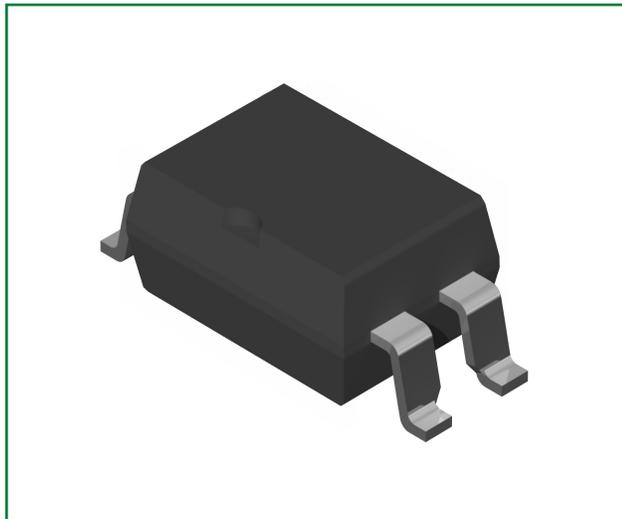


CPC1343G

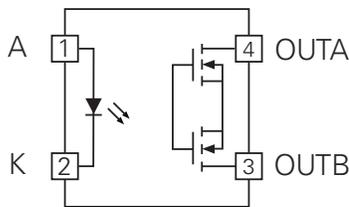
60 V, 900 mA_{RMS}/mA_{DC}, Normally Open Relay

Key Attributes

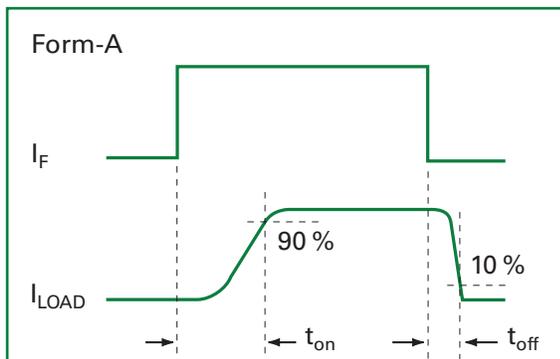
Characteristic	Rating	Unit
Blocking Voltage	60	V _P
Load Current	900	mA _{RMS} /mA _{DC}
On-Resistance (max.)	0.8	Ω
Isolation Voltage, Input to Output	5000	V _{RMS}



Pinout Diagram (DIP-4)



Switching Characteristics



Description



The CPC1343G is a bidirectional, normally open (1-Form-A) Solid State Relay with an enhanced input to output isolation barrier of 5000 V_{RMS}.

The relay output is constructed with efficient MOSFET switches that uses Littelfuse's patented OptoMOS® architecture. The input, a highly efficient infrared LED, controls the optically coupled output.

Features

- 60 V, 900 mA continuous load current capability
- Operating ambient temperature -40°C to + 105°C
- Input/Output isolation 5000 V_{RMS}
- Fast switching T_{on}/T_{off} = 4 ms /1 ms
- Low LED control current: I_F max = 3 mA

Applications

- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
- Meters (electric current, water, gas)
- Automatic test equipment
- Medical equipment—patient/equipment isolation
- Industrial controls

Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: 1172007
- TUV EN 62368-1: Certificate # B 082667 0008

Ordering Information

Part Number	Description
CPC1343G	4-Pin DIP (100/Tube)
CPC1343GR	4-Pin Surface Mount (100/Tube)
CPC1343GRTR	4-Pin Surface Mount (1000/Reel)

Specifications

Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	60	V
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10 ms)	1	A
Input Power Dissipation ¹	150	mW
Total Power Dissipation ²	550	
Isolation Voltage, Input to Output	5000	V _{RMS}
ESD Rating (Human Body Model)	2	kV
Operational Temperature, Ambient	-40 to +105	°C
Storage Temperature	-40 to +125	

¹ Derate linearly 1.33 mW/K

² Derate output power linearly 3 mW/K

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.

