



Spec No. :DS70-2001-010 Effective Date: 10/04/2018

Revision: P

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

LITE-ON Technology Corp. / Optoelectronics



1. DESCRIPTION

1.1 Features

- Current transfer ratio (CTR : 50% to 600% at $I_F = 5mA$, $V_{CE} = 5V$)
- High input-output isolation voltage (Viso = 3,750Vrms)
- High collector-emitter voltage (V_{CEO} = 80V)
- Mini-flat package : LTV-356T
- Safety approval

UL 1577

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

CSA CA5A

CQC GB4943.1-2011/ GB8898-2011

FIMKO/DEMKO/SEMKO/NEMKO

- 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/ CDM2000V
- MSL class1
- Halogen Free option

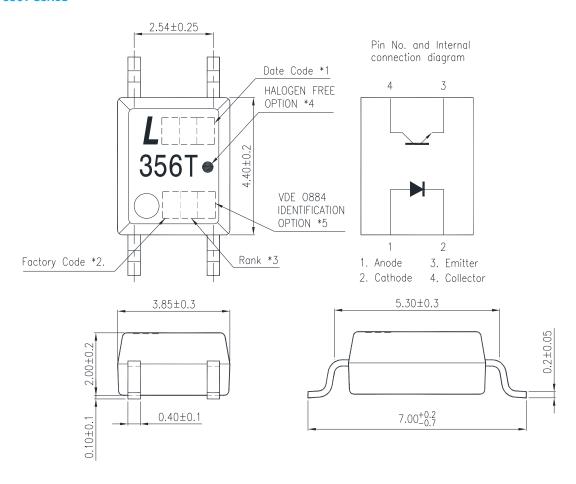
1.2 Applications

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



2. PACKAGE DIMENSIONS

2.1 LTV-356T series



Notes:

- 1-digit year code, Example: 2010 = A
 2-digit work week ranging from '01' to '53'
- 2. Factory identification mark shall be marked (W: China -CZ, X: China -TJ)
- 3. Rank shall be or shall not be marked.
- "●" indicates halogen free option.
- 5. "V" for VDE option.

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Part No. LTV-356T series BNC-OD-FC002/A4 Rev : P

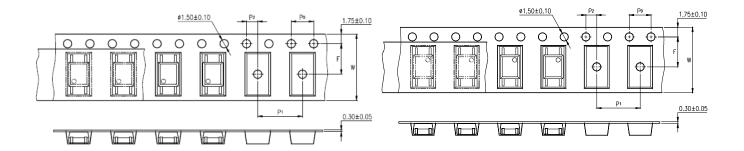
^{*}All dimensions in millimeters.



3. TAPING DIMENSIONS

3.1 LTV-356T-TP

3.2 LTV-356T (no suffix)



Description	Symbol	Dimension in mm (inch)
Tape wide	W	12±0.3 (0.472)
Pitch of sprocket holes	P ₀	4±0.1 (0.157)
Distance of compartment	F	5.5±0.1 (0.217)
	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P ₁	8±0.1 (0.315)

3.3 Quantities Per Reel

Package Type	LTV-356T series
Quantities (pcs)	3000



4. RATING AND CHARACTERISTICS

4.1 Absolute Maximum Ratings at Ta=25℃

	Parameter	Symbol	Rating	Unit
	Forward Current	l _F	50	mA
lan. it	Reverse Voltage	V_{R}	6	V
Input	Power Dissipation	Р	70	mW
	Junction Temperature	Τ _J	125	°C
	Collector - Emitter Voltage	V _{CEO}	80	V
	Emitter - Collector Voltage	V _{ECO}	6	V
Output	Collector Current	I _C	50	mA
	Collector Power Dissipation	Pc	150	mW
	Junction Temperature	Τ _J	125	°C
	Total Power Dissipation	P _{tot}	170	mW
1.	Isolation Voltage	V _{iso}	3750	V _{rms}
	Operating Temperature	T _{opr}	-55 ~ +110	°C
	Storage Temperature	T _{stg}	-55 ~ +150	°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



4.2 ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25℃

	Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Condition
Input	Forward Voltage	V _F	_	1.2	1.4	V	I _F =20mA
	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	BV _{ECO}	6	_	_	V	I _E =10μΑ, I _F =0
TRANSFER CHARACTERISTICS	Collector Current	lc	2.5	_	30	mA	I _F =5mA
	Current Transfer Ratio	CTR	50	_	600	%	V _{CE} =5V
	Collector-Emitter Saturation Voltage	V _{CE(sat)}	_	_	0.2	V	I _F =20mA I _C =1mA
	Isolation Resistance	R _{iso}	5×10 ¹⁰	1×10 ¹¹	_	Ω	DC500V, 40 ~ 60% R.H.
	Floating Capacitance	Cf	_	0.6	1	pF	V=0, f=1MHz
	Response Time (Rise)	tr	_	4	18	μs	V _{CE} =2V,
	Response Time (Fall)	tf	_	3	18	μs	I_C =2mA R_L =100 Ω ,

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



5. RANK TABLE OF CURRENT TRANSFER RATIO (CTR)

Parameter	CTR Rank	Min	Max	Condition		
DC Current Transfer Ratio	Α	80	160			
	В	130	260			
	С	200	400	I _F =5mA, V _{CE} =5V, Ta=25°C		
	D	300	600	., c, rol c 1, .a 20 c		
	A or B or C or D or No mark	50	600			



6. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Fig.1 Forward Current vs.

