



VISHAY INTERTECHNOLOGY, INC.



SOLID STATE RELAYS



Solid State Relays

Reliable and Versatile

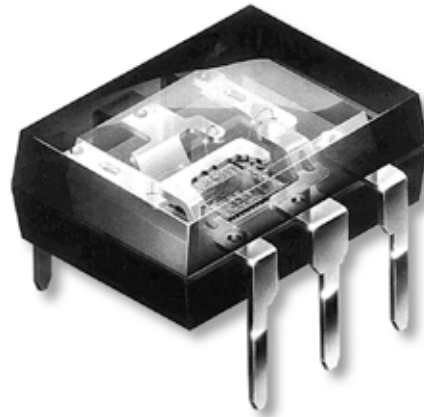
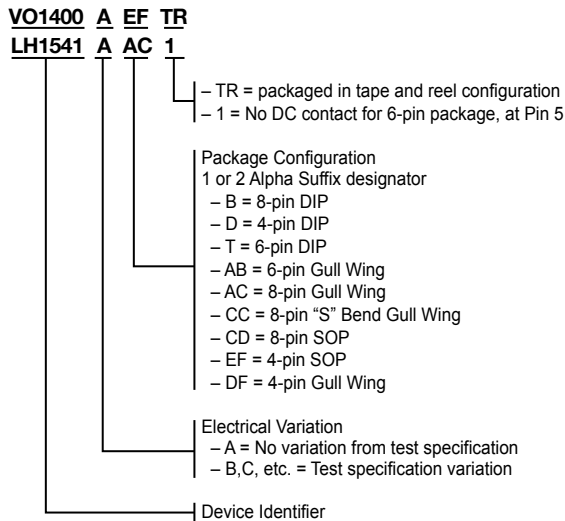


Solid-State Relays from Vishay Semiconductors

Vishay's Solid State Relays (SSRs), previously sold under the Infineon, Siemens, and AT&T brand names, deliver fast switching while optically isolating and protecting equipment from damaging external high-voltage spikes. By eliminating the majority of wire bonds found in other SSRs, Vishay's monolithic structure has set the performance standard.

With no moving parts, our solid state relays are noiseless, bounce-free and reliable, commonly replacing electromechanical relays. Used in industrial, automotive, and communication applications, all of our solid state relays feature low power consumption, small packaging, and low turn-on current. Exceeding industry standards, they are approved by VDE, UL, CSA and other safety regulatory agencies.

Part Number Coding




www.vishay.com/ref/solid_state_relays

FAQs

- 1. What are the advantages of SSRs over electromechanical relays (EMRs)?** Reliable, long life, no noise, contact bounce or arcing and low power consumption. (75 % lower than EMR)
- 2. Do you have a low cost SSR for use in place of EMRs?** The LH1546AEF/AD (4 pin) depending on your application requirements. Other possibilities are: LH1529FP; LH1532FP; LH1550 products.
- 3. Can your SSRs meet my projects' requirement for at least 2500-3000 I/O voltage?** Most of our SSRs provide 5300 I/O.
- 4. Do you have High Speed MOSFET Drivers?** Yes, we have the LH1262 which can be configured for best use in motor drive controls, IGBT-predrivers and AC/DC power inverters. It can also be used to customize and build your own custom solid state relay.
- 5. Do you have a relay for high frequency applications e.g. T1/E1?** Yes, the LH1514 allows the ultimate in component isolation. It serves as a general purpose 2 Form A for balance sequence, high activation rate, DSO, DSI, DSIA; DSIC; DS2 and low Ron. See Appnote 67 for additional T1 switching information.
- 6. Do you have relays which can be used in PCMCIA applications?** Yes, depending on your functional, package size and application requirements, see our LH1529FP and LH1532FP, and our LH1525ACD.
- 7. Do you have relays which can be used in modem and PC applications?** Yes, we have several for modems in general. Based on your switching and Ron application requirements: LH1529FP, LH1532FP, LH1546, LH1540, LH1550. See Appnote 66 Modem Line Interface Solutions.
- 8. How do I know which Agency approvals are available?** All SSRs are Underwriters Laboratories (UL) recognized. Most have Canadian Standards Association (CSA) and British Approvals Board for Telecommunications (BABT) IEC 950 EN60950, FIMKO IEC 950 EN60950 and VDE 0884 certifications. See our website for information on a specific product.



