





ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>OUTPUT</b>				
Collector emitter breakdown voltage		$BV_{CEO}$	70	V
Emitter base breakdown voltage		$BV_{EBO}$	7	V
Collector base breakdown voltage		$BV_{CBO}$	70	V
Collector current		$I_C$	50	mA
	$t < 1.0\text{ ms}$	$I_C$	400	mA
Power dissipation		$P_{diss}$	200	mW
Derate linearly from 25 °C			2.6	mW/°C
<b>COUPLER</b>				
Package power dissipation		$P_{tot}$	250	mW
Derate linearly from 25 °C			3.3	mW/°C
Storage temperature		$T_{stg}$	-40 to +150	°C
Operating temperature		$T_{amb}$	-40 to +100	°C
Junction temperature		$T_j$	125	°C
Soldering temperature <sup>(1)</sup>	2.0 mm from case bottom	$T_{sld}$	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
- <sup>(1)</sup> 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	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>						
Forward voltage	$I_F = 60\text{ mA}$	$V_F$	-	1.25	1.65	V
Breakdown voltage	$I_R = 10\text{ }\mu\text{A}$	$V_{BR}$	6	30	-	V
Reverse current	$V_R = 6.0\text{ V}$	$I_R$	-	0.01	10	$\mu\text{A}$
Capacitance	$V_R = 0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_O$	-	40	-	pF
Thermal resistance junction to lead		$R_{thjl}$	-	750	-	K/W
<b>OUTPUT</b>						
Collector emitter capacitance	$V_{CE} = 5.0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_{CE}$	-	6.8	-	pF
Collector base capacitance	$V_{CB} = 5.0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_{CB}$	-	8.5	-	pF
Emitter base capacitance	$V_{EB} = 5.0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_{EB}$	-	11	-	pF
Collector emitter leakage voltage	$V_{CE} = 10\text{ V}$	$I_{CEO}$	-	5	50	nA
Collector emitter saturation voltage	$I_{CE} = 1.0\text{ mA}$ , $I_B = 20\text{ }\mu\text{A}$	$V_{CEsat}$	-	0.25	-	V
Base emitter voltage	$V_{CE} = 10\text{ V}$ , $I_B = 20\text{ }\mu\text{A}$	$V_{BE}$	-	0.65	-	V
DC forward current gain	$V_{CE} = 10\text{ V}$ , $I_B = 20\text{ }\mu\text{A}$	$h_{FE}$	200	650	1800	
DC forward current gain saturated	$V_{CE} = 0.4\text{ V}$ , $I_B = 20\text{ }\mu\text{A}$	$h_{FEsat}$	120	400	600	
Thermal resistance junction to lead		$R_{thjl}$	-	500	-	K/W
<b>COUPLER</b>						
Capacitance (input to output)	$V_{I-O} = 0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_{IO}$	-	0.6	-	pF
Insulation resistance	$V_{I-O} = 500\text{ V}$	$R_S$	-	$10^{14}$	-	$\Omega$

**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	SYMBOL	MIN.	TYP.	MAX.	UNIT
Current transfer ratio (collector emitter saturated)	$I_F = 10 \text{ mA}, V_{CE} = 0.4 \text{ V}$	$CTR_{CEsat}$	-	170	-	%
Current transfer ratio (collector emitter)	$I_F = 10 \text{ mA}, V_{CE} = 10 \text{ V}$	$CTR_{CE}$	100	200	500	%
Current transfer ratio (collector base)	$I_F = 10 \text{ mA}, V_{CB} = 9.3 \text{ V}$	$CTR_{CB}$	-	0.25	-	%

