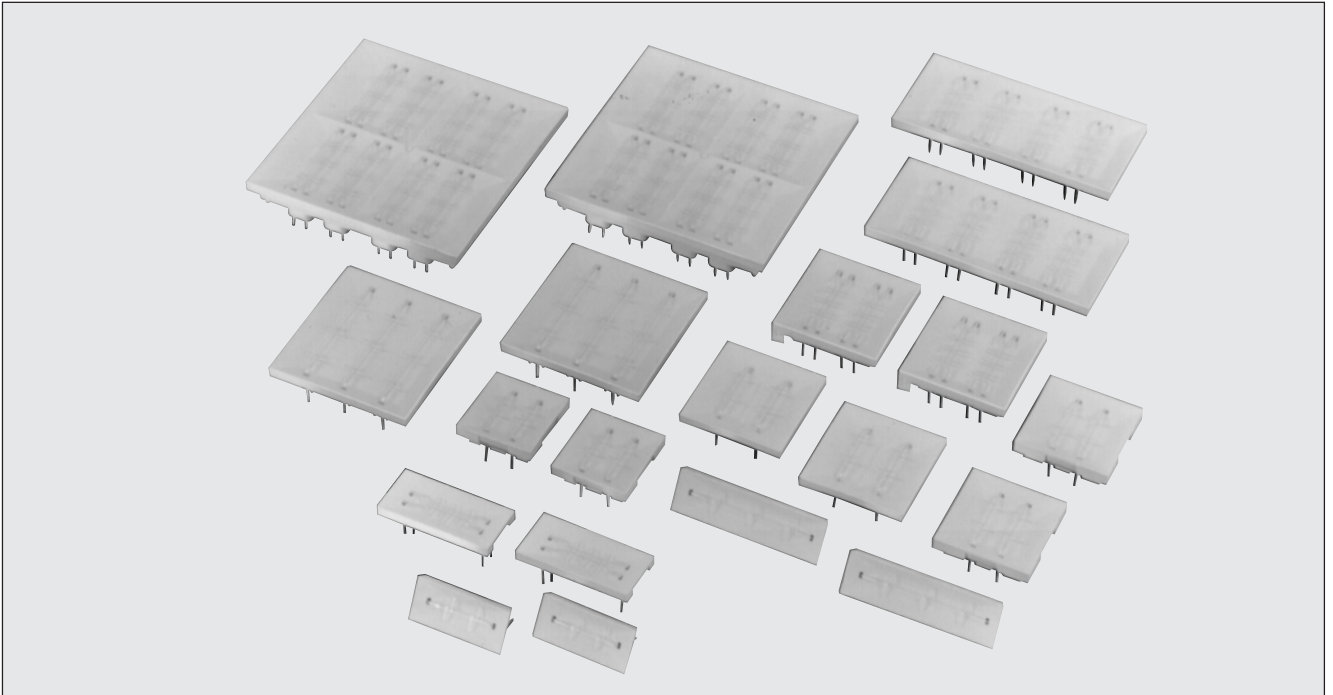


# Surface Emission LED Lighting Package

## TFN Series



### ■ Features

- Wide surface and slim lighting units of a mere 4.4~7.1mm.
- Soft lighting color with even emission of light.
- Five lighting colors available: red, yellow, green, orange, and pure yellow.



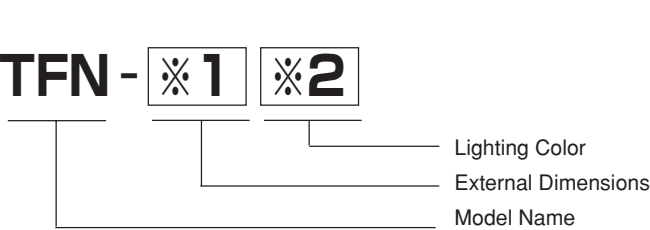
#### NOTICE

Because the TFN is a semiconductor, be aware of the following points.