			Output Characteristics								Input Characteristics				
			Load Voltage Max. (V)		Current Max. Recommended (mA)		On-Resistance Max. at 25 °C (Ω)		Current Limit (mA) Typ. at 25 °C I _F = 5 mA		Operate Time (msec) Max. at 25 °C I _F = 5 mA		LED Operate Current Min. (mA)		I/O Isolation (Min.) (V _{rms})
			AC/DC	DC	AC/DC	DC	AC/DC	DC	t _{on}	t _{off}	25 °C Test Specs	Recommended Current for 85 °C Operation			
Package	Pins	Part Number	AC/DC	DC	AC/DC	DC	AC/DC	DC	t _{on}	t _{off}	25 °C Test Specs	Recommended Current for 85 °C Operation	I/O Isolation (Min.) (V _{rms})		
1 Form A	4	LH1546 ⁵	120	—	35	—	—	—	3.0	3.0	2.0	2.0	5.0	3000	
		VO1400AEFTR ⁵	100	—	5	—	—	—	0.5	0.5	0.3	0.3	3.2	1500	
1 Form A	6	LH1510 ⁹	200	350	15	3.75	—	—	2.0*	2.0*	2.0	2.0	5.0	5300	
		LH1500	150	250	25	6.25	—	—	2.0	2.0	2.0	2.0	5.0	5300	
		LH1540	120	250	25	6.25	—	—	2.0	2.0	2.0	2.0	5.0	5300	
		LH1546	120	200	35	10	—	—	3.0	3.0	2.0	2.0	5.0	5300	
		LH1550 ¹	100	—	50	—	—	—	3.0	3.0	2.0	2.0	5.0	5300	
		LH1525	120	250	33	8.25	—	—	1.0	1.5	0.5	0.5	2.0	5.0	5300
		LH1541 ¹	200	50	160	—	—	—	0.5	0.5	2.0	2.0	5.0	5300	
		VO14642	60	1000	0.25	0.07	—	—	0.8*	0.8*	2.0	2.0	1.3	5300	
2 Form A	8	LH1513	200	140	15	—	—	2.5*	2.5*	3.0	3.0	8.0	5300		
		LH1503	350	110	25	—	—	2.5*	2.5*	3.0	3.0	8.0	5300		
Dual 1 Form A	8	LH1522	200	140	15	—	—	2.0*	2.0*	2.0	2.0	5.0	5300		
		LH1544 ¹	200	40	160	—	—	—	—	0.5	0.5	2.0	5.0	5300	
		LH1505	250	120	20	—	—	—	—	4.0	4.0	2.0	5.0	5300	
		LH1520	350	110	25	—	—	—	—	2.0	2.0	2.0	5.0	5300	
		LH1526	400	100	36	—	—	—	—	1.0	1.5	0.5	5.0	5300	
		LH1532 ⁵	350	110	25	—	—	—	—	2.0	2.5	2.5	5.0	5300	
		LH1533	350	70	50	—	—	—	—	3.0	3.0	2.5	5.0	5300	
		LH1556 ⁵	350	110	35	—	—	—	—	3.0	3.0	2.0	5.0	5300	
1 Form B	6	LH1511	200	300	15	3.75	—	—	3.0*	3.0*	2.0	5.0	3750		
		LH1501	350	150	25	6.25	—	—	3.0	3.0	2.0	5.0	3750		
Dual 1 Form B	8	LH1521	350	110	25	—	—	—	3.0	3.0	2.0	5.0	3750		
		LH1523	200	140	15	—	—	—	3.0*	3.0*	2.0	5.0	3750		
1 Form A, B/C	8	LH1502 ²	350	150	25	—	—	—	6.0*	3.0*	2.0	5.0	3750		
		LH1512	200	200	15	—	—	—	3.0*	3.0*	2.0	5.0	3750		
1 Form A w/Optocoupler	8	LH1529 ^{5,6,7}	350	120	25	—	—	—	2.5	2.5	2.0	5.0	5300		
		LH1549 ⁶	400	120	36	—	—	—	1.0	1.0	0.5	3.0	5300		
1 Form A w/Darlington	8	LH1539 ⁸	400	120	33	—	—	—	2.0	0.5	1.0	5.0	5300		
		LH1514 ³	15	150	5	—	—	—	1.0*	1.0*	3.0	8.0	5300		
MOSFET Driver	8	LH1262	15	—	—	—	—	—	35 μs**	90 μs**	—	—	5300		
		VO1263	15	—	—	—	—	—	26 μs**	73 μs**	—	—	5300		

