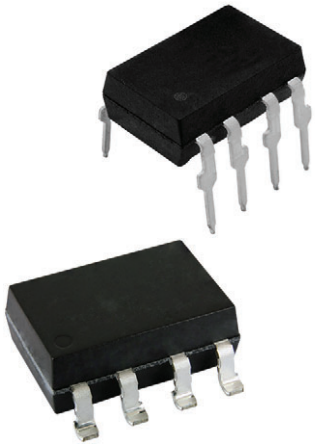
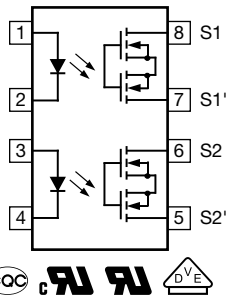
Dual 1 Form A Solid-State Relay (Normally Open)





FEATURES

- Dual channel
- Current limit protection
- Isolation test voltage 5300 V_{RMS}
- Typical R_{ON} 22 Ω
- Load voltage 350 V
- Clean bounce free switching
- Low power consumption
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

APPLICATIONS

- General telecom switching
- Security equipment
- Instrumentation
- Industrial controls

AGENCY APPROVALS

- UL
- cUL
- VDE
- CQC GB8898-2011
- CQC GB4943.1-2011

LINKS TO ADDITIONAL RESOURCES

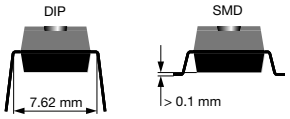
3D Models | Design Tools | Related Documents

DESCRIPTION

The LH1532 dual 1 Form A relays are SPST normally open switches that can replace electromechanical relays in many applications. They are constructed using a GaAlAs LED for actuation control and MOSFET switches for the output. In addition, the LH1532 SSRs employ current-limiting circuitry to provide overvoltage protection.

ORDERING INFORMATION

L	H	1	5	3	2	A	#	#	T	R
PART NUMBER						ELECTR. VARIATION	PACKAGE CONFIG.		TAPE AND REEL	



PACKAGE	UL
SMD-8, tape and reel	LH1532AACTR
DIP-8, tubes	LH1532AB

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
INPUT				
IRED continuous forward current		I_F	50	mA
IRED reverse voltage		V_R	5	V
Input power dissipation		P_{diss}	80	mW
OUTPUT				
DC or peak AC load voltage		V_L	350	V
Continuous DC load current at 25 °C, one channel		I_L	120	mA
Continuous DC load current at 25 °C, two channels		I_L	110	mA
SSR output power dissipation		P_{diss}	550	mW
SSR				
Ambient temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +150	°C
Soldering temperature	t = 10 s max.	T_{sld}	260	°C

Note

- Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
INPUT						
IRED forward current, switch turn-on	I_L = 100 mA, t = 10 ms	I_{Fon}	-	0.25	2	mA
IRED forward current, switch turn-off	V_L = ± 350 V	I_{Foff}	0.05	0.15	-	mA
IRED forward voltage	I_F = 10 mA	V_F	1.15	1.36	1.45	V
OUTPUT						
On-resistance	I_F = 5 mA, I_L = 50 mA	R_{ON}	-	22	27	Ω
Off-resistance	I_F = 0 mA, V_L = ± 100 V	R_{OFF}	0.5	5000	-	GΩ
Off-state leakage current	I_F = 0 mA, V_L = ± 100 V	I_O	-	< 1	200	nA
	I_F = 0 mA, V_L = ± 350 V	I_O	-	6	1000	nA
Output capacitance	I_F = 0 mA, V_L = 1 V, 1 MHz	C_O	-	39	-	pF
	I_F = 0 mA, V_L = 50 V, 1 MHz	C_O	-	6	-	pF
Current limit AC/DC	I_F = 5 mA, t = 5 ms, V_L = ± 6 V	I_{limit}	170	300	450	mA
TRANSFER						
Capacitance (input to output)	V_{IO} = 1 V	C_{IO}	-	1	-	pF

Note

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements

SWITCHING CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Turn-on time	I_F = 5 mA, I_L = 50 mA	t_{on}	-	0.13	2.5	ms
Turn-off time	I_F = 5 mA, I_L = 50 mA	t_{off}	-	0.05	2.5	ms