1. Be sure to install a current limiting resistor in series, and adjust so that each circuit maintains approximately 15~20mA. For simultaneous two-color lighting, approximately 10~13mA is recommended for each circuit. Never use the device at a rating above the absolute maximum.
2. Voltage drops approximately 2V (depending on color and current) for each LED element when a forward current of 15~20mA is input. This means that there is a 6V drop with 3 LED elements and a 4V drop with 2 elements in series. When designing the circuit, this voltage drop should be set at less than half of the supplied voltage. Otherwise, the circuit will be vulnerable to voltage fluctuations.
3. When soldering, set the soldering iron to below 260°C, and solder for no more than 5 seconds.
4. Unless otherwise mentioned, all dimensions are indicated in "mm" in this book.

Model Designation

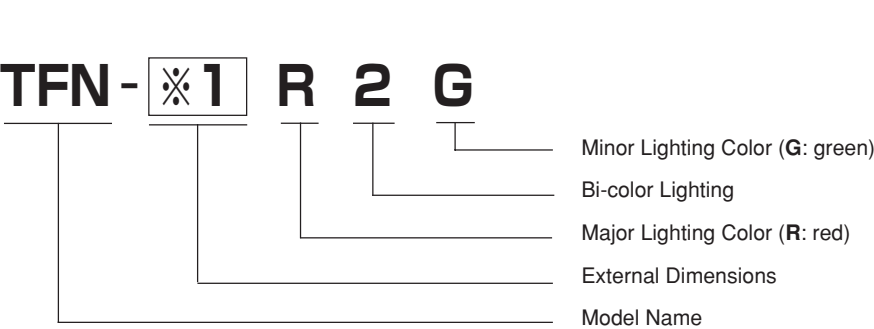
When using only one color



※1	(unit: mm)
Code	Dimensions
0818	8 × 18
0828	8 × 28
1022	10 × 22
15	14.8 × 14.8
18	17.8 × 17.8
20	19.8 × 19.8
21	20.8 × 20.8
2145	20.8 × 44.8
28	27.8 × 27.8
45	44.8 × 44.8

※2	
Code	Lighting Color
R	Red
O	Orange
Y	Yellow
G	Green
PY	Pure yellow

When using two colors



※1	(unit: mm)
Code	Dimensions
1022	10 × 22
21	20.8 × 20.8
2145	20.8 × 44.8
45	44.8 × 44.8

## Absolute Maximum Ratings

Ta (ambient temperature) = 25°C

Item	Model	TFN-0818 TFN-15/18/20	TFN-0828/28	TFN-1022/21/2145/45	
	Code			One Color	Two Color Simultaneous
Forward Current	I <sub>F</sub>	30mA		30mA (total value of 2 colors)	
Forward Current Reduction Rate	ΔI <sub>F</sub>	0.4mA/°C		0.4mA/°C (total value of 2 colors)	
Acceptable Pulse *1 Forward Current	I <sub>FP</sub>	100mA		100mA (total value of 2 colors)	
Reverse Voltage *2	V <sub>R</sub>	10V (I <sub>R</sub> = 100μA)	15V (I <sub>R</sub> = 100μA)		
Acceptable Loss	P <sub>D</sub>	150mW 220mW	200mW	200mW (total value of 2 colors)	
Operating Temperature	T <sub>opt</sub>	-20~+80°C			
Storage Temperature	T <sub>stg</sub>	-30~+100°C			

\*1 The condition for  $I_{FP}$  is  $PW \leq 1\text{msec}$  Duty  $\leq 1/20$ .

For details on current reduction rate for  $I_{FP}$ , see the Guide to Designing Indicators Using TFLED.

\*2 The rated value for reverse voltage is the value for each circuit.