* I_F = 10 mA
 ** I_F = 20 mA

- Low capacitance SSR (3.5 pF)
- Break-before-make operation
- High-frequency SSR (< 50 MHz)
- Current through both poles operating simultaneously. Load current for individual pole ratios is higher
- Surface mount Flat-Pack available
- Current transfer ratio min. 33 %
- Current transfer ratio min. 100 %
- Current transfer ratio >300 %
- DC current limit 720 mA



Cross Reference Guide

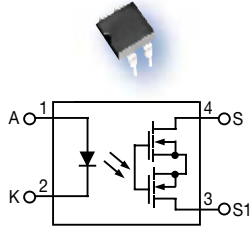
AROMAT – VISHAY		LCA111S	LH1500AAB	XCA111/L	LH1546AT	PS710AL-1L-E3	VO14642AABTR
AQV101	LH1510	LCA142/E	LH1510AT	XCA111/L	LH1550AT1	PS7200B-1A-F3	VO1400AEFTR
AQV101	LH1518	LCA190/E/LE	LH1500AT	XCA111/LE	LH1546AT	OKI – VISHAY	
AQV102	LH1510	LCA190/ES/LES	LH1500AAB	XCA120/E	LH1510AT	OCM200	LH1510AT
AQV102	LH1518	LCA190/L/LE	LH1500AT	XCA120/ES	LH1510AAB	OCM202	LH1518AT
AQV103	LH1510AT	LCA190/LES/LS	LH1500AAB	DIONICS – VISHAY		OCM210	LH1510AT
AQV103A*	LH1510AAB	LCA120E/L/LE	LH1518AT	DIG130A	LH1262CB	OCM212	LH1518AT
AQV104A	LH1500AAB	LCA120ES/LES/LS/S	LH1500AAB	DIG131A	LH1262CB	OCM214	LH1541AT1
AQV214	LH1525AT	LCA125E/L/LE	LH1510AT	DIG132A	LH1262CB	OCM220	LH1510AT
AQV214A	LH1525AAB	LCA125ES/LES/LS/S	LH1518AT	DIG22830-DD	LH1262CB	OCM220	LH1518AT
AQV214S	LH1525ACD	LCA127E	LH1510AT	FAIRCHILD – VISHAY		OCM222	LH1510AT
AQV217	LH1510AT	LCA127ES/S	LH1518AT	HSR312	LH1510AT	OCM222	LH1518AT
AQV217A	LH1510AAB	LCA142E	LH1510AT	HSR312L	LH1510AT	OCM224	LH1541AT1
AQV221	LH1541AT1	LCA143	LH1550AT	HSR412	LH1540AT	OCM240	LH1510AT
AQV221A	LH1541AAB	LCA143E	LH1540AT	HSR412L	LH1546AT	OCM240	LH1518AT
AQV225	LH1541AT	LCA145/E	LH1500AT	HP – VISHAY		OCM241	LH1510AT
AQV225A	LH1541AAB1	LCA145/ES/S	LH1500AAB	HSSR-8060	LH1510AT	OCM241	LH1518AT
AQV234	LH1525AT	LCA210/E	LH1503AB	HSSR-8060	LH1518AT	OCM242	LH1510AT
