



587 SERIES

**Right Angle / Side View
Addressable RGB LED**
SMD LED + IC

MECHANICAL / SPECIFICATIONS

PART NUMBER:
[587-1034-147F](#)

DIMENSIONS:
3.20 x 1.00 x 1.50mm

LENS COLOR: Clear

LENS MATERIAL: Epoxy

CONTROL WIRES:
Single Wire

STANDARD PACKAGING:
3000 pcs on 7 inch Reel

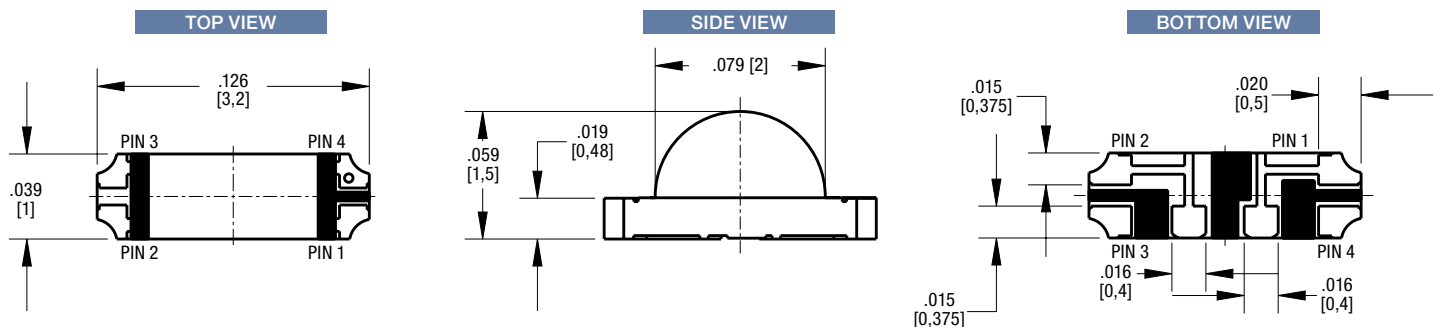
MOISTURE SENSITIVITY LEVEL: 3

CERTIFICATIONS & RATINGS
ROHS Compliant

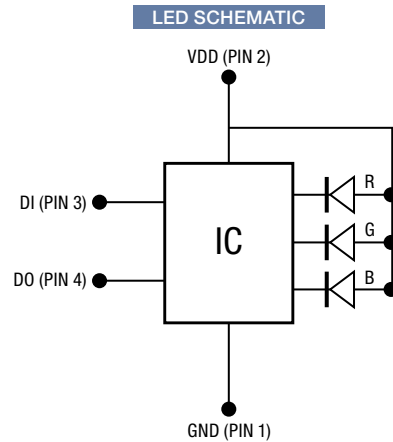
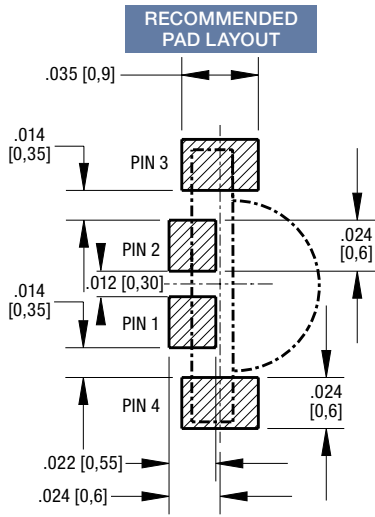
FEATURES & BENEFITS

- Support signal reshaping to pass control waveforms to next adjacent driver
- Cascading port transmission by a single data line
- Built-in current regulator, three-way drive
- Optional maximal drive current: 5mA
- 256-step gray-scale output to allow 16,777,216 color display
- Built-in oscillator 20MHz
- Built-in power-on-reset (2.6V) (@VDD=5V)
- Operating voltage 3.3V~5.5V

DIMENSIONS inches [mm]



DIMENSIONS inches [mm]



ELECTRICAL - OPTICAL CHARACTERISTICS (At 25°C Ambient) Test Condition: IC@5V, R/G/B@5mA, Ts=25°C; Tolerance ±10%

