BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

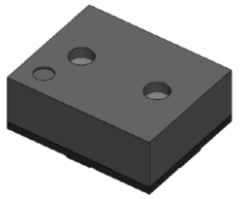
PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

- ► Opto Interrupter
- ► 2016 0.75t
- ► Reflective Type

Release Date: 01 June 2025 Version: A1.0

N0P67S68



Opto Interrupter

Opto Interrupter

RoHS Compliant

DESCRIPTION:

N0P67S68 is composed of a GaAs VCSEL and a NPN photo-transistor which is encased side-by-side on converging optical axis in a black thermoplastic housing. The photo-transistor receives reflection from the VCSEL only. Advantages as below:

- High reliability, high radiant intensity, low forward voltage
- Fast response time, high photo sensitivity
- Cut-off visible wavelength λ_p=800nm

APPLICATIONS:

- TWS
- Non-contact Switch
- Intelligent Electronics

FEATURES:

- **Package:** Black Case Top View SMD Opto Interrupter
- **Material:**
  - **VCSEL:** GaAs
  - **PT:** Silicon
- **Peak Wavelength (typ.):** 940nm
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+85°C
- **MSL Level:** 3
- **Packing:** 8mm tape with max.3000pcs/reel, ø178mm (7'')

CHARACTERISTICS:

Absolute Maximum Characteristics (T_a=25°C)

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation at (or below) 25°C free fir temperature	P_d	33	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	15	mA
	Peak Forward Current (Pulse width ≤100μs, duty cycle=1%)	I_{FP}	18	mA
Output	Collector Power Dissipation	P_C	75	mW
	Collector Current	I_C	50	mA
	Collector-Emitter Voltage	BV_{CEO}	70	V
	Emitter-Collector Voltage	BV_{ECO}	6	V
Operating Temperature		T_{OPR}	-40~+85	°C
Storage Temperature		T_{STG}	-40~+85	°C
Soldering Temperature		T_{SOL}	260 for 5sec	°C

CHARACTERISTICS:

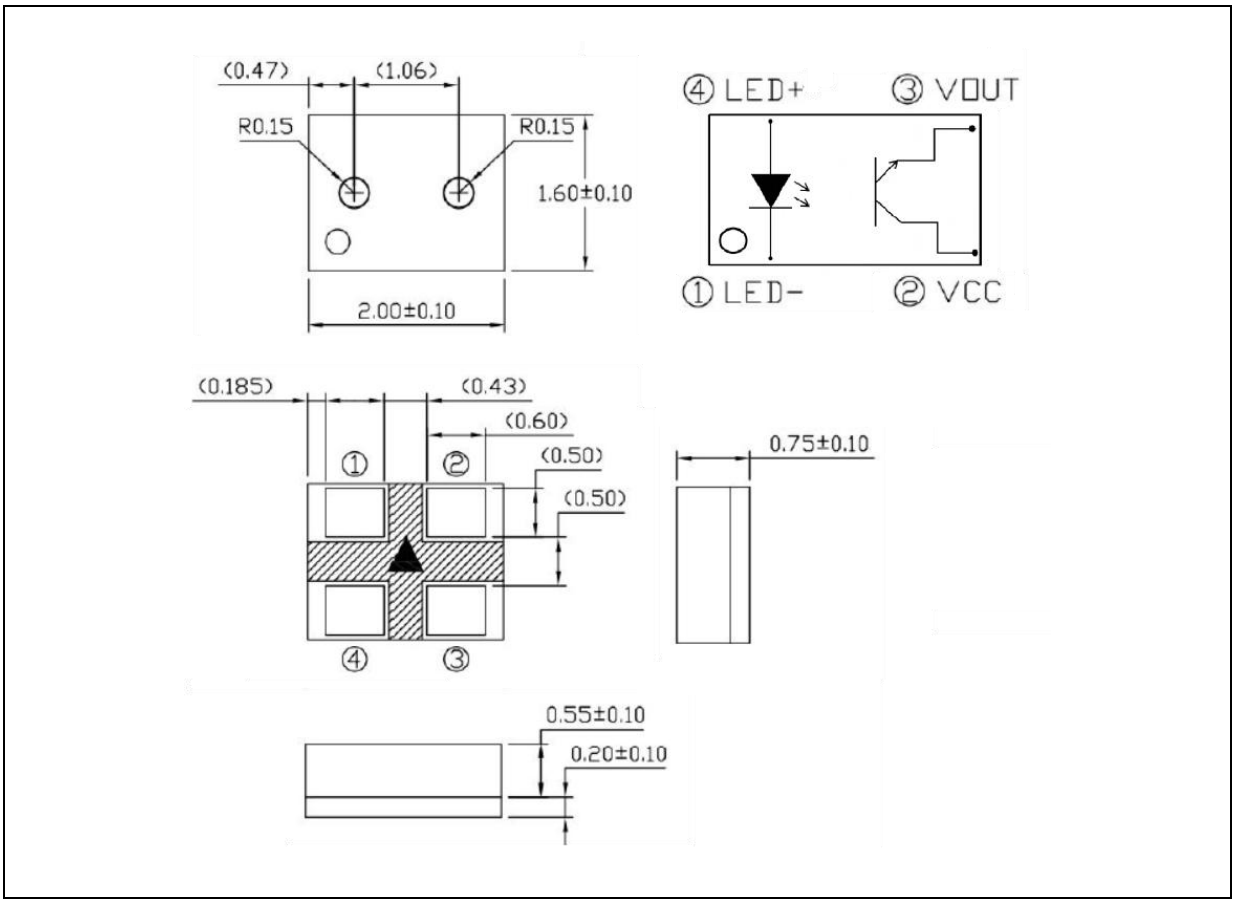
Electrical & Optical Characteristics (T_a=25°C)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Input							
Forward Voltage		V_F	1.5	---	1.8	V	I_F=5mA
			1.6	---	2.1		I_F=9mA
			1.85	---	2.25		I_F=15mA
Reverse Current		I_R	---	---	1	µA	V_R=5V
Peak Wavelength		λ_P	---	940	---	nm	---
Output							
Dark Current		I_{CEO}	---	---	10	µA	E_e=0mW/cm^2 V_{CE}=20V
C-E Saturation Voltage		$V_{CE(sat)}$	---	---	0.8	V	E_e=1mW/cm^2 I_C=2mA
Transfer Characteristics							
Light Current *	RL	$I_{C(ON)}$	1.15	---	1.35	mA	$I_{F(int)}$=9mA $V_{R(out)}$=5V
	R1		1.35	---	1.6		
	R2		1.6	---	1.9		
	R3		1.9	---	2.25		
	RL	$I_{C(ON)}$	0.25	---	0.45	mA	$I_{F(int)}$=5mA $V_{R(out)}$=5V
	R1		0.35	---	0.55		
	R2		0.45	---	0.65		
	R3		0.55	---	0.75		
Rise Time		t_r	---	20	---	µSEC	$V_{R(out)}$=5V; R_L=1KΩ I_C=100µA
Fall Time		t_f	---	20	---	µSEC	

* Test using a 1mm grey card with a reflection index of 18%.

