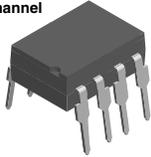
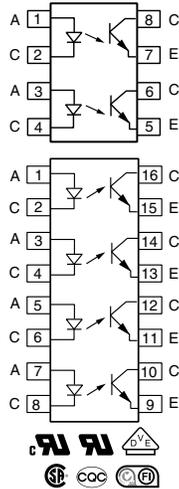
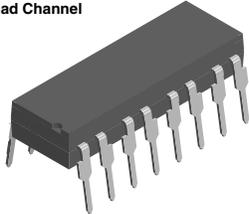


Optocoupler, Phototransistor Output (Dual, Quad Channel)

Dual Channel



Quad Channel



FEATURES

- High collector emitter voltage, $BV_{CEO} = 80\text{ V}$
- Dual and quad packages feature:
 - Lower pin and parts count
 - Better channel to channel CTR match
 - Improved common mode rejection
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

AGENCY APPROVALS

- UL
- cUL
- DIN EN 60747-5-5 (VDE 0884-5), available with option 1
- CQC
- FIMKO

DESCRIPTION

The ILD621, ILQ621, ILD621GB, ILQ621GB are multi-channel phototransistor optocouplers that use GaAs IRED emitters and high gain NPN silicon phototransistors. These devices are constructed using double molded insulation technology.

ORDERING INFORMATION				
<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">I</div> <div style="border: 1px solid black; padding: 2px;">L</div> <div style="border: 1px solid black; padding: 2px;">x</div> <div style="border: 1px solid black; padding: 2px;">6</div> <div style="border: 1px solid black; padding: 2px;">2</div> <div style="border: 1px solid black; padding: 2px;">1</div> <div style="border: 1px solid black; padding: 2px;">x</div> <div style="border: 1px solid black; padding: 2px;">x</div> <div style="border: 1px solid black; padding: 2px;">-</div> <div style="border: 1px solid black; padding: 2px;">X</div> <div style="border: 1px solid black; padding: 2px;">0</div> <div style="border: 1px solid black; padding: 2px;">#</div> <div style="border: 1px solid black; padding: 2px;">#</div> </div> <p style="text-align: center;">PART NUMBER</p> <p style="text-align: center;">PACKAGE OPTION</p> <p style="text-align: center;">x = D (Dual) or Q (Quad)</p>	 DIP-#	 Option 6		
 SMD				
AGENCY CERTIFIED / PACKAGE	DUAL CHANNEL		QUAD CHANNEL	
	CTR (%)			
UL, cUL, CSA, CQC, FIMKO	> 50	> 100	> 50	> 100
DIP-8	-	ILD621GB	-	-
SMD-8, option 7	ILD621-X007T	ILD621GB-X007T	-	-
DIP-16	-	-	ILQ621	ILQ621GB
SMD-16	-	-	-	ILQ621GB-X009 ⁽¹⁾
UL, cUL, CSA, CQC, FIMKO, VDE (option 1)	> 50	> 100	> 50	> 100
SMD-16	-	-	-	ILQ621GB-X017T

Notes

- Additional options may be possible, please contact sales office
- ⁽¹⁾ Part will be delivered in tape and reel



ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Reverse voltage		V _R	6.0	V
Forward current		I _F	50	mA
Surge current	1 μs pulse	I _{FSM}	1	A
Power dissipation		P _{diss}	100	mW
OUTPUT				
Collector emitter reverse voltage		V _{CEO}	80	V
Collector current		I _C	50	mA
Power dissipation		P _{diss}	150	mW
COUPLER				
Storage temperature		T _{stg}	-55 to +125	°C
Operating temperature		T _{amb}	-55 to +110	°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.
- 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 = 20 mA		V _F	-	1.2	1.4	V
Reverse current	V _R = 4 V		I _R	-	-	10	μA
Capacitance	V _R = 0 V, f = 1.0 kHz		C _{IO}	-	30	-	pF
OUTPUT							
Collector emitter leakage current	V _{CE} = 20 V		I _{CEO}	-	-	100	nA
COUPLER							
Capacitance (input to output)	V _{IO} = 0 V, f = 1.0 MHz		C _{IO}	-	0.6	-	pF
Collector emitter saturation voltage	I _F = 20 mA, I _{CE} = 1 mA	ILD621 ILQ621	V _{CEsat}	-	-	0.2	V

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							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Current transfer ratio (collector emitter)	I _F = 5.0 mA, V _{CE} = 5.0 V	ILD621	CTR _{CE}	50	-	600	%
		ILQ621	CTR _{CE}	50	-	600	%
		ILD621GB	CTR _{CE}	100	-	600	%
		ILQ621GB	CTR _{CE}	100	-	600	%

