

## Technical Data Sheet

### 0603 Package Top Phototransiator

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### MPT603Series

#### Features

- 0603 package
- High photo sensitivity
- Small junction capacitance
- Pb free
- The product itself will remain within RoHS compliant version.

#### Descriptions

- The device is a phototransistor in miniature SMD package which is flat top view lens.
- The device is Spectrally matched to visible and infrared emitting diode.

#### Applications

- Infrared applied system

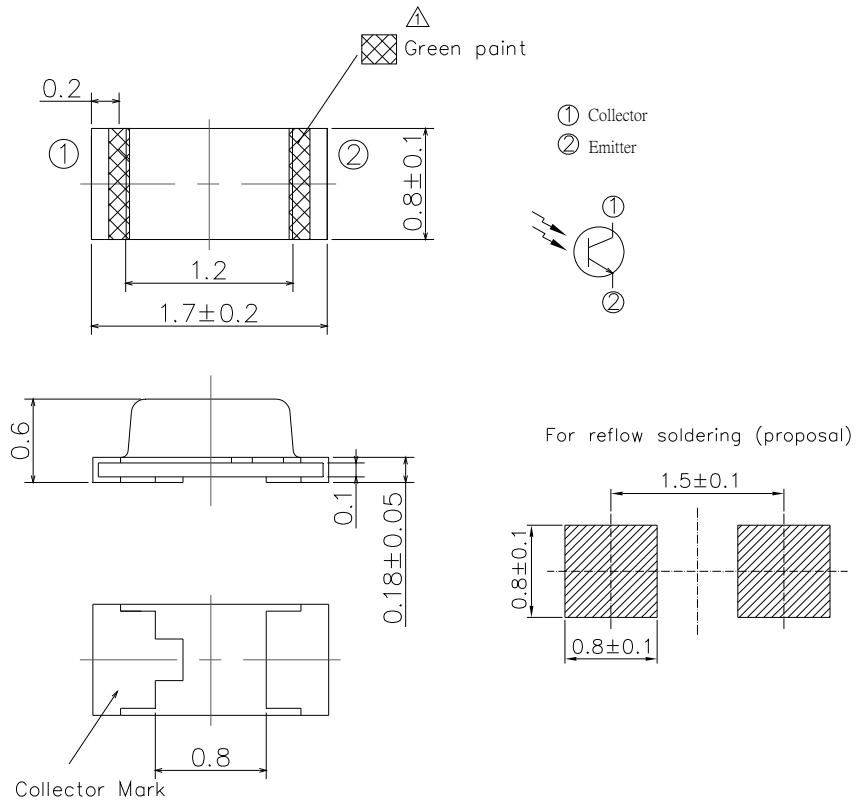
#### Devices Selection Guide

LED Part No.	Thickness	Lens Color
MPT6036C/3T	0.6mm	Clear
MPT6038C/3T	0.8mm	Clear
MPT60363T	0.6mm	Black
MPT60383T	0.8mm	Black

