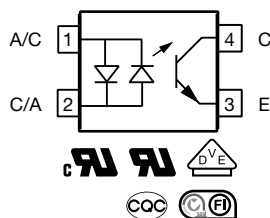
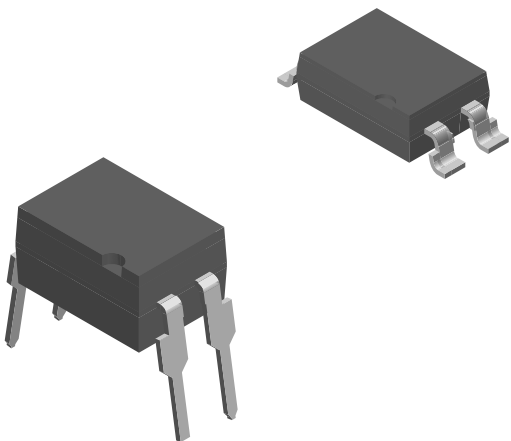


Optocoupler, Phototransistor Output, AC Input, 5300 V_{RMS}



DESCRIPTION

The SFH620AA, SFH620AGB features a high current transfer ratio, low coupling capacitance and high isolation voltage. These couplers have a GaAs infrared emitting diode emitter, which is optically coupled to a silicon planar phototransistor detector, and is incorporated in a plastic DIP-4 package.

The coupling devices are designed for signal transmission between two electrically separated circuits.

The couplers are end-stackable with 2.54 mm lead spacing. This version complies with IEC 60950 (DIN VDE 0805) for reinforced insulation up to an operation voltage of 400 V_{RMS} or DC.

FEATURES

- High current transfer ratios
 - at 5 mA: 50 to 600 %
 - at 1.0 mA: 45 % typical (> 13)
- Low CTR degradation
- Good CTR linearity depending on forward current
- Isolation test voltage, 5300 V_{RMS}
- High collector emitter voltage, V_{CEO} = 70 V
- Low saturation voltage
- Fast switching times
- Temperature stable
- Low coupling capacitance
- End stackable, 0.100" (2.54 mm) spacing
- High common mode interference immunity (unconnected base)
- SMD option, see SFH620A, SFH6206 datasheet
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES



Product Page



Design Tools



Footprints



Models

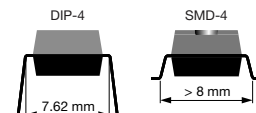
AGENCY APPROVALS

- [UL](#)
- [cUL](#)
- [DIN EN 60747-5-5 \(VDE 0884-5\). available with option 1](#)
- [BSI](#)
- [CQC](#)
- [FIMKO](#)



ORDERING INFORMATION

S	F	H	6	2	0	A	x	x	-	X	0	0	1
PART NUMBER									PACKAGE OPTION				



AGENCY CERTIFIED / PACKAGE	CTR (%)	
	± 5 mA	
UL, cUL, BSI, FIMKO, CQC	50 to 600	100 to 600
DIP-4	SFH620AA	SFH620AGB
UL, cUL, BSI, FIMKO, CQC, VDE (option 1)	50 to 600	100 to 600
DIP-4	-	SFH620AGB-X001
SMD-4, option 9	-	SFH620AGB-X019T

