



Product NO: FZ2812-0807



FZ2812-0807 LED Datasheet

1. Product Description

Overall Dimensions (L/W/H): $2.0 \times 1.8 \times 0.8$ mm

Color: RGB

Encapsulation: Transparent epoxy

Environmentally friendly product, compliant with ROHS requirements

Suitable for automatic pick-and-place machines

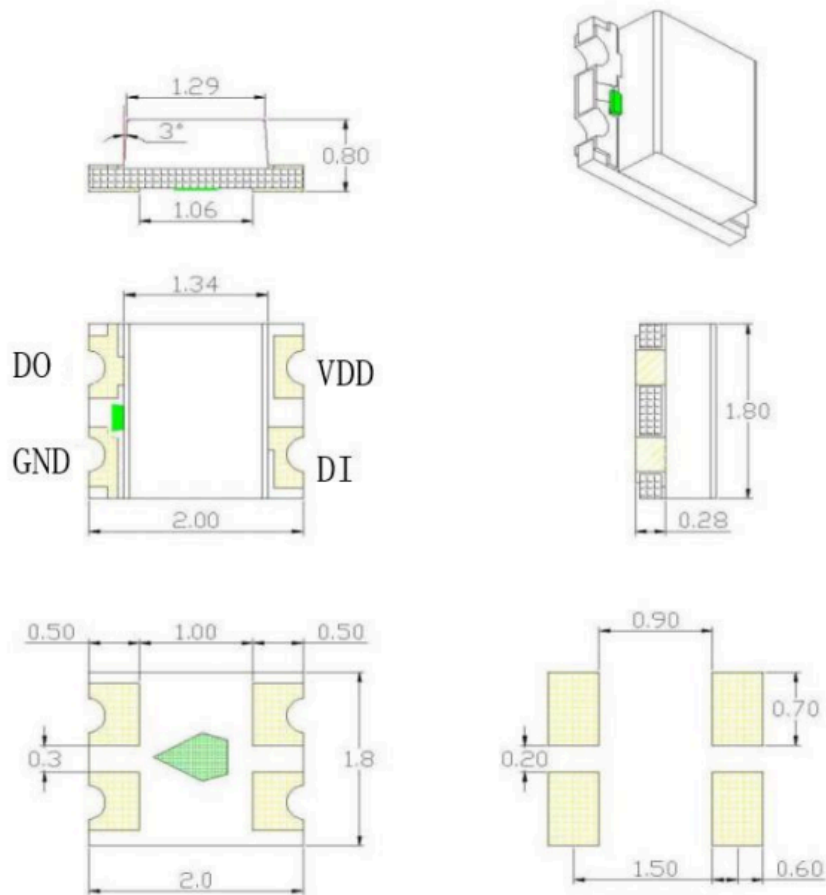
Suitable for infrared reflow soldering process

2. Product Dimensions and Recommended Solder Pads

Notes:

1. Unit: millimeter (mm)

2. Tolerance: ± 0.10 mm unless otherwise noted



3. Product Overview

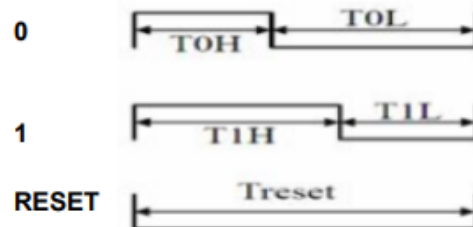
The FZ2812-0807 LED integrates a high-quality single-wire cascaded constant-current driver IC and high-quality RGB LED chips. The built-in control IC features high reliability, low power consumption, strong noise immunity, and high constant-current accuracy. The LED chips are pre-binned, providing excellent luminance consistency, pure white-light performance, and low light decay.

By combining these features, the device achieves small size, minimal external components, and clean PCB layout. When controlled by an external controller, it can display colors, animations, and high-quality video effects.

