

Photocoupler
Product Data Sheet
LTV-805XM Series

Spec No. :DS70-2017-0036
Effective Date: 01/18/2018
Revision: A

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

Photocoupler LTV-805XM series

1. DESCRIPTION

1.1 Features

- Isolation voltage between input and output V_{iso} : 5,000 Vrms
- High repetitive peak off-state voltage V_{DRM} : Min. 600V
- High critical rate of rise of off-state voltage (dV/dt : MIN. 1000V / μs)
- Non-zero crossing functional
- Safety approval

UL 1577

VDE DIN EN60747-5-5 (VDE 0884-5)

cUL CA5A

CQC GB4943.1-2011/ GB8898-2011 (meet Altitude up to 5000m)

Nordic Safety (DEMKO)

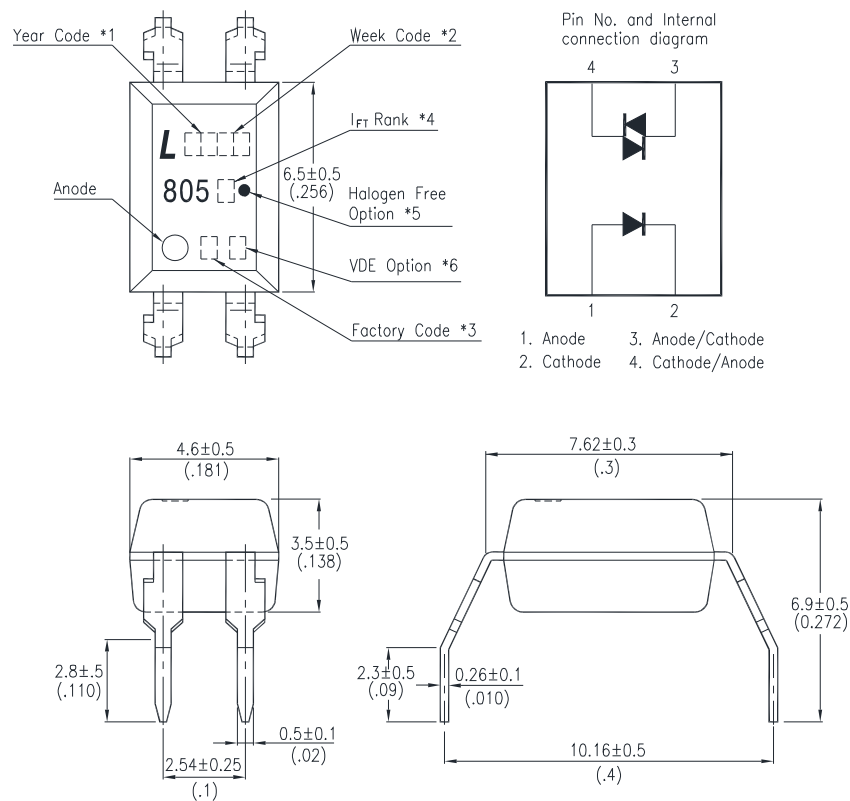
1.2 Applications

- AC Motor Drives
- AC Motor Starters
- E.M. Contactors
- Lighting Controls
- Solenoid/Valve Controls
- Solid State Relays
- Static Power Switches
- Temperature Controls

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2. PACKAGE DIMENSIONS

2.1 LTV-805XM



Notes :

1. 2-digit year code, example : 2016 = 16
2. 2-digit work week ranging from '01' to '53'
3. Factory identification mark shall be marked (W: China-CZ, Y: Thailand)
4. I_{FT} Rank
5. "●" for halogen free option.
6. "4" or "V" for VDE option.

*Dimensions in millimeters (inches).

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3. RATING AND CHARACTERISTICS

3.1 Absolute Maximum Ratings at Ta=25°C

	Parameter	Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	120	mW
	Junction Temperature	T_J	125	°C
Output	Off-State Output Terminal Voltage	V_{DRM}	600	V
	Peak Repetitive Surge Current (PW=100μs, 120pps)	V_{TSM}	1	A
	Collector Power Dissipation	P_C	150	mW
	Junction Temperature	T_J	125	°C
	Total Power Dissipation	P_{tot}	250	mW
*1.	Isolation Voltage	V_{iso}	5000	V_{rms}
	Ambient Operating Temperature Range	T_A	-55 ~ +110	°C
	Storage Temperature	T_{stg}	-55 ~ +125	°C
*2.	Soldering Temperature	T_L	260	°C

*1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

*2. For 10 Seconds

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3.2 ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

