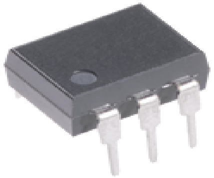
APSEMI®

1 Form A GAQV216E_EH

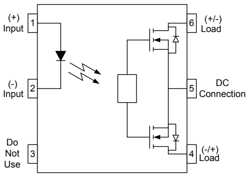
SMD-6/DIP-6 Load Voltage:600V Load Current:80mA

Parameter	Symbol	Rating	Units
Load Voltage	V_L	600	V
Load Current	I_L	0.08	A
On-Resistance	R_{on}	35	Ω
I/O Breakdown Voltage	V_{IO}	5000	Vrms

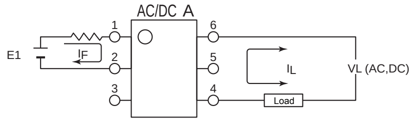
SMD-6

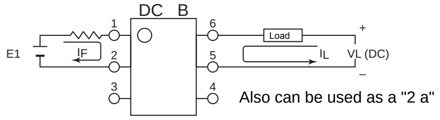


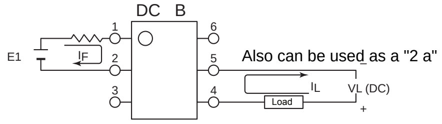
DIP-6

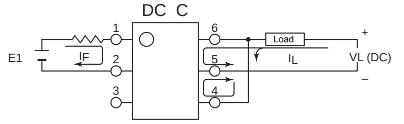


1. LED Anode
2. LED Cathode
4. Drain (MOS FET)
5. Source (MOS FET)
6. Drain (MOS FET)









APSEMI PhotoRelays

- Long life (No limit on mechanical and electrical
- lifetime)Bounce-free switching
- Higher speed and high frequency switching
- Higher sensitivity (less power consumption)
- Immunity to EMI or RFI
- No have voltaic arc, bounce, and noise More
- resistant to vibration and impact AC or DC load
- switching
- Small package size

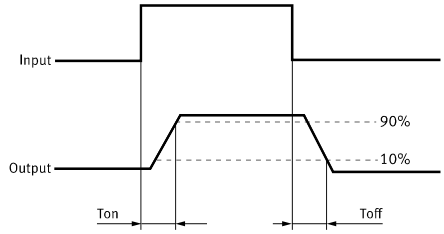
Applications

- Telecom/Datacom switching
- Multiplexers
- Meter reading systems
- Data acquisition
- Medical equipment
- Battery monitoring
- I/O Sub-Systems
- Robotics
- Aerospace
- Home/Safety security systems
- Process Control
- Energy Management
- Reed Relay EMR Replacement
- Programmable Controllers

TPYES

Category	Output Rating		Package	Part No.	Packing Quantity
	Load Voltage	Load Current			
AC/DC	600V	0.08A	DIP-6	GAQV216E	50pcs /tube
			SMD-6	GAQV216EH	1000pcs /reel

*Turn on/Turn off time



Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Value	Units	Note
Input	Continuous LED Current	I_F	50	mA	
	Peak LED Current	I_{FP}	1000	mA	f=100Hz, duty=1%
	LED Reverse Voltage	V_R	5	V	
	Input Power Dissipation	P_{In}	75	mW	
Output	Load Voltage	V_L	600	V(AC peak or DC)	
	Load Current	I_L	0.08	A	
	Peak Load Current	I_{Peak}	0.12	A	100ms(1 pulse)
	Output Power Dissipation	Pout	450	mW	
Total Power Dissipation		P_T	500	mW	
I/O Breakdown Voltage		$V_{I/O}$	5000	Vrms	RH=60%, 1min
Operating Temperature		T_{opr}	-40 to 85	℃	
Storage Temperature		T_{stg}	-40 to 100	℃	
Pin Soldering Temperature		T_{sol}	260	℃	10 sec max.