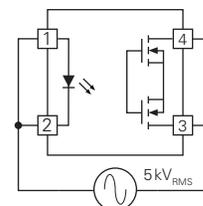
Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Value			Units
			Minimum	Typical	Maximum	
Output Characteristics						
Blocking voltage	$I_L = 1 \mu\text{A}$	V_{DRM}	60	—	—	V
Load current:						
Continuous ¹	—	I_L	—	—	900	mA _{RMS} /mA _{DC}
Peak	t = 100 ms	I_{LPK}	—	—	±1500	mA _P
On-resistance ²	$I_L = 100 \text{ mA}$	R_{ON}	—	0.37	0.8	Ω
Off-state leakage current	$V_L = 60 \text{ V}_P$	I_{LEAK}	—	—	1	μA
Switching speeds:						
Turn-on	$I_F = 5 \text{ mA}, V_L = 10 \text{ V}$	t_{on}	—	0.36	4	ms
Turn-off		t_{off}	—	0.16	1	
Output capacitance	$I_F = 0 \text{ mA}, V_L = 20 \text{ V}, f = 1 \text{ MHz}$	C_{OUT}	—	20	—	pF
Input Characteristics						
Input control current to activate	$I_L = 100 \text{ mA}$	I_F	—	0.46	3	mA
Input control current to deactivate	—	I_F	0.1	—	—	
Input voltage to deactivate	—	V_F	0.8	—	—	V
Input voltage drop	$I_F = 5 \text{ mA}$	V_F	0.9	1.36	1.5	
Reverse input current	$V_R = 5 \text{ V}$	I_R	—	—	10	μA
Common Characteristics						
Capacitance, input to output	$V_{\text{IO}} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{IO}	—	0.8	1.5	pF
Isolation Resistance I/O	—	$R_{\text{I/O}}$	1000	—	—	MΩ

¹ Load current derates linearly from 900 mA @ 25°C to 400 mA @ 105°C.

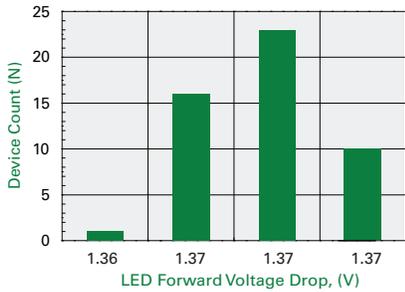
² Measurement taken within 1 second of on-time.

Isolation Test Circuit

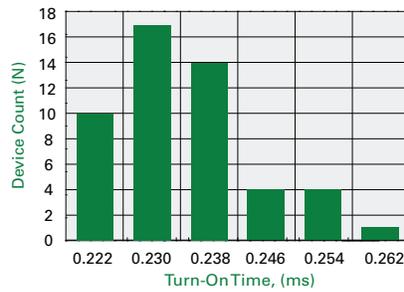


Characteristic Curves

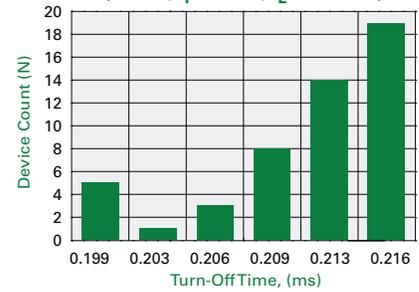
Typical LED Forward Voltage Drop
(N = 50, I_F = 5 mA)



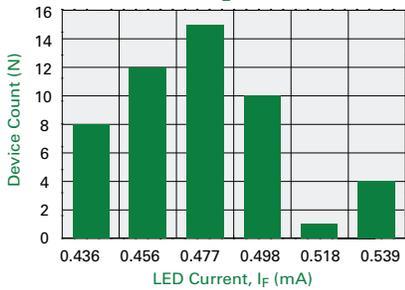
Typical Turn-On Time
(N = 50, I_F = 5 mA, I_L = 100 mA)