SWITCHING CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>NON-SATURATED</b>						
Current time	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$I_F$	-	4	-	mA
Delay time	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_D$	-	1.7	-	$\mu\text{s}$
Rise time	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_r$	-	2.6	-	$\mu\text{s}$
Storage time	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_s$	-	0.4	-	$\mu\text{s}$
Fall time	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_f$	-	2.2	-	$\mu\text{s}$
Propagation H to L	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_{PHL}$	-	1.2	-	$\mu\text{s}$
Propagation L to H	$V_{CE} = 5 \text{ V}, R_L = 75 \Omega$ , $t_p$ measured at 50 % of output	$t_{PLH}$	-	2.3	-	$\mu\text{s}$
<b>SATURATED</b>						
Current time	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$I_F$	-	5	-	mA
Delay time	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_D$	-	1	-	$\mu\text{s}$
Rise time	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_r$	-	2	-	$\mu\text{s}$
Storage time	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_s$	-	5.4	-	$\mu\text{s}$
<b>SATURATED</b>						
Fall time	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_f$	-	13.5	-	$\mu\text{s}$
Propagation H to L	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_{PHL}$	-	5.4	-	$\mu\text{s}$
Propagation L to H	$V_{CE} = 0.4 \text{ V}, R_L = 1.0 \text{ k}\Omega$ , $V_{CL} = 5 \text{ V}, V_{TH} = 1.5 \text{ V}$	$t_{PLH}$	-	7.4	-	$\mu\text{s}$

COMMON MODE TRANSIENT IMMUNITY						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Common mode rejection output high	$V_{CM} = 50 \text{ V}_{P-P}, R_L = 1 \text{ k}\Omega, I_F = 10 \text{ mA}$	$ CM_H $	-	5000	-	$\text{V}/\mu\text{s}$
Common mode rejection output low	$V_{CM} = 50 \text{ V}_{P-P}, R_L = 1 \text{ k}\Omega, I_F = 10 \text{ mA}$	$ CM_L $	-	5000	-	$\text{V}/\mu\text{s}$
Common mode coupling capacitance		$C_{CM}$	-	0.01	-	pF



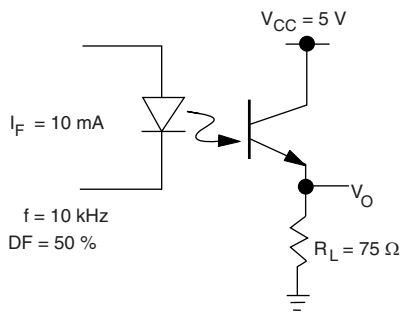
SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		40 / 100 / 21	
Comparative tracking index		CTI	175	
Maximum rated withstanding isolation voltage	t = 1 min	V <sub>ISO</sub>	4420	V <sub>RMS</sub>
Maximum transient isolation voltage		V <sub>IOTM</sub>	10 000	V <sub>peak</sub>
Maximum repetitive peak isolation voltage		V <sub>IORM</sub>	890	V <sub>peak</sub>
Isolation resistance	V <sub>IO</sub> = 500 V, T <sub>amb</sub> = 25 °C	R <sub>IO</sub>	≥ 10 <sup>12</sup>	Ω
	V <sub>IO</sub> = 500 V, T <sub>amb</sub> = 100 °C	R <sub>IO</sub>	≥ 10 <sup>11</sup>	Ω
Output safety power		P <sub>SO</sub>	400	mW
Input safety current		I <sub>SI</sub>	275	mA
Safety temperature		T <sub>S</sub>	175	°C
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness		DTI	≥ 0.4	mm

**Note**

- As per IEC 60747-5-5, § 7.4.3.8.2, 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