**Package Dimensions**

**MPT603Series**

**MPT6036C/3T & MPT60363T**

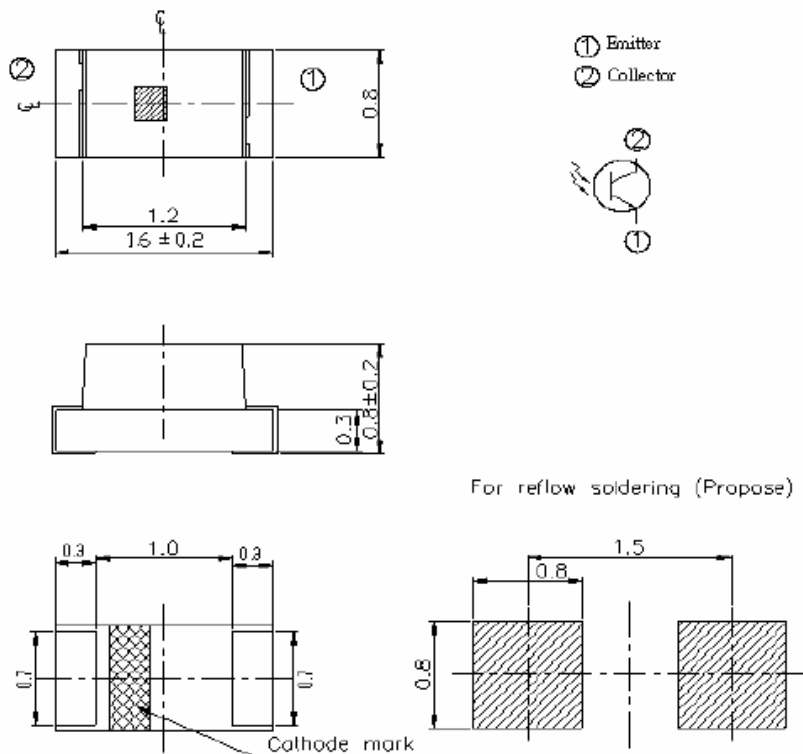


- Notes:**
1. All dimensions are in millimeters
  2. Tolerances unless dimensions  $\pm 0.1$  mm

## Package Dimensions

## MPT603Series

### MPT6038C/3T & MPT60383T



- Notes:** 1.All dimensions are in millimeters  
2.Tolerances unless dimensions  $\pm 0.1\text{mm}$

### **Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )**

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	$V_{CEO}$	30	V
Emitter-Collector-Voltage	$V_{ECO}$	5	V
Collector Current	$I_C$	20	mA
Operating Temperature	$T_{opr}$	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +100	$^\circ\text{C}$
Soldering Temperature *1	$T_{sol}$	260	$^\circ\text{C}$
Power Dissipation at(or below) 25 $^\circ\text{C}$ Free Air Temperature	$P_c$	75	mW

**Notes:** \*1:Soldering time  $\leq 5$  seconds.

## MPT603Series

### Electro-Optical Characteristics (Ta=25°C) is for clear type

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Rang Of Spectral Bandwidth	$\lambda_{0.1}$	---	400	---	1100	nm
Wavelength Of Peak Sensitivity	$\lambda_P$	---	---	940	---	nm
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=100\mu A$ $E_e=0mW/cm^2$	30	---	---	V
Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E=100\mu A$ $E_e=0mW/cm^2$	5	---	---	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2mA$ $I_B=100\mu A$	---	---	0.4	V
Collector Dark Current	$I_{CEO}$	$V_{CE}=20V$ $E_e=0mW/cm^2$	---	---	100	nA
Rise Time	$t_r$	$V_{CE}=5V$ $I_C=1mA$ $R_L=1000\Omega$	---	15	---	$\mu S$
Fall Time	$t_f$		---	15	---	

### Electro-Optical Characteristics (Ta=25°C) is for black type

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Rang Of Spectral Bandwidth	$\lambda_{0.1}$	---	730	---	1100	nm
Wavelength Of Peak Sensitivity	$\lambda_P$	---	---	940	---	nm
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=100\mu A$ $E_e=0mW/cm^2$	30	---	---	V
Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E=100\mu A$ $E_e=0mW/cm^2$	5	---	---	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2mA$ $I_B=100\mu A$	---	---	0.4	V
Collector Dark Current	$I_{CEO}$	$V_{CE}=20V$ $E_e=0mW/cm^2$	---	---	100	nA
Rise Time	$t_r$	$V_{CE}=5V$ $I_C=1mA$ $R_L=1000\Omega$	---	15	---	$\mu S$
Fall Time	$t_f$		---	15	---	

## MPT603Series

### Bin Range of on state collector current

#### MPT6036C/3T

Bin	Min	Max	Unit	Condition
A1	0.27	0.66	mA	$V_{CE}=5V$ $E_e=1mW/cm^2$ $\lambda_p=940nm$
A2	0.54	1.00		
A3	0.81	1.32		

#### MPT6038C/3T

Bin	Min	Max	Unit	Condition
B1	0.90	1.54	mA	$V_{CE}=5V$ $E_e=1mW/cm^2$ $\lambda_p=940nm$
B2	1.26	1.87		
B3	1.51	2.42		

#### MPT60363T

Bin	Min	Max	Unit	Condition
A1	0.27	0.66	mA	$V_{CE}=5V$ $E_e=1mW/cm^2$ $\lambda_p=940nm$
A2	0.54	1.00		

#### MPT60383T

Bin	Min	Max	Unit	Condition
B1	0.90	1.54	mA	$V_{CE}=5V$ $E_e=1mW/cm^2$ $\lambda_p=940nm$
B2	1.26	1.87		

## Precautions For Use

## MPT603Series

### 1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).

### 2. Storage

2.1 Do not open moisture proof bag before devices are ready to use.

2.2 Shelf life in sealed bag from the bag seal date:

18 months at 10°C~30°C and < 90% RH.