SWITCHING CHARACTERISTICS							
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT	
NON-SATURATED							
Rise time	V _{CE} = 2 V, I _C = 2 mA, R _L = 100 Ω	t _r	-	6	-	μs	
Fall time	V _{CE} = 2 V, I _C = 2 mA, R _L = 100 Ω	t _f	-	8	-	μs	

SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		55 / 110 / 21	
Comparative tracking index		CTI	175	
Maximum rated withstanding isolation voltage	t = 1 min	V _{ISO}	5000	V _{RMS}
Maximum transient isolation voltage		V _{IOTM}	6000	V _{peak}
Maximum repetitive peak isolation voltage		V _{IORM}	850	V _{peak}
Isolation resistance	V _{IO} = 500 V, T _{amb} = 25 °C	R _{IO}	≥ 5 × 10 ¹⁰	Ω
Output safety power		P _{SO}	265	mW
Input safety current		I _{SI}	130	mA
Safety temperature		T _S	150	°C
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness		DTI	≥ 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 °C, unless otherwise specified)

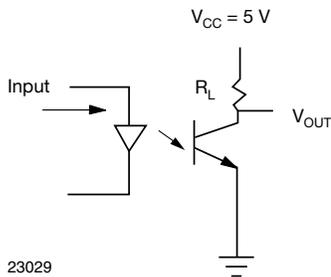


Fig. 1 - Test Circuit for Switching Characteristics

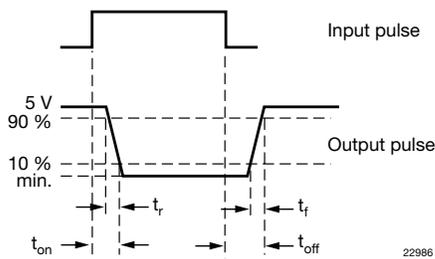


Fig. 2 - Parameter and Limit Definition

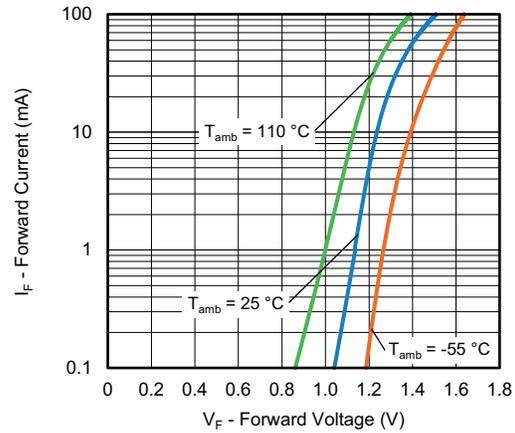


Fig. 3 - Forward Current vs. Forward Voltage

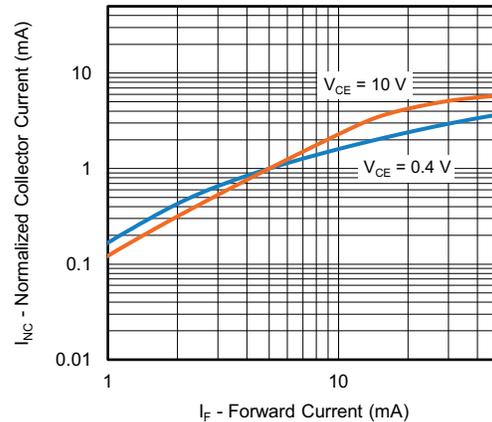


Fig. 4 - Normalized Collector Current vs. Forward Current

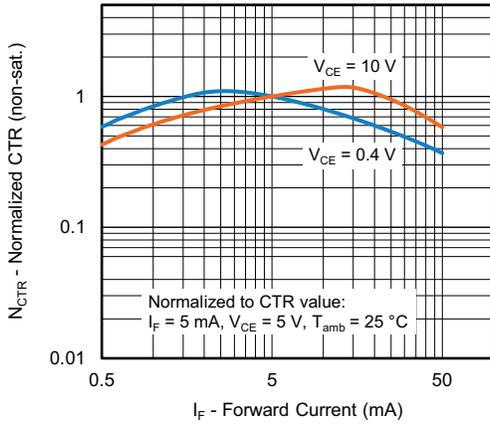


Fig. 5 - Normalized CRT vs. Forward Current (non-saturated)

