



Spec No. :DS70-2009-0016 Effective Date: 07/25/2018

Revision: E

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

LITE-ON Technology Corp. / Optoelectronics

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1. DESCRIPTION

1.1 Features

- Current transfer ratio (CTR) : MIN. 50% at I_F = 5mA, V_{CE} = 5V
- High input-output isolation voltage. (Viso=3,750Vrms)
- Employs double transfer mold technology
- Safety approval:

UL 1577

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

CSA CA5A

FIMKO

- RoHS Compliance: All materials be used in device are followed EU RoHS directive (No.2002/95/EC, 2011/65/EU, and 2015/863).
- ESD pass HBM 8000V/MM2000V
- MSL class1
- Halogen Free

1.2 Applications

Downloaded from Arrow.com.

- Hybrid substrates that require high density mounting.
- Programmable controllers
- System appliances, measuring instruments

Part No.: LTV-2X7 series BNC-OD-FC002/A4

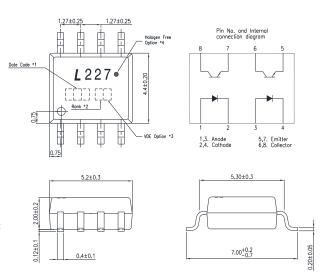


2. PACKAGE DIMENSIONS

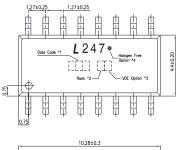
2.1 LTV-217

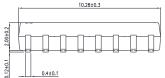
1.27±0.25 Pin No. and Internal connection diagram 4 3 ViE Option *3 1 2 1. Anode 3. Emitter 2. Colhode 4. Collector 5.30±0.3 7.00±0.2 7.00±0.2 7.00±0.2 7.00±0.2

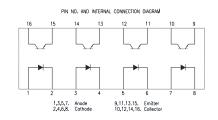
2.2 LTV-227

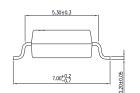


2.3 LTV-247









Notes:

- 1. 1-digit year code, Example: 2010 = A
 2-digit work week ranging from '01' to '53'
- 2. Rank shall be or shall not be marked
- 3. VDE mark only appears on devices or ordered "V" option.
- 4. "

 " indicates Halogen free option.

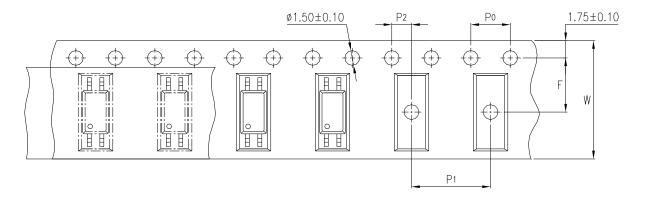
Part No.: LTV-2X7 series BNC-0D-FC002/A4

^{*}All dimensions in millimeters.

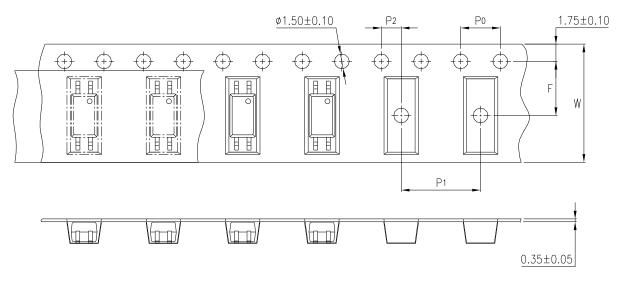


3. TAPING DIMENSIONS

3.1 LTV-217



3.2 LTV-217-TP1

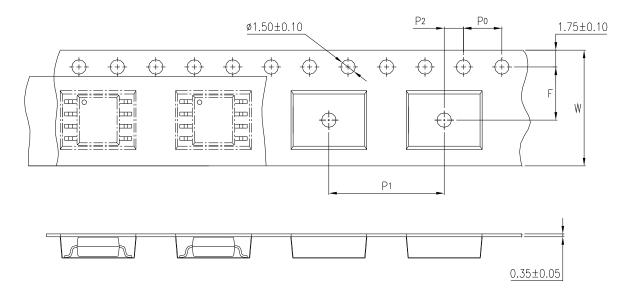


Description	Symbol	Dimension in mm (inch)
Tape wide	W	12±0.3 (0.47)
Pitch of sprocket holes	P ₀	4±0.1 (0.15)
Distance of compartment	F	5.5±0.1 (0.217)
Distance of compartment	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P ₁	8±0.1 (0.315)

