



587 SERIES

**5050 PLCC-4**  
**Addressable RGB LED**  
SMD LED + IC

MECHANICAL / SPECIFICATIONS

PART NUMBER:  
[587-2054-127E](#)

DIMENSIONS:  
5.0 x 5.0 x 1.6mm

LENS COLOR: Clear

LENS MATERIAL: Silicone

# CONTROL WIRES:  
Single Wire

STANDARD PACKAGING:  
1000 pcs on 7 inch Reel

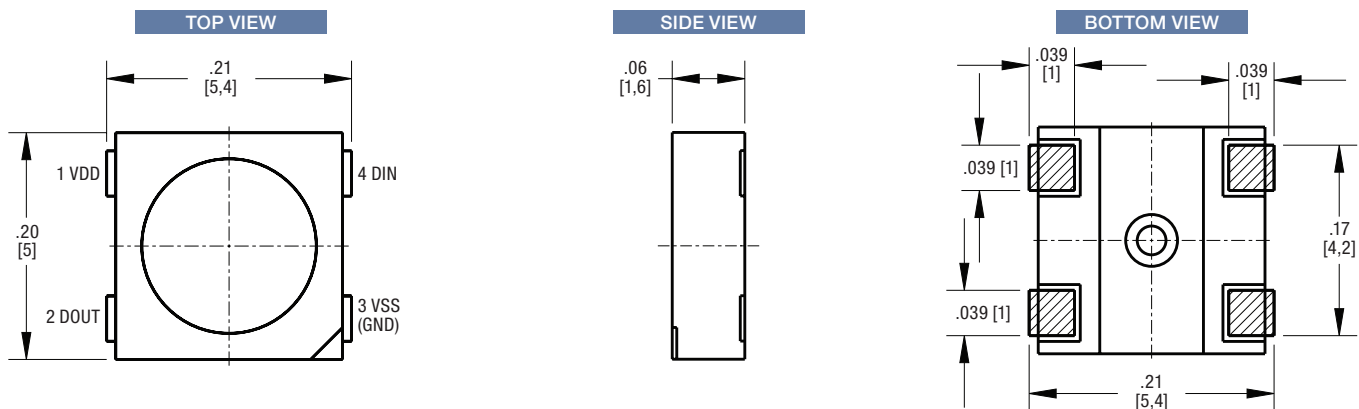
MOISTURE SENSITIVITY LEVEL: 5a

CERTIFICATIONS & RATINGS  
ROHS Compliant

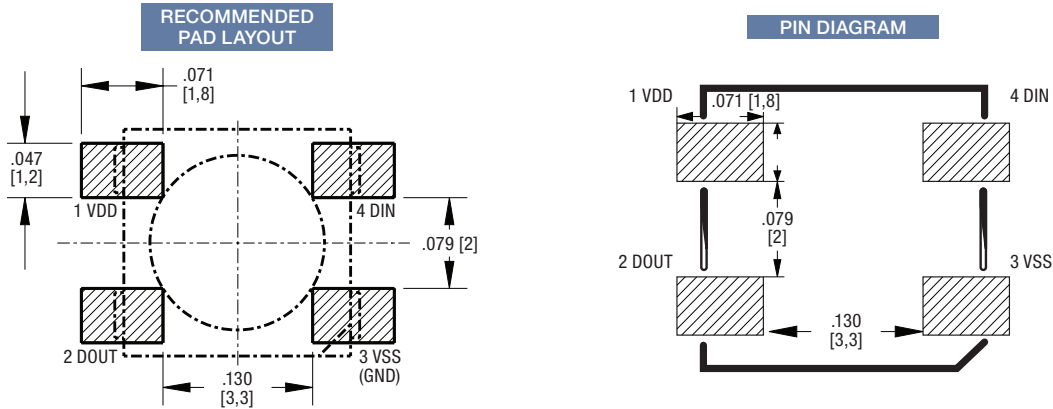
FEATURES & BENEFITS

- The control circuit and the LED share the only power source.
- IControl circuit and RGB chip are integrated in a package of 5050 components, form a complete control of pixel point.
- Built-in signal reshaping circuit, after wave reshaping to the next driver, ensure wave-form distortion not accumulate.
- Built-in electric reset circuit and power lost reset circuit.
- Each pixel of the three primary color can achieve 256 brightness display, completed 16777216 color full color display, and scan frequency not less than 400Hz/s.
- Cascading port transmission signal by single line.
- Any two point the distance does not exceed 3m transmission signal without any increase circuit.
- When the refresh rate is 30fps, cascade number are not less than 1024 points.
- Send data at speeds of 800Kbps.

