

587 SERIES

2020 Addressable RGB LED

SMD LED + IC

MECHANICAL / SPECIFICATIONS

PART NUMBER:

[587-1024-147F](#)

DIMENSIONS:

2.0 x 2.0 x 0.9mm

LENS COLOR: Clear

LENS MATERIAL: Epoxy

CONTROL WIRES:

Single Wire

STANDARD PACKAGING:

3000 pcs on 7 inch Reel

MOISTURE SENSITIVITY LEVEL: 3

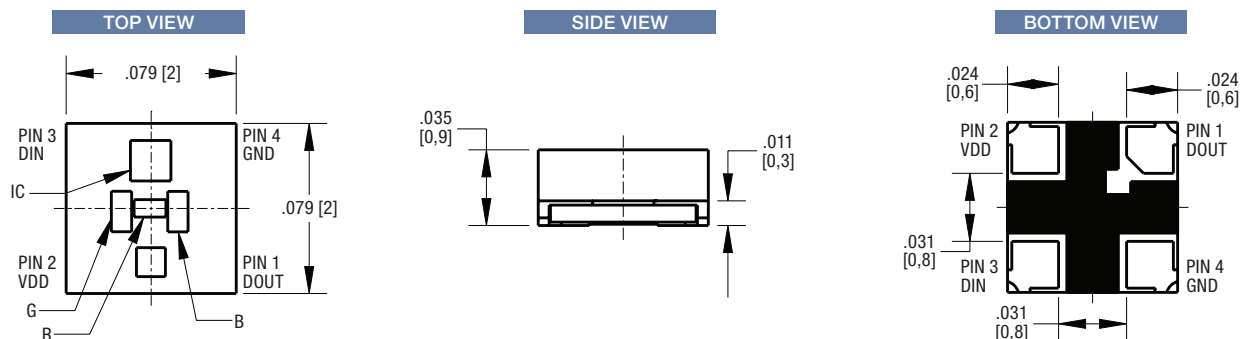
CERTIFICATIONS & RATINGS

ROHS Compliant

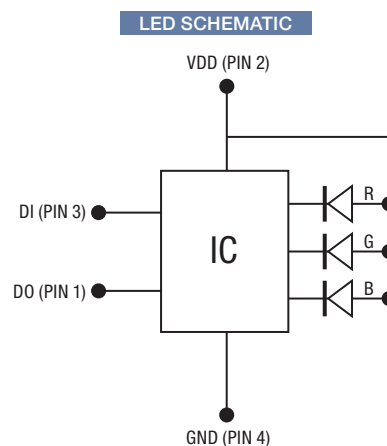
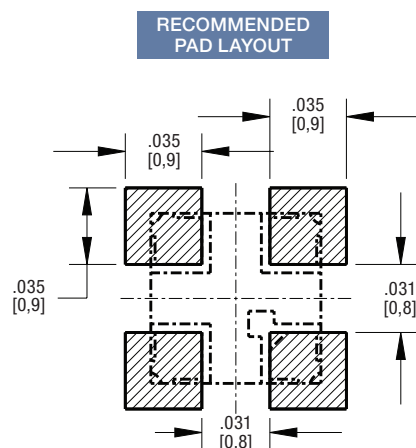
FEATURES & BENEFITS

- 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- Optional maximal drive current: 5mA
- 256-step gray-scale output to allow 16,777,216 color display
- Built-in oscillator 20MHz
- LED driver port maximum withstand Voltage 6.5V
- Built-in power-on-reset (2.6V) (@VDD=5V)
- Operating voltage 3.3~5.5V

DIMENSIONS inches [mm]



DIMENSIONS inches [mm]



ELECTRICAL - OPTICAL CHARACTERISTICS (T_{Soldering} 25°C)
Testing 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	618	625	40	65	120	120
G	InGaN	518	535	60	85	180	120
B	InGaN	460	474	15	20	60	120

ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

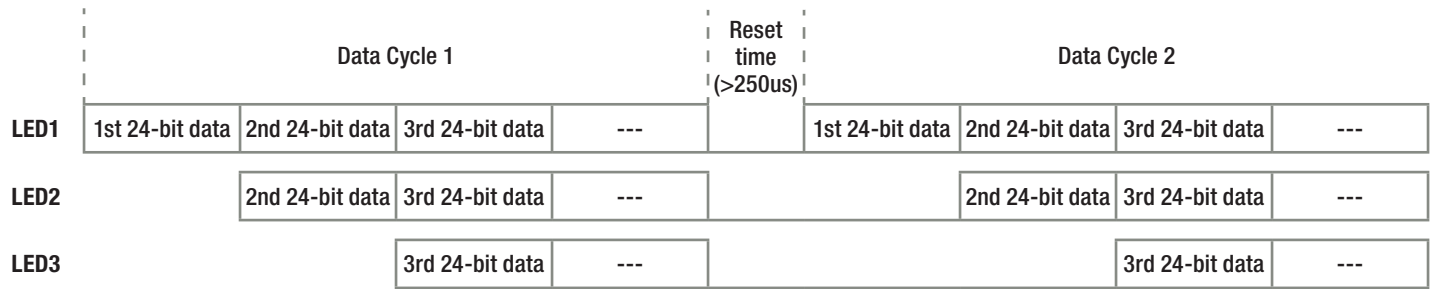
Symbol	Parameter	Rating	Units
V _{DD}	Supply Voltage	6.5	V
IF	Total DC Current	16.75	mA
T _{OPR}	Operating Temperature Range	-40~85	°C
T _{STO}	Storage Temperature Range	-65~120	°C
V _{ESD}	ESD Voltage	4	kV

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min.	Typ.	Max.	Units	Note
VDD	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	V _{DD} *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	I _{OH} =4mA
V _{OL}	Output Low "L" of DO			0.4	V	I _{OL} =4mA
I _{sink}	R, G, B Sink Current	4.75	5	5.25	mA	Vo=VDD-3.0V @VDD=5V
I _{leak}	Input leakage			1	uA	DI=VDD
I _{off}	R, G, B off leakage current			1	uA	PWM=0(off), @R, G, B =5V

tPLZ	Propagation delay time			80	ns	DI → DO, CL=30pF
tPZL				80	ns	
tTHL			15		ns	
tTLH			15		ns	
tR	Rising time		50		ns	R, G, B=mA, CL=30pF
tF	Falling time		50		ns	
F _{data}	Data rate		800		Khz	

