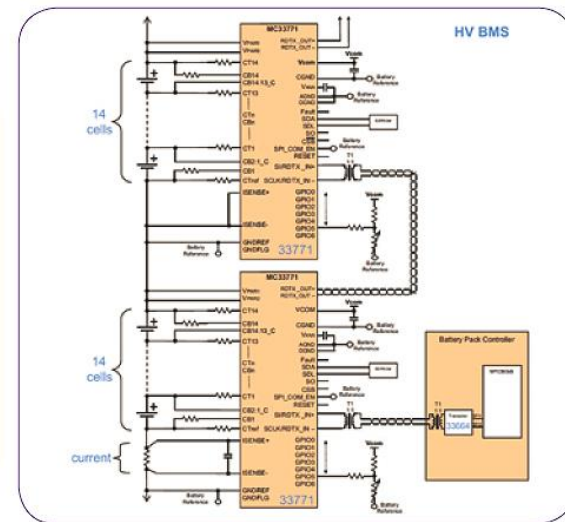
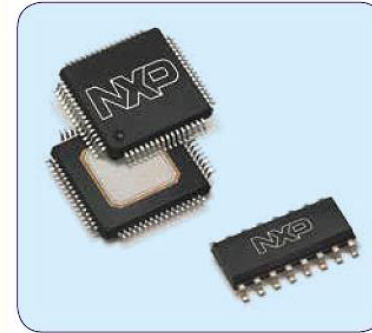
# Key Performance Characteristics

**Electrical Characteristics @ 25°C**

PARAMETER	CONDITIONS	VALUE	UNITS
Inductance (OCL) Min.	100 kHz, 0.01 V, (1-2)	125	μH
Inductance (OCL) Nom.	100 kHz, 0.01v , (1.2), -40°C	120	μH
DC Resistance (DCR) Max.	(1-2)	0.25	Ω
	(4-3)	0.25	Ω
Dielectric Breakdown Isolation (equivalent to 1 min, 3000 Vrms) Min.	1 sec, (1-4) Max Leakage current 0.5mA	3750	Vrms
Operating Temperature Nom.		-40 to +125	°C

# ESMIT-4180/C Applications

- Hybrid Vehicle/Electric Vehicle Automotive
  - Provides signal isolation for battery monitoring
  - Reference design for NXP Freescale MC33771 and MC33664 Battery Cell Controller and Transformer Physical Layer (comprising a High-Voltage Battery Management System)



MC33771 and MC33664 High-Voltage Battery Management System

# ESMIT-4180/C Applications

- Telecommunications
  - Digital isolation barrier for Conextant Smart DAAs
  - Serial/Parallel Modems
- Industrial Applications
  - Signal isolation in control circuits



26mm x 59mm  
**CX86500 Modem Reference Design**

# ESMIT-4180 Summary

- Low profile, high-temp SMD isolation transformer
- 3,750 Vrms isolation
- AEC—Q200 Qualified
- Applications include:
  - EV and HV auto battery monitoring
  - Isolation barrier for Conextant Smart DAAs
  - Modems