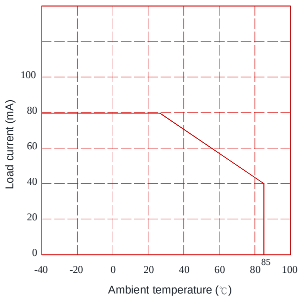
Electrical Characteristics (Ta = 25°C)

Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input	LED Forward Voltage	V_F		1.2	1.5	V	I_F=10mA
	Operation LED Current	I_{Fon}		0.5	5.0	mA	
	Recovery LED Current	I_{Foff}		0.35	0.5	mA	
	Recovery LED Voltage	V_{Foff}	0.7			V	
Output	On-Resistance	R_{on}		35	70	Ω	I_F=5mA,I_L=Max Time to flow is within 1 sec.
	Off-State Leakage Current	I_{Leak}			1	uA	V_L=Rating
	Output Capacitance	C_{out}		100		pF	V_L=0, f=1MHz
Transmission	Turn-On Time	T_{on}		0.5	1.0	ms	I_F=5mA, I_L=Max
	Turn-Off Time	T_{off}		0.02	0.2	ms	
Coupled	I/O Isolation Resistance	$R_{I/O}$	10^{10}			Ω	DC500V
	I/O Capacitance	$C_{I/O}$		0.8	1.5	pF	f=1MHz

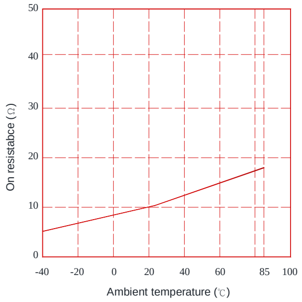
Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value): IF ≥5mA and ≤30mA

Engineering Data

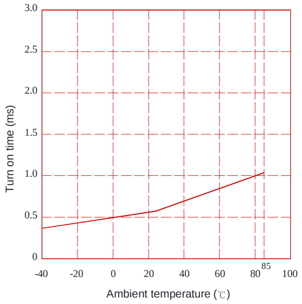
Load current Vs.
Ambient temperature



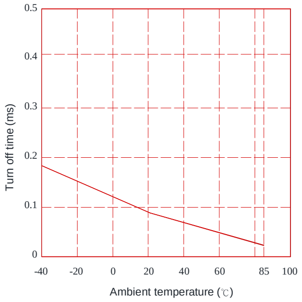
On resistance Vs.
Ambient temperature



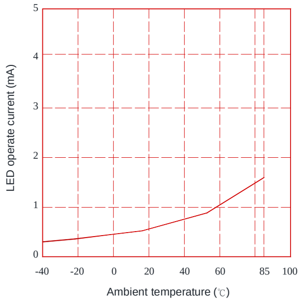
Turn on time Vs.
Ambient temperature



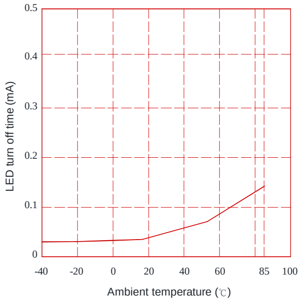
Turn off time Vs.
Ambient temperature



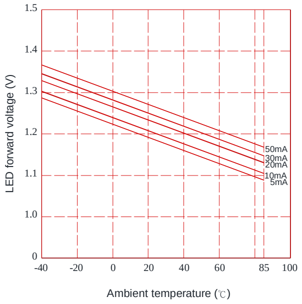
LED operate current Vs.
Ambient temperature



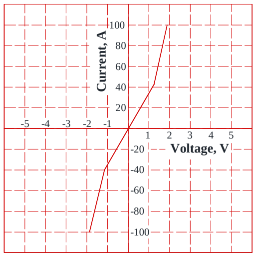
LED turn off current Vs.
Ambient temperature



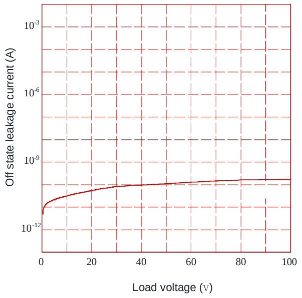
LED forward voltage Vs.
Ambient temperature