Parameter			Symbol	Min.	Typ.	Max.	Unit	Test Condition
Input	Forward Voltage		V_F	—	1.2	1.4	V	$I_F=20\text{mA}$
	Reverse Current		I_R	—	—	10	μA	$V_R=3\text{V}$
Output	*1 Peak Blocking Current, Either Direction		I_{DRM}	—	—	1	μA	$V_{\text{DRM}}=600\text{V}$
	Peak On-State Voltage, Either Direction		V_{TM}	—	—	3.0	V	$I_{\text{TM}}=100\text{ mA Peak}$
	*2 Critical Rate of Rise of Off-State Voltage		dv/dt	1000	—	—	V/ μs	
COUPLED	*3 Led Trigger Current, Current Required to Latch Output, Either Direction	LTV-8050	I_{FT}	—	—	30	mA	Main Terminal Voltage = 3V
		LTV-8051		—	—	15		
		LTV-8052		—	—	10		
		LTV-8053		—	—	5		
	Holding Current, Either Direction		I_H	—	400	—	μA	

*1 Test voltage must be applied within dv/dt rating.

*2 This is static dv/dt . Commutating dv/dt is a function of the load-driving thyristor(s) only.

*3 All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT} .

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4. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

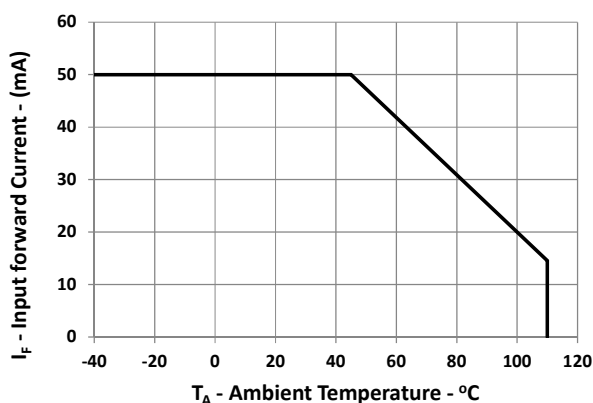


Fig.1 Forward current vs. T_A

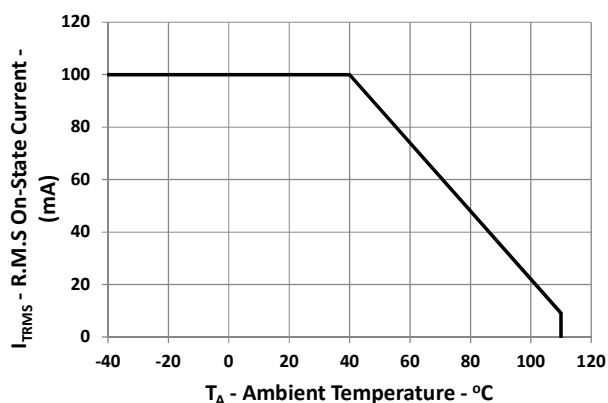


Fig 2 On-state current vs. T_A

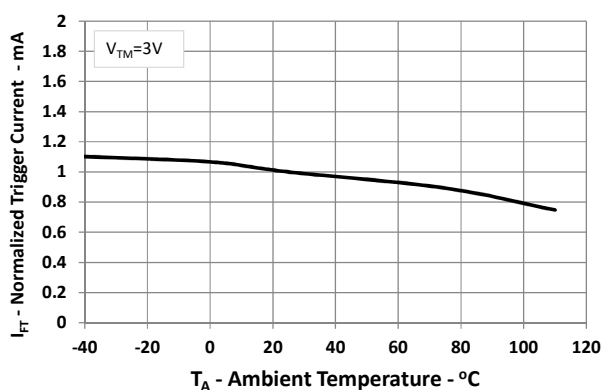


Fig 3. Normalized I_{FT} vs. T_A

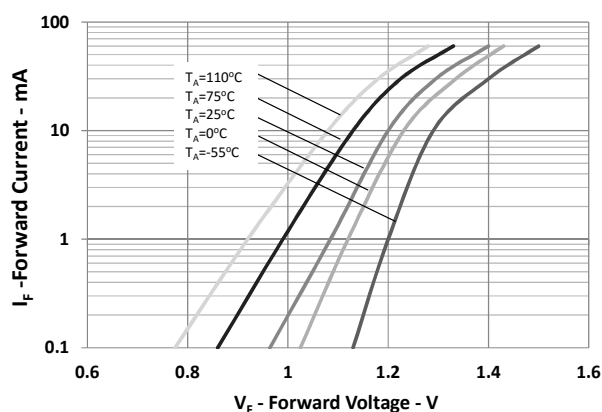


Fig 4. V_F vs. I_F

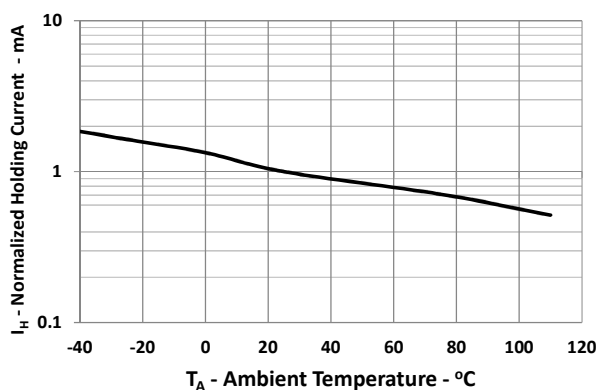


Fig 5. Normalized I_H vs. T_A

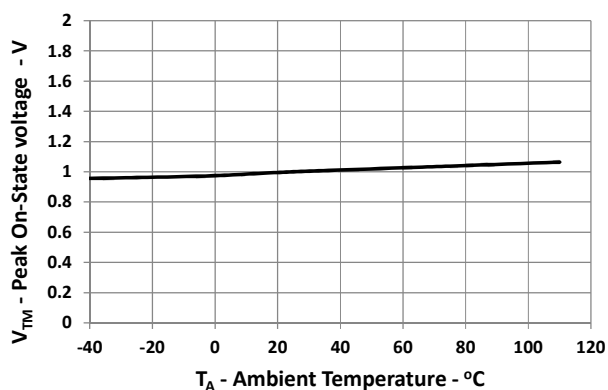


Fig 6. Normalized V_{TM} vs. T_A

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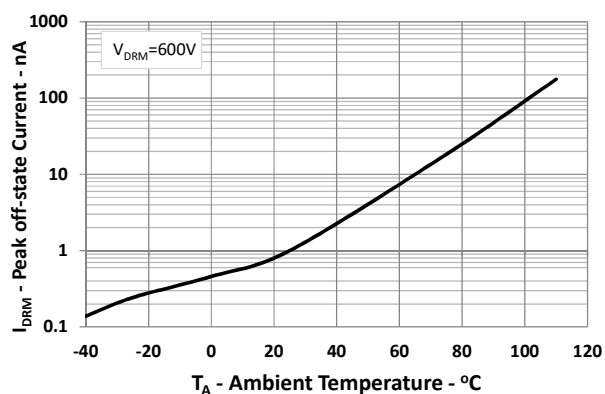


Fig.7 Normalized I_{DRM} vs. T_A

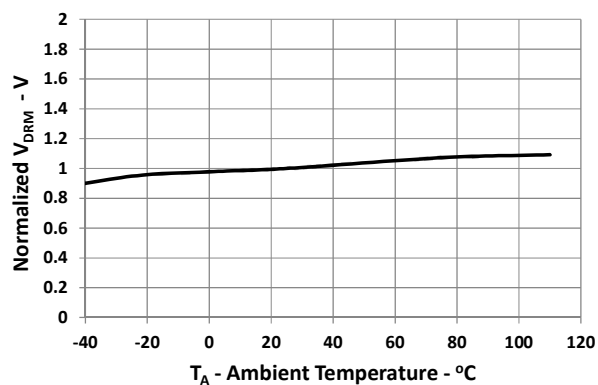


Fig.8 Normalized V_{DRM} vs. T_A

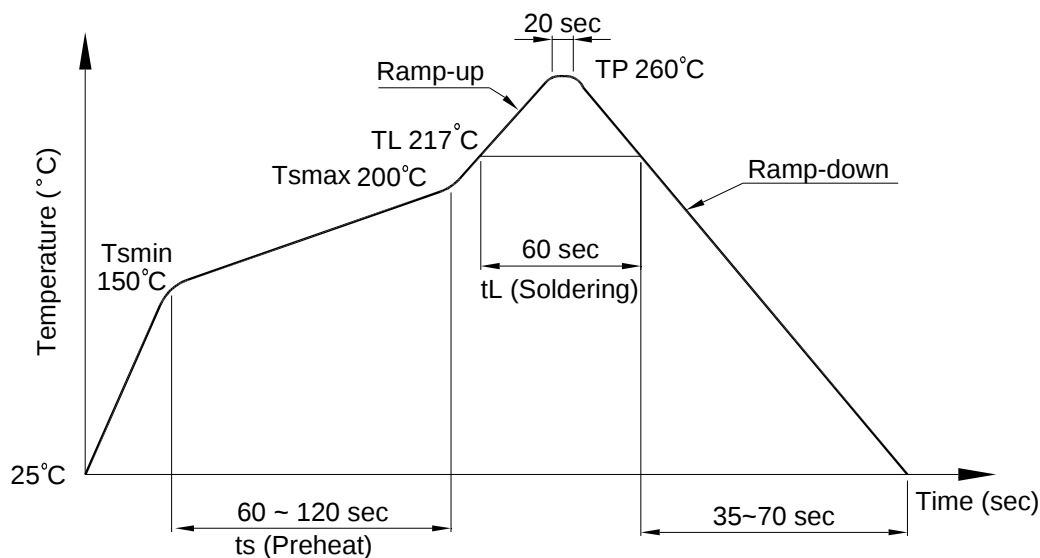
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5. TEMPERATURE PROFILE OF SOLDERING