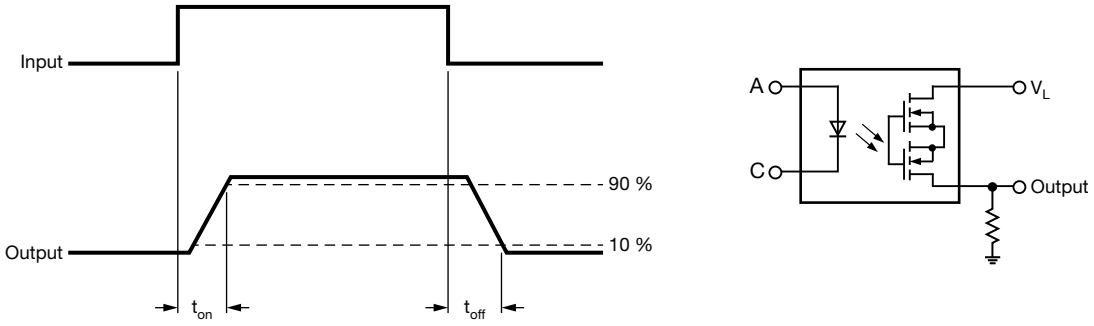


Fig. 1 - Timing Schematic

SAFETY AND INSULATION RATINGS				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Climatic classification	According to IEC 68 part 1		40 / 85 / 21	
Pollution degree	According to DIN VDE 0109		2	
Comparative tracking index	Insulation group IIIa	CTI	175	
Maximum rated withstanding isolation voltage	According to UL1577, t = 1 min	V_{ISO}	5300	V_{RMS}
Maximum transient isolation voltage	According to DIN EN 60747-5-5	V_{IOTM}	8000	V_{peak}
Maximum repetitive peak isolation voltage	According to DIN EN 60747-5-5	V_{IORM}	890	V_{peak}
Isolation resistance	V_{IO} = 500 V, T_{amb} = 25 °C	R_{IO}	≥ 10^{12}	Ω
	V_{IO} = 500 V, T_{amb} = 100 °C	R_{IO}	≥ 10^{11}	Ω
Output safety power		P_{SO}	600	mW
Input safety current		I_{SI}	240	mA
Safety temperature		T_S	175	°C
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness		DTI	≥ 0.4	mm
Input to output test voltage, method B	V_{IORM} x 1.875 = V_{PR}, 100 % production test with t_M = 1 s, partial discharge < 5 pC	V_{PR}	1669	V_{peak}
Input to output test voltage, method A	V_{IORM} x 1.6 = V_{PR}, 100 % sample test with t_M = 10 s, partial discharge < 5 pC	V_{PR}	1424	V_{peak}

Note

- As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for “safe electrical insulation” only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits