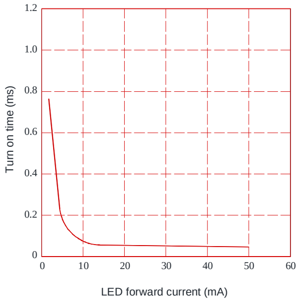
Voltage Vs. currennt characteristics
of output at MOS portion



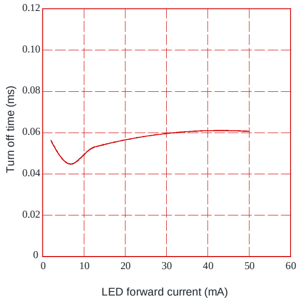
Off state leakage current



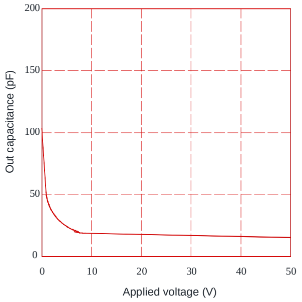
LED foward current Vs.
turn on time characteristics



LED foward current Vs.
turn off time characteristics



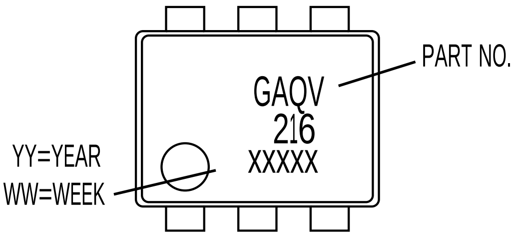
Applied voltage Vs.
output capacitance characteristics



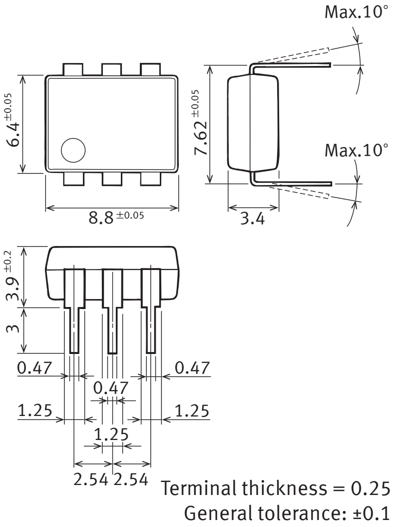
Dimensions and DIP-6 Package

Unit: mm

Marking

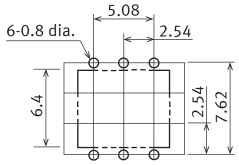


Through hole terminal type



Terminal thickness = 0.25
General tolerance: ±0.1

PC board pattern (Bottom view)

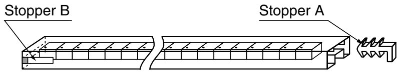


Tolerance: ±0.1

DIP Tape dimensions

Unit : mm

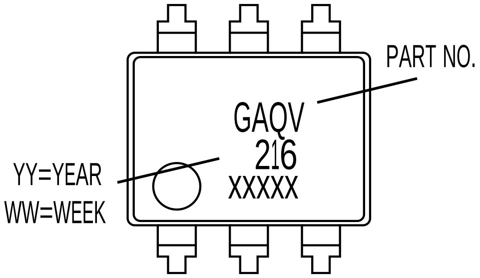
Devices are packaged in a tube so that pin No. 1 is on the stopper B side. Observe correct orientation when mounting them on PC boards.



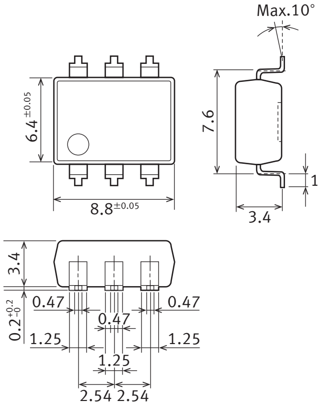
Dimensions and SMD-6 Package

Unit: mm

Marking

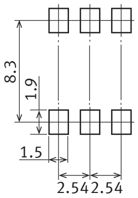


Surface mount terminal type



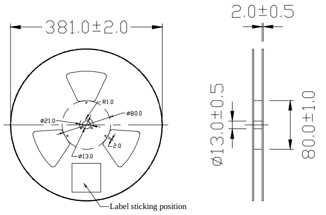
Terminal thickness = 0.25
General tolerance: ±0.1

