

FEATURES

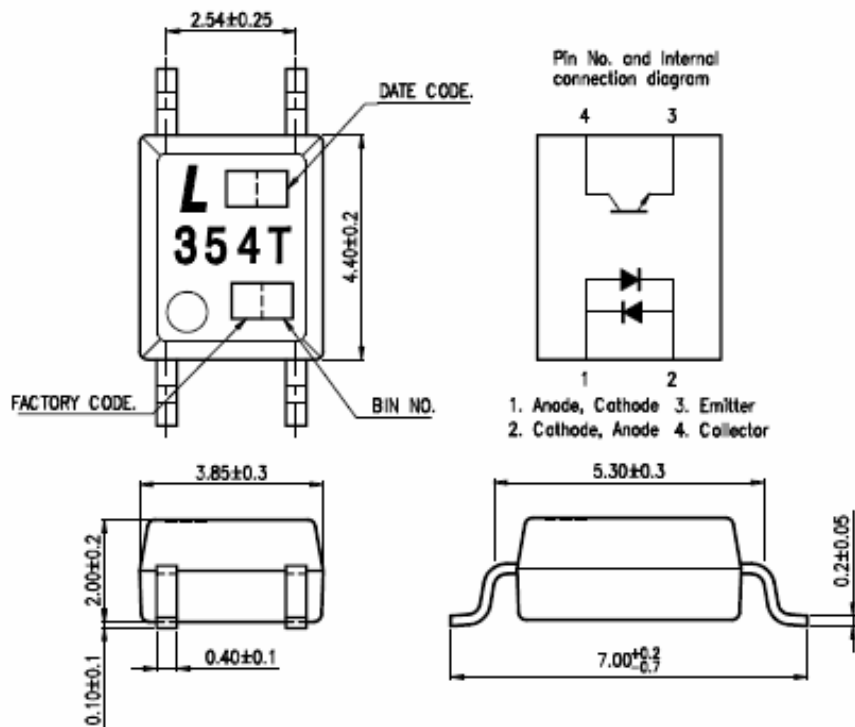
- * AC input response
- * Current transfer ratio
(CTR : MIN. 20% at $I_F = \pm 1\text{mA}$, $V_{CE} = 5\text{V}$)
- * Isolation voltage between input and output LTV-354T-TP1
($V_{iso} = 3,750\text{V}_{rms}$)
- * Employs double transfer mold technology
- * Subminiature type
- * Mini-flat package :
2.0 profile : LTV-354T-TP1
- * Packing volume : 3000 pcs / Reel
- * UL approved (No. E113898)
- * CUL approved (No. E113898 , 01SC19287)
- * CSA approved (No. 1243207)
- * FIMKO approved (No. FI-16420)
- * NEMKO approved (No. P01100403)
- * DEMKO approved (No. 310475-01)
- * SEMKO approved (No. 0109173 / 01-08)
- * VDE approved (No. 094722)
- * RoHS compliance

APPLICATIONS

- * Hybrid substrates that require high density mounting.
- * Programmable controllers

