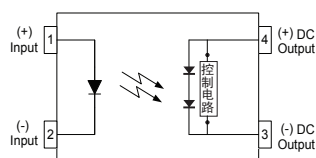
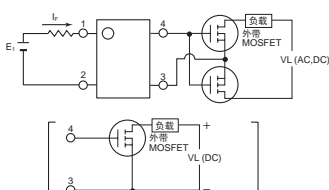




Parameter	Symbol	Rating	Units
Short circuit current	$I_{sc}$	8	$\mu A$
Drop-out voltage	$V_{oc}$	12	V
Turn-On Time	$T_{on}$	0.23	ms
I/O Isolation Voltage	$V_{io}$	2500	$V_{rms}$



1. LED Anode
2. LED Cathode
3. Cathode
4. Anode

(Unit: mm)



SOP-4

### Function

#### 1. High-speed switching

Since release time is 0.1 ms, the MOSFET or other load can be turned off quickly in urgent situations.

#### 2. Space saving

With a built-in control circuit, an external resistor is not needed. This contributes to making substrates more compact.

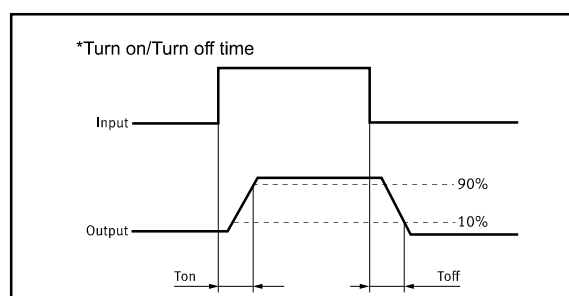
### Applications

#### MOSFET driver

Power supply ( $V_{cc}$ ) for electronic circuits

#### TPYES

Category	Output Rating		Package	Part No.	Packing Quantity
	Drop-out voltage (Typ.)	Short circuit current (Typ.)			
Driver	12V	8 $\mu A$	SOP-4	GAQV1123S	2000pcs /reel



**Absolute Maximum Ratings** (Ta = 25°C)

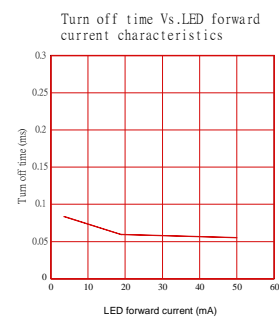
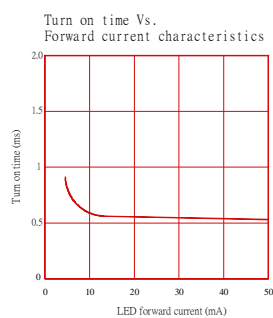
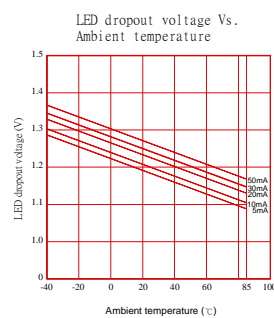
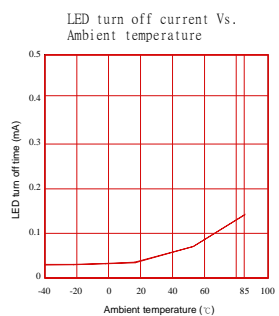
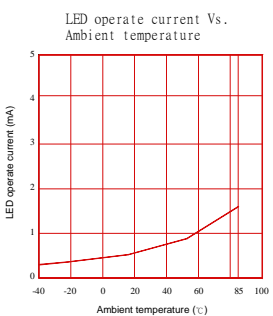
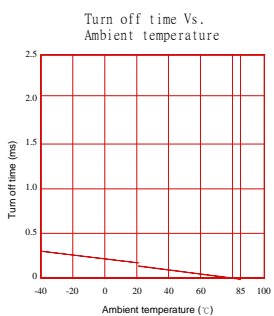
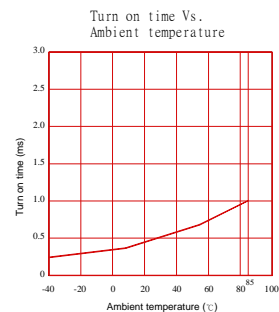
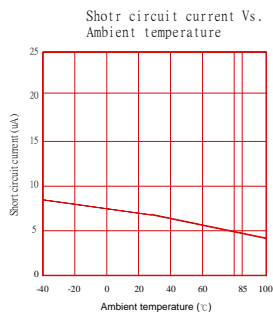
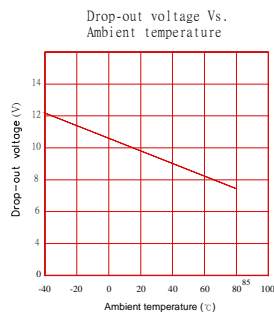
Item		Symbol	Value	Units	Note
Input	Continuous LED Current	I <sub>F</sub>	50	mA	
	Peak LED Current	I <sub>FP</sub>	1000	mA	f=100Hz, duty=1%
	LED Reverse Voltage	V <sub>R</sub>	5	V	
	Input Power Dissipation	P <sub>In</sub>	75	mW	
I/O Isolation Voltage		V <sub>I/O</sub>	2500	V <sub>rm</sub>	RH=60%, 1min
Operating Temperature		T <sub>Opr</sub>	-40 to +85	°C	
Storage Temperature		T <sub>Stg</sub>	-40 to +100	°C	