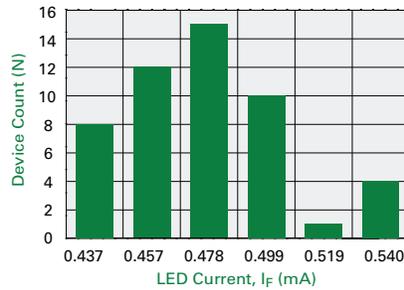
Typical Turn-Off Time
(N = 50, I_F = 5 mA, I_L = 100 mA)



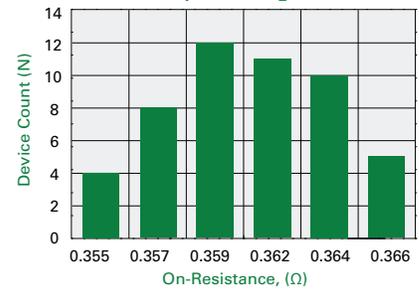
Typical I_F for Switch Dropout
(N = 50, I_L = 100 mA)



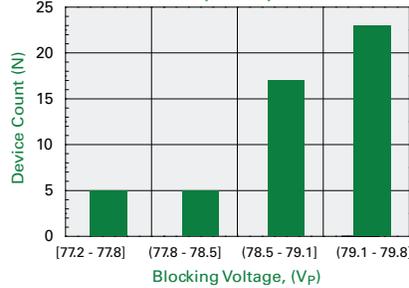
Typical I_F for Switch Operation
(N = 50, I_L = 100 mA)



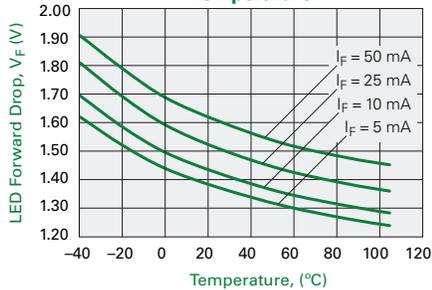
Typical On-Resistance
(N = 50, I_F = 5 mA, I_L = 100 mA)



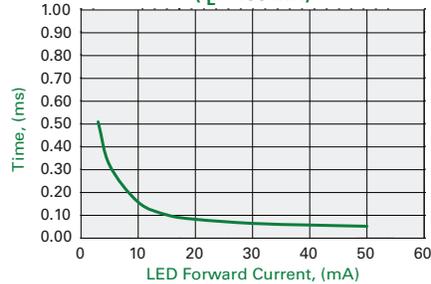
Typical Blocking Voltage Distribution
(N = 50)



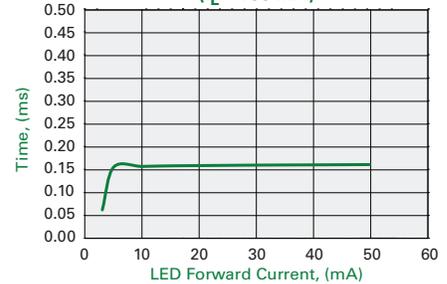
Typical LED Forward Voltage Drop vs. Temperature



Typical Turn-On Time vs. LED Forward Current
(I_L = 100 mA)



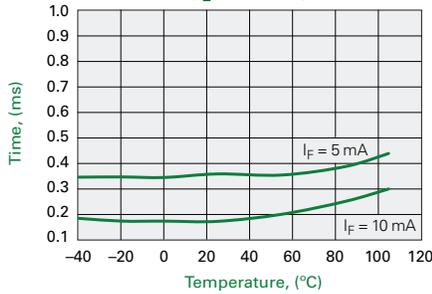
Typical Turn-Off Time vs. LED Forward Current
(I_L = 100 mA)



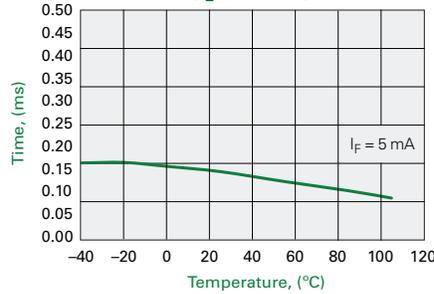
*Unless otherwise noted, data presented in these graphs is typical for device operation at T_A = 25°C.