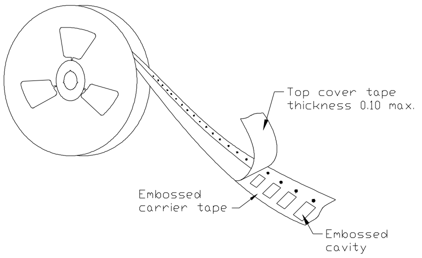
Recommended mounting pad
(Top view)

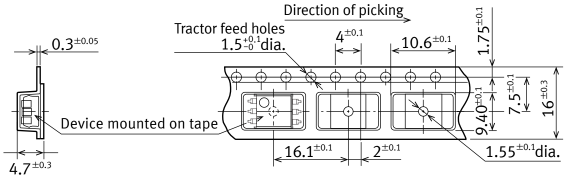


Tolerance: ±0.1

Tape dimensions (tape reel)

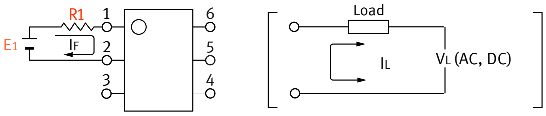






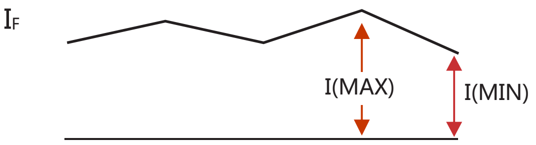
Using Methods

Examples of resistance value to control LED forward current (IF=5mA)



E1	R1 (Approx)
3.3V	300 Ω
5.0V	600 Ω
12V	1.9KΩ
24V	4.1KΩ

LED forward current must be more than 5mA , at I(MIN) ,and less than 30mA , at I(MAX).



Recommended Operating Conditions

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

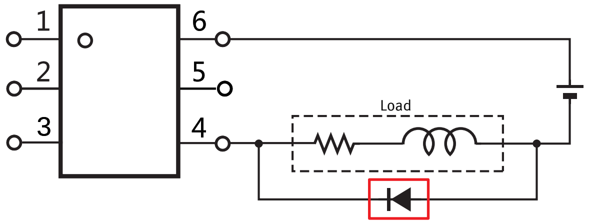
Characteristic	Symbol	Min	Typ.	Max	Unit
Forward current	I_F	5.0	7.0	30	mA

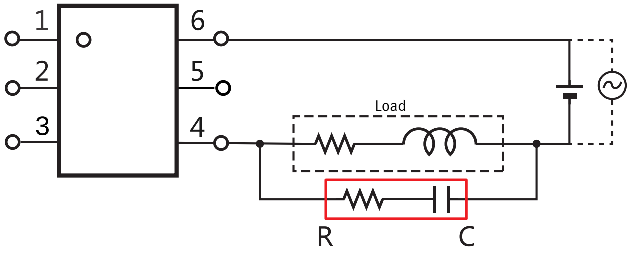
Protection Circuit

Output spike voltages:if an inductive load generates spike voltages which exceed heabsolute maximum rating, the spike voltage shall be limited.

Clamp diode is connected in parallel with the load.
Absorb capacity with external diode.

CR Snubber is connected in parallel with the load.
Absorb capacity with buffer capacity.





When adding diodes, buffer circuits (C-R), and other protections, they need to be installed near the MOS RELAY to be effective.
Adding protection elements may result in a slow reset time, so adjust them according to the actual situation before use.

Note: When developing designs using this product, perform the expected performance of the equipment under the operating conditions recommended by the guidelines in this document. Continuous use under heavy loads (including, but not limited to, the application of high temperatures/current/voltage and significant changes in temperature, etc.) may result in deterioration of the reliability of this product.