Excellent Integrated System Limited

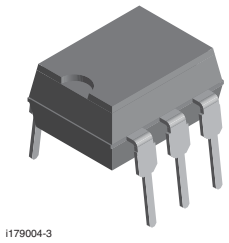
Stocking Distributor

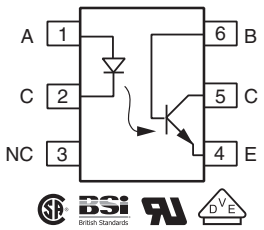
Click to view price, real time Inventory, Delivery & Lifecycle Information:

Vishay Semiconductor/Opto Division
SFH640-2

For any questions, you can email us directly:
sales@integrated-circuit.com

Optocoupler, Phototransistor Output, with Base Connection, 300 V BV_{CEO}





FEATURES

- Good CTR linearity with forward current
- Low CTR degradation
- Very high collector emitter breakdown voltage, BV_{CER} = 300 V
- Isolation test voltage: 5300 V_{RMS}
- Low coupling capacitance
- High common mode transient immunity
- Phototransistor optocoupler 6 pin DIP package with base connection
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free
e3
RoHS COMPLIANT

AGENCY APPROVALS

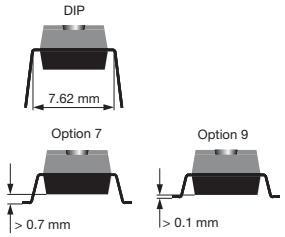
- UL1577, file no. E52744 system code H or J, double protection
- DIN EN 60747-5-2 (VDE 0884) available with option 1
- CSA 93751
- BSI IEC 60950; IEC 60065

DESCRIPTION

The SFH640 is an optocoupler with very high BV_{CER}, a minimum of 300 V. It is intended for telecommunications applications or any DC application requiring a high blocking voltage.

ORDERING INFORMATION

S	F	H	6	4	0	-	#	X	0	#	#	T
PART NUMBER							CTR BIN	PACKAGE OPTION				TAPE AND REEL



AGENCY CERTIFIED/PACKAGE	CTR (%)	
	10 mA	
UL, CSA, BSI	**63 to 125**	**100 to 200**
DIP-6	SFH640-2	SFH640-3
SMD-6, option 7	SFH640-2X007	SFH640-3X007T (1)
VDE, UL, CSA, BSI	**63 to 125**	**100 to 200**
SMD-6, option 9	-	SFH640-3X019T (1)

Notes

- Additional options may be possible, please contact sales office.

(1) Also available in tubes, do not put T on the end.

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Reverse voltage		V_R	6.0	V
DC forward current		I_F	60	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	2.5	A
Total power dissipation		P_{diss}	100	mW

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
OUTPUT				
Collector emitter voltage		V_{CEO}	300	V
Collector base voltage		V_{CBO}	300	V
Emitter base voltage		V_{EBO}	7.0	V
Collector current		I_C	50	mA
Surge collector current	$t_p \leq 10$ ms	I_C	100	mA
Total power dissipation		P_{diss}	300	mW
COUPLER				
Isolation test voltage between emitter and detector		V_{ISO}	5300	V_{RMS}
			7500	V_{PK}
Isolation resistance	V_{IO} = 500 V, T_{amb} = 25 °C	R_{IO}	$\geq 10^{12}$	Ω
	V_{IO} = 500 V, T_{amb} = 100 °C	R_{IO}	$\geq 10^{11}$	Ω
Insulation thickness between emitter and detector			≥ 0.4	mm
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Comparative tracking index per DIN IEC 112/VDE 0303, part 1		CTI	175	
Storage temperature range		T_{stg}	- 55 to + 150	°C
Operating temperature range		T_{amb}	- 55 to + 100	°C
Soldering temperature (1)	max. 10 s, dip soldering: distance to seating plane ≥ 1.5 mm	T_{sld}	260	°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 °C, unless otherwise specified)							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
INPUT							
Forward voltage	I_F = 10 mA		V_V		1.1	1.5	V
Reverse voltage	I_R = 10 µA		V_R	6			V
Reverse current	V_R = 6 V		I_R		0.01	10	µA
Capacitance	V_F = 0 V, f = 1 MHz		C_O		25		pF
Thermal resistance			R_{thja}		750		K/W
OUTPUT							
Collector emitter breakdown voltage	I_{CE} = 1 mA, R_{BE} = 1 MΩ		BV_{CER}	300			V
Voltage emitter base	I_{EB} = 10 µA		BV_{BEO}	7			V
Collector emitter capacitance	V_{CE} = 10 V, f = 1 MHz		C_{CE}		7		pF
Collector base capacitance	V_{CB} = 10 V, f = 1 MHz		C_{CB}		8		pF
Emitter base capacitance	V_{EB} = 5 V, f = 1 MHz		C_{EB}		38		pF
Thermal resistance			R_{thja}		250		K/W
COUPLER							
Coupling capacitance			C_C		0.6		pF
Saturation voltage collector emitter	I_F = 10 mA, I_C = 3.2 mA	SFH640-2	V_{CEsat}		0.25	0.4	V
	I_F = 10 mA, I_C = 5 mA	SFH640-3	V_{CEsat}		0.25	0.4	V
Collector emitter leakage current	V_{CE} = 200 V, R_{BE} = 1 MΩ		I_{CER}		1	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 °C, unless otherwise specified)							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Current transfer ratio	I_F = 10 mA, V_{CE} = 10 V	SFH640-2	I_C/I_F	63		125	%
	I_F = 1 mA, V_{CE} = 10 V	SFH640-2	I_C/I_F	22	45		%
	I_F = 10 mA, V_{CE} = 10 V	SFH640-3	I_C/I_F	100		200	%
	I_F = 1 mA, V_{CE} = 10 V	SFH640-3	I_C/I_F	34	70		%