## Electronic and Optical Characteristics

TFN-0818/0828/1022/15/18/20/21/28/2145/45

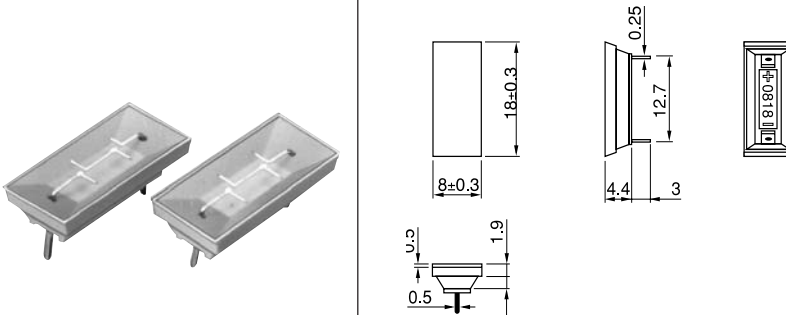
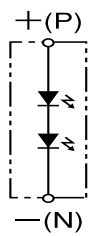
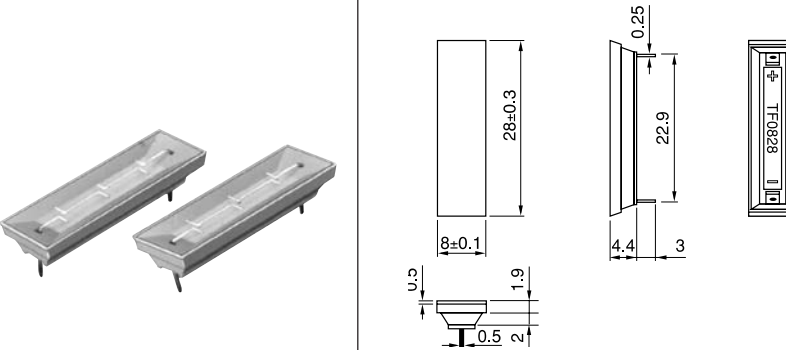
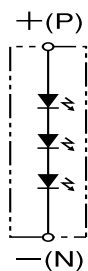
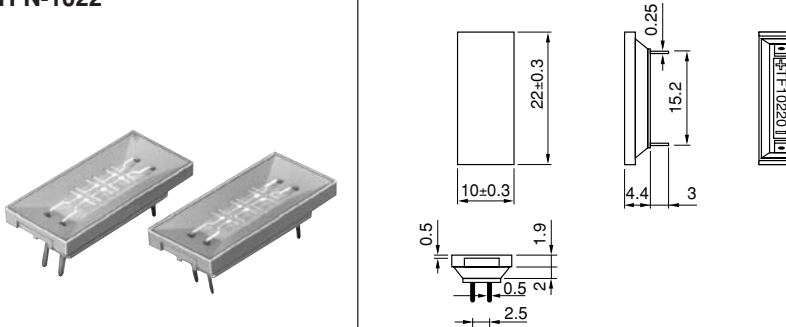
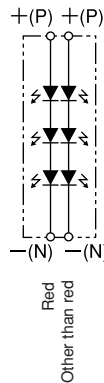
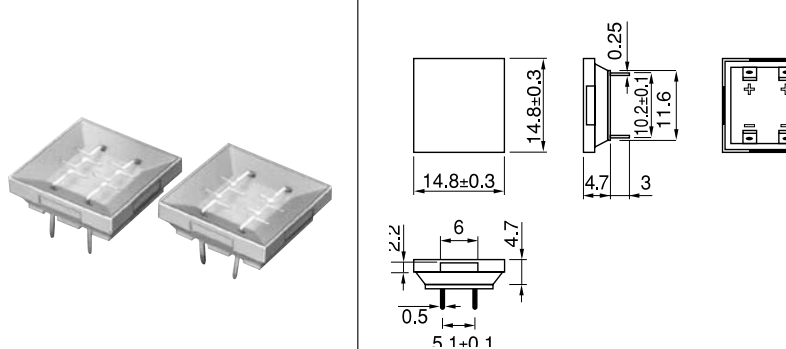
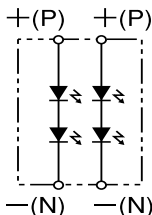
Ta (ambient temperature) = 25°C


