

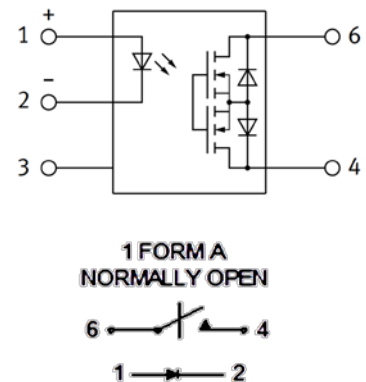
KAQV258 Series

5PIN 1500V N.O TYPE
SOLID STATE RELAY-MOSFET OUTPUT

● Description

The KAQV258 series is robust, ideal for telecom and ground fault applications. It is a SPST normally open switch (1 Form A) that replaces electromechanical relays in many applications. 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 MOSFET switches.

● Schematic



● Features

1. Load voltage: 1,500 V
2. Load current: 50 mA
3. Safety Approvals:
CQC GB4943.1-2022

● Application

- Isolation detection
- Voltage monitoring
- Signal control

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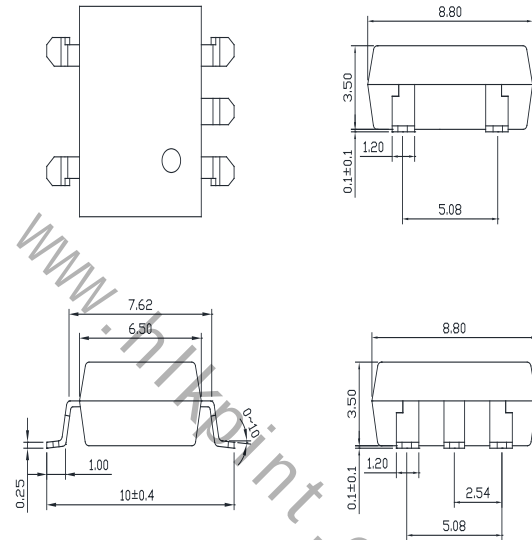
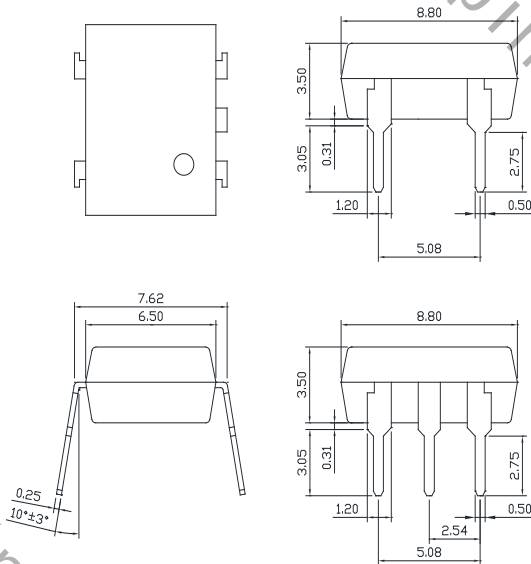
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● Outside Dimension

Unit : mm

Dual in line type

Surface mount type



TOLERANCE : $\pm 0.2\text{mm}$

● Device Marking



Notes :

cosmo

V258

: Part NO.

YWW

Y : Year code / W : Week code

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● 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	V_L	1500	V
	Continuous load current	I_L	0.05	A
	Peak load current	I_{peak}	0.18	A
	Power dissipation	P_{out}	500	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 +100	°C
Storage temperature		T_{stg}	-40 to +125	°C
Junction temperature		T_j	125	°C
Soldering temperature 10 seconds		T_{sot}	260	°C

● Electro-optical Characteristics

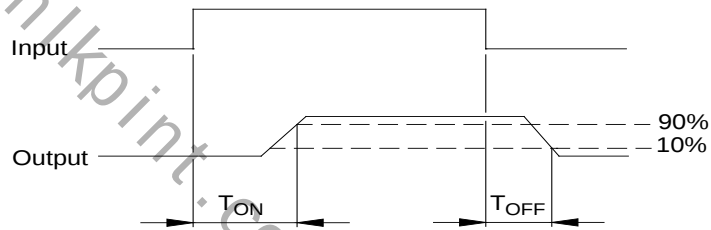
(Ta=25°C)