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3.3 LTV-227



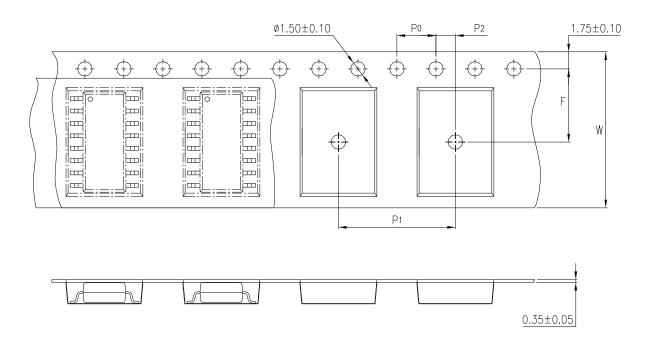
Description	Symbol	Dimension in mm (inch)
Tape wide	W	12±0.3 (0.47)
Pitch of sprocket holes	P ₀	4±0.1 (0.15)
Distance of compartment	F	5.5±0.1 (0.217)
Distance of compartment	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P ₁	8±0.1 (0.315)

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3.4 LTV-247



Description	Symbol	Dimension in mm (inch)
Tape wide	W	16±0.3 (0.47)
Pitch of sprocket holes	P ₀	4±0.1 (0.15)
Distance of compartment	F	7.5±0.1 (0.217)
Distance of compartment	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P ₁	12±0.1 (0.315)

3.5 Quantities per Reel

Package Type	LTV-217	LTV-227	LTV-247
Quantities (pcs)	3000	2000	2000

Part No.: LTV-2X7 series BNC-OD-FC002/A4



4. RATING AND CHARACTERISTICS

4.1 Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Rating	Heis			
	Parameter	Symbol	217 227	247	Unit	
	Forward Current	l _F	50		mA	
	Reverse Voltage	V_R	6		V	
Input	Power Dissipation	Р	70		mW	
	Pulse Forward Current	I _{FSM}	1		Α	
	Junction Temperature	TJ	125		°C	
	Collector - Emitter Voltage	V _{CEO}	80		V	
	Emitter - Collector Voltage	V _{ECO}	7		V	
Output	Collector Current	Ic	50		mA	
	Collector Power Dissipation	Pc	150	100	mW	
	Junction Temperature	TJ	125		°C	
	Total Power Dissipation	P _{tot}	200	170	mW	
1.	Isolation Voltage	$V_{\rm iso}$	3750		V _{rms}	
	Operating Temperature	T _{opr}	-55 ~ +110)	°C	
	Storage Temperature	T _{stg}	-55 ~ +15)	°C	
2.	Soldering Temperature	T _{sol}	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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4.2 ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25℃

	Parameter	Symb	Min.	Тур.	Max.	Unit	Test Condition
	Forward Voltage	V _F	_	1.2	1.4	V	I _F =20mA
Input	Reverse Current	I _R	_	_	10	μΑ	V _R =4V
	Terminal Capacitance	Ct	_	30	250	pF	V=0, f=1KHz
	Collector Dark Current	I _{CEO}	_	_	100	nA	V _{CE} =20V, I _F =0
Output	Collector-Emitter Breakdown Voltage	BV _{CEO}	80	_	_	V	I _C =0.1mA, I _F =0
	Emitter-Collector Breakdown Voltage		7	_	_	V	I _E =10μΑ, I _F =0
	Collector Current	Ic	2.5	_	30	mA	I _F =5mA
	Current Transfer Ratio	CTR	50	_	600	%	V _{CE} =5V
	Collector-Emitter Saturation Voltage	V _{CE(sat)}	_	_	0.4	V	I _F =8mA I _C =2.4mA
TRANSFER	Isolation Resistance	R _{iso}	5×10 ¹⁰	1×10 ¹¹	_	Ω	DC500V, 40 ~ 60% R.H.
CHARACTERISTICS	Floating Capacitance	Cf	_	0.6	1	pF	V=0, f=1MHz
	Response Time (Rise)	tr	_	2	18	μs	V _{CC} =10V,
	Response Time (Fall)	tf	_	3	18	μs	I _C =2mA
	Turn-On Time	T _{ON}	_	3	_	μs	$R_L=100\Omega$,
	Turn-Off Time	T _{OFF}	—	3	_	μs	f=100Hz
	Turn-On Time	t _{ON}	_	2	_	μs	
	Storage Time	Ts	_	25	_	μs	V _{CC} =5V, I _F =16mA
	Turn-Off Time	t _{OFF}	_	40	_	μs	R _L =1.9KΩ

1. CTR =
$$\frac{I_C}{I_F} \times 100\%$$

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5. RANK TABLE OF CURRENT TRANSFER RATIO CTR

MODEL NO.	CTR Rank	Min	Max	Condition
	А	80	160	
	A1	100	160	
LTV-217	В	130	260	
LI V-Z I I	С	200	400	
	D	300	600	I _F =5mA, V _{CE} =5V, Ta=25°C
	A or B or C or D or No mark	50	600	1F-3111A, VCE-3V, 1a-23 C
	В	130	260	
LTV-227	С	200	400	
	B or C or No mark	50	600	
LTV-247	No mark	100	600	