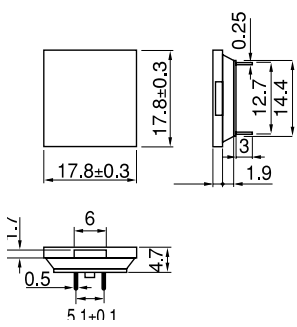
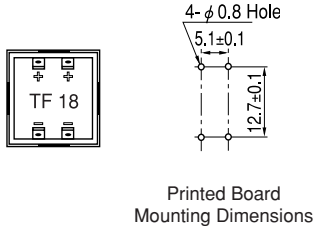
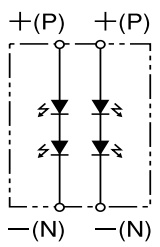
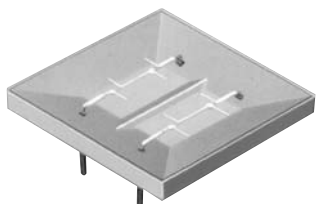
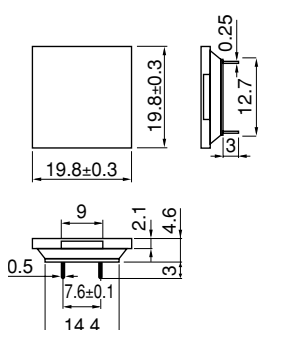
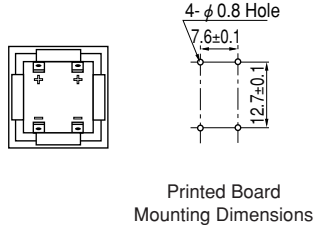
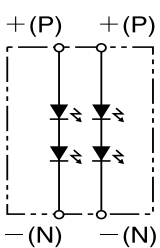
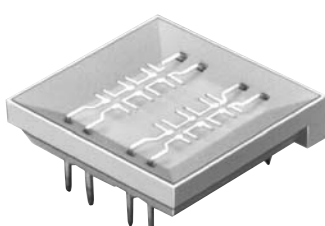
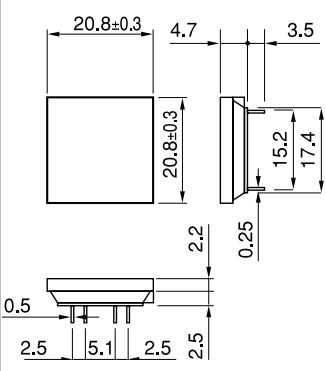
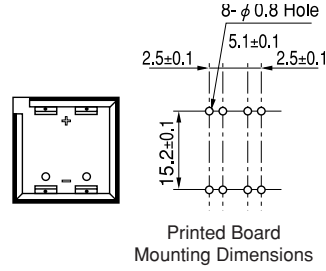
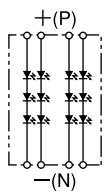
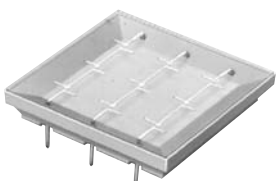
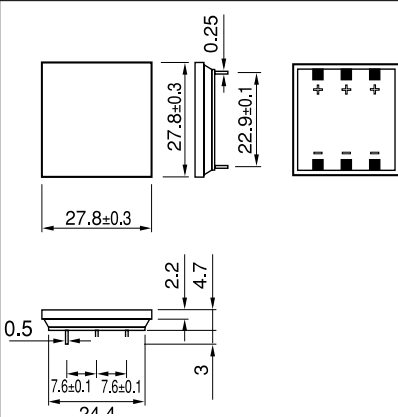
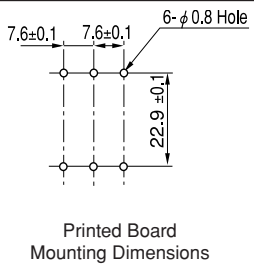
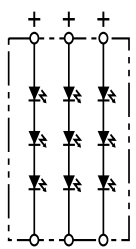
Item	Code	Condition	Unit	Standard Value				
				Red	Orange	Yellow	Pure Yellow	Green
Forward Voltage/ Element	$V_F$	$I_F = 20\text{mA}$	V	2.0	2.1	2.0	2.1	2.2
Peak Emission Wave	$\lambda_p$	$I_F = 20\text{mA}$	nm	650	615	585	570	565