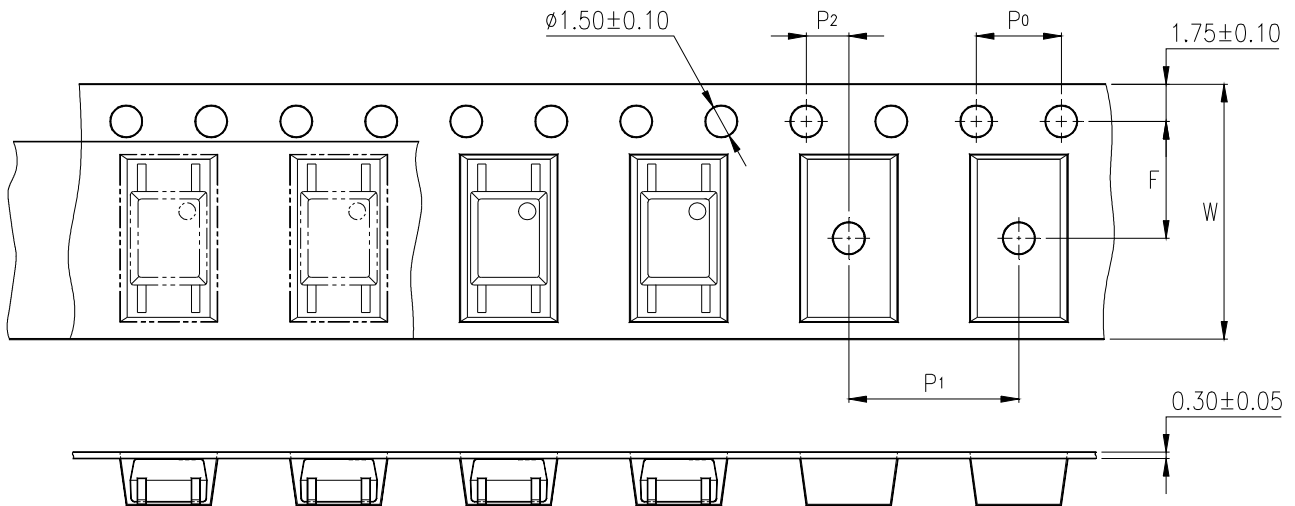
OUTLINE DIMENSIONS

LTV-354T-TP1 :



- *1. 2-digit date code.
- *2. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).
- *3. Rank shall be or shall not be marked.

TAPING DIMENSIONS



Description	Symbol	Dimensions in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P ₀	4 ± 0.1 (.15)
Distance of compartment	F	5.5 ± 0.1 (.217)
Distance of compartment to compartment	P ₂	2 ± 0.1 (.079)
Distance of compartment to compartment	P ₁	8 ± 0.1 (.315)

ABSOLUTE MAXIMUM RATING

(Ta = 25°C)

PARAMETER		SYMBOL	RATING	UNIT
INPUT	Forward Current	I _F	±50	mA
	Power Dissipation	P	70	mW
OUTPUT	Collector - Emitter Voltage	V _{CEO}	35	V
	Emitter - Collector Voltage	V _{ECO}	6	V
	Collector Current	I _C	50	mA
	Collector Power Dissipation	P _C	150	mW
Total Power Dissipation		P _{tot}	170	mW
*1	Isolation Voltage	V _{iso}	3,750	V _{rms}
Operating Temperature		T _{opr}	-55 ~ +100	°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

ELECTRICAL - OPTICAL CHARACTERISTICS

(Ta = 25°C)

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
INPUT	Forward Voltage	V_F	—	1.2	1.4	V	$I_F = \pm 20\text{mA}$
	Terminal Capacitance	C_t	—	30	250	pF	$V=0, f=1\text{KHz}$
OUTPUT	Collector Dark Current	I_{CEO}	—	—	100	nA	$V_{CE}=20\text{V}, I_F=0$
	Collector-Emitter Breakdown Voltage	BV_{CEO}	35	—	—	V	$I_C=0.1\text{mA}$ $I_F=0$
	Emitter-Collector Breakdown Voltage	BV_{ECO}	6	—	—	V	$I_E=10\mu\text{A}$ $I_F=0$
TRANSFER CHARACTERISTICS	Collector Current	I_C	0.2	—	4	mA	$I_F = \pm 1\text{mA}$
	*1 Current Transfer Ratio	CTR	20	—	400	%	$V_{CE}=5\text{V}$
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.1	0.2	V	$I_F = \pm 20\text{mA}$ $I_C=1\text{mA}$
	Isolation Resistance	R_{iso}	5×10^{10}	1×10^{11}	—	Ω	DC500V 40 ~ 60% R.H.
	Floating Capacitance	C_f	—	0.6	1	pF	$V=0, f=1\text{MHz}$
	Response Time (Rise)	t_r	—	4	18	μs	$V_{CE}=2\text{V}, I_C=2\text{mA}$ $R_L=100\Omega$
	Response Time (Fall)	t_f	—	3	18	μs	

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

RANK TABLE OF CURRENT TRANSFER RATIO CTR

MODEL NO.	RANK MARK	CTR (%)
LTV-354T	A	50 ~ 150
	A or No mark	20 ~ 400

CONDITIONS	$I_F = \pm 1 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $T_a = 25 \text{ }^\circ\text{C}$
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CHARACTERISTICS CURVES