Emitting Color	Material	Dominant Wavelength (nm)		Luminous Intensity (mcd)			Viewing Angle
		Min.	Max.	Min.	Typ.	Max.	
R	AlInGaP	615	630	29	104	180	120
G	InGaN	515	535	45	165	285	120
B	InGaN	460	475	12	41	72	120

ABSOLUTE MAXIMUM RATINGS (T_{Soldering} 25°C)

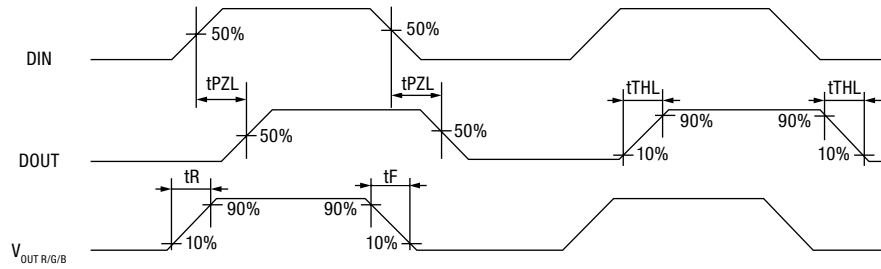
Symbol	Parameter	Range	Units
V _{DD}	Supply Voltage	5.5	V
V _{ESD}	ESD Voltage	4000	V
IF	Total DC Current	17.25	mA
T _{OPR}	Operating Temperature Range	-40~85	°C
T _{STO}	Storage Temperature Range	-40~85	°C

ELECTRICAL CHARACTERISTICS

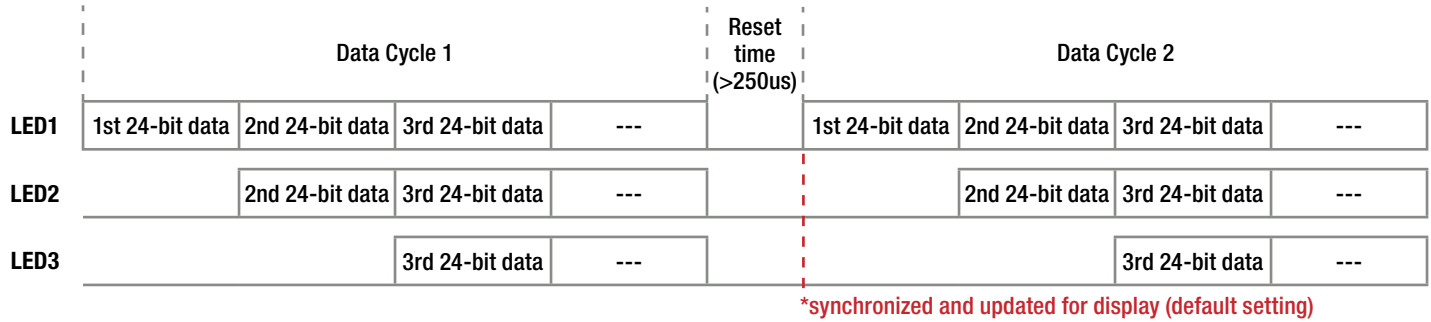
Symbol	Parameter	Min.	Typ.	Max.	Units	Note
V _{DD}	Supply Voltage	3.3	5	5.5	V	
I _{DD}	Operation Current		0.8	1	mA	R, G, B no load
V _{IH}	Input High "H" of DI	VDD * 0.45 + 0.5		VDD	V	
V _{IL}	Input Low "L" of DI	0		1.0	V	
R _{PD}	Pull Down Resistance		500K		Ω	DI, DO
V _{OH}	Output High "H" of DO	VDD - 0.5			V	IOH=4mA
V _{OL}	Output Low "L" of DO			0.4	V	IOH=4mA
I _{SINK}	R, G, B Sink Current	4.75	5	5.25	mA	VDD - V _{fLED} ≥ 1.0V
I _{LEAK}	Input Leakage			1	uA	D _{IN} = 0V
L _{OFF}	R, G, B Off Leakage Current			1	uA	

ELECTRICAL CHARACTERISTICS (Continued)

