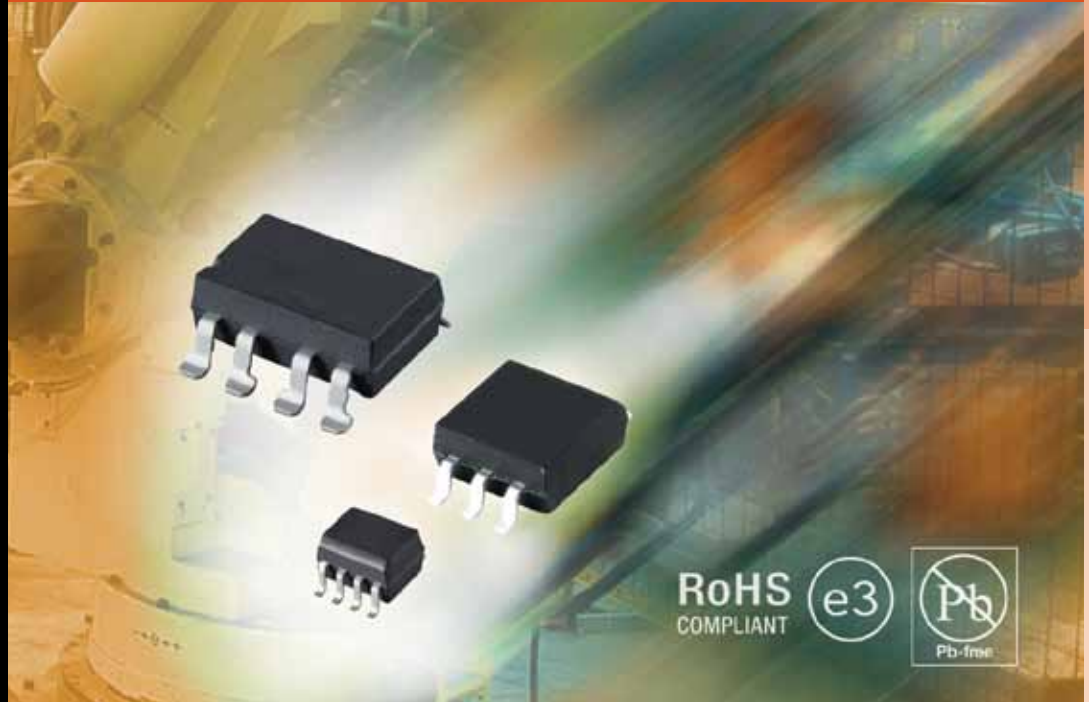




OPTOCOUPLERS



High-Speed Optocouplers



ANALOG AND DIGITAL OUTPUT

High-Speed Optocouplers

Features

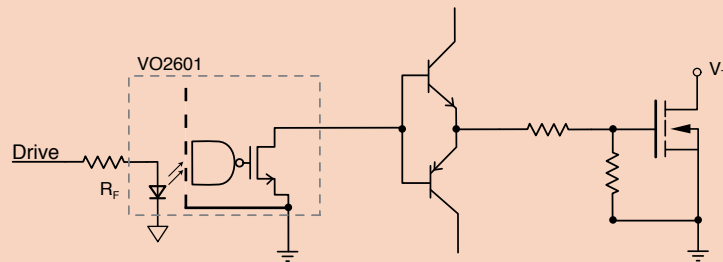
- JEDEC-compatible
- Reinforced insulation
- High-voltage isolation
- Up to 30 kV/ μ s common mode transient immunity
- Worldwide safety agency certification
- Meets IEC60068-2-42 (SO₂) and IEC60068-2-43 (H₂S) requirements
- RoHS and WEEE compliant, pure tin leads