**Electrical Characteristics** (Ta = 25°C)

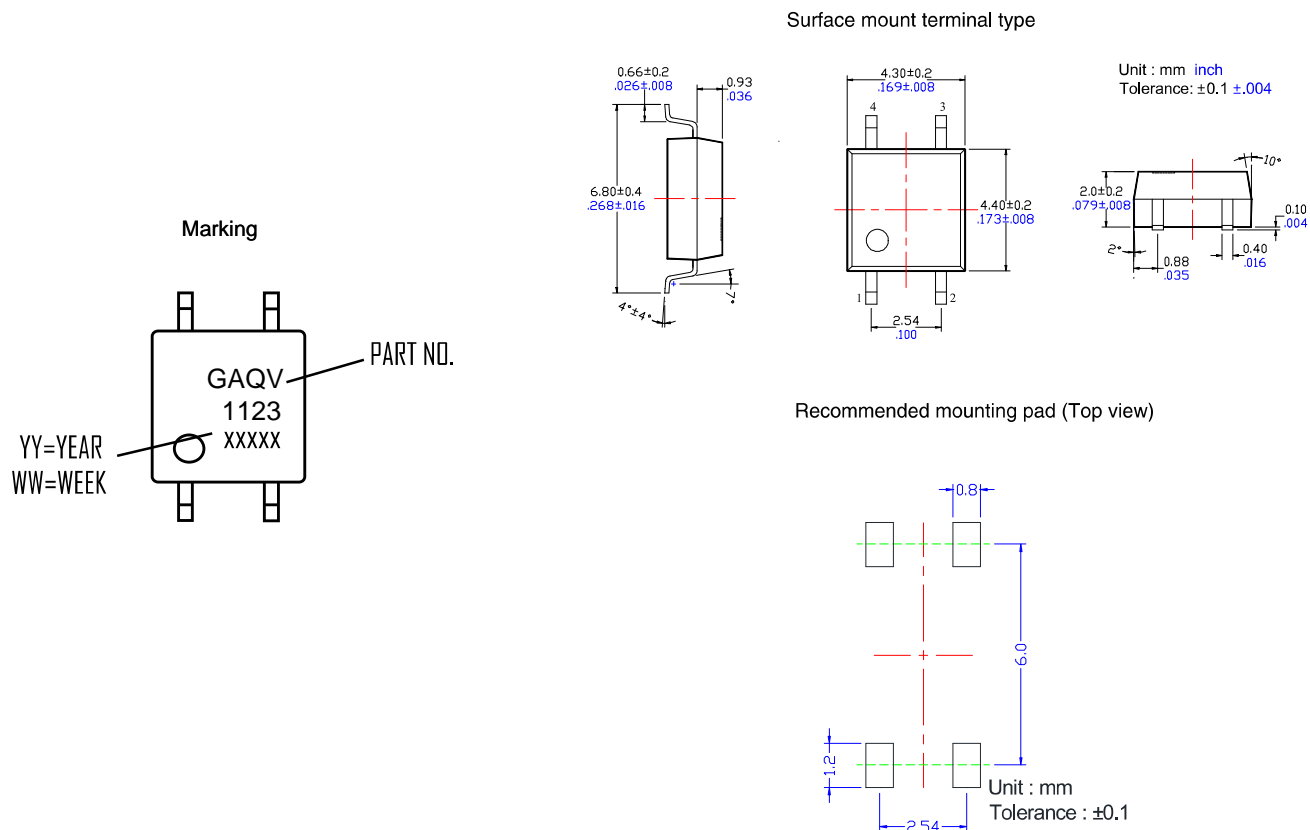
Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input	LED Forward Voltage	V <sub>F</sub>		1.2	1.4	V	I <sub>F</sub> =10mA
	Operation LED Current	I <sub>F On</sub>		0.5	3.0	mA	V <sub>oc</sub> =5V
	Recovery LED Current	I <sub>F Off</sub>		0.35	0.5	mA	V <sub>oc</sub> =1V
Output	Drop-out Voltage	V <sub>oc</sub>	10	12		V	I <sub>F</sub> =10mA
	Short Circuit Current	I <sub>sc</sub>	1	8		uA	I <sub>F</sub> =10mA
Transmis sion	Turn-On Time	T <sub>On</sub>		0.23		ms	I <sub>F</sub> =10mA
	Turn-Off Time	T <sub>Off</sub>		0.03		ms	C <sub>L</sub> =1000pF
Coupled	I/O Isolation Resistance	R <sub>I/O</sub>	10 <sup>10</sup>			Ω	DC500V
	I/O Capacitance	C <sub>I/O</sub>		0.8	1.5	pF	f=1MHz

Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value): I<sub>F</sub> ≥10mA and ≤30mA