Symbol	Parameter	Min.	Typ.	Max.	Units	Note
tPLZ	Propagation delay time			80	ns	D _{IN} → D _{OUT} , CL=30pF
tPZL				80	ns	
tTZL	Rising time		15		ns	
tTHZ	Falling time		15		ns	
tR	Rising time		50		ns	R, G, B=5mA, CL=30pF
tF	Falling time		50		ns	
F _{DATA}	Data rate		800		KHZ	
F _{PWM}	PWM Frequency		20		KHZ	



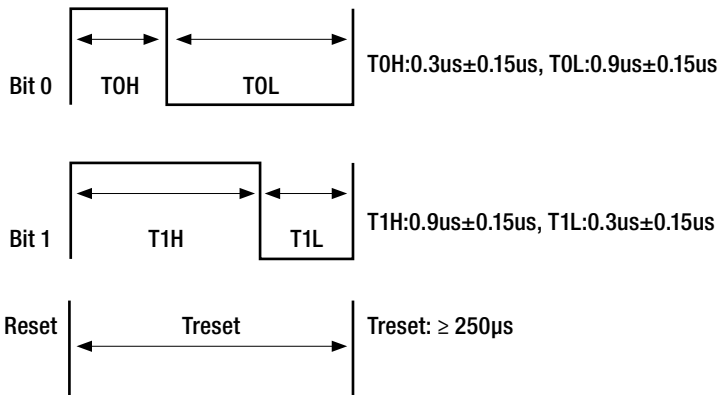
CASCADING DATA STRUCTURE



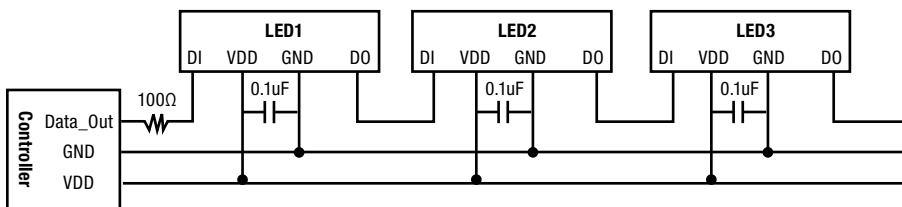
The single wire data transfer protocol supports 24-bit data for each LED’s RGB display data refresh. The Device receives 24-bit data and passes the remaining data to next LED. The 24-bit data consist of green, red and blue data, each with 8-bit width, and are transferred with MSB first.



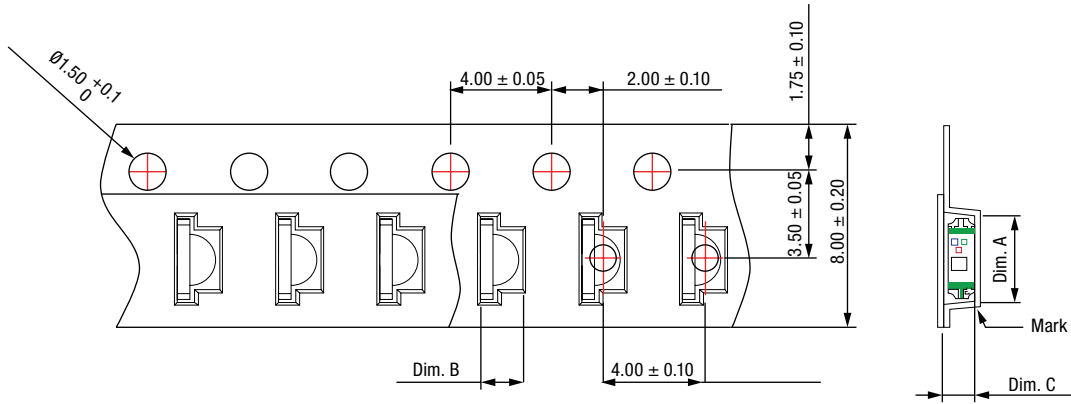
The device determines the received bit string based on the input pulse width on Di port. A low bit 0 is represented by a 0.30us high pulse followed by a 0.9us low pulse. A high bit 1 is represented by a 0.9us high pulse followed by a 0.3us low pulse. A low pulse longer than 250us is recognized as a reset command to the device to synchronize and update the data for all device to display simultaneously, and it also means to start a new cycle of serial commands.