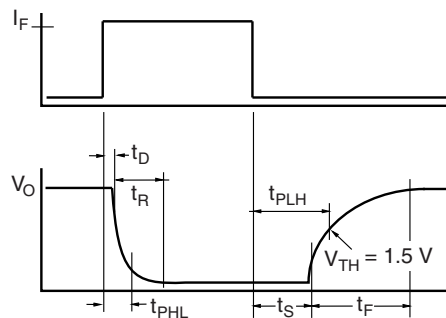


**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)



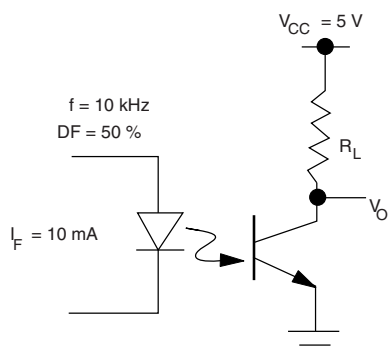
iii1\_01

Fig. 1 - Non-Saturated Switching Schematic



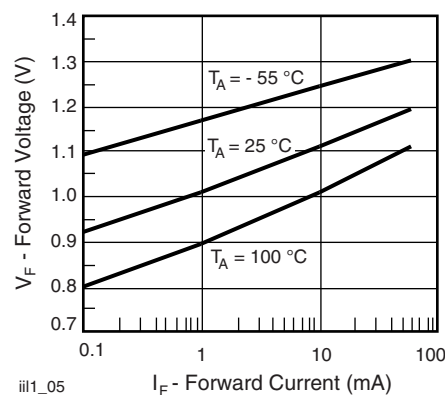
iii1\_04

Fig. 4 - Saturated Switching Timing



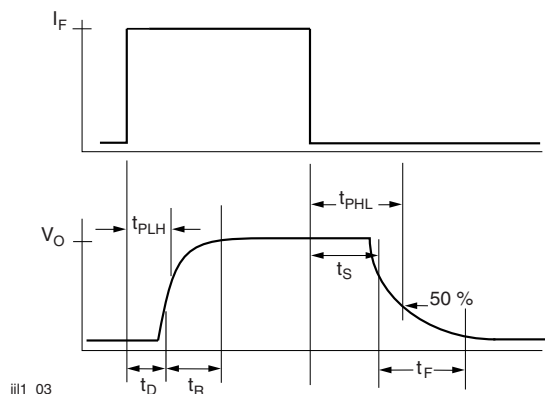
iii1\_02

Fig. 2 - Saturated Switching Schematic



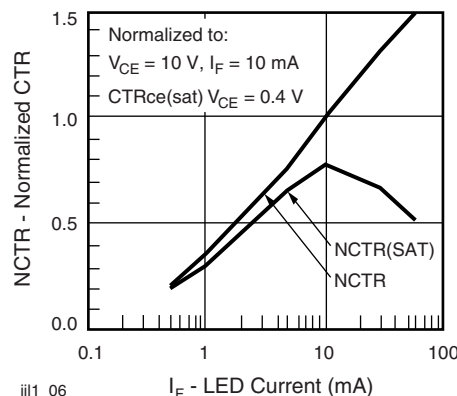
iii1\_05

Fig. 5 - Forward Voltage vs. Forward Current



iii1\_03

Fig. 3 - Non-Saturated Switching Timing



iii1\_06

Fig. 6 - Normalized Non-Saturated and Saturated CTR vs. LED Current