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
DC forward current		I_F	± 60	mA
Surge forward current	$t_p \leq 1.0\text{ }\mu\text{s}$	I_{FSM}	± 2.5	A
Total power dissipation		P_{diss}	100	mW
OUTPUT				
Collector emitter voltage		V_{CE}	70	V
Emitter collector voltage		V_{EC}	7	V
Collector current		I_C	50	mA
	$t_p \leq 1.0\text{ ms}$	I_C	100	mA
Power dissipation		P_{diss}	150	mW
COUPLER				
Isolation test voltage between emitter and detector		V_{ISO}	5300	V_{RMS}
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness between emitter and detector			≥ 0.4	mm
Comparative tracking index per DIN IEC 112/VDE 0303 part 1		CTI	≥ 175	
Isolation resistance	$V_{IO} = 500\text{ V}, T_{amb} = 25\text{ }^{\circ}\text{C}$	R_{IO}	≥ 10^{12}	Ω
	$V_{IO} = 500\text{ V}, T_{amb} = 100\text{ }^{\circ}\text{C}$	R_{IO}	≥ 10^{11}	Ω
Storage temperature		T_{stg}	-55 to +150	$^{\circ}\text{C}$
Ambient temperature		T_{amb}	-55 to +100	$^{\circ}\text{C}$
Junction temperature		T_j	100	$^{\circ}\text{C}$
Soldering temperature ⁽¹⁾	Max. 10 s, dip soldering distance to seating plane ≥ 1.5 mm	T_{sld}	260	$^{\circ}\text{C}$

Notes

- 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.
- ⁽¹⁾ Refer to reflow profile for soldering conditions for surface mounted devices (SMD). Refer to wave profile for soldering conditions for through hole devices (DIP).

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT							
Forward voltage	$I_F = \pm 60\text{ mA}$		V_F	-	1.25	1.65	V
Capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$		C_O	-	50	-	pF
Thermal resistance			R_{thja}	-	750	-	K/W
OUTPUT							
Collector emitter capacitance	$V_{CE} = 5\text{ V}$, $f = 1\text{ MHz}$		C_{CE}	-	6.8	-	pF
Thermal resistance			R_{thja}	-	500	-	K/W
COUPLER							
Collector emitter saturation voltage	$I_F = \pm 10\text{ mA}$, $I_C = 2.5\text{ mA}$		V_{CEsat}	-	0.25	0.4	V
Coupling capacitance			C_C	-	0.2	-	pF
Collector emitter leakage current	$V_{CE} = 10\text{ V}$	SFH620AA	I_{CEO}	-	10	100	nA
		SFH620AGB	I_{CEO}	-	10	100	nA

Note

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

CURRENT TRANSFER RATIO ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
I_C/I_F	$I_F = \pm 5\text{ mA}$, $V_{CE} = 5\text{ V}$	SFH620AA	CTR	50	-	600	%
		SFH620AGB		100	-	600	%

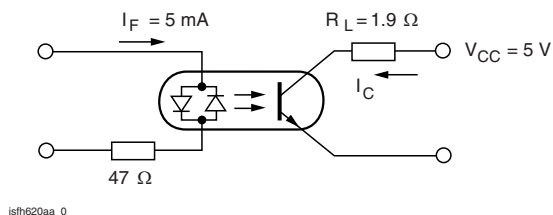


Fig. 1 - Switching Times (Typical Values)
Linear Operation (Saturated)

SWITCHING CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	$I_F = \pm 5\text{ mA}$, $R_L = 1.9\text{ k}\Omega$, $V_{CC} = 5\text{ V}$	t_{on}	-	2	-	μs
Turn-off time	$I_F = \pm 5\text{ mA}$, $R_L = 1.9\text{ k}\Omega$, $V_{CC} = 5\text{ V}$	t_{off}	-	25	-	μs

SAFETY AND INSULATION RATINGS

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Climatic classification (according to IEC 68 part 1)			-	55 / 100 / 21	-	
Comparative tracking index		CTI	175	-	399	
V_{IOTM}			10000	-	-	V
V_{IORM}			890	-	-	V
P_{SO}			-	-	400	mW
I_{SI}			-	-	275	mA
T_{SI}			-	-	175	°C
Creepage distance	standard DIP-4		7	-	-	mm
Clearance distance	standard DIP-4		7	-	-	mm
Insulation thickness, reinforced rated	per IEC 60950 2.10.5.1		0.4	-	-	mm

Note

- As per IEC 60747-5-5, 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.