2.3 After opening the package, the devices must be stored at 10°C~30°C and ≤ 60%RH, and used within 168 hours(floor life).

2.4 If the moisture absorbent material(desiccant material) has faded or unopened bag has exceeded the shelf life or devices(out of bag) have exceeded the floor life, baking treatment is required.

2.5 If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions :

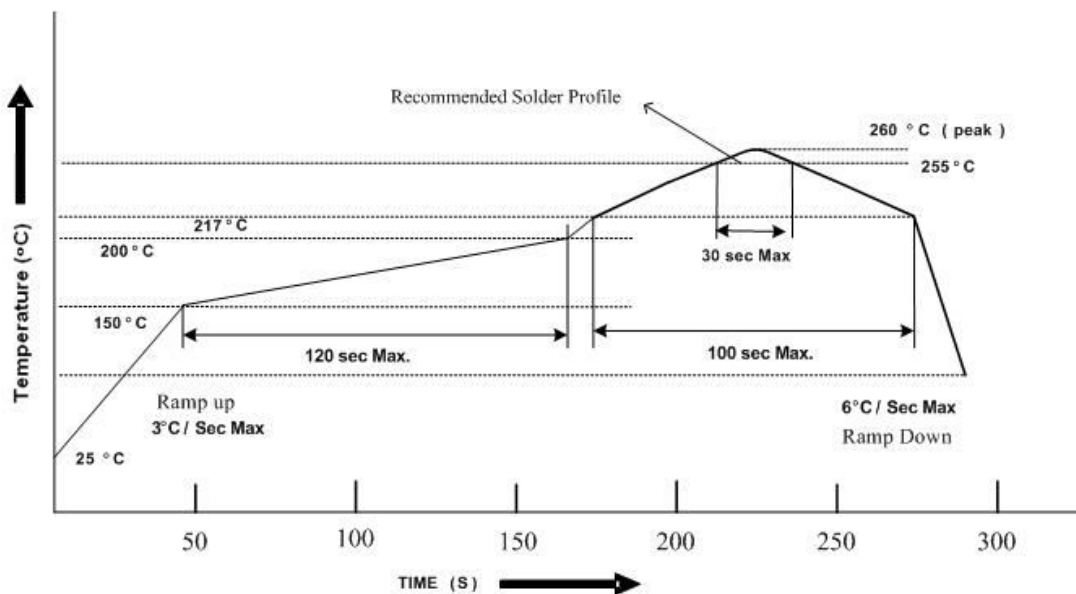
192 hours at 40°C +5/-0°C and < 5 % RH (reeled/tubed/loose units) or

96 hours at 60°C ± 5°C and < 5 % RH (reeled/tubed/loose units) or

24 hours at 125°C ± 5°C, not suitable for reel or tubes.

### 3. Soldering Condition

#### 3.1 Pb-free solder temperature profile



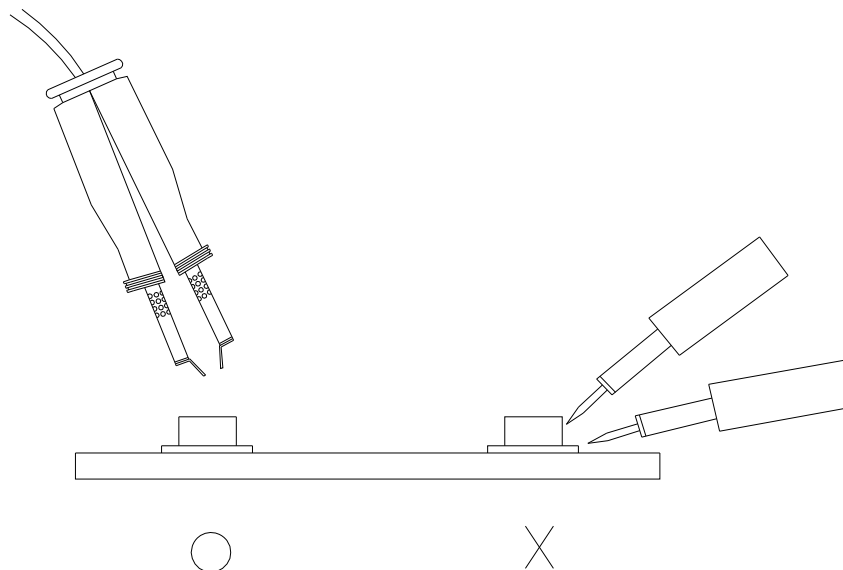
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