SWITCHING CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Turn-on time	I_C = 2 mA, R_L = 100 Ω, V_{CC} = 10 V	t_{on}		5		µs
Rise time	I_C = 2 mA, R_L = 100 Ω, V_{CC} = 10 V	t_r		2.5		µs
Turn-off time	I_C = 2 mA, R_L = 100 Ω, V_{CC} = 10 V	t_{off}		6		µs
Fall time	I_C = 2 mA, R_L = 100 Ω, V_{CC} = 10 V	t_f		5.5		µs

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

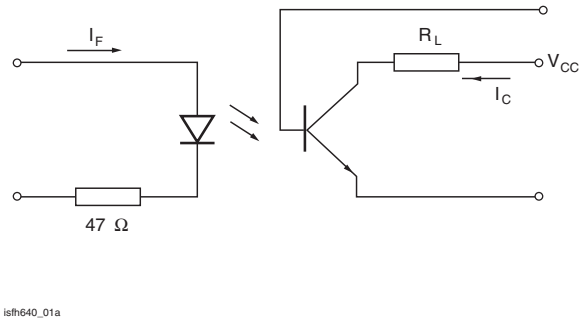


Fig. 1 - Switching Times Measurement Test Circuit and Waveform

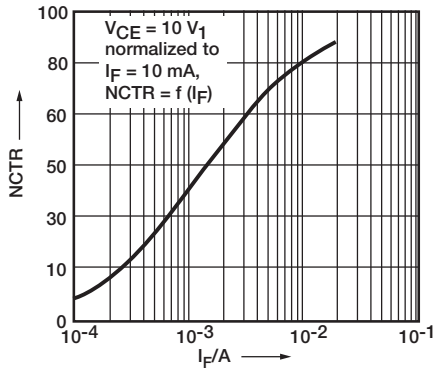


Fig. 3 - Current Transfer Ratio (typ.)

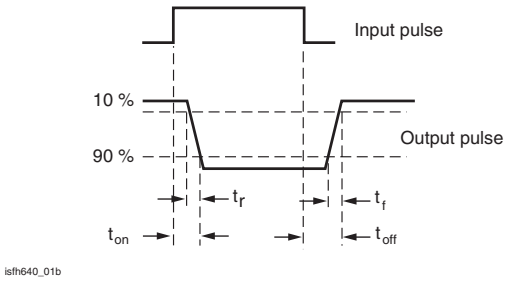


Fig. 2 - Switching Times Measurement Test Circuit and Waveform

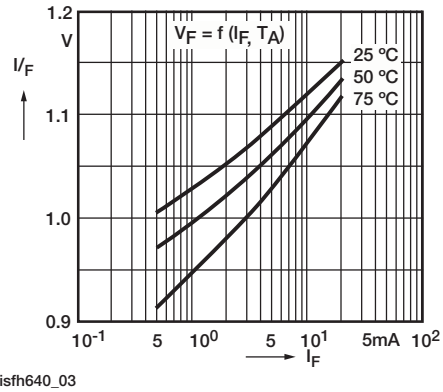


Fig. 4 - Diode Forward Voltage (typ.)