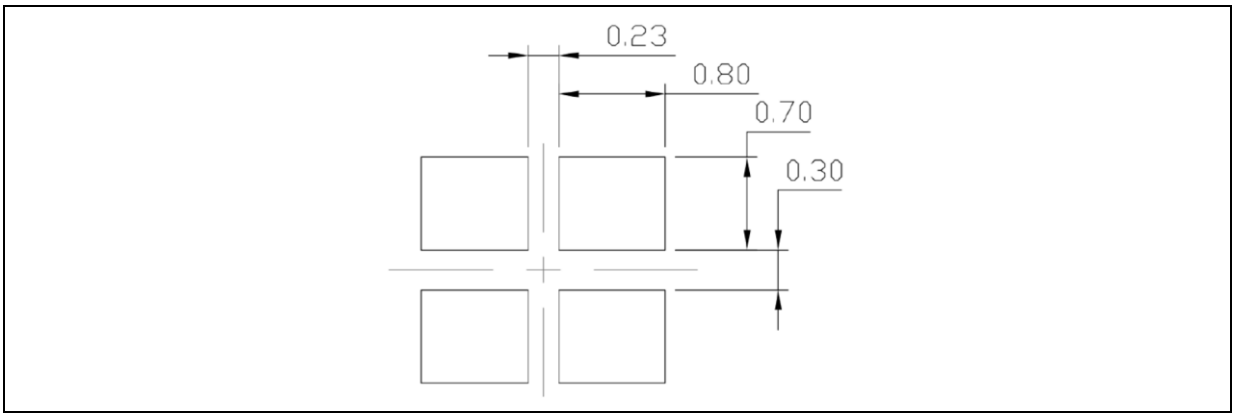
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

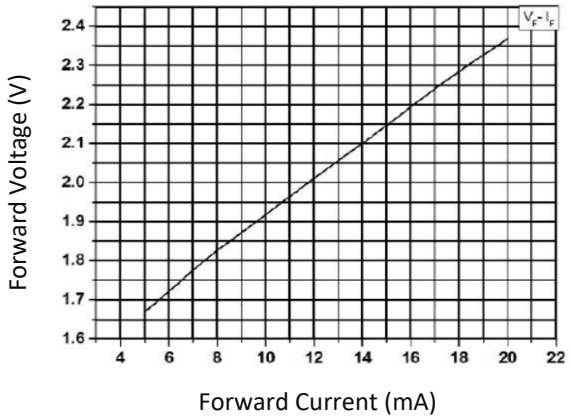
Recommended Soldering Pad Dimension:



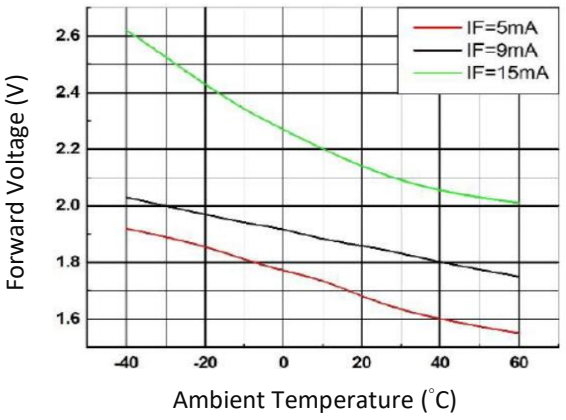
1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

ELECTRO-OPTICAL CHARACTERISTICS (IR):