AQV234A	LH1525AAB	LCA210ES/S	LH1503AAC	HSSR-8200*	LH1541AT1	OCM242	LH1518AT
AQV254A	LH1500AAB	LCA220/E	LH1513AB	HSSR-8400	LH1510AT	OKITA – VISHAY	
AQV414	LH1501AT	LCA220/ES	LH1513AAC	HSSR-8400	LH1518AT	ADM1M21	LH1510AT
AQV414A	LH1501AAB	LCA710	VO14642AT	HSSR-7110	No Cross	ADM1M41	LH1518AT
AQW210TS	LH1529FP	LCA710STR	VO14642AABTR	HSSR-7111	No Cross	AD2M22	LH1520AB
AQW210E	LH1532FP	LCB110/E	LH1501BT	HSSR-7112	No Cross	PANASONIC – VISHAY	
AQW210E	LH1556FP	LCB110/ES/S	LH1501BAB	5962-9314001	No Cross	AQV252	VO14642AT
AQW214	LH1520AB	LCB111/E	LH1501BT	5962-9314002	No Cross	AQV252AX	VO14642AABTR
AQW214	LH1526AB	LCB111/ES/S	LH1501BAB	IR – VISHAY		AQY221R2VY	VO1400AEFTR
AQW214A	LH1520AAC	LCB120/E	LH1511BT	PV15100	LH1262CB	SOLID STATE OPTRONICS – VISHAY	
AQW214A	LH1526AAB	LCB120/ES/S	LH1511BAB	PVA1052	LH1510AT	AD4-C111	LH1532AB
AQW614A	LH1502BB	LCB127/E	LH1526AB	PVA1054	LH1510AT	AD4-C111	LH1526AB
AQW614A	LH1502BAC	LCB127ES/S	LH1526AAC	PVA1352	LH1510AT	AD4-C112	LH1521BB
CLARE – VISHAY		LCC110/E	LH1502BB	PVA1352	LH1518AT	AD4-C113	LH1502BB
CPC1017N	VO1400AEF	LCC110/ES/S	LH1512BAC	PVA1354	LH1510AT	AD6-C111	LH1540AT
CPC1017NTR	VO1400AEFTR	LCC120/E	LH1502BB	PVA1354	LH1518AT	AD6-C111	LH1525AT
CPC1035	LH1546AEF	LCC120/ES/S	LH1512BAC	PVA2352	LH1510AT	AD6-C112	LH1511BT
CPC1050	LH1546AEF	OMA130/E	LH1510AT	PVA3324	LH1500AT	AD6-C211	LH1510AT
LAA100P	LH1532FP	OMA130ES/S	LH1518AT	PVA3354	LH1530AT	AD6-C211	LH1518AT
LAA100P	LH1556FP	OMA160/E	LH1518AT	PVR1300	LH1513AT	AD8-C111	LH1540AT
LAA110/E	LH1532AB	OMA160/E	LH1541AAB1	PVR1301	LH1513AB	AD8-C111	LH1525AT
LAA110/E/ES	LH1532AAC	OMA210	LH1503BB	PVR2300	LH1513AB	AD8-C112	LH1511BT
LAA120/E	LH1505AB	OMA221	LH1503BAC	PVR3300	LH1503AB	AD8-C211	LH1510AT
