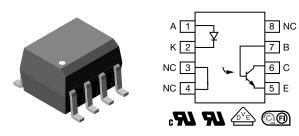


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Optocoupler, Phototransistor Output, With Base Connection in SOIC-8 Package



LINKS TO ADDITIONAL RESOURCES







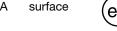
DESCRIPTION

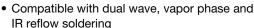
The IL205AT, IL206AT, IL207AT, IL208AT are optically coupled pairs with a gallium arsenide infrared LED and a silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output. This family comes in a standard SOIC-8 small outline package for surface mounting which makes them ideally suited for high density application with limited space. In addition to eliminating through-hole requirements, this package conforms to standards for surface mounted devices.

A specified minimum and maximum CTR allows a narrow tolerance in the electrical design of the adjacent circuits. The high BV_{CEO} of 70 V gives a higher safety margin compared to the industry standard 30 V.

FEATURES

- High BV_{CEO}, 70 V
- Isolation test voltage, 4000 V_{RMS}
- Industry standard SOIC-8A surface mountable package





 Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

AGENCY APPROVALS

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

ORDERING INFORMATION					
I L 2 PART NUMBE	0 #	TAPE AND REEL		SOIC-8 6.1 mm	
AGENCY CERTIFIED / PACKAGE		CTR	R (%)		
AGENCY CERTIFIED / PACKAGE		10	mA		
UL, cUL, FIMKO	40 to 80	63 to 125	100 to 200	160 to 320	
SOIC-8	IL205AT	IL206AT	IL207AT IL208AT		
UL, cUL, FIMKO, VDE (option 1)	40 to 80	63 to 125	100 to 200	160 to 320	
SOIC-8	-	-	IL207A-X001T	-	

Note

· Additional options may be possible, please contact sales office

IL205AT, IL206AT, IL207AT, IL208AT

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ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless c	therwise specifi	ed)	
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Peak reverse voltage		V_R	6	V
Forward continuous current		I _F	60	mA
Power dissipation		P _{diss}	90	mW
Derate linearly from 25 °C			1.2	mW/°C
ОИТРИТ				
Collector emitter breakdown voltage		BV _{CEO}	70	V
Emitter collector breakdown voltage		BV _{ECO}	7	V
Collector-base breakdown voltage		BV _{CBO}	70	V
I _{CMAX DC}		I _{CMAX DC}	50	mA
I _{CMAX}	t < 1 ms	I _{CMAX}	100	mA
Power dissipation		P _{diss}	150	mW
Derate linearly from 25 °C			2	mW/°C
COUPLER				
Isolation test voltage		V _{ISO}	4000	V _{RMS}
Total package dissipation (LED and detector)		P _{tot}	240	mW
Derate linearly from 25 °C			3.3	mW/°C
Operating temperature		T _{amb}	-55 to +100	°C
Storage temperature		T _{stg}	-55 to +150	°C
Soldering time	At 260 °C		10	s

Note

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.

ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)								
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT		
INPUT								
Forward voltage	I _F = 10 mA	V _F	-	1.3	1.5	V		
Reverse current	V _R = 6 V	I _R	-	0.1	100	μΑ		
Capacitance	V _R = 0 V	Co	-	13	-	pF		
OUTPUT								
Collector emitter breakdown voltage	I _C = 100 μA	BV _{CEO}	70		-	V		
Emitter collector breakdown voltage	I _E = 100 μA	BV _{ECO}	7	10	-	V		
Collector emitter leakage current	V _{CE} = 10 V	I _{CEO}	-	5	50	nA		
COUPLER								
Saturation voltage, collector emitter	$I_C = 2 \text{ mA}, I_F = 10 \text{ mA}$	V _{CEsat}	-	-	0.4	V		
Capacitance, input to output		C _{IO}	-	0.5	-	pF		
Resistance, input to output		R _{IO}	-	100	-	GΩ		

Note

Minimum and maximum values were tested requierements. Typical values are characteristics of the device and are the result of engineering
evaluations. Typical values are for information only and are not part of the testing requirements.

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CURRENT TRANSFER RATIO							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
		IL205AT	CTR	40	-	80	%
	$I_{\rm F} = 10 \text{mA}, V_{\rm CF} = 5 \text{V}$	IL206AT	CTR	63	-	125	%
Current transfer ratio	IF = 10 IIIA, VCE = 5 V	IL207AT	CTR	100	-	200	%
		IL208AT	CTR	100	-	320	%
		IL205AT	CTR	13	25	-	%
	1 m \ \/ E \/	IL206AT	CTR	22	40	-	%
	$I_F = 1 \text{ mA}, V_{CE} = 5 \text{ V}$	IL207AT	CTR	34	60	-	%
		IL208AT	CTR	56	95	-	%