#### 4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

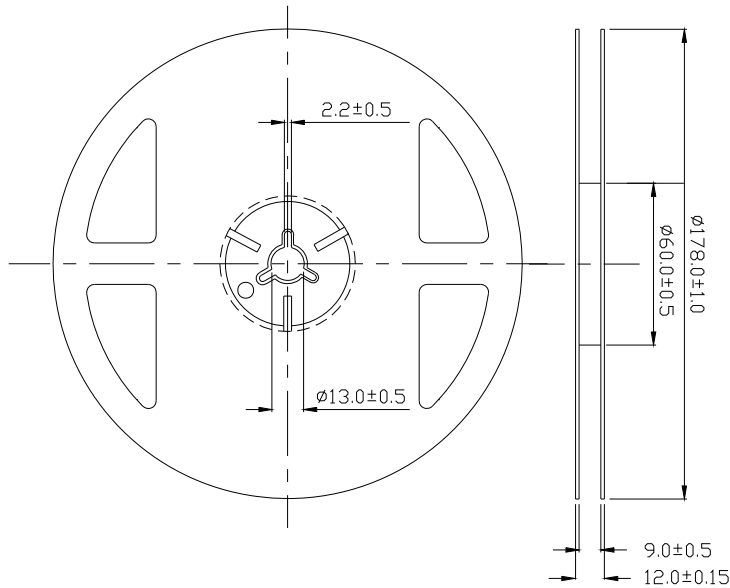
#### 5.Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



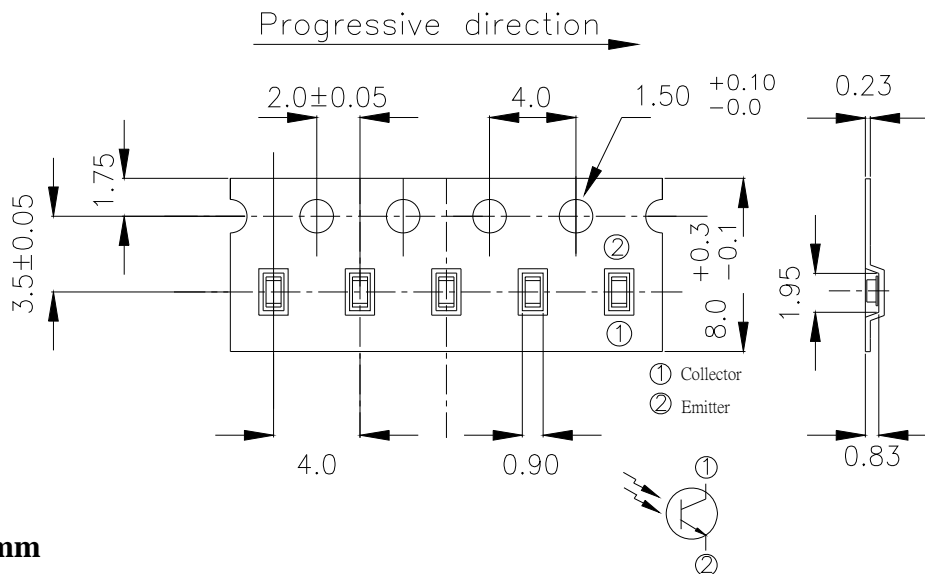
**Package Dimensions**  
**MPT6036C/3T & MPT60363T**