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}	$I_L = \text{Max.}$	-	0.8	3.0	mA
	Recovery input current	I_{FOFF}	$I_L = \text{Max.}$	0.2	-	-	mA
Output	On resistance	R_{on}	$I_F = 10 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s	-	150	300	Ω
	Off-state leakage current	I_{LEAK}	$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$	-	-	1	μA
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}	$I_F = 10 \text{ mA}$	-	0.15	1.0	ms
Turn-off time		T_{OFF}	$I_L = \text{Max.}$	-	0.07	0.2	ms

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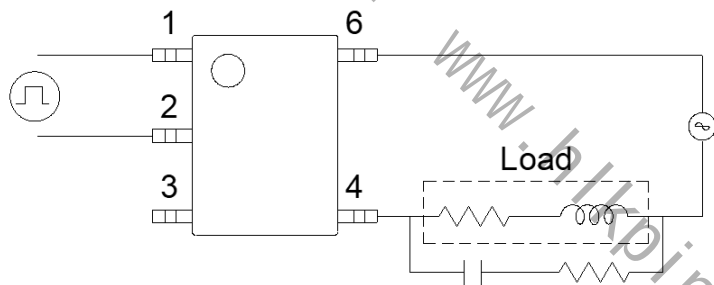
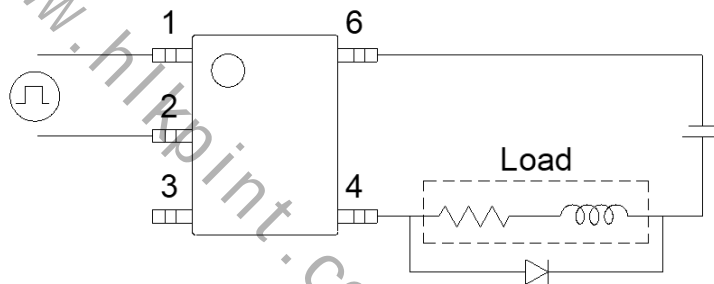
● Turn-on / Turn-off Time



● Schematic and Wiring Diagrams

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

● Using Methods



R-C Snubber

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Fig. 1. Load current vs Ambient Temperature