SWITCHING CHARACTERICTICS							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Switching time	I_C = 2 mA, R_L = 100 Ω , V_{CC} = 10 V		t _{on} , t _{off}	-	3	-	μs

SAFETY AND INSULATION RATINGS							
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Climatic classification	According to IEC 68 part 1		=	55 / 110 / 21	-		
Pollution degree (DIN VDE 0109)			=	2.0	=		
Comparative tracking index		CTI	175	-	399		
V _{IOTM}	DIN IEC 112 / VDE 0303 part 1, group IIIa per DIN VDE 6110 175 399	V _{IOTM}	6000	-	-	V	
V _{IORM}		V _{IORM}	560	-	=	V	
Resistance (input to output)		R _{IO}	-	10 ¹²	-	Ω	
P _{SI}			-	-	350	mW	
I _{SI}			-	-	150	mA	
T _{SI}			-	-	165	°C	
Creepage distance			4.0	-	-	mm	
Clearance distance			4.0	-	-	mm	

Note

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

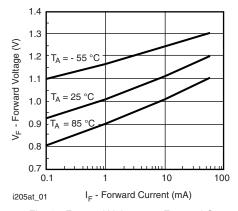


Fig. 1 - Forward Voltage vs. Forward Current

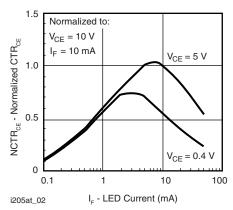


Fig. 2 - Normalized Non-Saturated and Saturated CTR $_{\mbox{\scriptsize CE}}$ vs. LED Current

As per IEC 60747-5-5, §7.4.3.8.1, 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.

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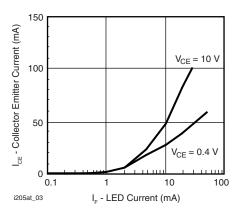


Fig. 3 - Collector Emitter Current vs. LED Current

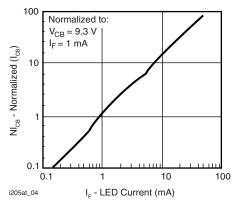


Fig. 4 - Normalized Collector-Base Photocurrent vs. LED Current

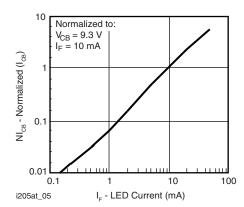


Fig. 5 - Normalized Collector-Base Photocurrent vs. LED Current

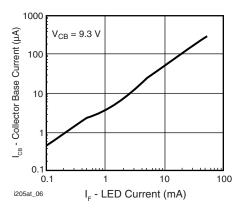


Fig. 6 - Collector Emitter Photocurrent vs. LED Current

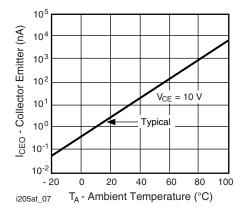


Fig. 7 - Collector Emitter Photocurrent vs. LED Current

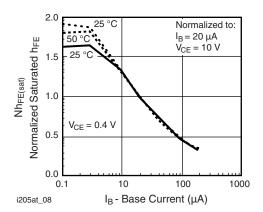


Fig. 8 - Base Current vs. I_F and h_{FE}

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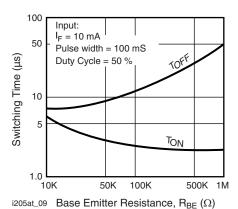
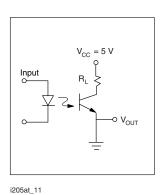


Fig. 9 - Typical Switching Characteristics vs. Base Resistance (Saturated Operation)



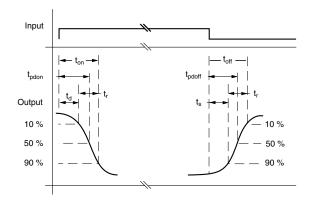
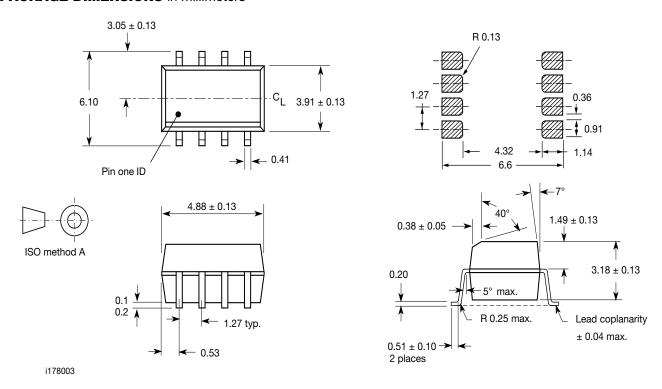


Fig. 10 - Switching Test Circuit

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PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (example)



Fig. 11 - Example of IL206AT

Notes

- XXXX = LMC (lot marking code)
- Tape and reel suffix (T) is not part of the package marking



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