Applications

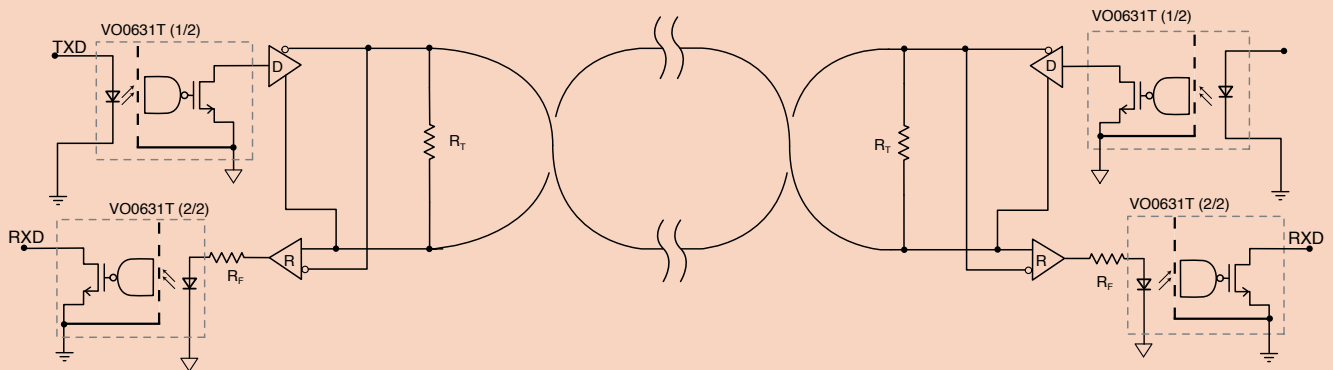
- Industrial communication buses
- High-speed A/D and D/A converters
- Digital control and switch mode power supplies
- Industrial controller I/O interfaces
- Scan driver IC interfaces for high output voltage devices (plasma display panels)
- Signal isolation transformer replacement
- AC motor drives

