

KAQV27x Series

5PIN N.O TYPE

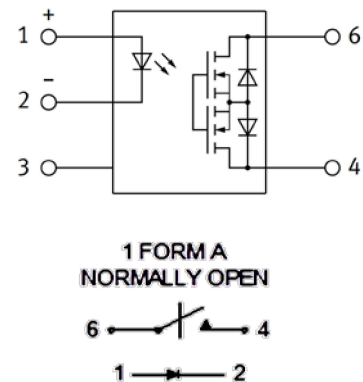
SOLID STATE RELAY- SiC MOSFET OUTPUT

● Description

The KAQV27x series is a SPST normally open switch (1 Form A) that is ideally suited for controlling low-level signals and various types of loads.

It is constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage dielectrically isolated technology, is comprised of a photodiode array, switch control circuitry and SiC-MOSFET.

● Schematic



● Features

1. Silicon carbide SiC MOSFET Output
2. High load voltage with low on-resistance
3. Fast reverse recovery time
4. Isolation voltage between input and output Viso : 5,000 Vrms
5. 5-pin DIP and SMD package

● Application

- Industrial Automation
- Battery Management
- Building Automation
- EV Charger
- Measurement Equipment

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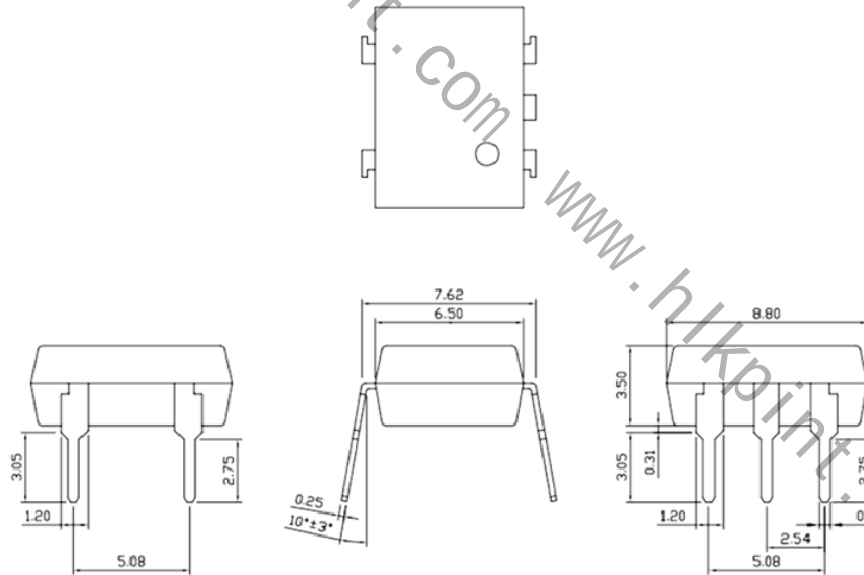
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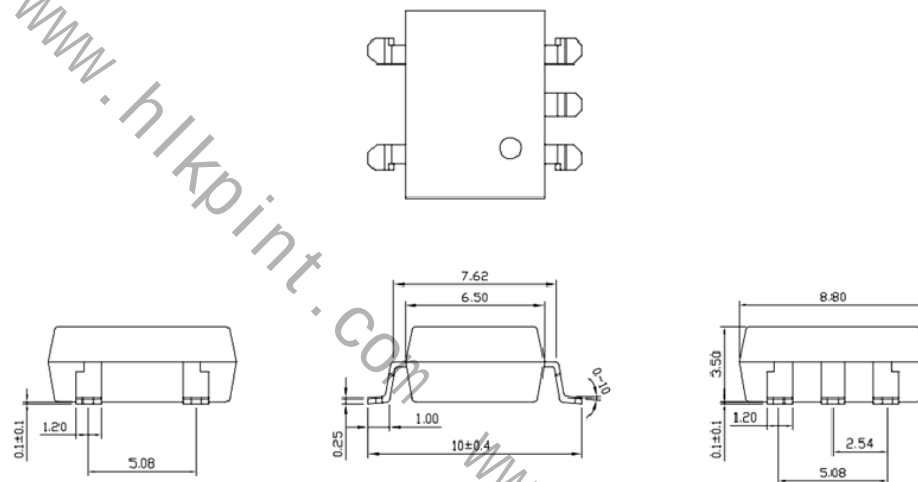
● Outside Dimension