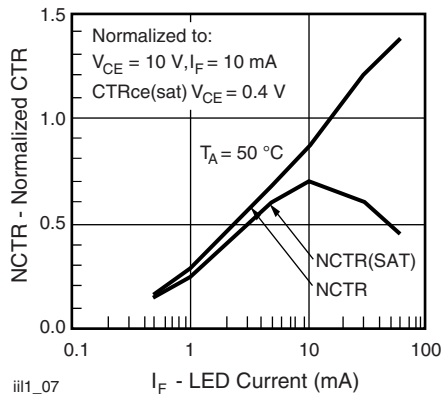


Fig. 7 - Normalized Non-Saturated and Saturated CTR vs. LED Current

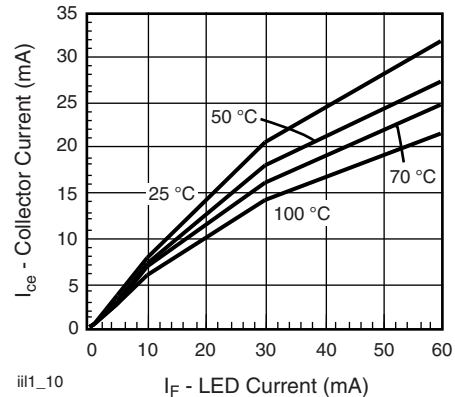


Fig. 10 - Collector Emitter Current vs. Temperature and LED Current

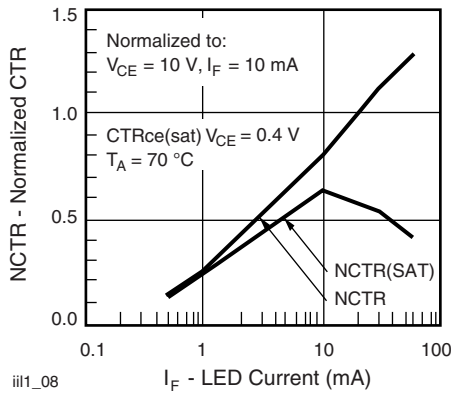


Fig. 8 - Normalized Non-Saturated and Saturated CTR vs. LED Current

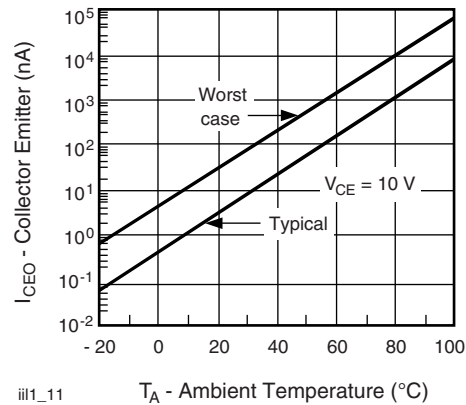


Fig. 11 - Collector Emitter Leakage Current vs. Temperature

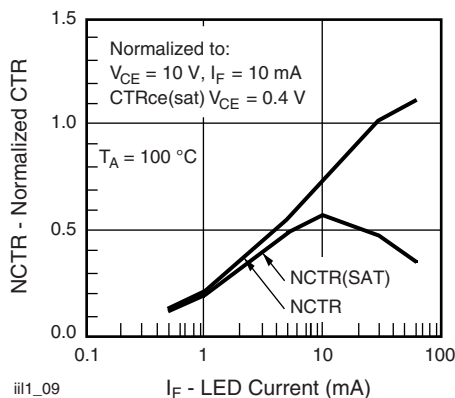


Fig. 9 - Normalized Non-Saturated and Saturated CTR,  $T_{amb} = 100\text{ °C}$  vs. LED Current