Application Circuits

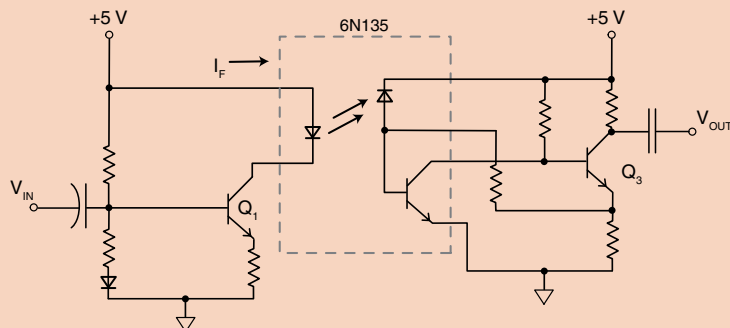
MOSFET Driver



Industrial RS485 Isolated Interface with Dual-Channel VO4661



AC-Coupled Isolation Amplifier



ANALOG AND DIGITAL OUTPUT

High-Speed Optocoupler Part Numbers



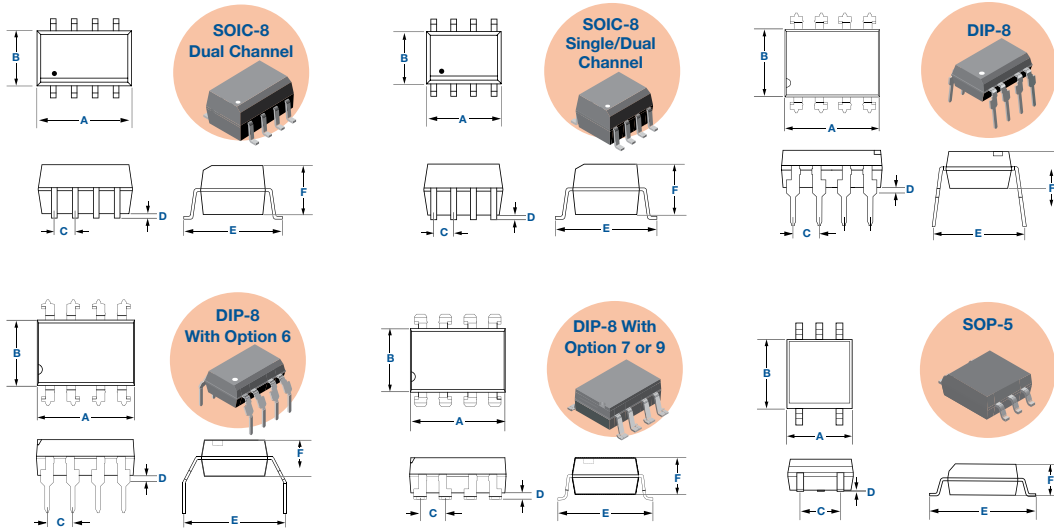
Part Number	Package	Channel(s)	CTR _{min} (%)	t _{PLH typ} (μsec)	t _{PHL typ} (μsec)	R _L (kΩ)	CMR typ (V/μs)		
6N138	DIP-8	1	300	2.0	2.0	2.2	500	Data Rate 100 Kbd	High-Speed Analog
6N139	DIP-8	1	500	6.0	4.0	4.7	500		
SFH6138	DIP-8	1	300	2.0	4.0	2.2	500		
SFH6139	DIP-8	1	500	6.0	5.0	4.7	500		
SFH6318T	SOIC-8	1	300	2.0	2.0	2.2	500		
SFH6319T	SOIC-8	1	500	6.0	4.0	4.7	500		
SFH636	DIP-6	1	15	0.3	0.3	1.9	1,000	Data Rate 1 MBd	
6N135	DIP-8	1	5	0.3	0.3	4.1	1,000		
6N1135*	DIP-8	1	5	0.3	0.3	4.1	1,000		
6N136	DIP-8	1	15	0.2	0.2	1.9	1,000		
6N1136*	DIP-8	1	15	0.2	0.2	1.9	1,000		
SFH6135	DIP-8	1	5	0.3	0.3	4.1	1,000		
SFH6136	DIP-8	1	15	0.2	0.2	1.9	1,000		
SFH6315T	SOIC-8	1	5	0.5	0.5	4.1	1,000		
SFH6316T	SOIC-8	1	15	0.3	0.5	1.9	1,000		
SFH6343T	SOIC-8	1	15	0.3	0.5	1.9	30,000		
SFH6345	DIP-8	1	15	0.3	0.3	1.9	30,000		
SFH6325	DIP-8	2	5	0.3	0.6	4.1	1,000		
SFH6326	DIP-8	2	15	0.2	0.5	1.9	1,000		
VOM452T	SOP-5	1	15	0.5	0.3	1.9	1,000		
VOM453T	SOP-5	1	15	0.5	0.3	1.9	15,000		
Part Number	Package	Channel(s)	t _r typ (ns)	t _f typ (ns)	t _{PHL typ} (ns)	t _{PHL typ} (ns)	CMTI _{min} (V/μs)		
SFH6700	DIP-8	1	25	4	105	90	1,000	Data Rate 5 MBd	High-Speed Digital
SFH6701	DIP-8	1	25	4	105	90	1,000		
SFH6705	DIP-8	1	25	4	105	90	1,000		
SFH6719	DIP-8	1	25	4	105	90	2,500		
SFH6702	DIP-8	1	25	4	105	90	1,000		
SFH6712	DIP-8	1	25	4	105	90	2,500		
SFH6711	DIP-8	1	25	4	105	90	2,500		
SFH6731	DIP-8	2	25	4	105	90	1,000		
SFH6732	DIP-8	2	25	4	105	90	5,000		
SFH6720T	SOIC-8	1	25	4	105	90	1,000		
SFH6721T	SOIC-8	1	25	4	105	90	2,500		
6N137	DIP-8	1	23	7	49	50	100		
VO2601	DIP-8	1	23	7	49	50	5,000		
VO2611	DIP-8	1	23	7	49	50	15,000		
VO0600T	SOIC-8	1	23	7	49	50	100		
VO0601T	SOIC-8	1	23	7	49	50	5,000		
VO0611T	SOIC-8	1	23	7	49	50	15,000		
VO2630	DIP-8	2	23	7	49	50	100		
VO2631	DIP-8	2	23	7	49	50	5,000		
VO4661	DIP-8	2	23	7	49	50	15,000		
VO0630T	SOIC-8	2	23	7	49	50	100		
VO0631T	SOIC-8	2	23	7	49	50	5,000		
VO0661T	SOIC-8	2	23	7	49	50	15,000		
VO0630T	SOIC-8	2	23	7	49	50	100		
VO0631T	SOIC-8	2	23	7	49	50	5,000		
VO0661T	SOIC-8	2	23	7	49	50	15,000		
SFH6755T	SOIC-8	2	23	7	49	50	100		
SFH6756T	SOIC-8	2	23	7	49	50	5,000		
SFH6757T	SOIC-8	2	23	7	49	50	15,000		

Note:
 1. All DIP packages have a V_{ISO} of 5300 V_{rms} and all SOIC-8 packages have a V_{ISO} of 4000 V_{rms}.
 2. All 100 Kbd devices have an I_{F(test)} of 1.6 mA and all 1 MBd devices have an I_F of 16 mA.
 3. All 5 MBd propagation delays were measured with a peaking capacitor.
 4. * Rated for 110 °C operation.