Unit : mm

1. Dual-in-line type.



2. Surface mount type.

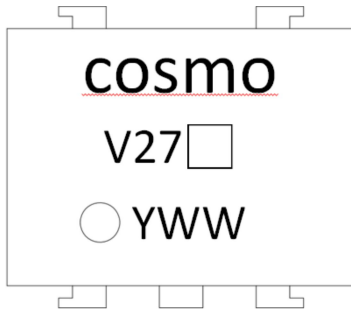


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● Device Marking



Notes :

cosmo

V27□

YWW

Part No. V271、V272

Y : Year code / W : Week code

● Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating		Unit
Input	Continuous forward current	I_F	50		mA
	Peak forward current	I_{FP}	1		A
	Reverse voltage	V_R	5		V
	Power dissipation	P_{in}	75		mW
Output	Load voltage(Peak AC or DC)	V_L	V271	1500	V
			V272	1800	
	Continuous load current	I_L	V271	50	mA
			V272	30	
	Peak load current	I_{peak}	80		mA
Power dissipation		P_{out}	450		mW
Isolation voltage		V_{iso}	5000		Vrms
Total power dissipation		P_t	500		mW
Derate linearly from 25°C		-	2.5		mW/°C
Operating temperature		T_{opr}	-40 to +110		°C
Storage temperature		T_{stg}	-40 to +125		°C
Junction temperature		T_j	125		°C
Soldering temperature 10 seconds		T_{sot}	260		°C

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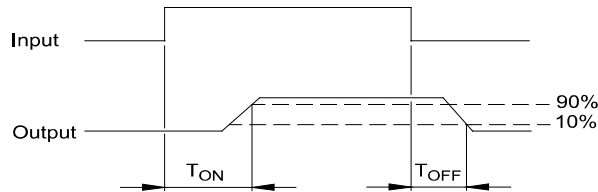
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● Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	V_F	$I_F = 10\text{ mA}$	-	1.2	1.5	V
	Operation input current	I_{FON}	$I_L = \text{Max.}$	-	1.0	3.0	mA
	Recovery input current	I_{FOFF}	$I_L = \text{Max.}$	0.2	-	1.3	mA
Output	On resistance	R_{on}	$I_F = 10\text{ mA}$, $I_L = 50\text{mA.}$ Within 1 s	-	25	100	Ω
	Off-state leakage current	I_{LEAK}	$I_F = 0\text{ mA}$, $V_L = 1500\text{V}$	-	-	1	μA
			$I_F = 0\text{ mA}$, $V_L = 1800\text{V}$			10	
I/O capacitance		C_{iso}	$f = 1\text{ MHz}$, $V_B = 0\text{ V}$	-	1.3	3	pF
Initial I/O isolation resistance		R_{iso}	500 V DC	1,000	-	-	M Ω
Turn-on time		T_{ON}	$I_F = 10\text{mA}$, $I_L = \text{Max.}$	-	0.1	0.5	ms
Turn-off time		T_{OFF}		-	0.4	1.0	ms