**MPT603Series**



**Note:** The tolerances unless mentioned is  $\pm 0.1$  mm ,Unit = mm

**Carrier Tape Dimensions:(Quantity: 3000pcs/reel)**

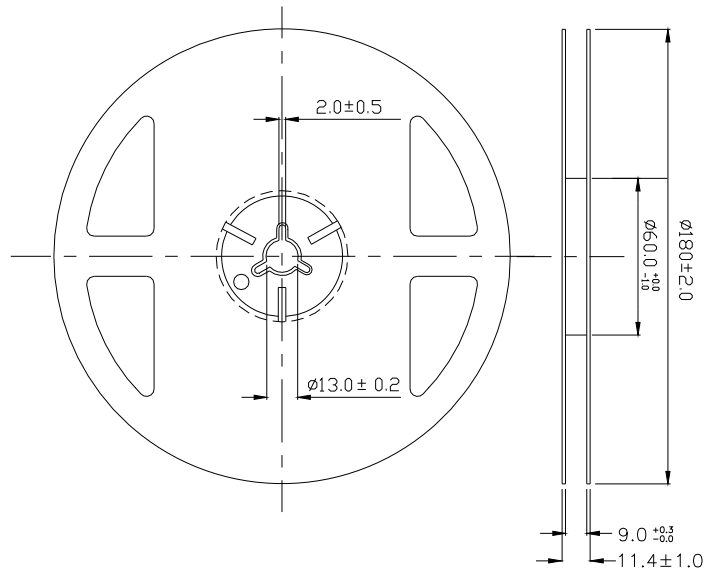


**Unit: mm**



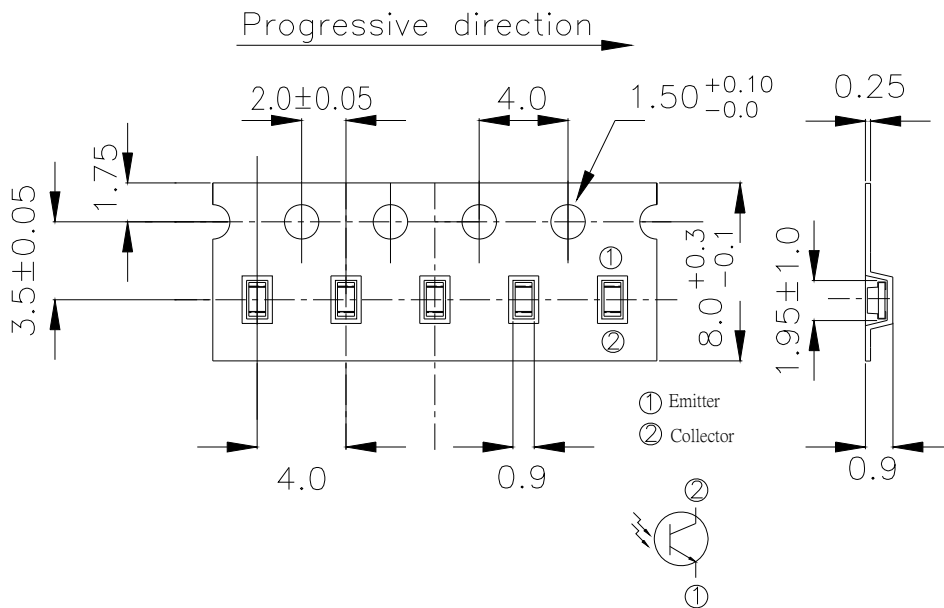
**Package Dimensions**  
**MPT6038C/3T MPT60383T**

**MPT603Series**



**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm ,Unit = mm

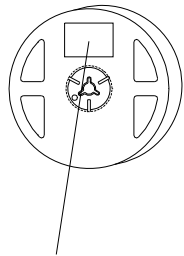
**Carrier Tape Dimensions:(Quantity: 3000pcs/reel)**



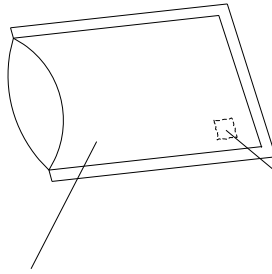
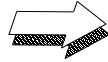
**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm ,Unit = mm

## Packing Procedure

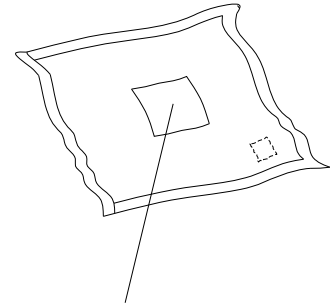
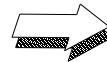
## MPT603Series



Label



Aluminum moisture-proof bag



Desiccant

Label

### Label Form Specification

	<b>EVERLIGHT</b>	
CPN : P/N :XXXXXXXXXXXX		RoHS
QTY : XXX		CAT : XXX
LOT NO : XXXXXXXXXX		HUE : XXX
Reference : XXXXXXXX		REF : XXX
<b>MADE IN TAIWAN</b>		

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN TAIWAN: Production Place

### Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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