ANALOG AND DIGITAL OUTPUT

Protection Through Optical Isolation



SOP-5	A	B	C	D	E	F
Single Channel	0.174 (4.42)	0.180 (4.57)	0.050 (1.27)	0.006 (0.15)	0.274 (6.96)	0.078 (1.97)
SOIC-8	A	B	C	D	E	F
Single/Dual Channel	0.192 (4.88)	0.154 (3.91)	0.050 (1.27)	0.006 (0.15)	0.240 (6.10)	0.125 (3.18)
Dual Channel*	0.230 (5.84)	0.154 (3.91)	0.050 (1.27)	0.006 (0.15)	0.240 (6.10)	0.125 (3.18)
DIP-8	A**	B	C	D	E	F
Standard	0.385 (9.78)	0.262 (6.66)	0.100 (2.54)	0.028 (0.71)	0.351 (8.92)	0.14 (3.56)
With 400 mil (Option 6)	0.385 (9.78)	0.262 (6.66)	0.100 (2.54)	0.028 (0.71)	0.415 (10.54)	0.14 (3.56)
SMD (Option 7)	0.385 (9.78)	0.262 (6.66)	0.100 (2.54)	0.028 (0.71)	0.396 (10.06)	0.14 (3.56)
SMD (Option 9)	0.385 (9.78)	0.262 (6.66)	0.100 (2.54)	0.007 (0.18)	0.385 (9.78)	0.14 (3.56)

Note:

* These dimensions only apply to part number SFH6755T, SFH6756T, and SFH6757T. They have a creepage of > 5 mm and clearance of 3.3 mm per safety agency requirements.

** The DIP-6 mechanical dimensions for the SFH636 is not shown above. It is identical to a standard DIP-8 package except for dimension A, which is 0.339 (8.6).

Safety Agency Table

Part Number	UL	CSA OR CUL	EN 60747-5-5 (VDE 0884)
6N135, 6N136	X	X	X
6N137	X	X	X
6N138, 6N139	X	X	X
SFH636	X	X	X
SFH6315T, SFH6316T	X	X	X
SFH6318T, SFH6319T	X	X	X
SFH6343T	X	X	X
SFH6325, SFH6326	X	X	X
SFH6345	X	X	X
SFH6700, SFH6701, SFH6702, SFH6705	X	X	X
SFH6711, SFH6712, SFH6719	X	X	X
SFH6720T, SFH6721T	X	X	X
SFH6731, SFH6732	X	X	X
SFH6755T, SFH6756T, SFH6757T	X	X	X
VOM452T, VOM453T	X	X	
VO2601, VO2611	X	X	X
VO0600T, VO0601T, VO0611T	X	X	X
VO2630, VO2631, VO4661	X	X	X
VO0630T, VO0631T, VO0661T	X	X	X

Note: * This certification can be ordered through option 1. See back of selector guide for details.

ORDERING AND CROSS REFERENCE

Protection Through Optical Isolation



Ordering Information

V	O	2	6	0	1	-	X	0	1	7	T
Prefix		Base Part Number				Options Definition					Tape and Reel Options

- Option 1: Optocouplers for safe electrical insulation per DIN VDE 0884
- Option 6: Optocouplers with 10.16 mm (0.4") through-hole lead spread
- Option 7: Optocouplers with SMD lead form bend, 0.9 mm maximum standoff height
- Option 9: Optocouplers with SMD lead form bend, 0.25 mm maximum standoff height
- Option T: Tape and reel option, combined with only options 7 and 9

Examples:

VO4661-X017T - VO4661, SMD gull wing with 0.9 mm standoff height, VDE approved, tape and reel
 SFH6731-X016 - SFH6731, 10.16 mm (0.4") lead spread, VDE approved
 6N135-X009T - 6N135, SMD gull wing with 0.25 mm standoff height, tape and reel
 SFH6138-X001 - SFH6138, VDE approved

This field is always 4 characters long and commences with the character X. In the case of surface mounted products in tape and reel format, the tape and reel option character "T" will follow this field. The possible combinations for these fields are: X001, X006, X007, X007T, X009T, X016, X017, X019, X017T, X019T. For SOIC-8 and SOP-5 packages, only option 1 can be added. Please note, not all option combinations are readily available. Please contact your local Vishay sales office.