Characteristic Curves

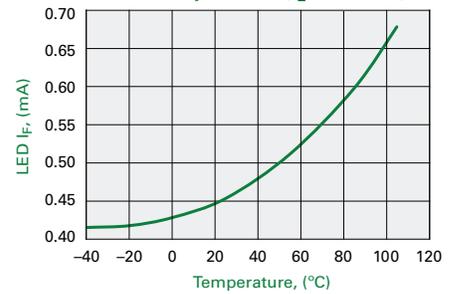
Typical Turn-On Time vs. Temperature
($I_L = 550 \text{ mA}$)



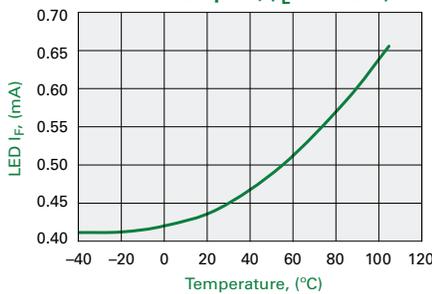
Typical Turn-Off Time vs. Temperature
($I_L = 550 \text{ mA}$)



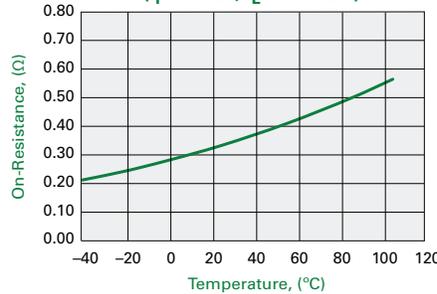
Typical forward current for Switch Operation, ($I_L = 550 \text{ mA}$)



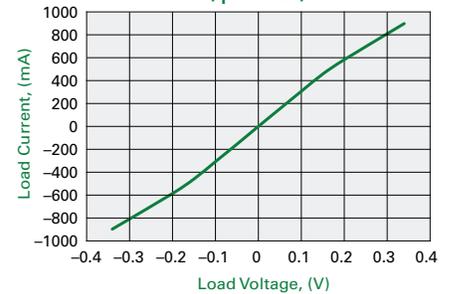
Typical forward current for Switch Dropout, ($I_L = 550 \text{ mA}$)



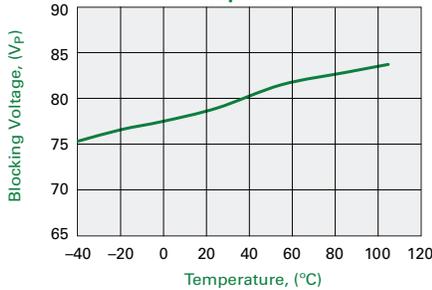
On-Resistance vs. Temperature
($I_F = 5 \text{ mA}$, $I_L = 100 \text{ mA}$)



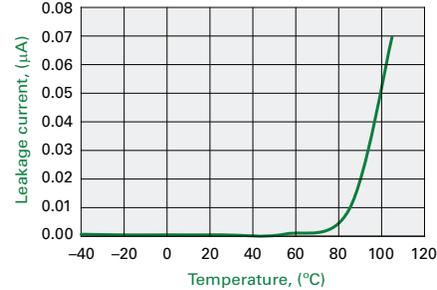
Typical Load Current vs. Load Voltage
($I_F = 5 \text{ mA}$)



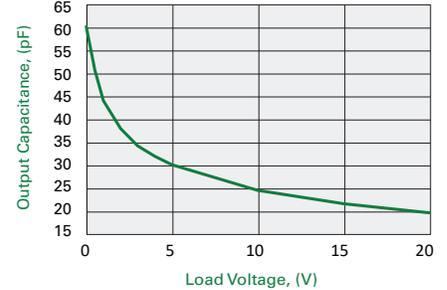
Typical Blocking Voltage vs. Temperature