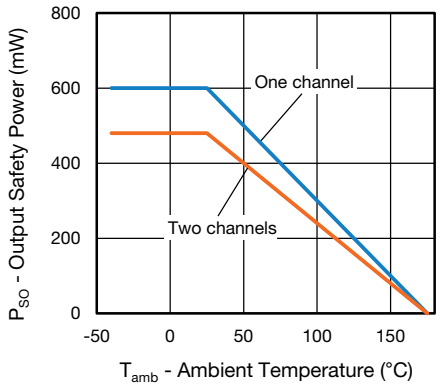


Fig. 2 - Safety Power Dissipation vs. Ambient Temperature

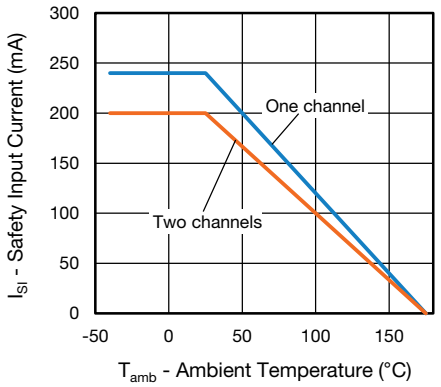


Fig. 3 - Safety Input Current vs. Ambient Temperature

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

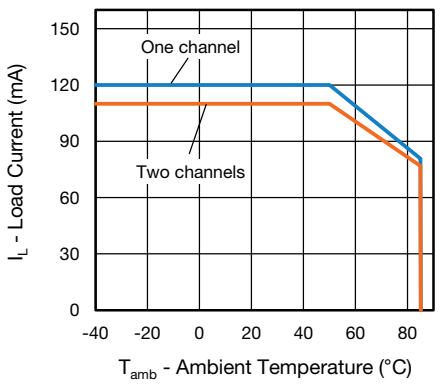


Fig. 4 - Maximum Load Current vs. Ambient Temperature

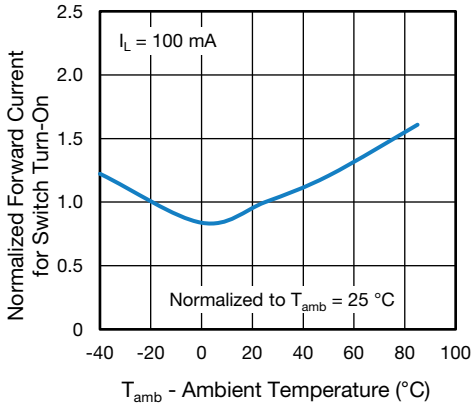


Fig. 7 - Normalized Forward Current for Switch Turn-On vs. Ambient Temperature