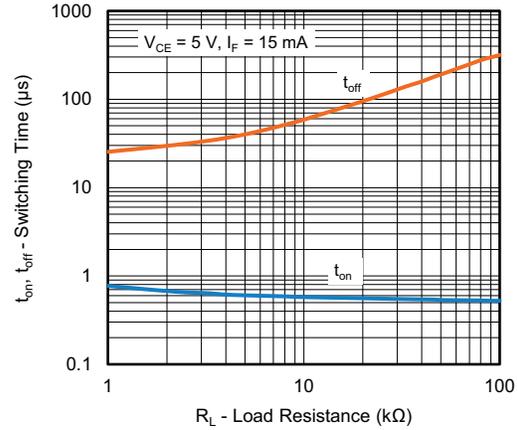


Fig. 8 - Switching Time vs. Load Resistance

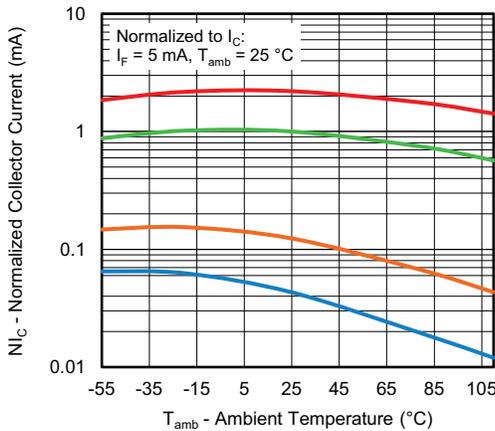


Fig. 6 - Normalized Collector Current vs. Ambient Temperature

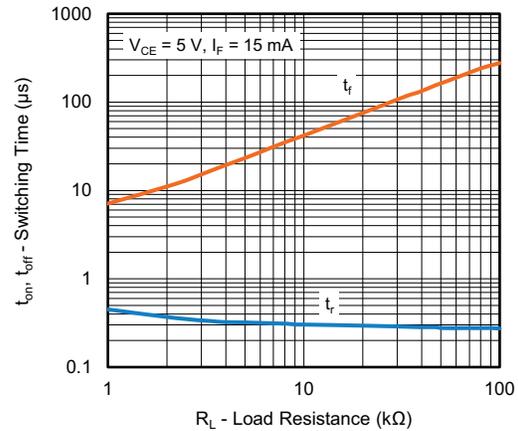


Fig. 9 - Switching Time vs. Load Resistance

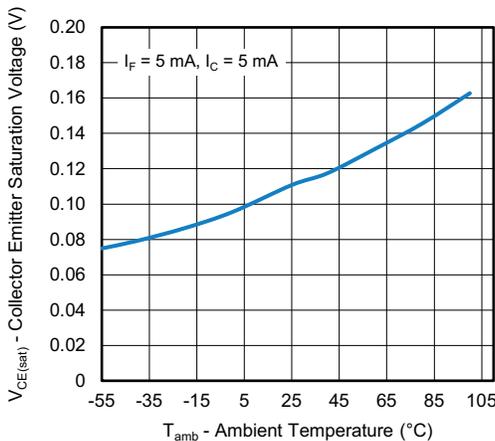


Fig. 7 - Collector Emitter Saturation Voltage vs. Ambient Temperature

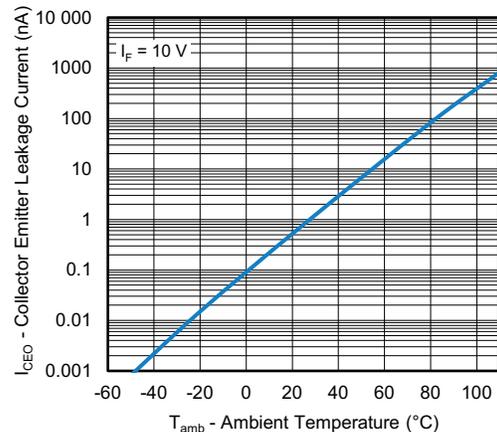
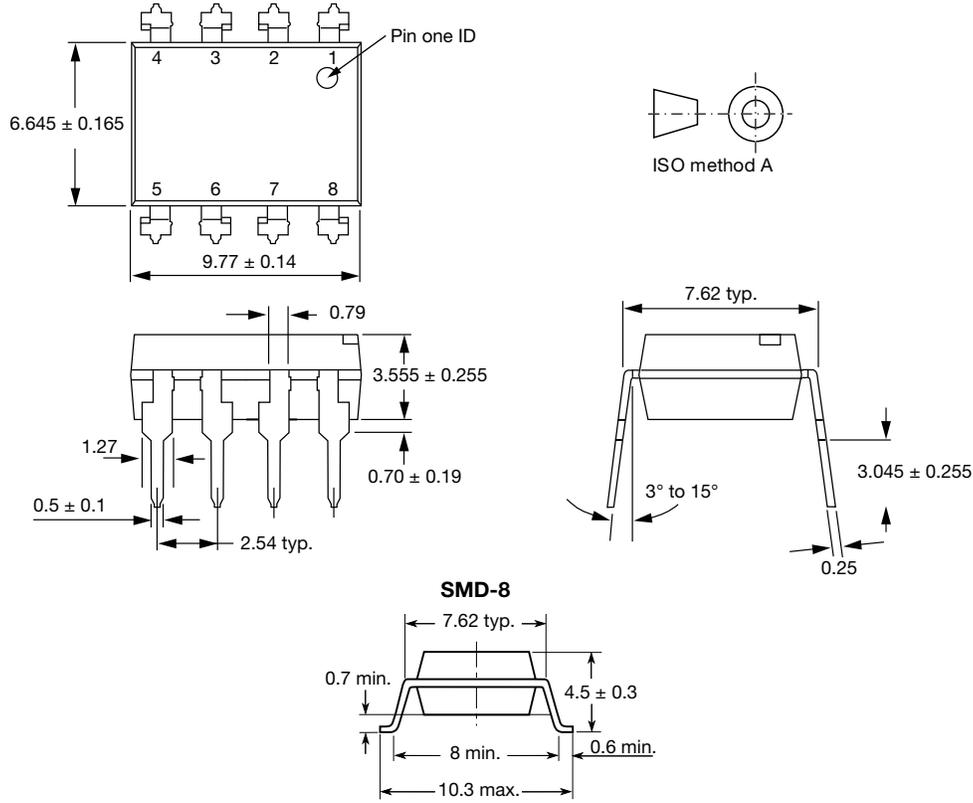