● Turn-on / Turn-off Time



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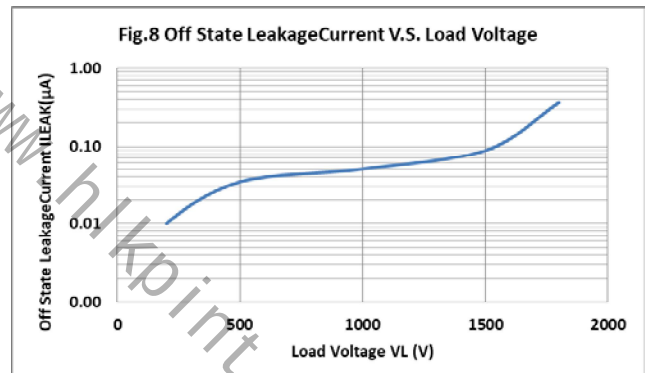
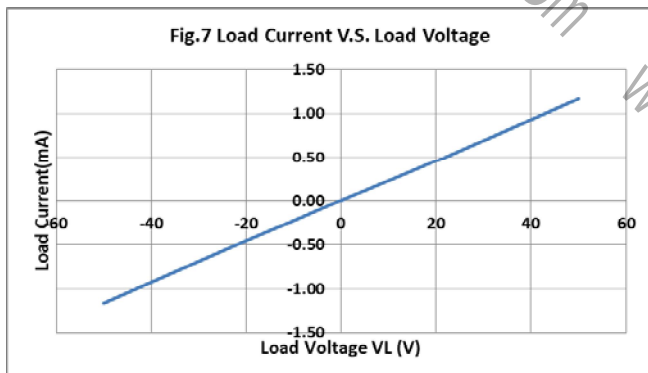
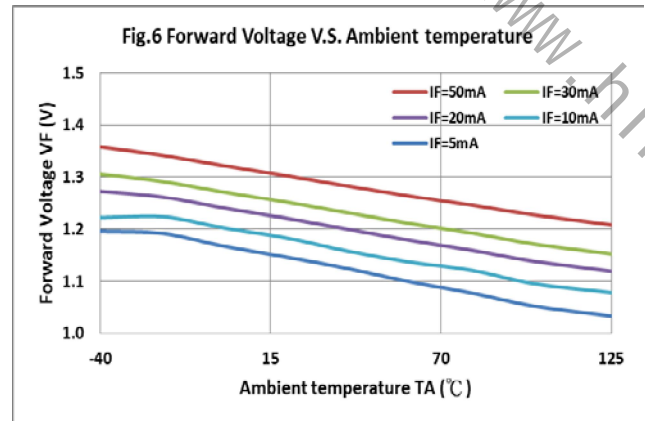
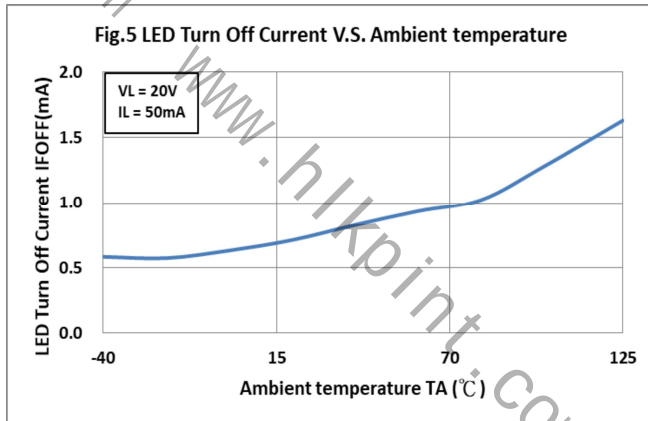
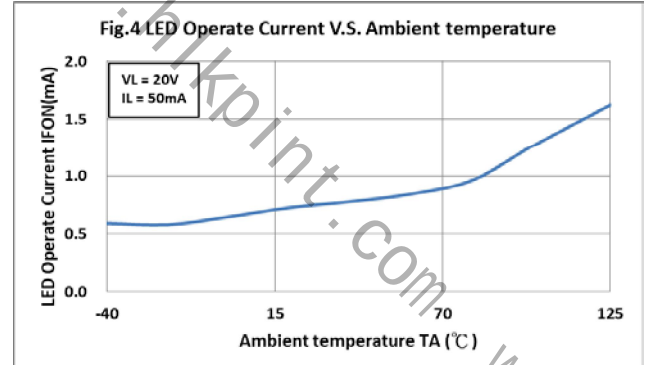
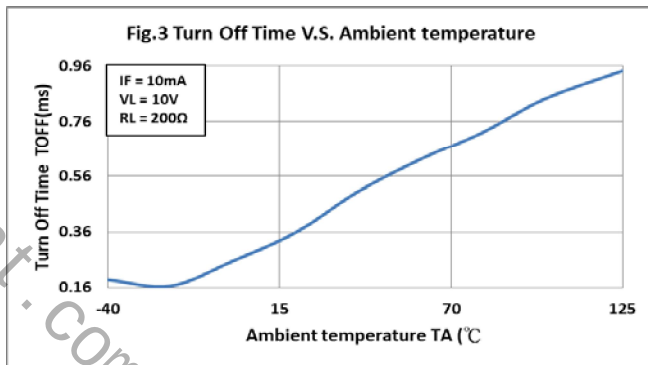
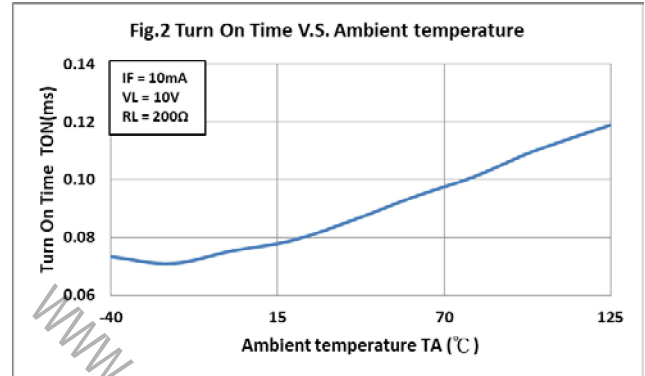
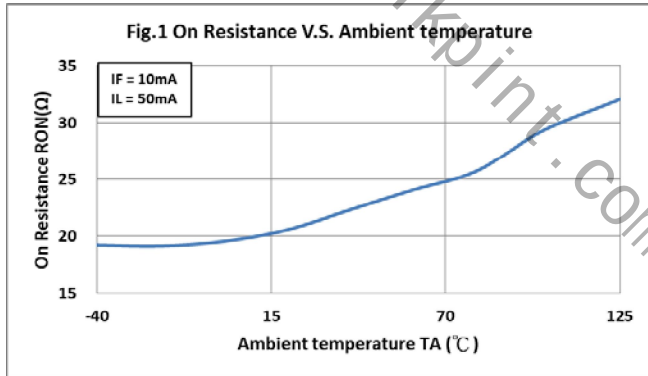
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● Schematic and Wiring Diagrams