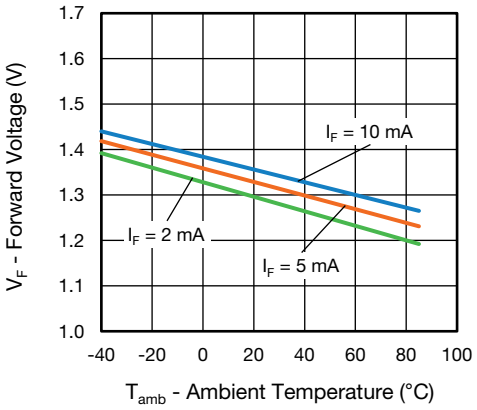


Fig. 5 - Forward Voltage vs. Ambient Temperature

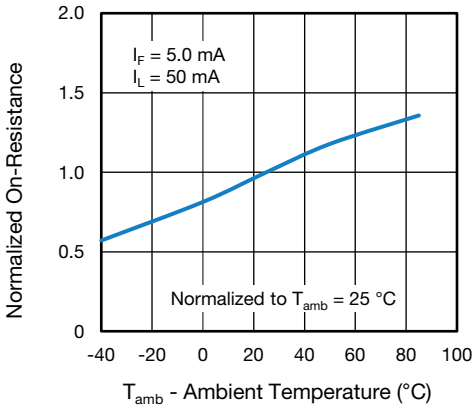


Fig. 8 - Normalized On-Resistance vs. Ambient Temperature

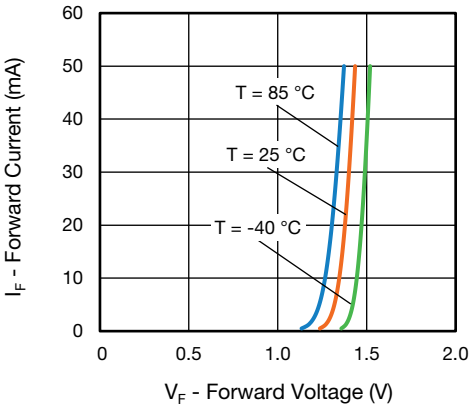


Fig. 6 - Forward Current vs. Forward Voltage

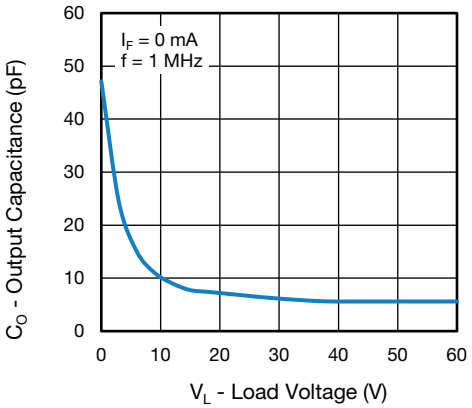


Fig. 9 - Output Capacitance vs. Load Voltage

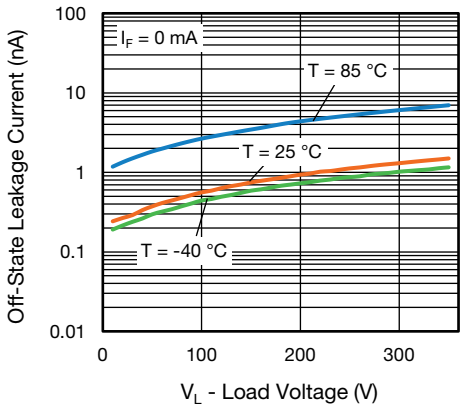


Fig. 10 - Off-State Leakage Current vs. Load Voltage