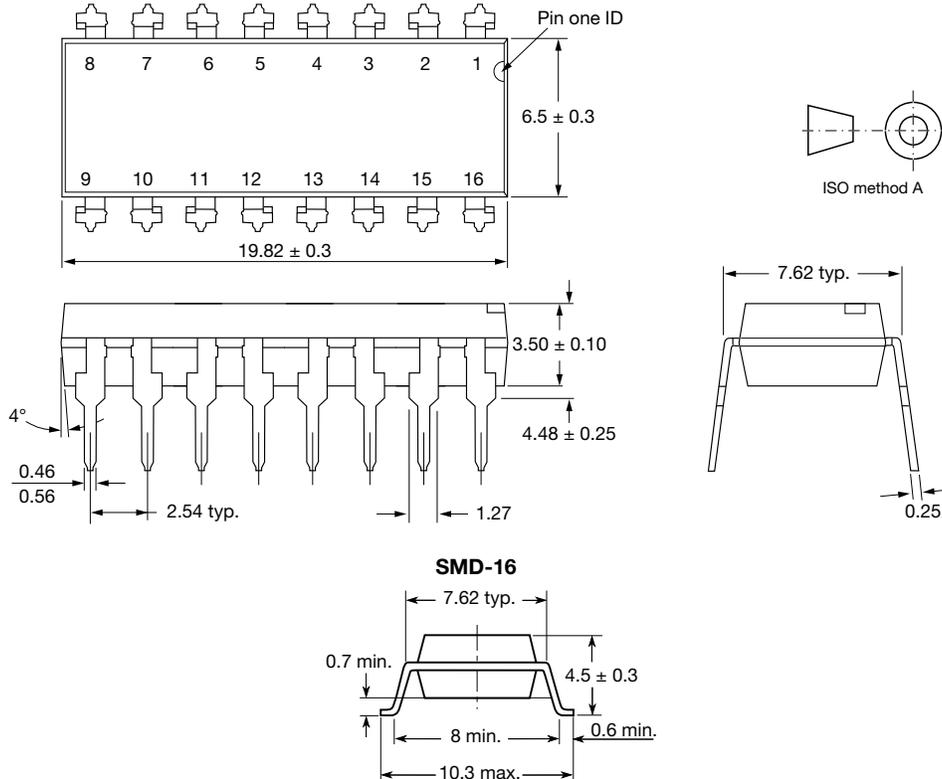
Fig. 10 - Collector Emitter Leakage Current vs. Ambient Temperature



PACKAGE DIMENSIONS DUAL CHANNEL in millimeters

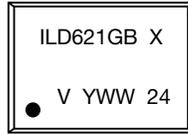


PACKAGE DIMENSIONS QUAD CHANNEL in millimeters





PACKAGE MARKING (example)



Notes

- YWW = date code
- Option 1 is reflected with letter "X"
- Tape and reel suffix (T) is not part of the package marking



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