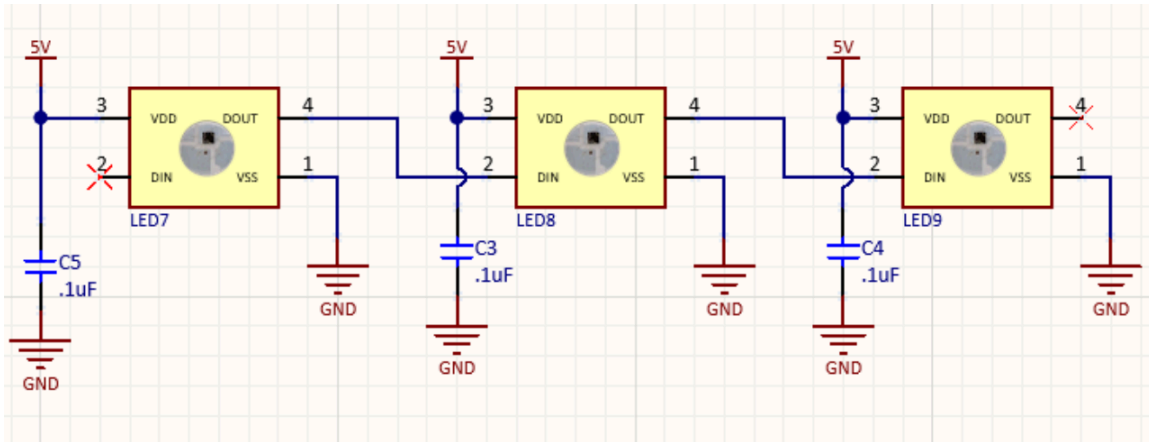
Pin Description:

Pin No.	Symbol	Pin Name	Function Description
1	VDD	Power	Power supply pin
2	DOUT	Data Output	Control data output
3	GND	Ground	Signal and power ground
4	DIN	Data Input	Control data input

Application:



Application Circuit:



4. Electrical Specifications (Absolute Maximum Ratings, Ta = 25 °C, VSS = 0 V)

Parameter	Symbol	Range	Unit
Supply Voltage	VDD	3.5 ~ 5.5	V
Logic Input Voltage	VIN	-0.4 ~ VDD + 0.4	V
Operating Temperature	Topt	-40 ~ +150	°C
Storage Temperature	Tstg	-55 ~ +150	°C
OUT R/G/B Withstand Voltage	BVout	16	V
ESD Withstand Voltage	VESD	>2000	V

5. IC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit / Condition
Low-level output current	Iout	-	5	-	mA (R,G,B)
Low-level output current (DOUT)	Ido	10	-	-	mA @ Vo=0.4V
Input current	Ii	-	-	±1	µA
Output pin sink current	Isink	-	5	-	mA

Input high voltage	Vih	0.7VDD	-	VDD	V
Input low voltage	Vil	-	-	0.3VDD	V
Hysteresis voltage	Vh	-	0.35	-	V
Channel current error	dIout	±1.5	-	±3.0	%
Chip-to-chip current error	dIout	±3.0	-	±5.0	%
Dynamic current (no load)	IDDdyn	-	1	-	mA
Power dissipation (Ta=25°C)	PD	-	250	-	mW
Thermal resistance	Rth(j-a)	80	-	190	°C/W

6. Switching Characteristics (VCC=5V, Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit / Condition
Oscillation frequency	Fosc1	-	800	-	kHz
Oscillation frequency	Fosc2	-	10	-	MHz
Propagation delay	Tflz	-	-	300	ns
Fall time	Tthz	-	-	120	µs
Data rate	Fd	800	-	-	Kbps
Input capacitance	Ci	-	-	15	pF

7. Built-in LED Parameters

Color	Dominant Wavelength (nm)	Luminous Intensity (mcd)	Operating Current (mA)	Forward Voltage (V)
R	620-625	90-110	5	1.9-2.1
G	525-530	300-350	5	2.6-2.8
B	465-470	75-90	5	2.7-2.9

8. Functional Description

The product adopts single-wire communication using return-to-zero coding. After power-on reset, the chip receives data from DIN. After receiving 24 bits, the DO pin forwards remaining data to the next device. RGB brightness is controlled using PWM based on the received data.

9. Data Format and Timing

24-bit data format:

R7-R0, G7-G0, B7-B0

Data is transmitted MSB first in GRB order.

Name	Description	Typical	Tolerance	Unit
T0H	Logic 0 high-level time	0.35	±150	ns
T1H	Logic 1 high-level time	1.36	±150	μs
T0L	Logic 0 low-level time	1.36	±150	μs
T1L	Logic 1 low-level time	0.35	±150	μs
RES	Reset low-level time	50	-	μs