Fig.1 Forward Current vs. Ambient Temperature

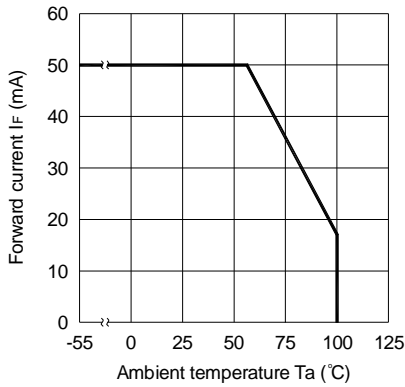


Fig.2 Collector Power Dissipation vs. Ambient Temperature

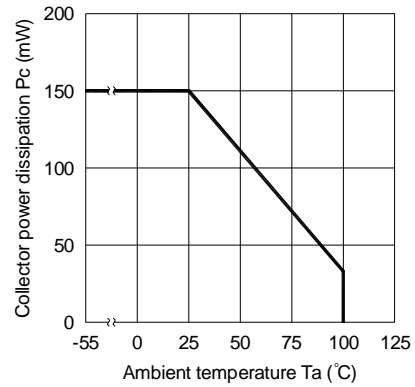


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

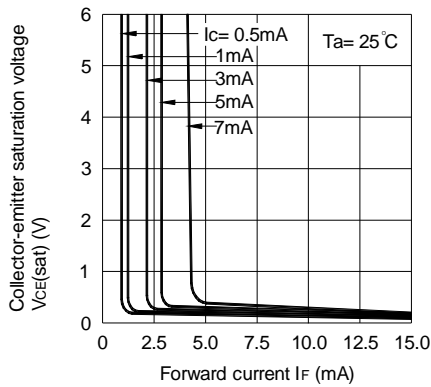


Fig.4 Forward Current vs. Forward Voltage

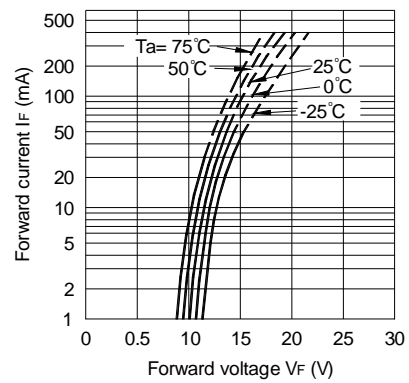


Fig.5 Current Transfer Ratio vs. Forward Current

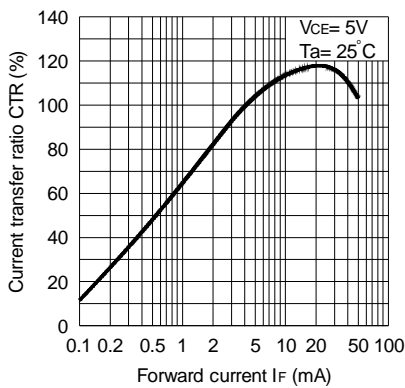
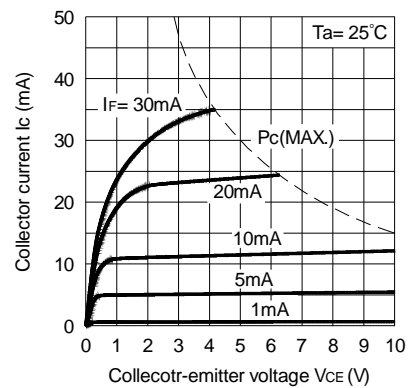