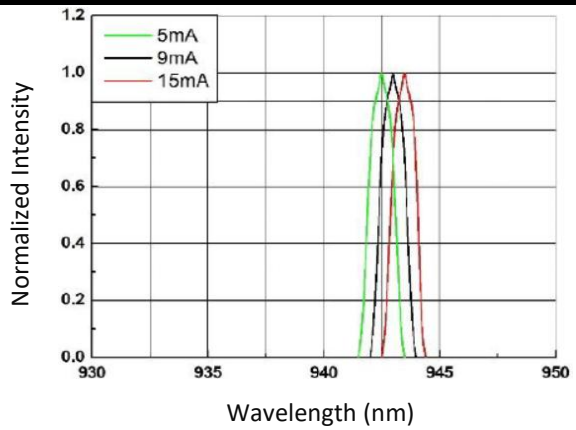
Forward Current v.s. Forward Voltage



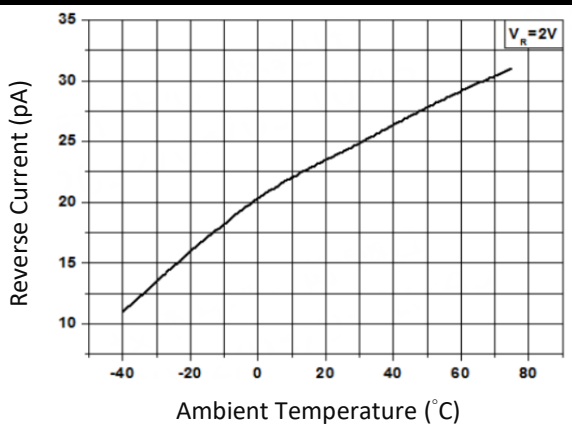
Forward Voltage v.s. Ambient Temperature



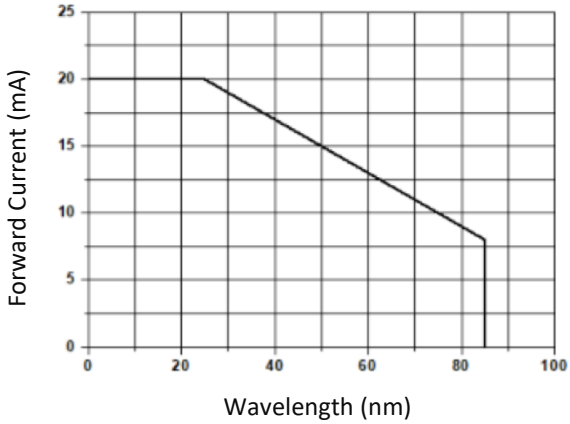
Spectral Distribution



Reverse Current v.s. Ambient Temperature

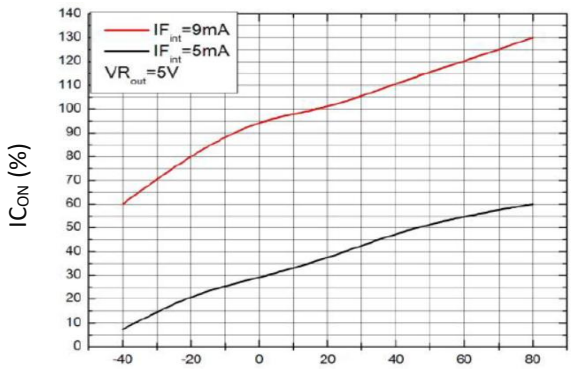


Froward Current v.s. Ambient Temperature

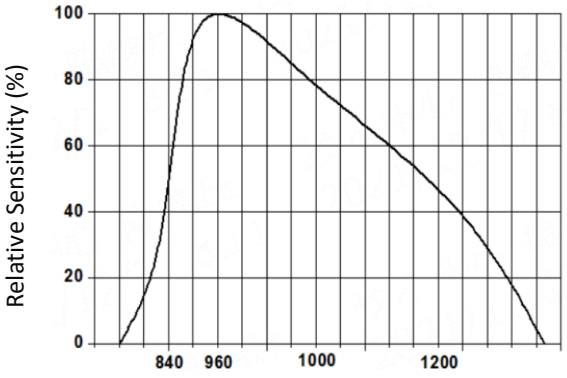


ELECTRO-OPTICAL CHARACTERISTICS (PT):

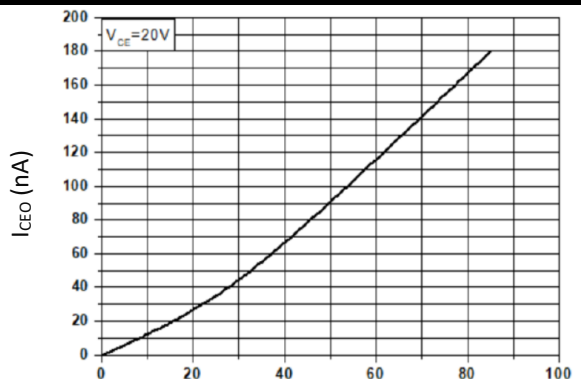
Current Transfer Ratio v.s. Ambient Temperature