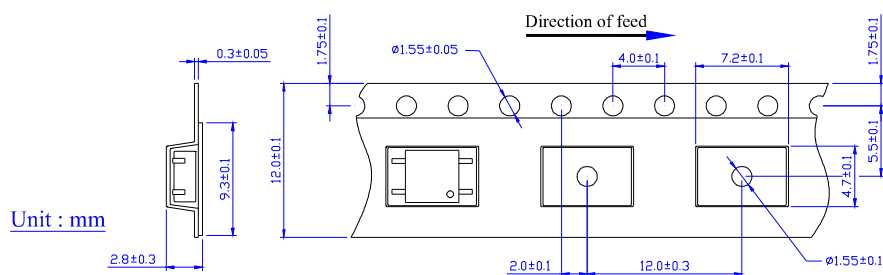
## Engineering Data



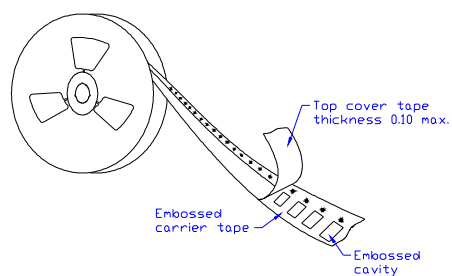
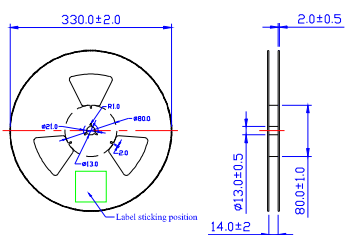
## Dimensions and Package



## Tape dimensions

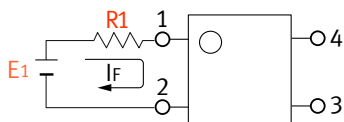


### Dimensions of tape reel



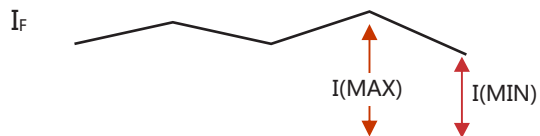
### Using Methods

Examples of resistance value to control LED forward current ( $I_F=20\text{mA}$ )



E1	R1 (Approx)
3.3V	100 $\Omega$
5.0V	180 $\Omega$
12V	500 $\Omega$
24V	1.1K $\Omega$

LED forward current must be more than 10mA , at  $I(\text{MIN})$  ,and less than 30mA , at  $I(\text{MAX})$  .



### Recommended Operating Conditions

Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value):

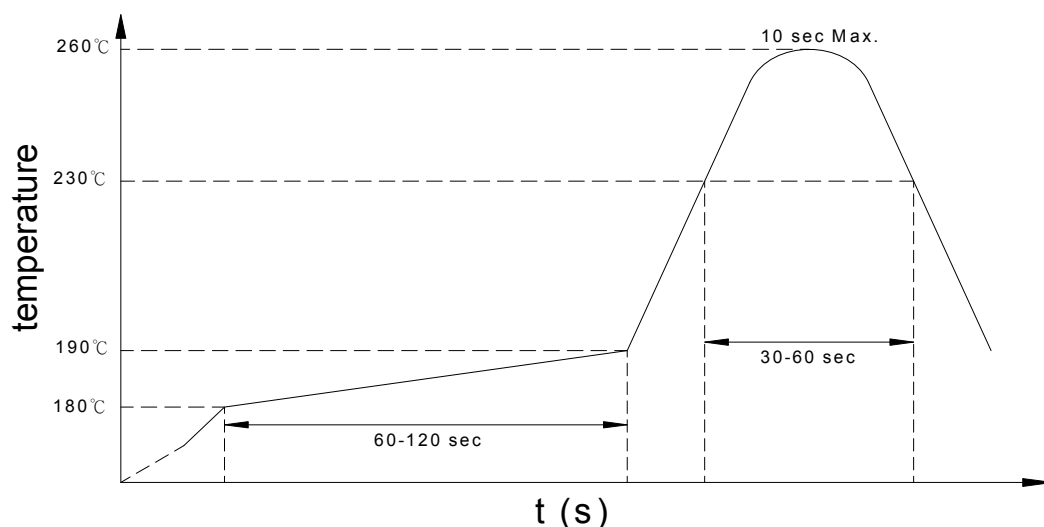
Characteristic	Symbol	Min	Typ.	Max	Unit
Forward current	$I_F$	10	20	30	mA

## Recommended Soldering Conditions

## (a) Infrared reflow soldering :

- Peak reflow soldering : 260°C or below (package surface temperature)
- Time of peak reflow temperature : 10 sec
- Time of temperature higher than 230°C : 30-60 sec
- Time to preheat temperature from 180~190°C : 60-120 sec
- Time(s) of reflow : Two
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

## Recommended Temperature Profile of Infrared Reflow



## (b) Wave soldering :

- Temperature : 260°C or below (molten solder temperature)
- Time : 10 seconds or less
- Preheating conditions : 120°C or below (package surface temperature)
- Time(s) of reflow : One
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

## (c) Cautions :

- Fluxes : Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.
- Avoid shorting between portion of frame and leads.