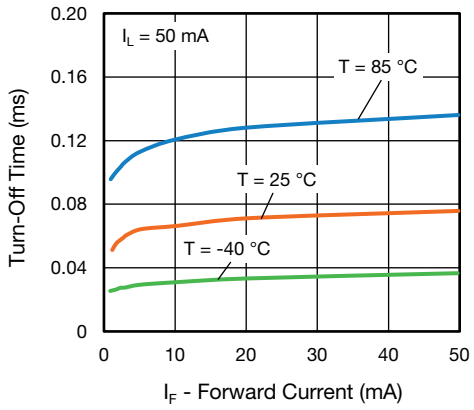


Fig. 13 - Turn-Off Time vs. Forward Current

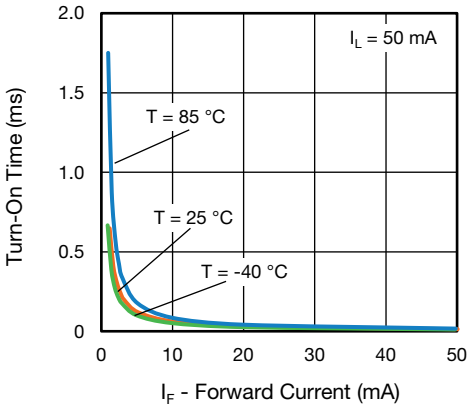


Fig. 11 - Turn-On Time vs. Forward Current

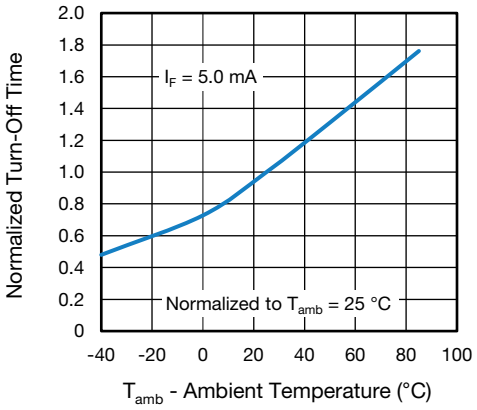


Fig. 14 - Normalized Turn-Off Time vs. Ambient Temperature

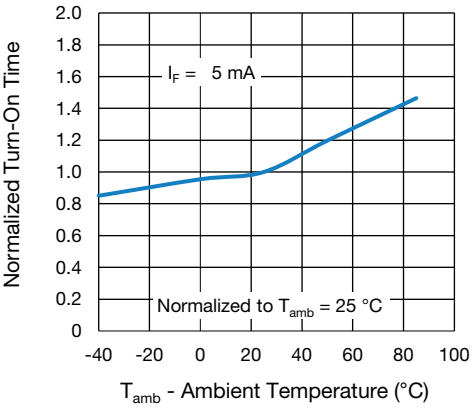
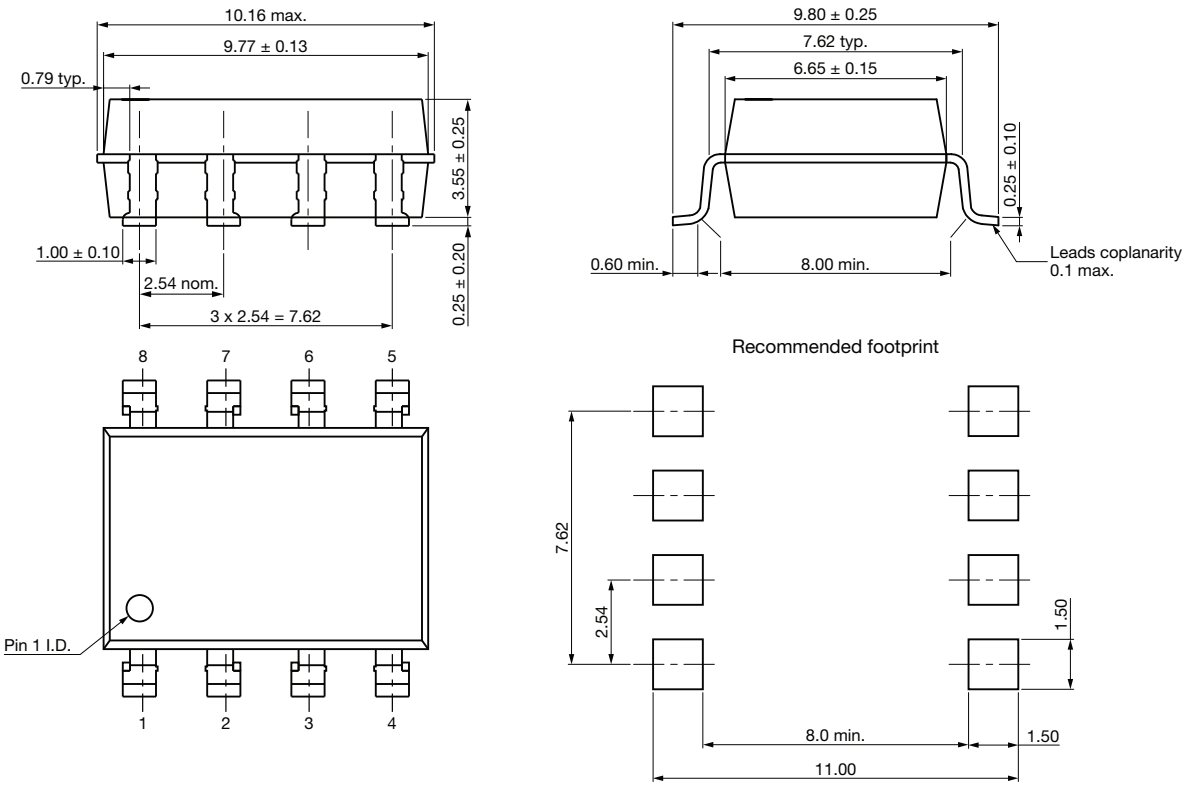


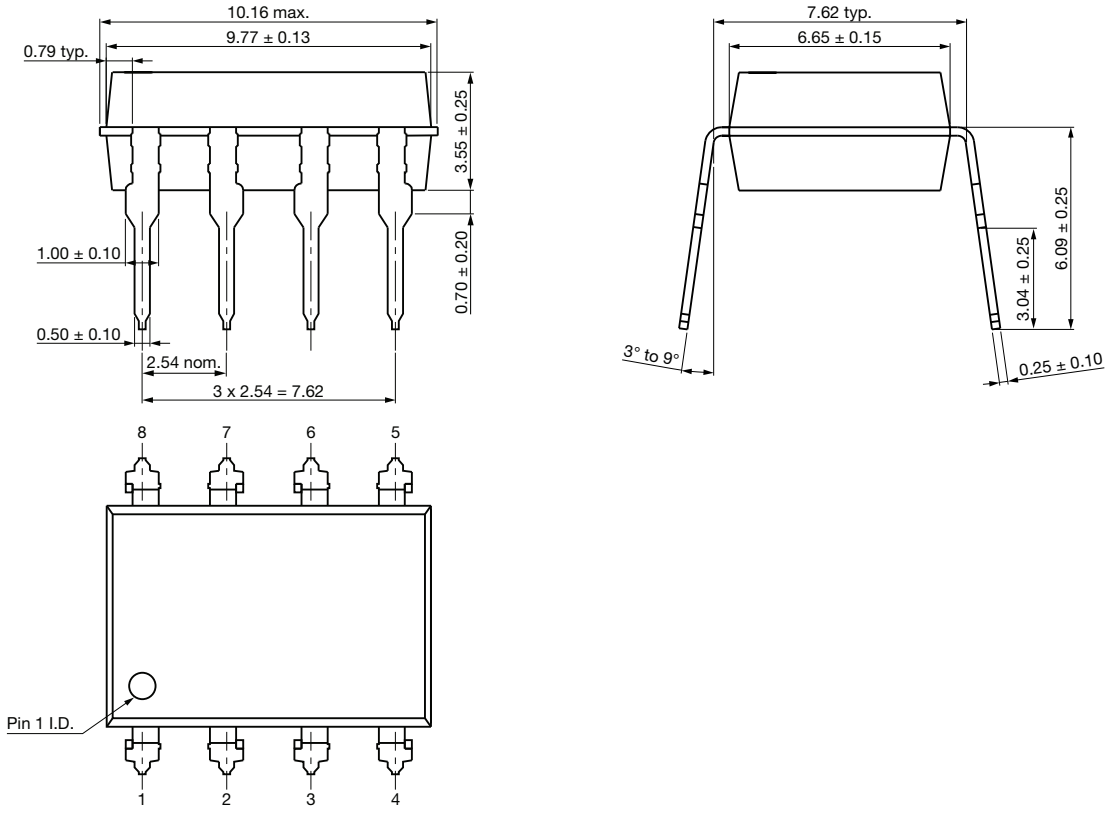
Fig. 12 - Normalized Turn-On Time vs. Ambient Temperature