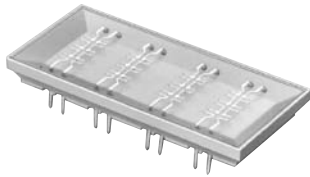
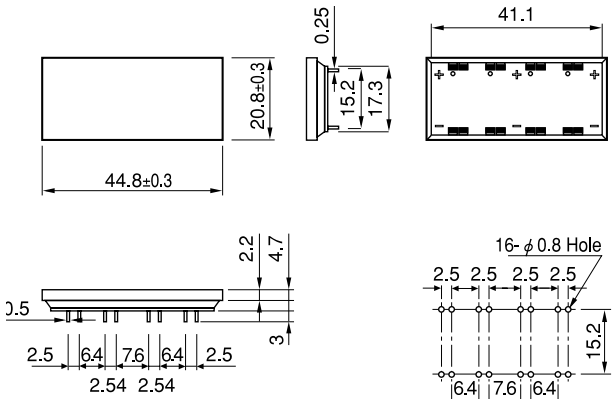
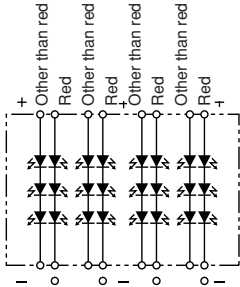

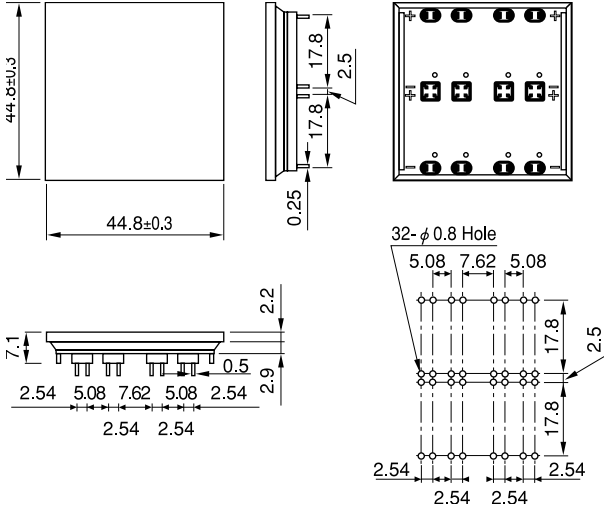
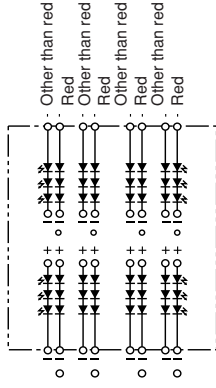
## Weight

TFN-0818	TFN-0828	TFN-1022	TFN-15	TFN-18	TFN-20	TFN-21	TFN-28	TFN-2145	TFN-45
0.6g	1.0g	1.0g	1.2g	1.7g	1.8g	2.4g	4.2g	5.4g	13.5g

■ Dimensions and Circuits

Appearance	Dimensions	Circuit Diagram
TFN-0818		
TFN-0828		
TFN-1022		 <p>When ordering a single color, a chip of the specified color will be installed.</p>
TFN-15		

Appearance	Dimensions	Circuit Diagram
<b>TFN-18</b> 	  <p>Printed Board Mounting Dimensions</p>	
<b>TFN-20</b> 	  <p>Printed Board Mounting Dimensions</p>	
<b>TFN-21</b> 	  <p>Printed Board Mounting Dimensions</p> <p>When ordering a single color, a chip of the specified color will be installed.</p>	 <p>Other than red Red Other than red Red</p>
<b>TFN-28</b> 	  <p>Printed Board Mounting Dimensions</p>	 <p>Circuit Diagram</p>

Appearance	Dimensions	Circuit Diagram
<div>TFN-2145</div> 	 <p>16-<math>\phi</math> 0.8 Hole</p> <p>Dimensional Tolerance <math>\pm 0.1</math> Printed Board Mounting Dimensions</p>	 <p>Circuit Diagram</p>
When ordering a single color, a chip of the specified color will be installed.		
<div>TFN-45</div> 	 <p>32-<math>\phi</math> 0.8 Hole</p> <p>Dimensional Tolerance <math>\pm 0.1</math> Printed Board Mounting Dimensions</p>	 <p>Circuit Diagram</p>
When ordering a single color, a chip of the specified color will be installed.		