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6. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Figure 1. Collector Power Dissipation vs. Ambient Temperature

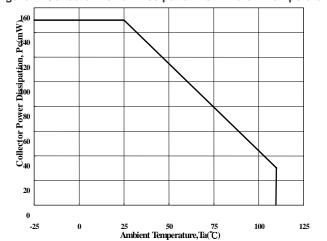


Figure 3. Forward Current vs. Forward Voltage

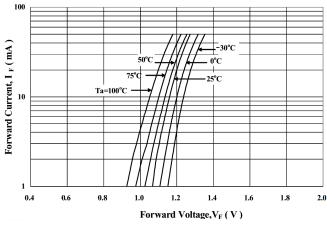


Figure 5. Pulse Forward Current vs. Duty Cycle Ratio

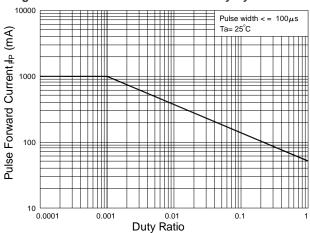


Figure 2. Forward Current vs. Ambient Temperature

60

(\$0

10

10

25

0

25

0

25

Ambient Temperature

75

100

Figure 4. Forward Voltage Temperature Coefficient vs.

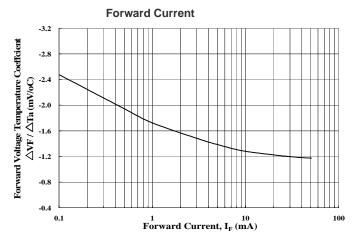
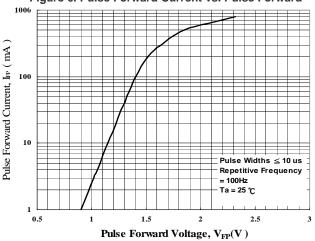


Figure 6. Pulse Forward Current vs. Pulse Forward



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Figure 7. Collector-Emitter Saturation Voltage vs. Forward

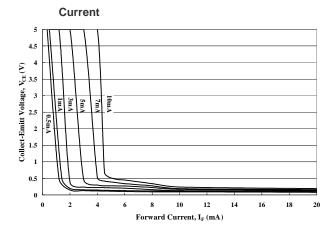


Figure 8. Collector Current vs. Collector-Emitter

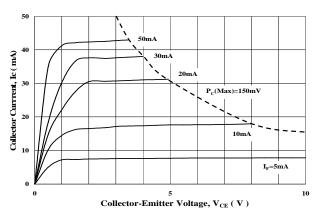


Figure 9. Collector Current vs. Small Collector-Emitter

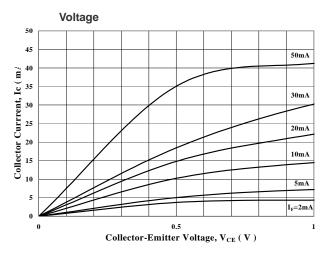


Figure 10. Normalized CTR vs. Forward Current

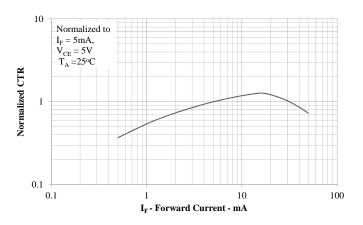


Figure 11. Collector Dark Current vs. Ambient Temperature

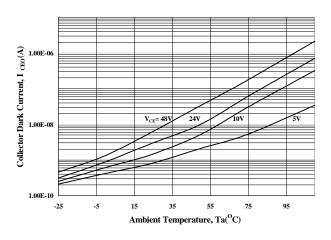
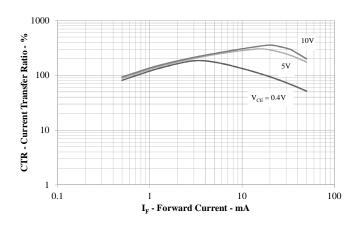


Figure 12. Current Transfer Ratio vs. Forward

Current



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Figure 13. Normalized CTR vs. Ambient Temperature

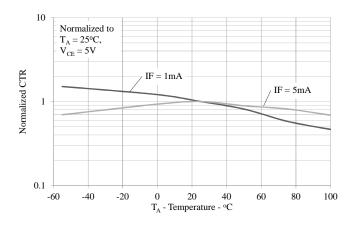


Figure 15. Collector Current vs. Ambient Temperature

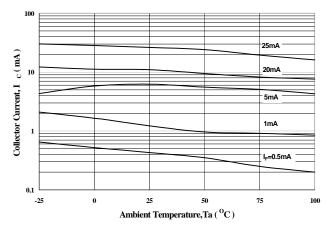


Figure 17. Switching Time vs. Ambient Temperature

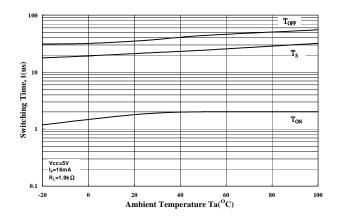


Figure 14. Collector-Emitter Saturation Voltage vs.