PACKAGE DIMENSIONS (in millimeters)

SMD-8



DIP-8



PACKAGE MARKING (example)

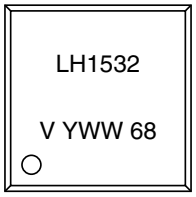


Fig. 15 - LH1532

Note

- Tape and reel suffix (TR) is not part of the package marking

PACKING INFORMATION (in millimeters)

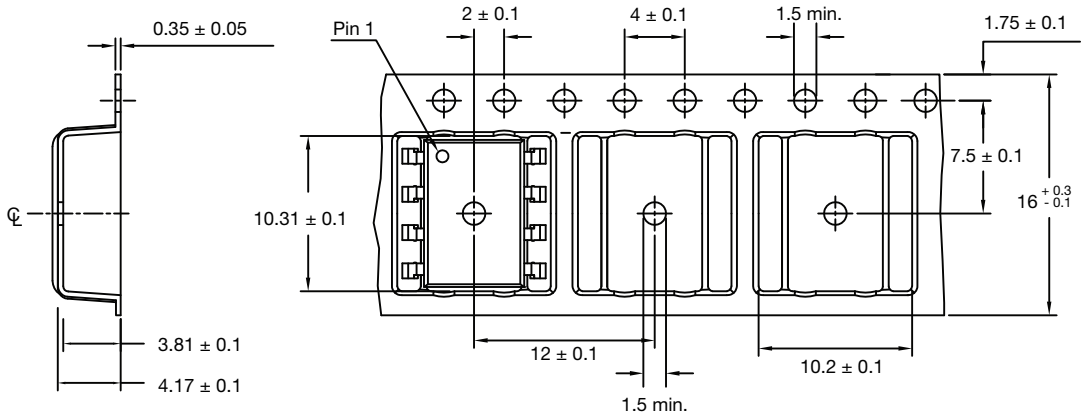


Fig. 16 - Tape and Reel Packing

TAPE AND REEL PACKING	
TYPE	**UNITS/REEL**
SMD-8	1000

TUBE PACKING			
TYPE	**UNITS/TUBE**	**TUBES/BOX**	**UNITS/BOX**
SMD-8	50	40	2000
DIP-8	50	40	2000

SOLDER PROFILES

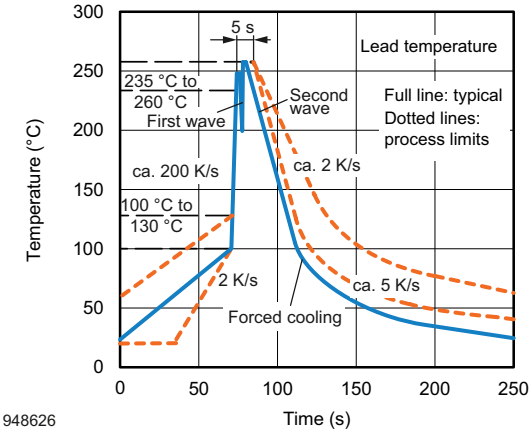


Fig. 17 - Wave Soldering Double Wave Profile
According to J-STD-020 for DIP Devices