LAA120/ES/S	LH1505AAC	OMA160/ES/S	LH1541AT1	PVR3301	LH1503AB	AD8-C211	LH1518AT
LBA110/E	LH1502BB	OMA160A	LH1541AAB1	PVY116-T	VO1400AEFTR	M271-TR	VO1400AEFTR
LBA110/ES/S	LH1502BAC	OAA160/E	LH1544AB	NEC – VISHAY		TOSHIBA – VISHAY	
LBA120/E	LH1512BB	OAA160/E	LH1544AAC	PFA101A	LH1510AT	TLP172A	VO1400AEFTR
LBA120ES/S	LH1512BAC	PAA110/E	LH1526AB	PFA101A	LH1518AT	TLP595G	LH1510AT
LBA127/E	LH1512BB	PAA110/ES/S	LH1526AAC	PFA112A	LH1510AT	TLP595G	LH1518AT
LBA127ES/S	LH1512BAC	PLA110/E	LH1525AT	PFA112A	LH1518AT	TELEDYNE – VISHAY	
LBA145/E	LH1502BB	PLA110/ES/S	LH1525AAB	PFA113A	LH1510AT	C60-3	LH1510AT
LBA145/ES/S	LH1502BAC	PLA140/E	LH1510AT	PFA113A	LH1518AT	C60-3	LH1518AT
LBA146/E	LH1502BB	PLA140/ES/S	LH1518AT	PFA121A	LH1510AT	C60-10	VO14642AT
LBA146/ES/S	LH1502BAC	PLA150/E	LH1510AT	PFA121A	LH1518AT	SC60-10	VO14642AABTR
LBB110/E	LH1521BB	PLA150/ES/S	LH1518AT	PFA122A	LH1510AT	TH ELECTRONICS – VISHAY	
LBB110ES/S	LH1521BAC	TS117E	LH1529AB	PFA122A	LH1518AT	THR 003-400	LH1510AT
LBB120/E	LH1523BB	TS117ES	LH1529AAC	PFD141A	LH1510AT	THR 003-400	LH1518AT
LBB120ES/S	LH1523BAC	TS120E	LH1529BB	PFD141A	LH1518AT	THR 010-200	LH1510AT
LCA110/E	LH1500AT	TS120S	LH1539AAC	PFD102A	LH1510AT	TOWARD RELAY – VISHAY	
LCA110/E	LH1540AT	TS120ES	LH1529BAC	PFD112A	LH1510AT	AB30S	LH1546AEF
LCA110/ES/S	LH1500AAB	TS190E	LH1549AB	PFD114A	LH1510AT	AB42S	No Cross
LCA110/ES/S	LH1540AAB	TS190ES	LH1549AAC	PFD114A	LH1518AT	AB30F	LH1525AT
LCA110L/LE	LH1500AT	XCA110/E	LH1550AT1	PFD123A	LH1510AT	AA31F	LH1540AT
LCA110L/LES	LH1500AAB	XCA110/ES	LH1550AAB1	PFD123A	LH1518AT	AA37F	No Cross
LCA111	LH1500AT	XCA110/ES/S	LH1500AAB	PFD142A	LH1510AT	AC30F	LH1503AB
LCA111E	LH1550AT1	XCA110/ES/S	LH1530AAB	PFD142A	LH1518AT	AC31F	LH1503AB
LCA111ES	LH1550AAB1	XCA110/ES/S	LH1550AAB1	PS710A-1A	VO14642AT		