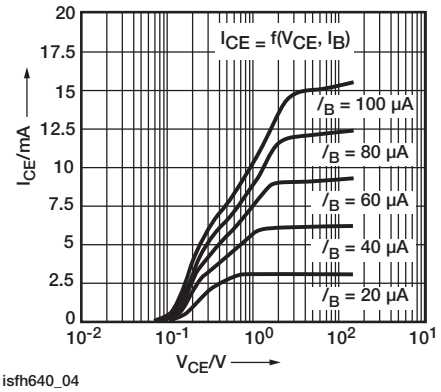


Fig. 5 - Output Characteristics (typ.)

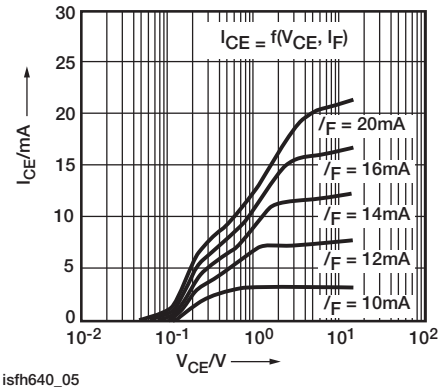


Fig. 6 - Output Characteristics (typ.)

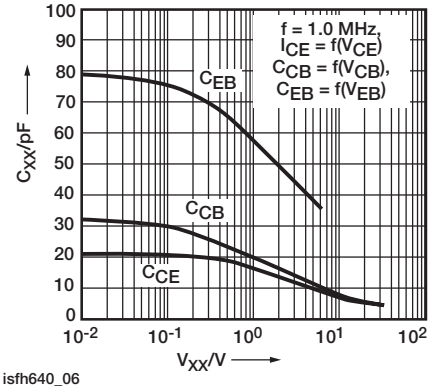


Fig. 7 - Transistor Capacitances (typ.)

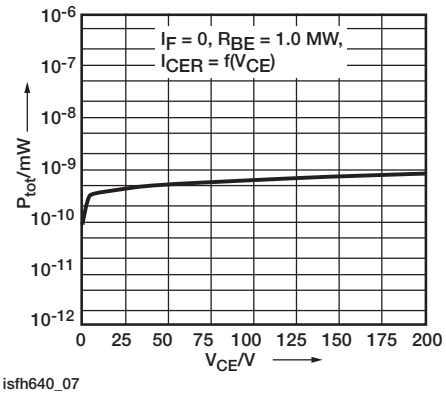


Fig. 8 - Collector-Emitter Leakage Current (typ.)

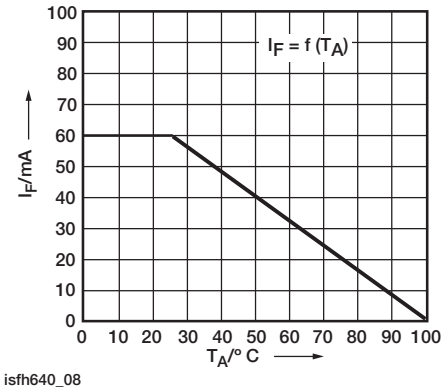


Fig. 9 - Permissible Loss Diode

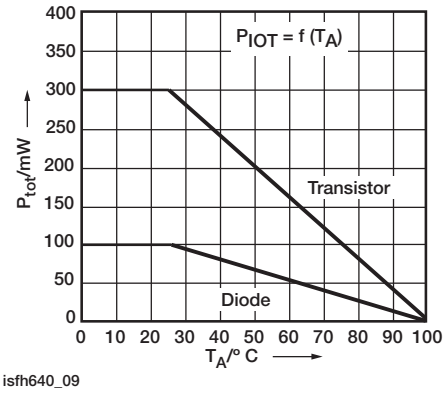
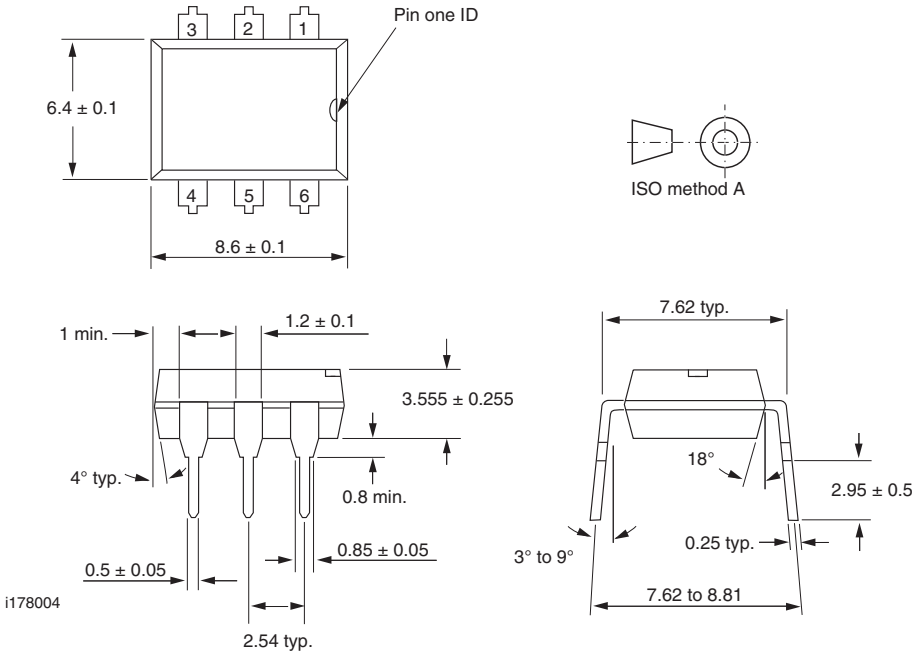
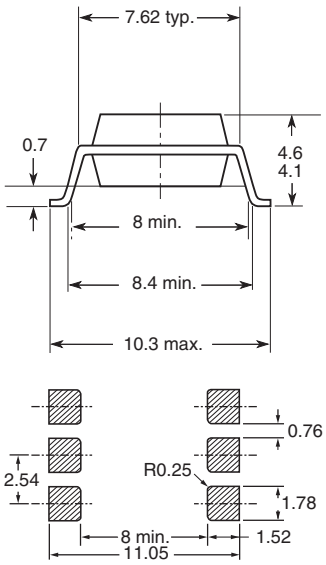