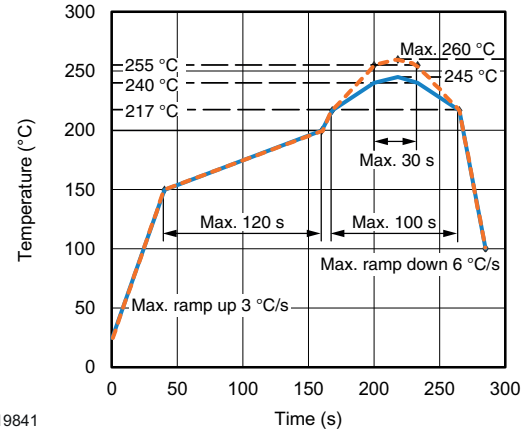


Fig. 18 - Lead (Pb)-free Reflow Solder Profile
According to J-STD-020 for SMD Devices

HANDLING AND STORAGE CONDITIONS

ESD level: HBM class 2

Floor life: unlimited

Conditions: $T_{amb} < 30$ °C, RH < 60 %

Moisture sensitivity level 1, according to J-STD-020

Footprint and Schematic Information for LH1532

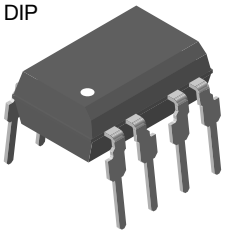
The footprint and schematic symbols for the following parts can be accessed using the associated links. They are available in Eagle, Altium, KiCad, OrCAD / Allegro, Pulsonix, and PADS.

Note that the 3D models for these parts can be found on the Vishay product page.

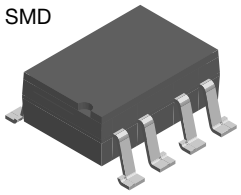
PART NUMBER	FOOTPRINT / SCHEMATIC
LH1532AAC	www.snapeda.com/parts/LH1532AAC/Vishay/view-part
LH1532AACTR	www.snapeda.com/parts/LH1532AACTR/Vishay/view-part
LH1532AB	www.snapeda.com/parts/LH1532AB/Vishay/view-part
LH1532FP	www.snapeda.com/parts/LH1532FP/Vishay/view-part
LH1532FPTR	www.snapeda.com/parts/LH1532FPTR/Vishay/view-part

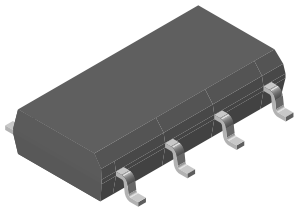
For technical issues and product support, please contact optocoupleranswers@vishay.com.

DIP



SMD





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Solid State Relays - PCB Mount ***category:***

Click to view products by Vishay ***manufacturer:***

Other Similar products are found below :

M86F-2W M90F-2Y G2-1A07-ST G2-1A07-TT G2-1B02-TT G2-DA06-ST 923812OCAS PLA134S DS11-1005 AQV210EHJ AQV212J AQV252GAJ AQY210ST AQY221N2SJ AQY221R2SJ AQY410SXJ AQY412EHAJ EFR1200480A150 901-7 LCA220 LCB110S 1618400-5 SR75-1ST AQH2213AJ AQV112KLJ AQV212AJ AQV212SXJ AQV238AD01 AQW414TS AQY221N2SYD01 AQY221N2V1YJ AQY221R2VJ AQY275AXJ AQY414SXE01 G2-1A02-ST G2-1A03-ST G2-1A03-TT G2-1A05-ST G2-1A06-TT G2-1A23-TT G2-1B01-ST G2-1B01-TT G2-1B02-ST G2-DA03-ST G2-DA03-TT G2-DA06-TT CPC1333GR 3-1617776-2 CTA2425 TLP3131(F)