DIMENSIONS inches [mm]



DIMENSIONS inches [mm]



PIN FUNCTION

Serial Number	Symbol	Pin Name	Function Description
1	VDD	Power Supply	Power supply pins
2	DOUT	Data Output	Control data signal output
3	GND(VSS)	Ground	Signal grounding and power grounding
4	DIN	Data Input	Control data signal input

ELECTRICAL - OPTICAL CHARACTERISTICS (Ta=25°C IF=12mA)

Project	Symbol	Min	Typ	Max	Unit	Viewing Angle
Dominant wavelength	λd	R	620	625	nm	120
		G	520	530		
		B	460	470		
Luminous intensity	IV	R	400	700	mcd	
		G	1000	1500		
		B	200	400		

ABSOLUTE MAXIMUM RATINGS (TA=25°C)

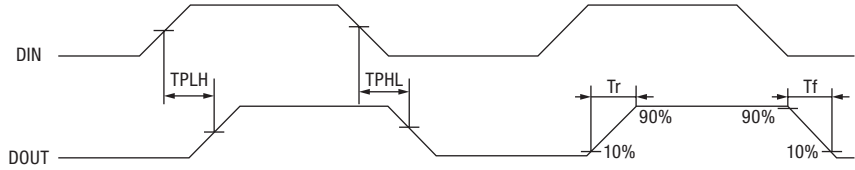
Symbol	Parameter	Range	Units
VDD	Local Supply Voltage	3.5~+5.5	V
Vi1	Logical Input Voltage	-0.5~5.5	V
Topt	Working temperature	-40-85°C	°C
Tstg	Storage temperature	-40-120°C	°C
ESD	Electrostatic Discharge (HBM)	2000	V

ELECTRICAL PARAMETERS

Parameters	Symbol	Min	Typ	Max	Unit	Test Conditions
Local Supply Voltage	VDD	3.7	5.0	5.5	V	-
R/G/B output current	Io	-	12	-	mA	-
High level input voltage	V <sub>IH</sub>	0.7* VDD	-	-	V	VDD=5.0 V
Low level input voltage	V <sub>IL</sub>	-	-	0.3* VDD	V	VDD=5.0 V
DOUT driving capability	IDOH	-	49	-	mA	DOUT grounding, maximum driving current
	IDOL	-	-50	-	mA	DOUT connected to positive, maximum sinking current
PWM frequency	FP WM	-	1.2	-	KHZ	-
Static power consumption	IDD	-	1	-	mA	-

DYNAMIC PARAMETERS

Parameters	Symbol	Min	Typ	Max	Unit	Test Conditions
Data rate	FDIN	-	800	-	KHZ	DutyCycle 67%
Transmission DelayTime	Tpzd	-	-	500	ns	DIN-DO
Transmission Rise Time	Tr	-	100	-	ns	VDS=1.5V IOUT=12mA
	Tf	-	100	-	ns	

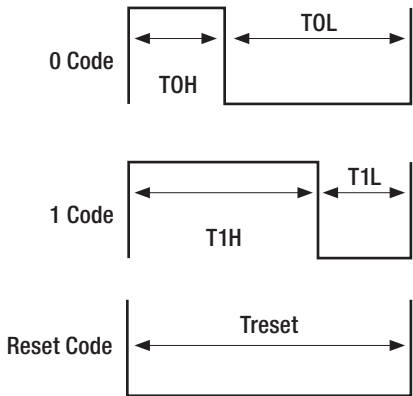


DATA TRANSMISSION TIME

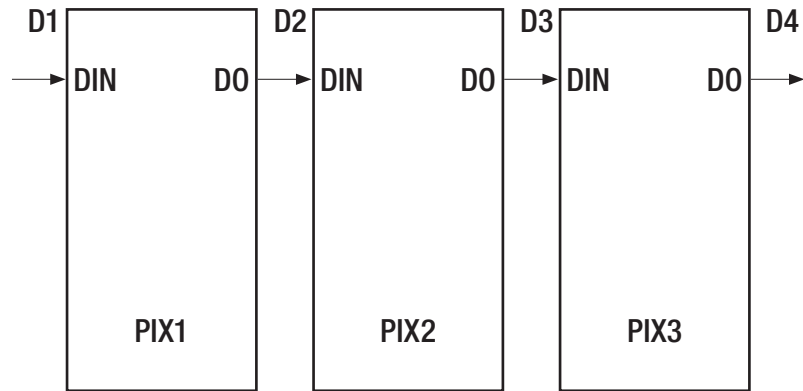
Symbol	Description	Min	Typ	Max	Unit
T	Code period	1.2	-	-	us
T0H	0 code, high level time	0.2	0.32	0.4	us
T0L	0 code, low level time	0.8	-	-	us
T1H	1 code, high level time	0.58	0.64	1	us
T1L	1 code, low level time	0.2	-	-	us
Trst	Rest code, low level time	80	-	-	us

TEMPORAL WAVE FORM FIGURE

Type of input:



Connection mode:

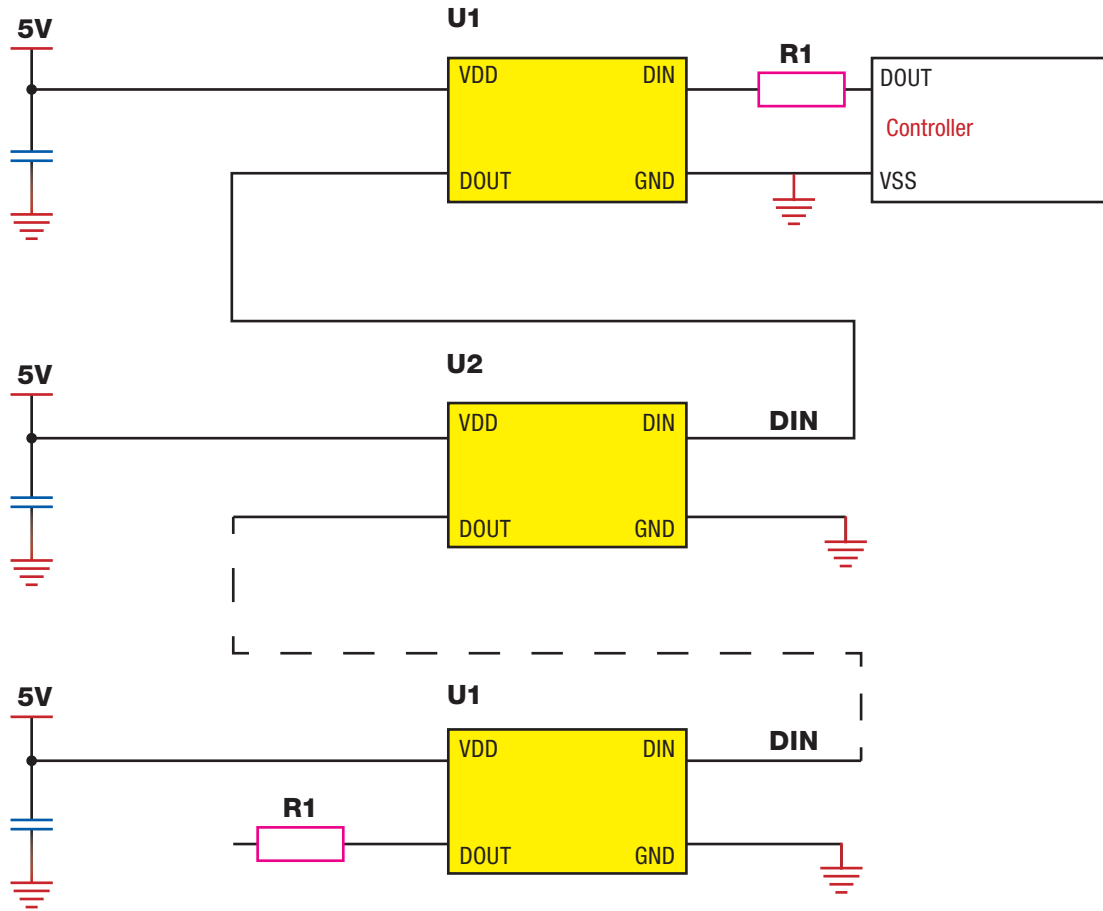


MODE OF DATA TRANSMISSION

G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Note: High start, send data in GRB order (G7 → G6 → B0)

TYPICAL APPLICATION CIRCUIT



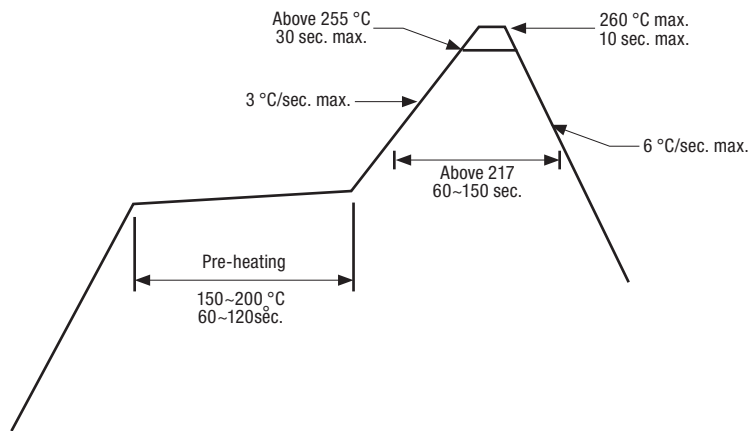


## REFLOW SOLDERING

Recommended soldering paste specifications:

1. Operating temp.: Above 217 °C, 60~150 sec.
2. Peak temp.: 260 °C max, 10 sec max
3. Reflow soldering should not be done more than two times.
4. Never attempt next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following:

## LEAD-FREE SOLDER PROFILE



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