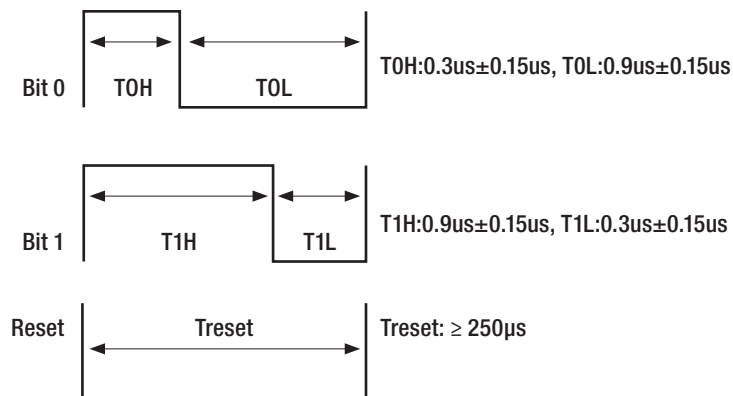
DATA TRANSFER PROTOCOL



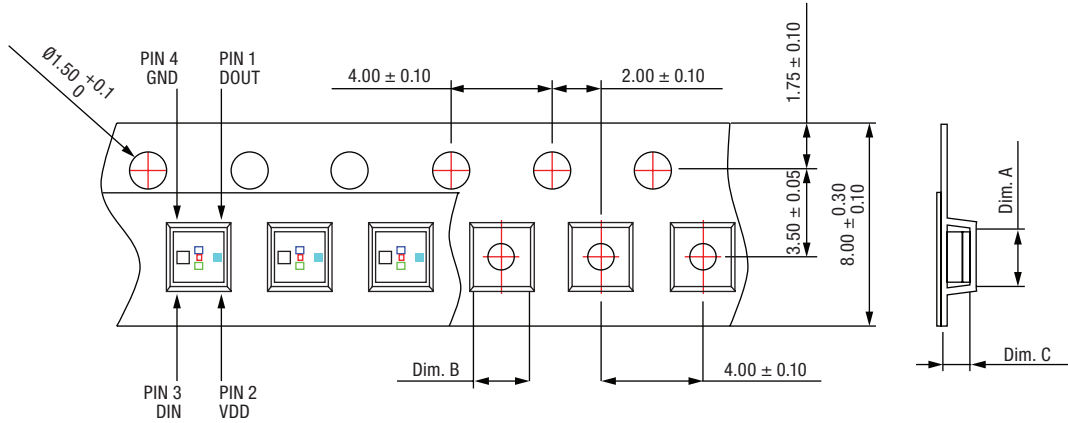
The single wire data transfer protocol supports 24-bit data for each LED RGB display data refresh. The IC receives 24-bit data and passes the remaining data to next LED. The 24-bit data consist of green, red and blue data, each with 8-bit width, and are transferred with MSB first.

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

The transferred data are recognized based on the pulse widths received by the IC. A low bit 0 is represented by a 0.3us 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 $\geq 250\mu\text{s}$ is used to issue a reset command to the IC to start a new cycle of serial commands.

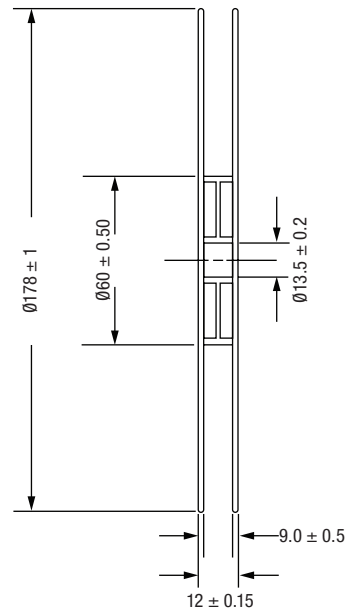
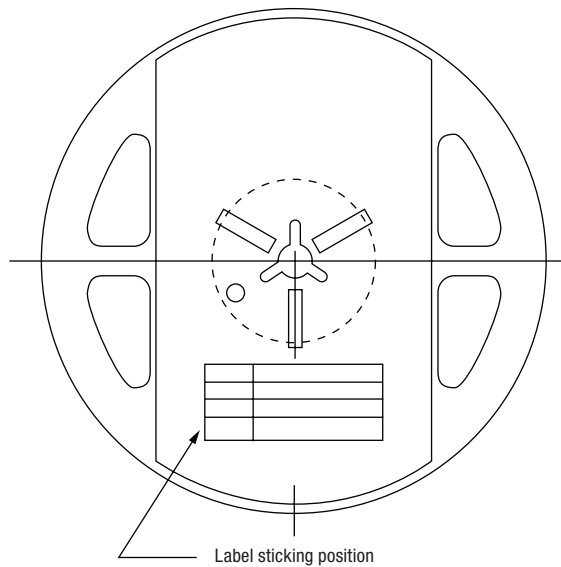
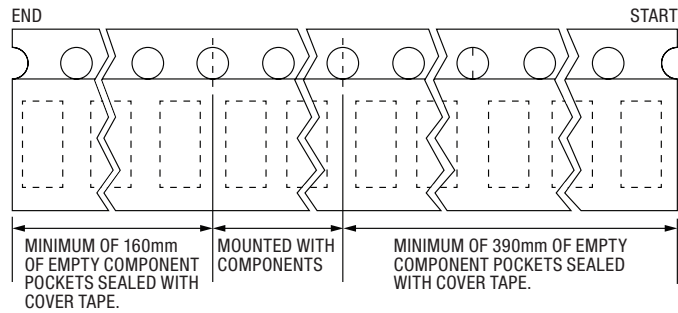


TAPE AND REEL SPECIFICATION



Dim A	Dim B	Dim C	Quantity/Reel
2.15±0.10	2.15±0.10	1.05±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, 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