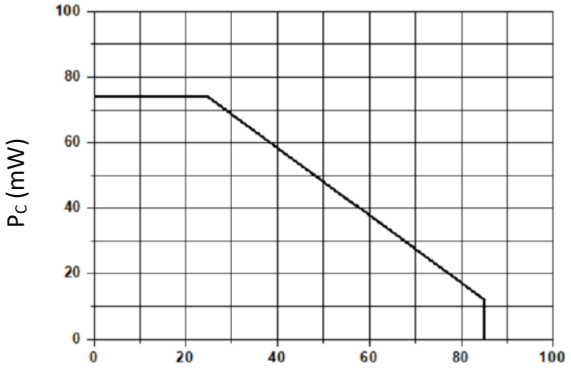
Spectral Sensitivity



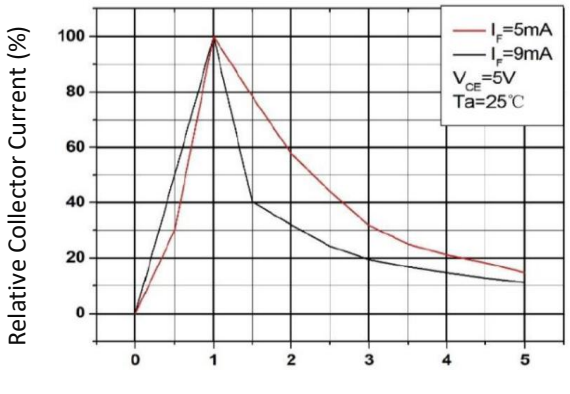
Collector Dark Current v.s. Ambient Temperature

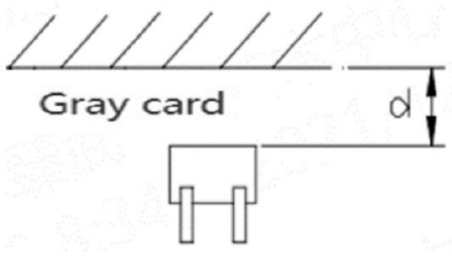


Collector Power Dissipation v.s. Ambient Temp.



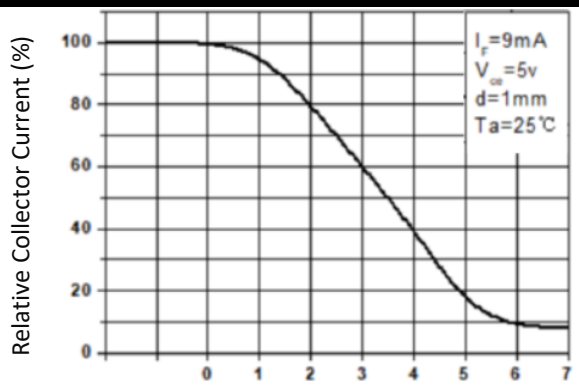
Relative Collector Current v.s. Distance between Sensor and AL Evaporation Glass

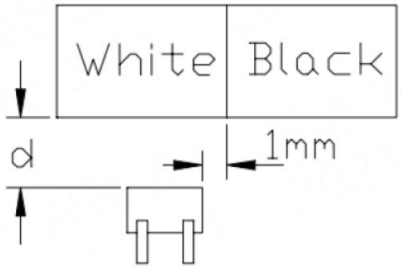




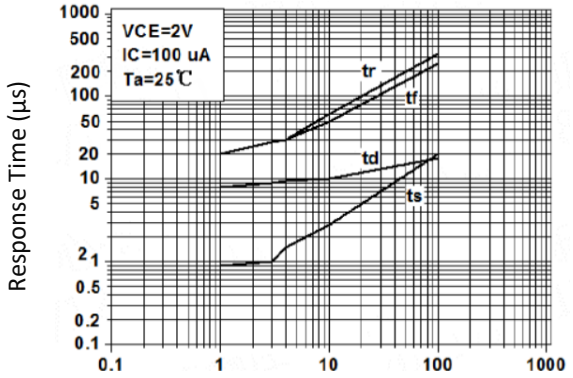
TEST CIRCUITS FOR ITR:

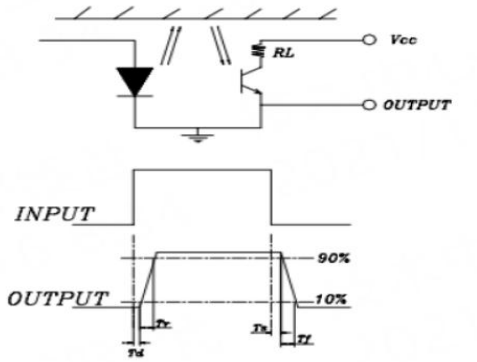
Relative Collector Current v.s. Card Moving Distance





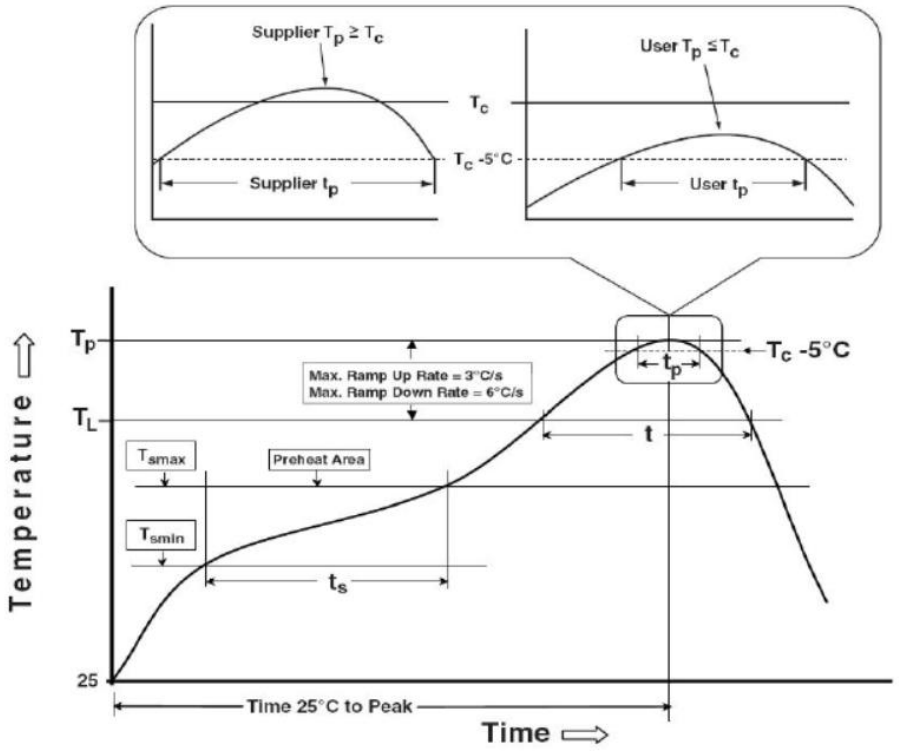
Response Time v.s. Load Resistance





RECOMMENDED SOLDERING PROFILE:

Lead-free Solder Reflow:



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

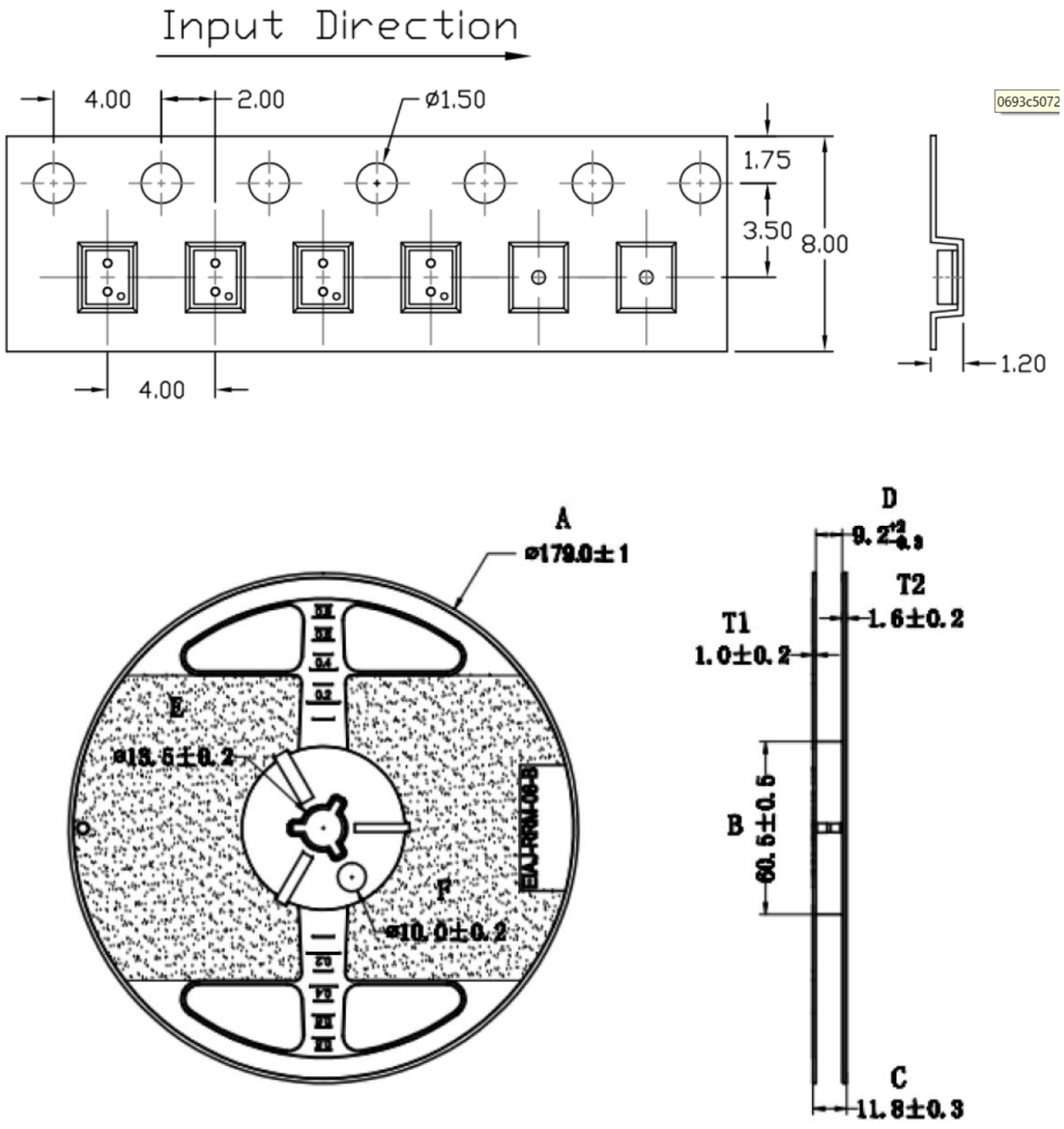
Note:

1. Recommended reflow temperature is 245°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 1 time.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:

Max.3000pcs/reel



PRECAUTIONS OF USE:

Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with descanting agent <10% R.H. and apply baking.

Over-Current Proof:

Must apply resistors for protection otherwise slight voltage shift will cause big current change and burn-out will happen.

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	01/06/2025	Datasheet set-up.