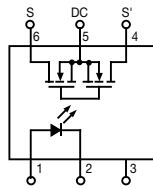
Solid State Relays

Protection Through Optical Isolation

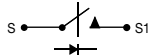
DIP/MiniFlat



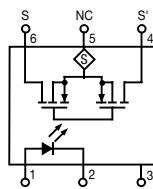
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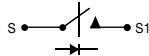
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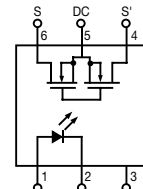
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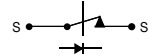
1 Form A



1 Form B*



1 Form B

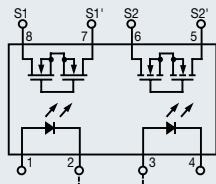


6-Pin DIP/SMD

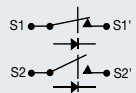


* Form A "normally open";
Form B "normally closed"

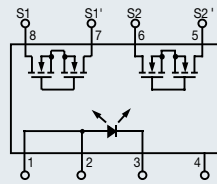
1 Form A/B, C



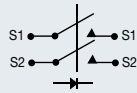
1 Form A, B, C



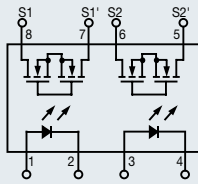
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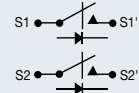
2 Form A



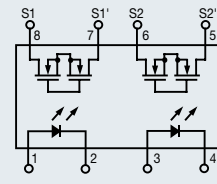
Dual 1 Form A*



Dual 1 Form A



Dual 1 Form B*



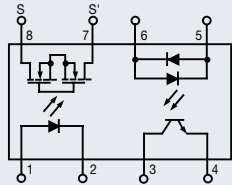
Dual 1 Form B



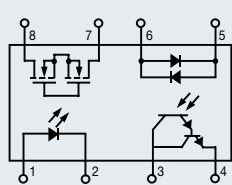
8-Pin DIP/SMD



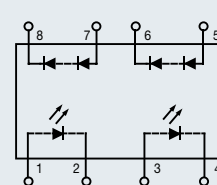
1 Form A/Optocoupler



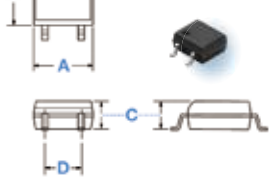
1 Form A/Darlington



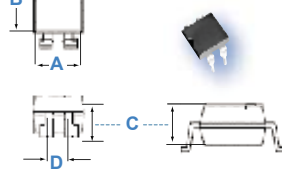
MOSFET Driver



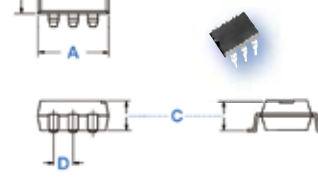
4-Pin MiniFlat



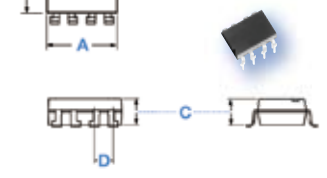
4-Pin DIP/SMD



6-Pin DIP/SMD



8-Pin DIP/SMD



DIP body dimensions are the same as the SMD version presented on this drawing.

DIP body dimensions are the same as the SMD version presented on this drawing.

MiniFlat	4-Pin*	8-Pin*
A	0.174 (0.442)	0.374 (9.61)
B	0.180 (4.70)	0.180 (4.70)
C	0.080 (2.03)	0.080 (2.03)
D	0.100 (2.54)	0.100 (2.54)

Typical* dimensions = inches (mm)

SMD/DIP	4-Pin*	6-Pin*	8-Pin*
A	0.261 (6.62)	0.343 (8.60)	0.385 (9.78)
B	0.300 (7.62)	0.300 (7.62)	0.300 (7.62)
C	0.140 (3.35)	0.140 (3.30)	0.140 (3.30)
D	0.100 (2.54)	0.100 (2.54)	0.100 (2.54)

Typical* dimensions = inches (mm)

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SEMICONDUCTORS:

Rectifiers • High-Power Diodes and Thyristors • Small-Signal Diodes • Zener and Suppressor Diodes
• FETs • RF Transistors • Optoelectronics • ICs • Modules and Assemblies

PASSIVE COMPONENTS:

Resistive Products • Magnetics • Capacitors • Strain Gage Transducers and Stress Analysis Systems

**One of the World's Largest
Manufacturers**
of Discrete Semiconductors and Passive Components

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