Schematic	Output Configuration	Load	Connection	Wiring Diagrams
	1a	AC DC	-	

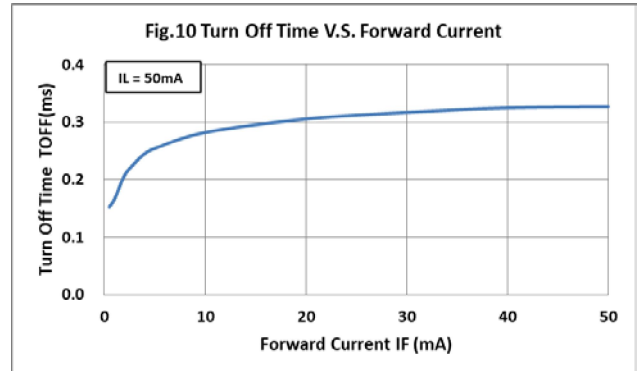
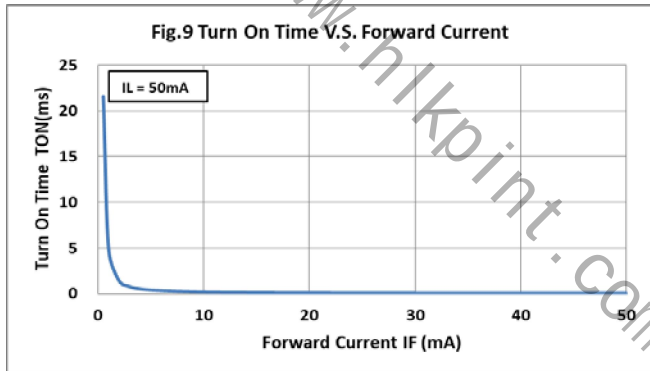
• TYPICAL PERFORMANCE CURVES & TEST CIRCUITS



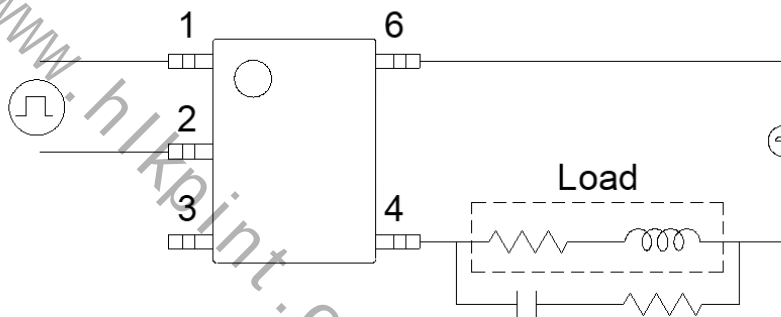
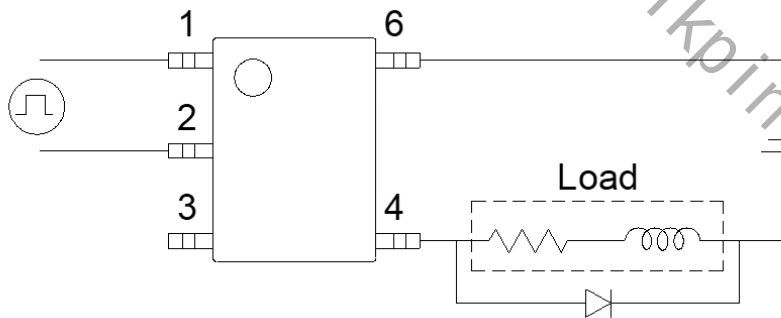
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● Using Methods