TYPICAL APPLICATION CIRCUIT

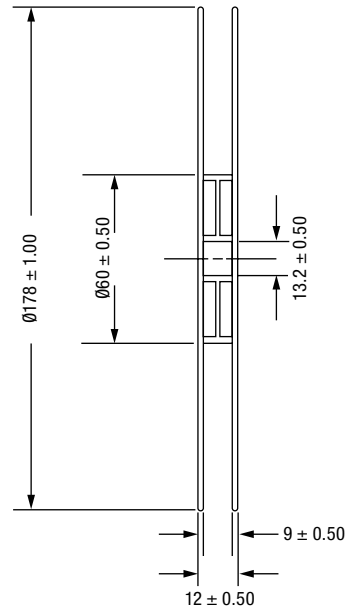
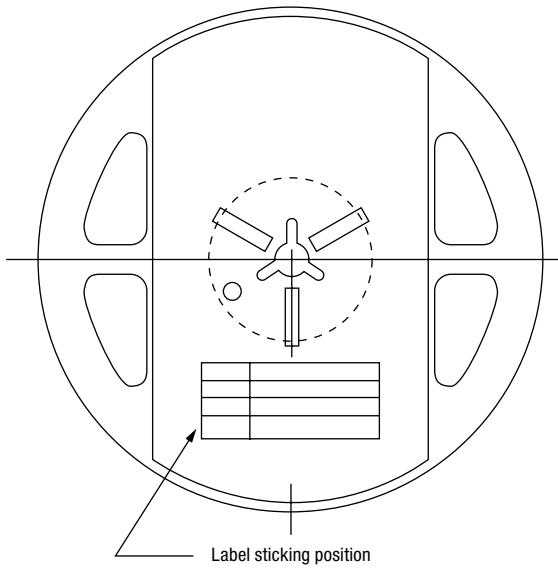


TAPE AND REEL SPECIFICATION



Dim A	Dim B	Dim C	Quantity/Reel
3.40 ± 0.10	1.70 ± 0.10	1.20 ± 0.10	3K

Unit: mm



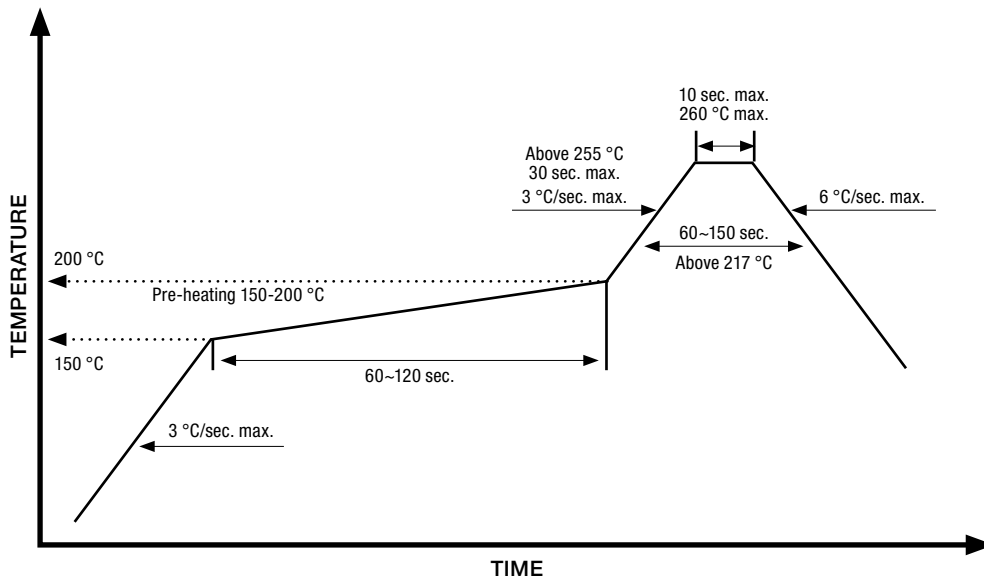
Unit: mm

REFLOW SOLDERING

Recommended soldering paste specifications:

1. Operating temp.: Above 217°C ,60~150 sec
2. Peak temp.:260°C Max.,10sec 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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