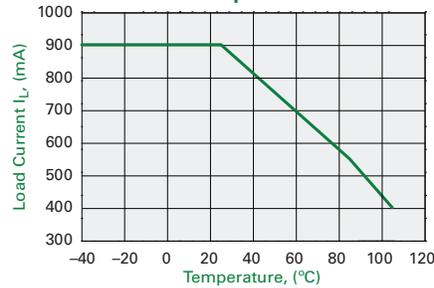
Typical Leakage vs. Temperature Measured Across Pins 3 and 4



Output Capacitance vs. Load Voltage
($I_F = 0 \text{ mA}$, $f = 1 \text{ MHz}$)



Maximum Load Current vs. Temperature



*Unless otherwise noted, data presented in these graphs is typical for device operation at $T_A = 25^\circ\text{C}$.

Manufacturing Information

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Littelfuse classifies its plastic encapsulated devices for moisture sensitivity according to the latest revision of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL)** classification as shown below, and should be handled according to the requirements of the latest revision of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Classification
CPC1343G	1
CPC1343GR	3



ESD Sensitivity

This product is ESD Sensitive, and should be handled according to the industry standard **JESD-625**.

Soldering Profile

Provided in the table below is the **IPC/JEDEC J-STD-020** Classification Temperature (T_C) and the maximum dwell time ($T_C - 5$ °C). The Classification Temperature sets the Maximum Body Temperature allowed for these devices, during reflow soldering processes.

Device	Classification Temperature (T_C)	Dwell Time (T_P)	Max Reflow Cycles
CPC1343G	250 °C	30 seconds	3

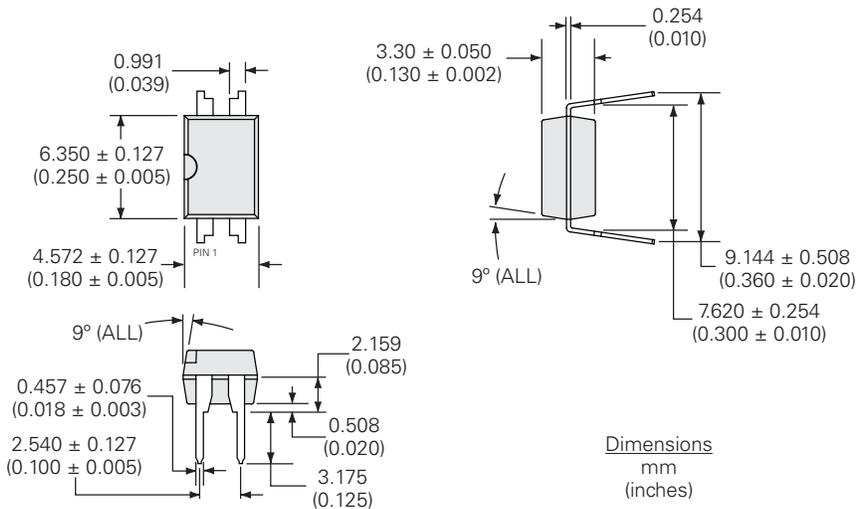
Board Wash

Littelfuse recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: Using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to halide flux or solvents.