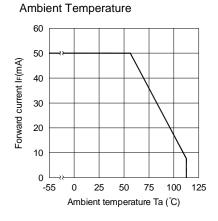


Fig.2 Collector Power Dissipation vs.
Ambient Temperature

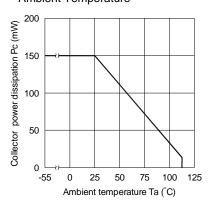


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

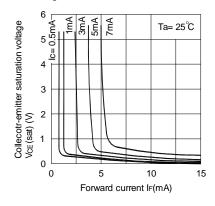


Fig.4 Forward Current vs. Forward Voltage

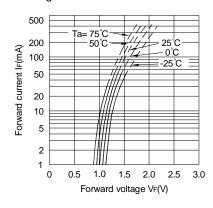


Fig.5 Current Transfer Ratio vs.
Forward Current

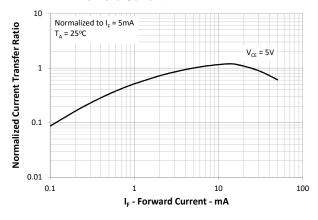


Fig.6 Collector Current vs.

Collector-emitter Voltage

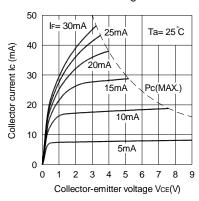




Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

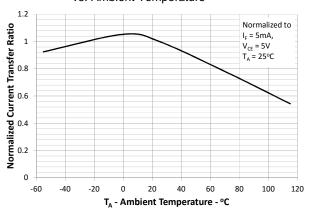


Fig.9 Collector Dark Current vs.
Ambient Temperature

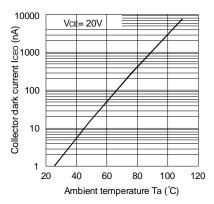


Fig.11 Frequency Response

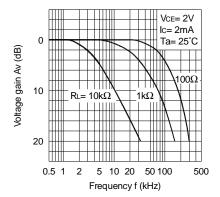


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

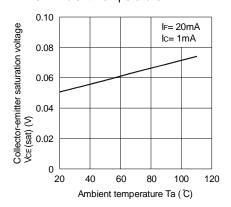
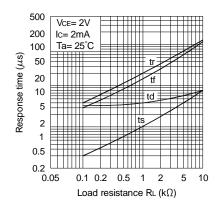
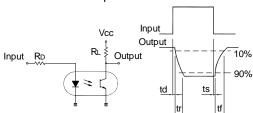


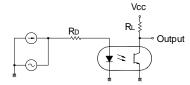
Fig.10 Response Time vs. Load Resistance



Test Circuit for Response Time



Test Circuit for Frequency Response



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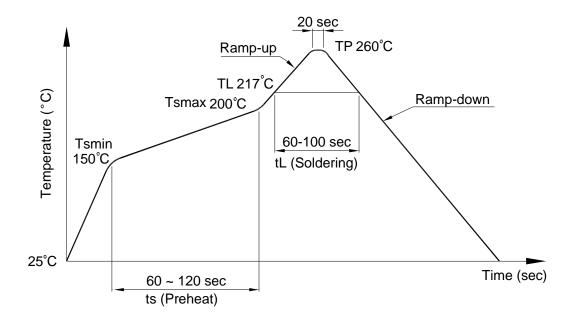


7. TEMPERATURE PROFILE OF SOLDERING

7.1 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	





7.2 Wave soldering (JEDEC22A111 compliant)

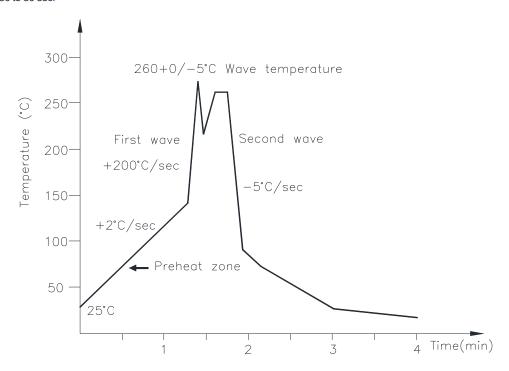
One time soldering is recommended within the condition of temperature.

Temperature: 260+0/-5°C

Time: 10 sec.

Preheat temperature:25 to 140°C

Preheat time: 30 to 80 sec.



7.3 Hand soldering by soldering iron

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

Temperature: 380+0/-5°C

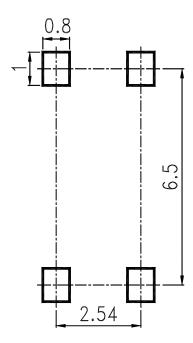
Time: 3 sec max.





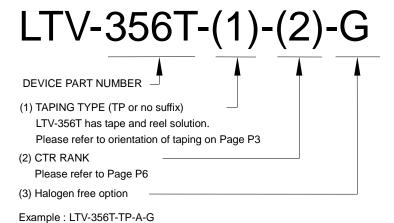
8. RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit: mm





9. NAMING RULE



DEVICE PART NUMBER

(1) TAPING TYPE (TP or no suffix)
LTV-356T has tape and reel solution.
Please refer to orientation of taping on Page P3

(2) CTR RANK
Please refer to Page P6

(3) VDE option

(4) Halogen free option

10. 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.

Example: LTV356TTPA-V-G

Immerge unit's body in solder paste is not recommended.

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