Fig. 10 - Permissible Power Dissipation

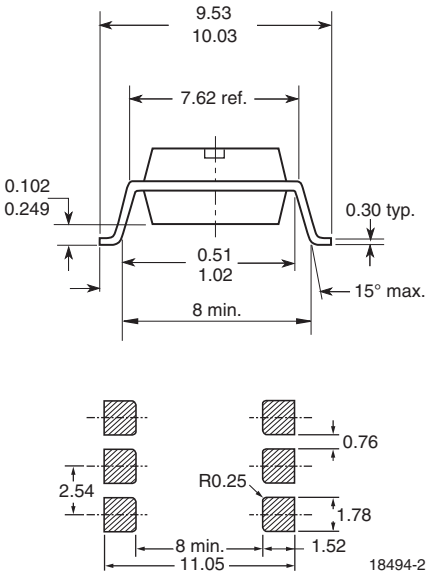
PACKAGE DIMENSIONS in millimeters



Option 7

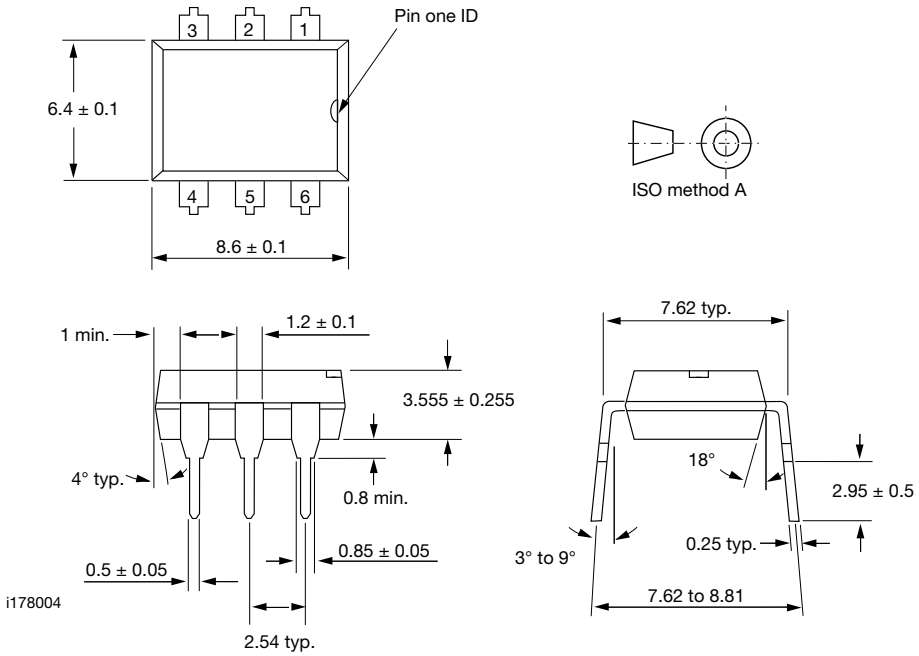


Option 9



DIP-6A

PACKAGE DIMENSIONS in inches (millimeters)



Note
The information in this document provides generic information but for specific information on a product the appropriate product datasheet should be used.

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.