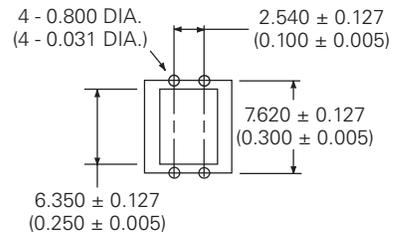


Mechanical Dimensions

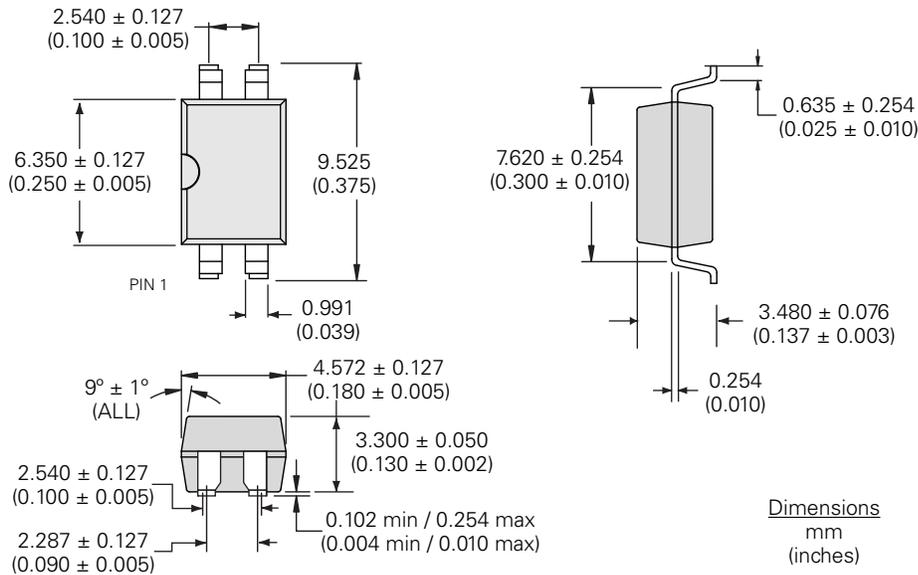
CPC1343G



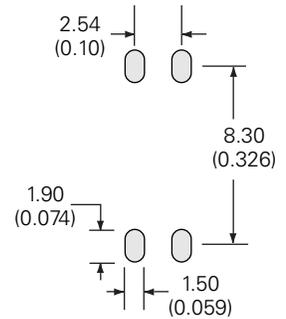
PC Board Pattern (Top View)



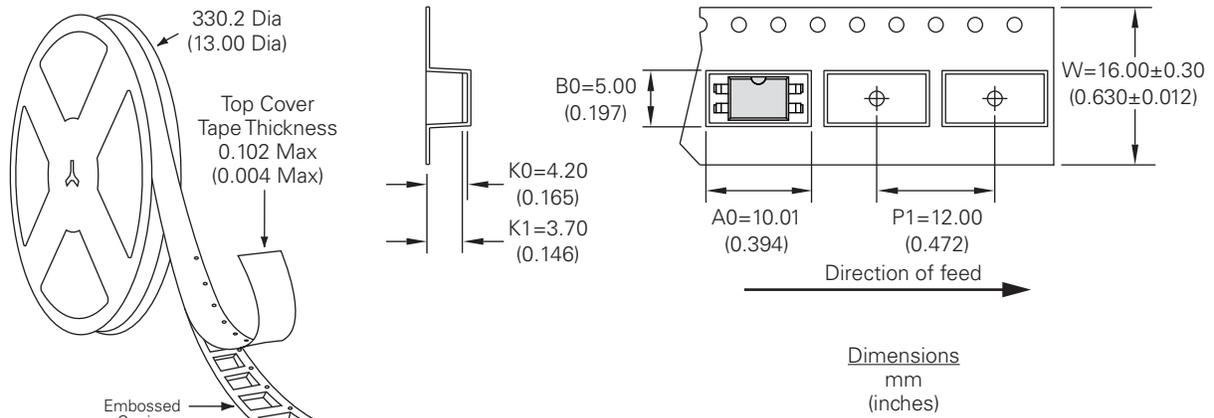
CPC1343GR



PCB Land Pattern



CPC1343GTR Tape and Reel Packaging



- NOTES:
1. All dimensions meet EIA-481-C requirements
 2. Unless otherwise noted, tolerance = ±0.10 (0.004)

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <https://www.littelfuse.com/disclaimer-electronics>