Fig.6 Collector Current vs. Collector-emitter Voltage



CHARACTERISTICS CURVES

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

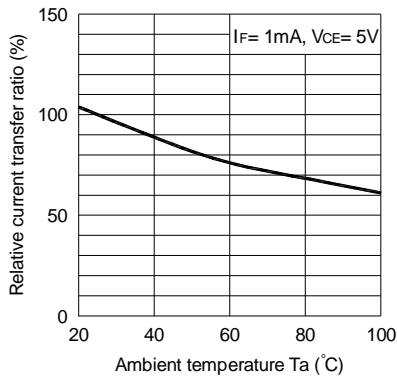


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

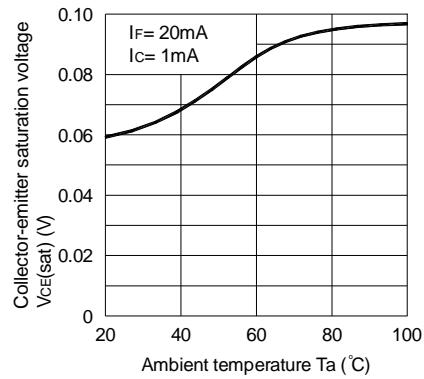


Fig.9 Collector Dark Current vs. Ambient Temperature

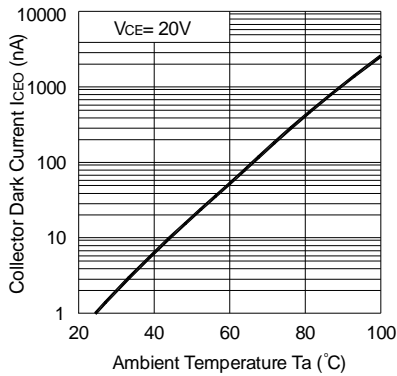


Fig.10 Response Time vs. Load Resistance

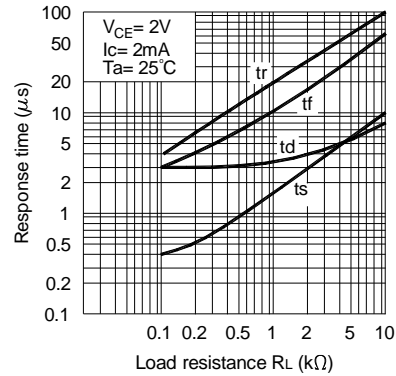
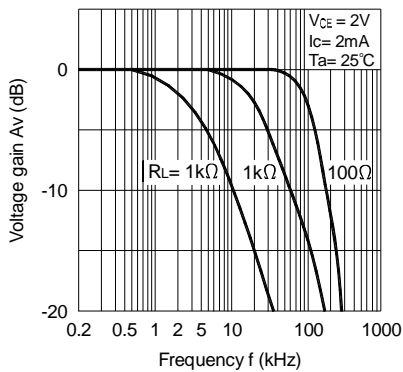
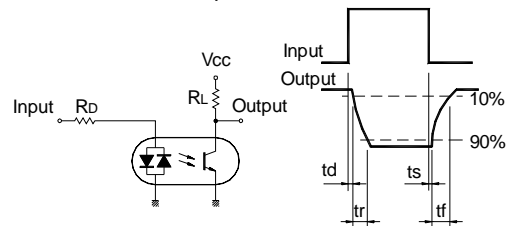


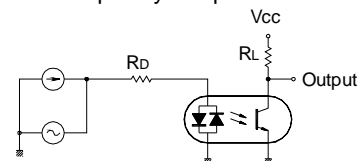
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



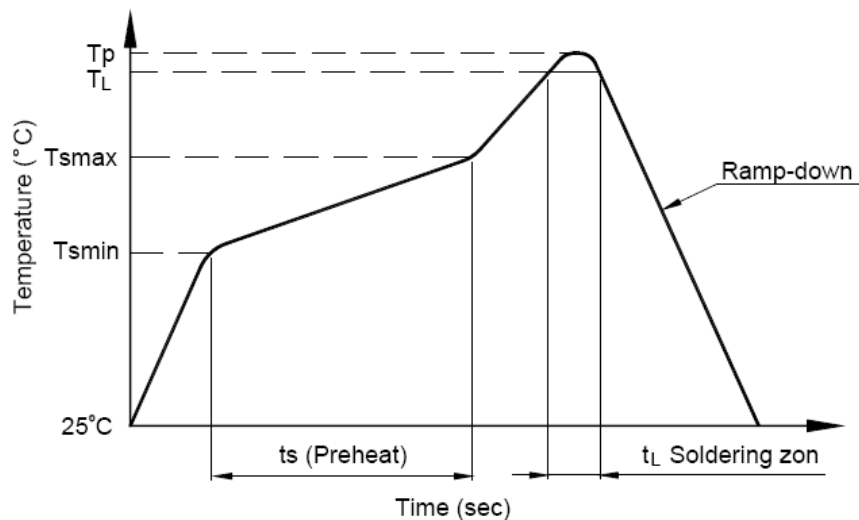
TEMPERATURE PROFILE OF SOLDERING REFLOW

(1) One time soldering reflow is recommended within the condition of temperature and time profile shown below.

- 1. Wave solder
- 260 °C / 10 sec

- 2. IR reflow

Profile item	Condition
Preheat	
- Temperature Min (T_{smin})	150 °C
- Temperature Max (T_{smax})	180 °C
- Time (min to max) (t_s)	90 ± 30 sec
Soldering zone	
- Temperature (T_L)	250 °C
- Time (t_L)	10 ~15 sec
Peak temperature (T_p)	260 °C
Ramp-down rate	3 ~ 6 °C / sec



TEMPERATURE PROFILE OF SOLDERING REFLOW

(2) When using another soldering method such as infrared ray lamp, the temperature may rise partially in the mold of the device.

Keep the temperature on the package of the device within the condition of above (1)

RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit : mm