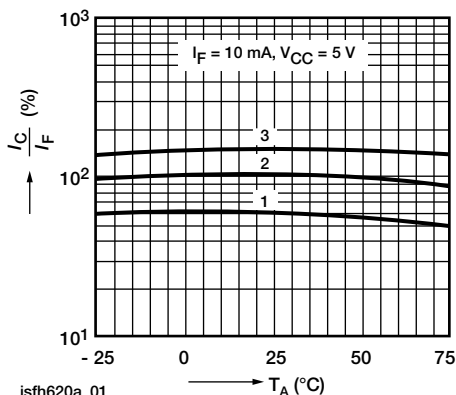
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)


Fig. 2 - Current Transfer Ratio (CTR) vs. Temperature

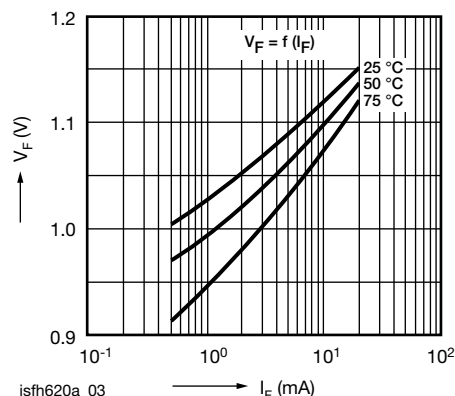


Fig. 4 - Diode Forward Voltage (Typ.) vs. Forward Current

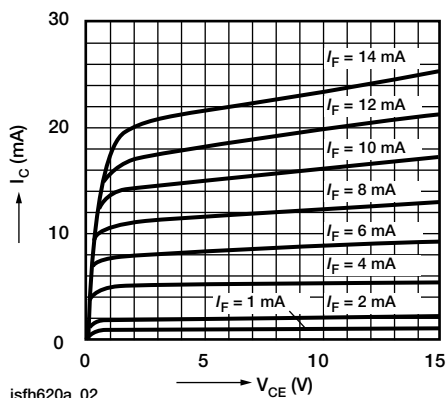


Fig. 3 - Output Characteristics (Typ.) Collector Current vs. Collector Emitter Voltage