5.1 IR Reflow soldering (JEDEC-STD-020C compliant)

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

Profile item	Conditions
Preheat	
- Temperature Min (T_{Smin})	150°C
- Temperature Max (T_{Smax})	200°C
- Time (min to max) (t_s)	90±30 sec
Soldering zone	
- Temperature (T_L)	217°C
- Time (t_L)	60 sec
Peak Temperature (T_P)	260°C
Ramp-up rate	3°C / sec max.
Ramp-down rate	3~6°C / sec



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5.2 Wave soldering (JEDEC22A111 compliant)

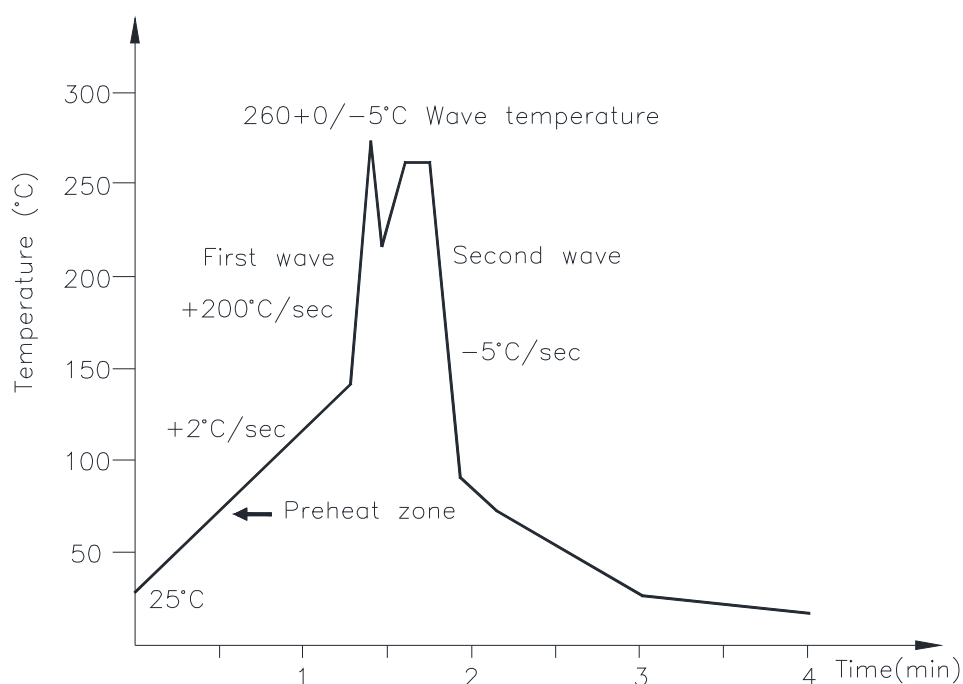
One time soldering is recommended within the condition of temperature.

Temperature: $260 \pm 0/-5^{\circ}\text{C}$

Time: 10 sec.

Preheat temperature: 25 to 140°C

Preheat time: 30 to 80 sec.



5.3 Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

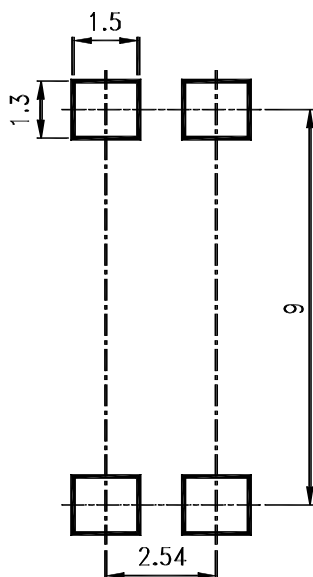
Temperature: $380 \pm 0/-5^{\circ}\text{C}$

Time: 3 sec max.

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6. RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit: mm



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7. NAMING RULE

LTV-805(X)(X)-G

(1) DEVICE PART NUMBER

(2) I_{FT} Rank

(3) FORM TYPE (M)

(4) Halogen free option

Example : LTV-8051M-G

LTV 805(X)(X)-V-G

(1) DEVICE PART NUMBER

(2) I_{FT} Rank

(3) FORM TYPE (M)

(4) VDE option

(5) Halogen free option

Example : LTV8051M-V-G

9. NOTES

- LiteOn is continually improving the quality, reliability, function or design and LiteOn reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.
- When requiring a device for any "specific" application, please contact our sales in advice.
- If there are any questions about the contents of this publication, please contact us at your convenience.
- The contents described herein are subject to change without prior notice.
- Immerge unit's body in solder paste is not recommended.