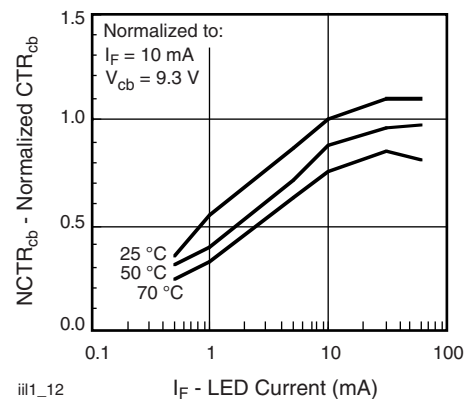


Fig. 12 - Normalized  $CTR_{cb}$  vs. LED Current and Temperature

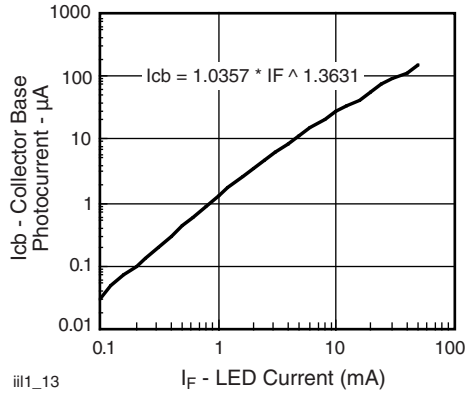


Fig. 13 - Collector Base Photocurrent vs. LED Current

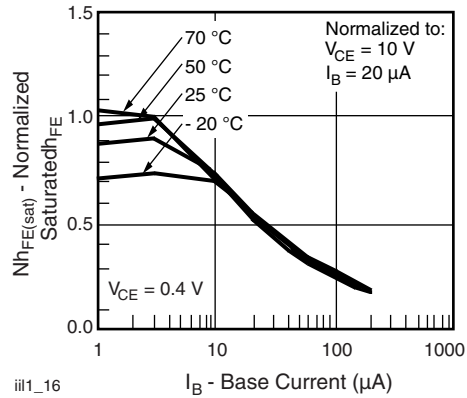


Fig. 16 - Normalized Saturated  $h_{FE}$  vs. Base Current and Temperature

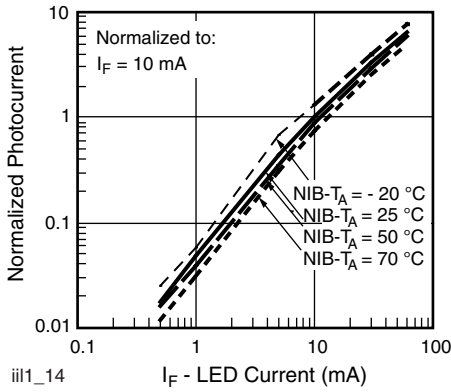


Fig. 14 - Normalized Photocurrent vs.  $I_F$  and Temperature

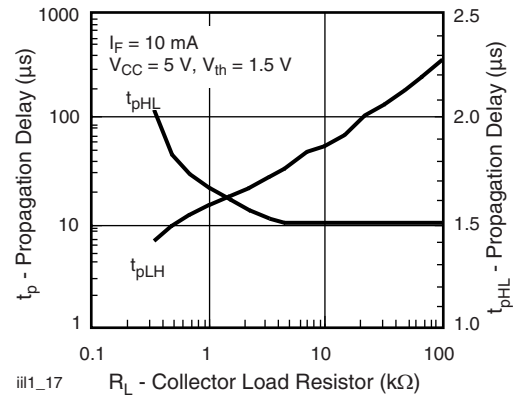


Fig. 17 - Propagation Delay vs. Collector Load Resistor

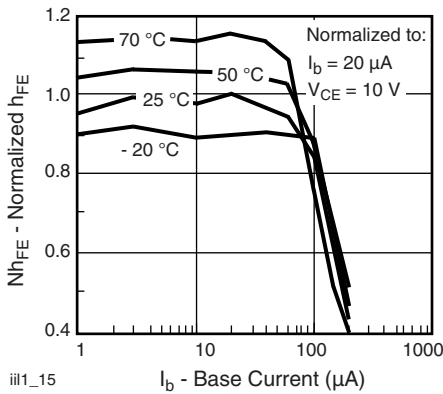
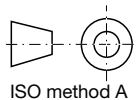
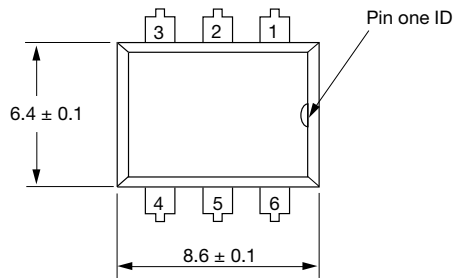


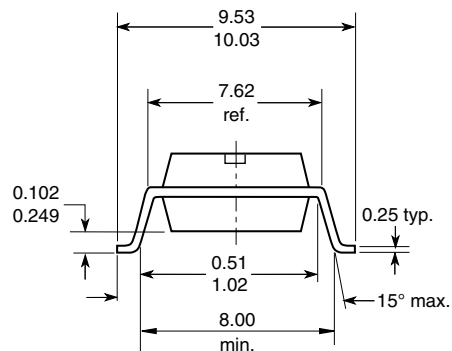
Fig. 15 - Normalized Non-Saturated  $h_{FE}$  vs. Base Current and Temperature



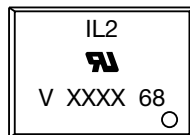
**PACKAGE DIMENSIONS** in millimeters



**Option 9**



**PACKAGE MARKING**



**Note**

- XXXX = LMC (lot marking code)





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