Cross Reference Information

Avago	Vishay	Avago	Vishay	Fairchild	Vishay	Kodenshi	Vishay	Toshiba	Vishay
4N46	6N139	HCPL-2212	SFH6712	HCPL-0500	SFH6315T	K6N137	6N137	6N136	6N136
6N135	6N135	HCPL-2219	SFH6719	HCPL-0501	SFH6316T	KPC2601	VO2601	6N137	6N137
6N136	6N136	HCPL-2231	SFH6731	HCPL-0600	VO0600T	KPC2630	VO2631	TLP112	VOM452T
6N137	6N137	HCPL-2232	SFH6732	HCPL-0601	VO0601T	KPC2631	VO2630	TLP112A	VOM452T
6N138	6N138	HCPL-2502	6N136	HCPL-0700	SFH6318T	NEC	Vishay	TLP113	VO0600T
6N139	6N139	HCPL-2530	SFH6325	HCPL-0701	SFH6319T	PS8101	VOM453T	TLP114	VOM453T
HCPL-0201	SFH6720	HCPL-2531	SFH6326	HCPL-2503	SFH6345	PS8601	6N136	TLP115	VO0601T
HCPL-0211	SFH6721	HCPL-2601	VO2601	HCPL-2530	SFH6325	PS8602	6N136	TLP115A	VO0601T
HCPL-0452	SFH6343T	HCPL-2611	VO2611	HCPL-2531	SFH6326	PS9113	SFH6343T	TLP2200	SFH6700
HCPL-0453	SFH6343T	HCPL-2630	VO2630	HCPL-2601	VO2601	PS9114	VO0611T	TLP2530	SFH6325
HCPL-0454	SFH6343T	HCPL-2631	VO2631	HCPL-2611	VO2611	PS9115	VO0611T	TLP2531	SFH6326
HCPL-0500	SFH6315T	HCPL-4502	SFH6345	HCPL-2630	VO2630	PS9613	SFH6345	TLP2601	VO2601
HCPL-0501	SFH6316T	HCPL-4503	SFH6345	HCPL-2631	VO2631	PS9614	VO2611	TLP2630	VO2630
HCPL-0600	VO0600T	HCPL-4504	SFH6345	HCPL-4502	SFH6345	PS9711	VO0601T	TLP2631	VO2631
HCPL-0601	VO0601T	HCPL-4661	VO4661	FODM452	VOM452T	Sharp	Vishay	TLP550	6N136
HCPL-0611	VO0611T	HCPL-J454	SFH6345	FODM453	VOM453T	6N137	6N137	TLP558	SFH6700
HCPL-0630	VO0630T	HCPL-M452	VOM452T	Isocom	Vishay	PC410L0NIP	VO0611T	TLP559	SFH6345
HCPL-0631	VO0631T	HCPL-M453	VOM453T	6N137	6N137	PC410L0NIP	VO0611T	TLP651	6N135
HCPL-0661	VO0661T	Fairchild	Vishay	ICPL2601	VO2601	PC457L0NIP	VOM453T	TLP750	SFH6345
HCPL-0700	SFH6318T	6N135	6N135	ICPL2611	VO2611	PC910L0NSZ	VO2611	TLP751	6N135
HCPL-0701	SFH6319T	6N136	6N136	ICPL2630	VO2630	PC911	VO2601	TLP759	SFH6345
HCPL-070A	SFH6318T	6N137	6N137	ICPL2631	VO2631	PC957L0NSZ	SFH6345		
HCPL-2200	SFH6700	6N138	6N138	ICPL4502	SFH6345	PC9D10	6N137		
HCPL-2201	SFH6701	6N139	6N139	Kodenshi	Vishay	PC9D17	VO2631		
HCPL-2202	SFH6702	FOD070L	SFH6319T	K6N135	6N135	Toshiba	Vishay		
HCPL-2211	SFH6711	HCPL-0452	SFH6343T	K6N136	6N136	6N135	6N135		

For technical questions, contact optocoupler.answers@vishay.com

For more information about Vishay High-Speed Optocouplers, go to <http://www.vishay.com/optocouplers/opto-high/>



NOTES

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