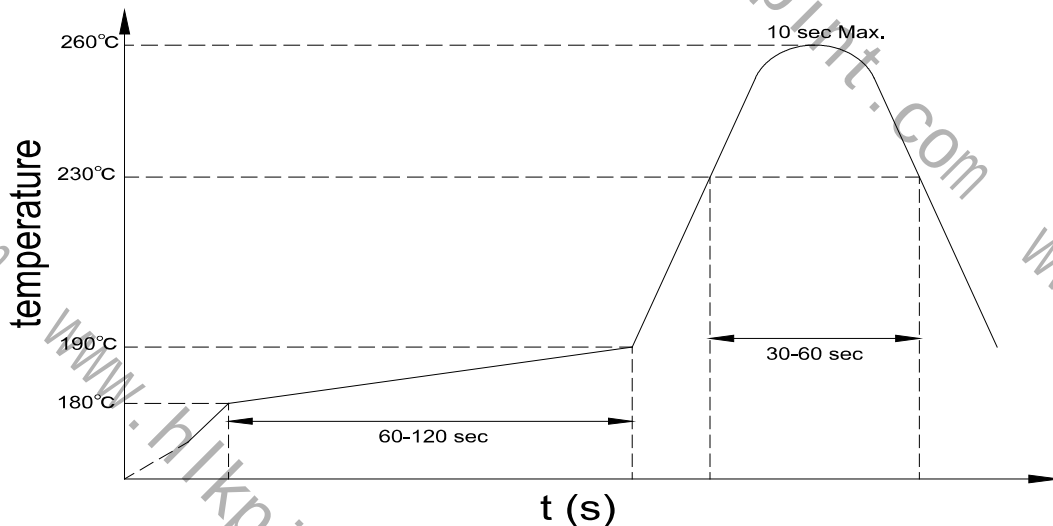
R-C Snubber

● 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
- Number of reflows : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)
- Flux :

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)
- Number of times : 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.

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● Numbering System

KAQV271 X (Y)

Notes:

KAQV271 = Part No.

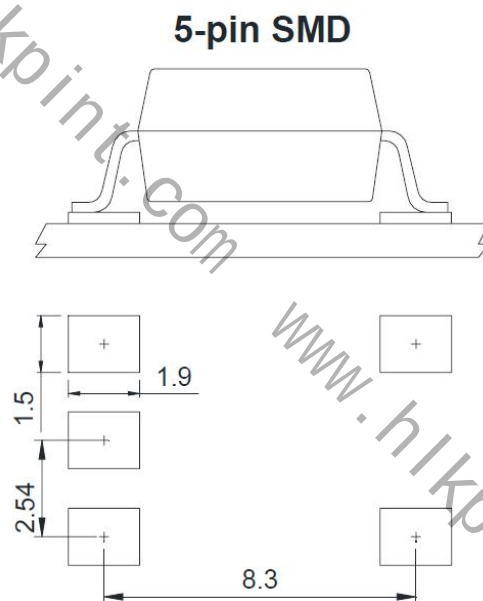
X = Lead form option (blank or A)

Y = Tape and reel option (TL 、 TR)

Option	Description	Packing quantity
A (TL)	surface mount type package + TL tape & reel option	1000 units per reel
A (TR)	surface mount type package + TR tape & reel option	1000 units per reel

● Recommended Pad Layout for Surface Mount Lead Form

1. Surface mount type.



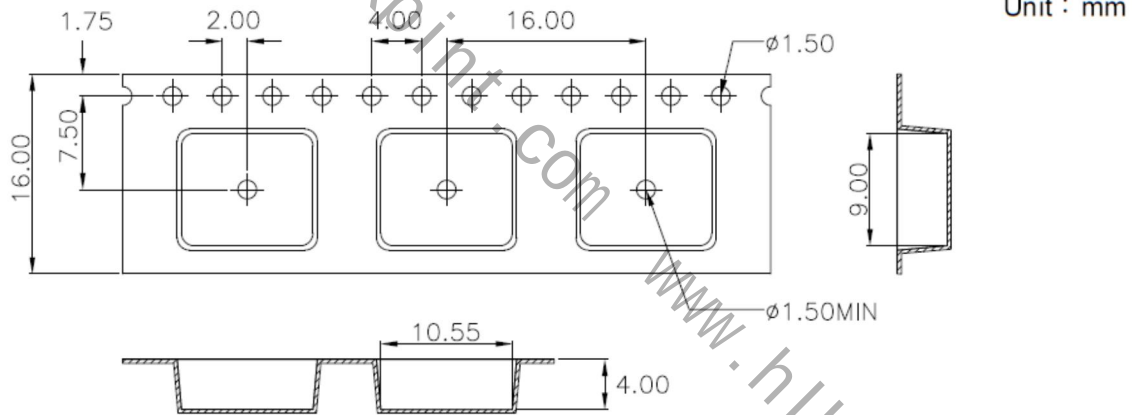
Unit : mm

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● 6-pin SMD Carrier Tape & Reel



TOLERANCE : ± 0.2 mm