Ambient Temperature

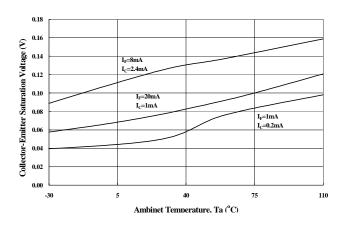


Figure 16. Switching Time vs. Load Resistance

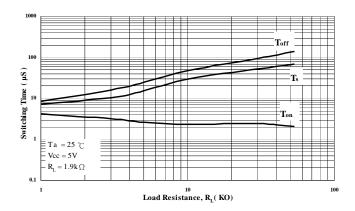
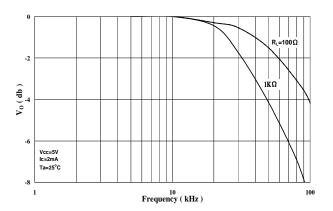


Figure 18. Frequency Response

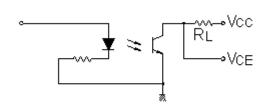


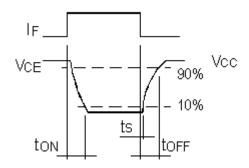
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7. SWITCHING TIME TEST CIRCUIT





8. TEMPERATURE PROFILE OF SOLDERING

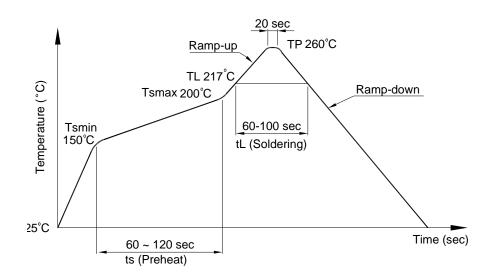
8.1 IR Reflow soldering (JEDEC-STD-020C compliant)

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) (ts)	90±30 sec
Soldering zone	
- Temperature (T _L)	217°C
- Time (t _L)	60 ~100 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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8.2 Wave soldering (JEDEC22A111 compliant)

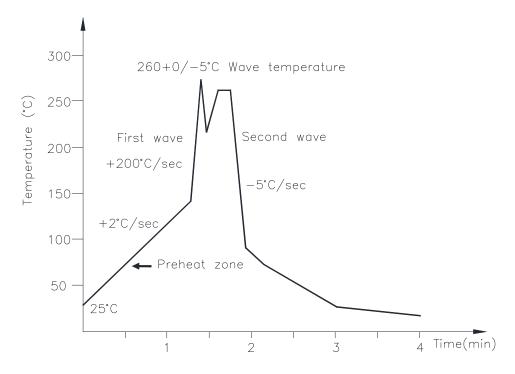
One time soldering is recommended within the condition of temperature.

Temperature: 260+0/-5°C

Time: 10 sec.

Preheat temperature:25 to 140°C

Preheat time: 30 to 80 sec.



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8.3 Hand soldering by soldering iron

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

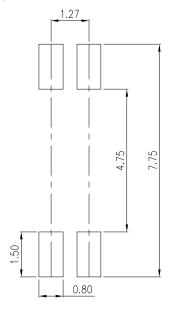
Temperature: 380+0/-5°C

Time: 3 sec max.

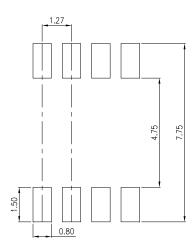
9. RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit: mm

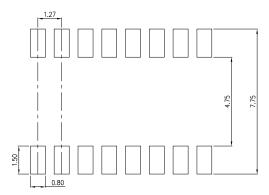
9.1 LTV-217



9.2 LTV-227

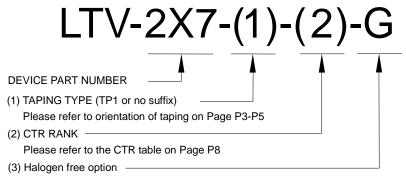


9.3 LTV-247

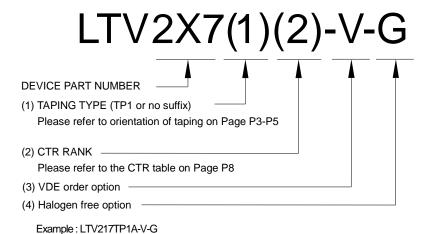




10. NAMING RULE



Example: LTV-217-TP1-A-G



11. 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.

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