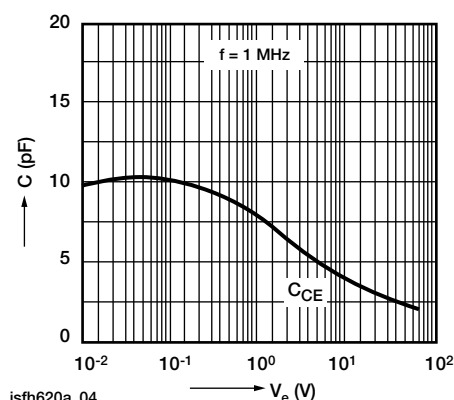


Fig. 5 - Transistor Capacitance (Typ.) vs. Collector Emitter Voltage

Fig. 7 - Permissible Power Dissipation vs. Ambient Temperature

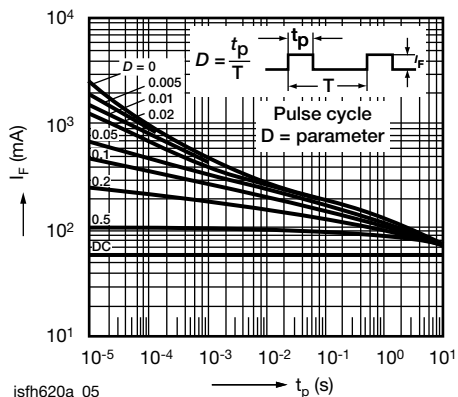


Fig. 6 - Permissible Pulse Handling Capability Forward Current vs. Pulse Width

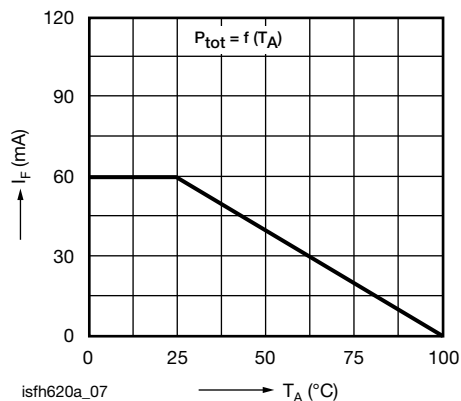
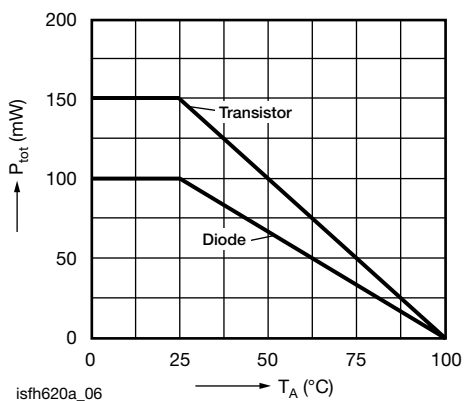


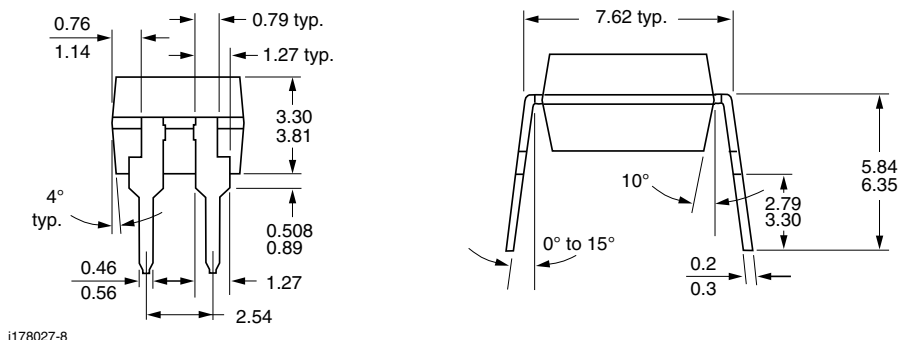
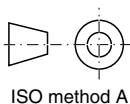
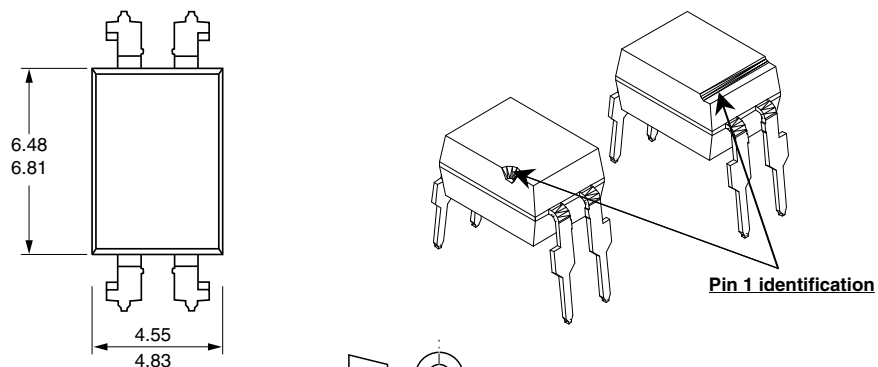
Fig. 8 - Permissible Diode Forward Current vs. Ambient Temperature



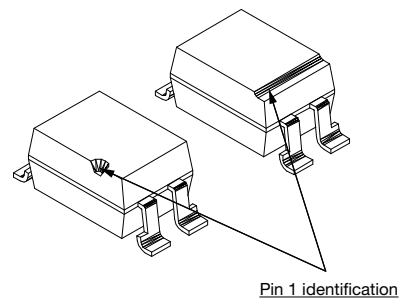
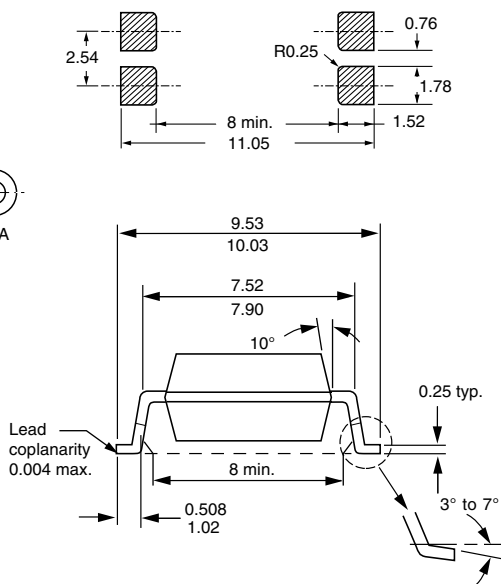
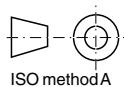
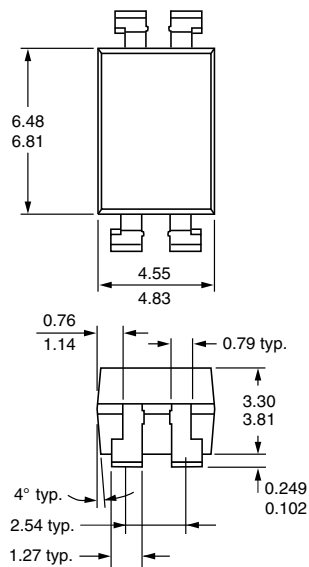
PACKAGE DIMENSIONS in millimeters



DIP-4

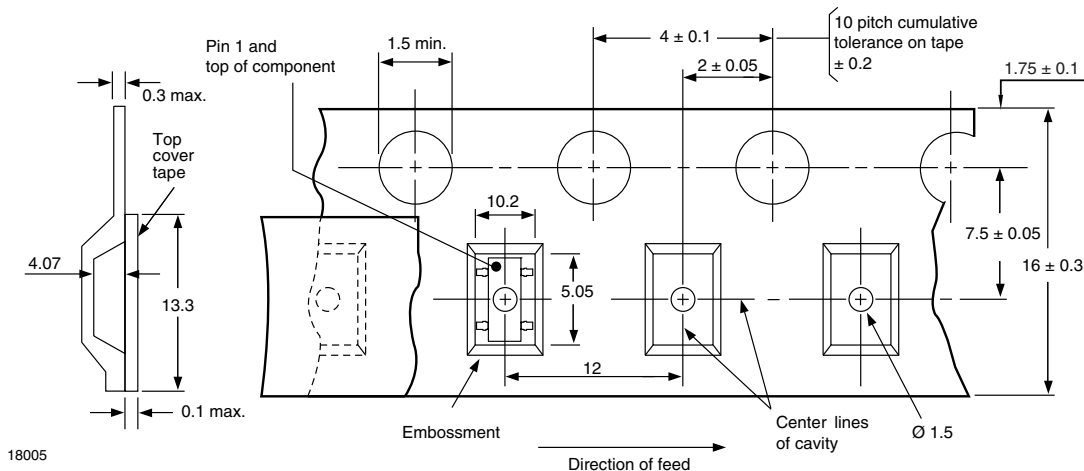
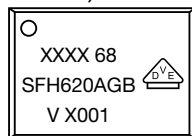


SMD-4, Option 9



TAPE AND REEL PACKAGING (in millimeters)

The tape is 16 mm and is wound on a 33 cm reel. There are 1000 parts per reel. Taped and reeled 4 pin optocouplers conform to EIA-481-2 and IEC60286-3.

SMD-4 ("T")

PACKAGE MARKING (example of SFH620AGB-X001)

Notes

- XXXX = LMC (lot marking code)
- The VDE logo is only marked on option1 parts.



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.