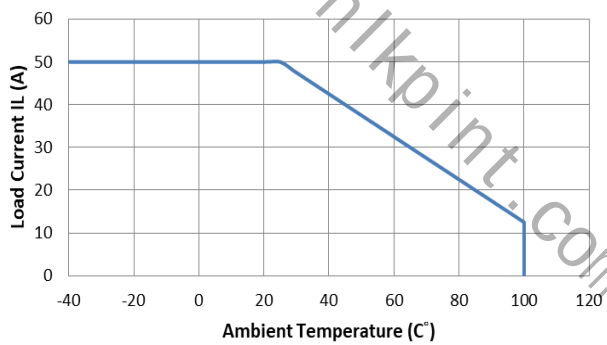


Fig. 2 On Resistance V.S. Ambient temperature

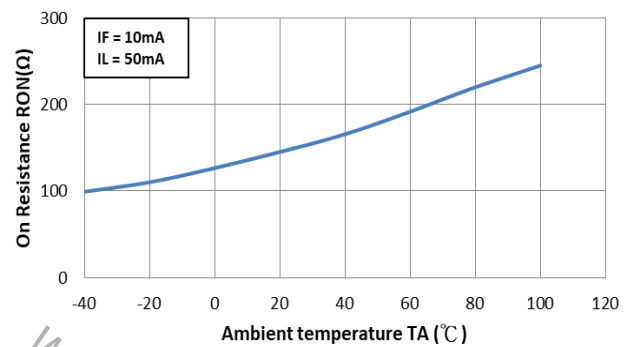


Fig. 3 Turn On Time V.S. Ambient temperature

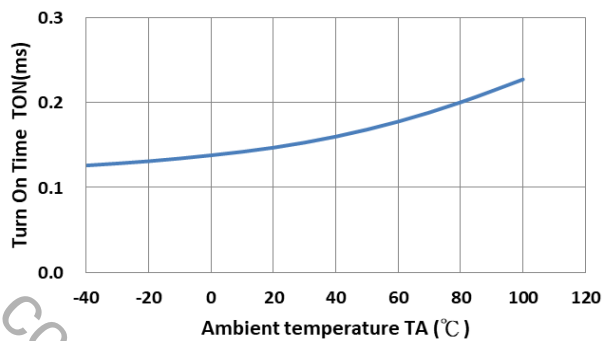


Fig. 4 Turn Off Time V.S. Ambient temperature

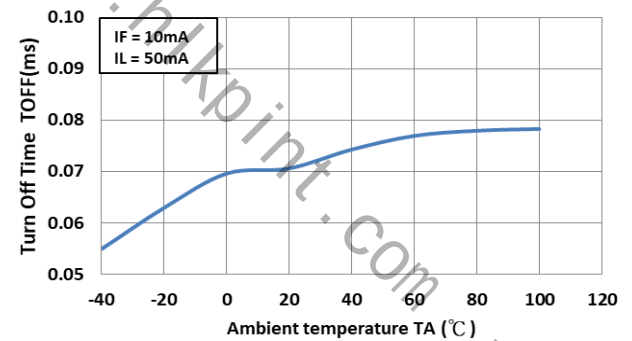


Fig. 5 Operate Input Current V.S. Ambient temperature

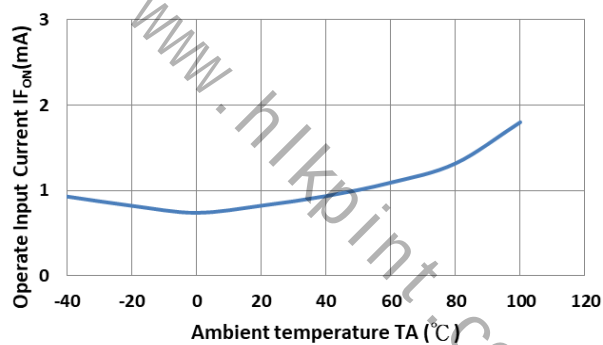


Fig. 6 Revover Input Current V.S. Ambient temperature

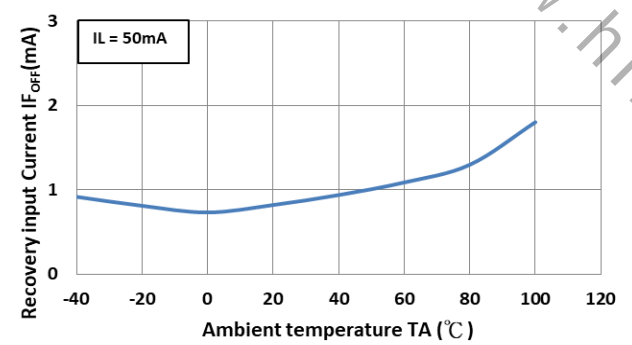


Fig. 7. Forward voltage vs Ambient temperature

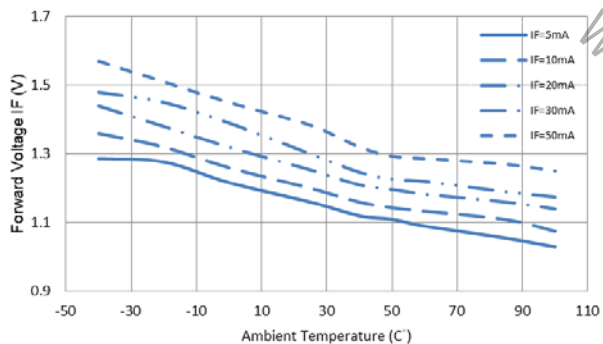
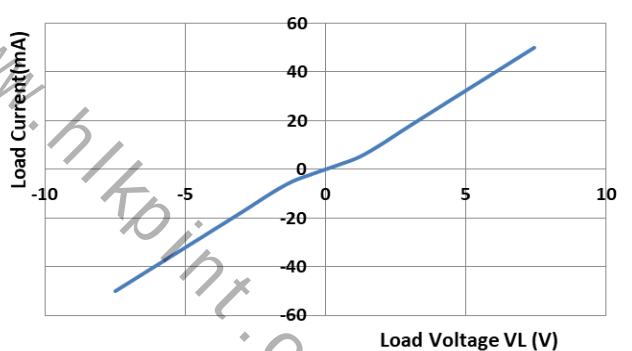


Fig. 8 Load Current V.S. Load Voltage



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Fig. 9 Off State Leakage Current V.S. Load Voltage

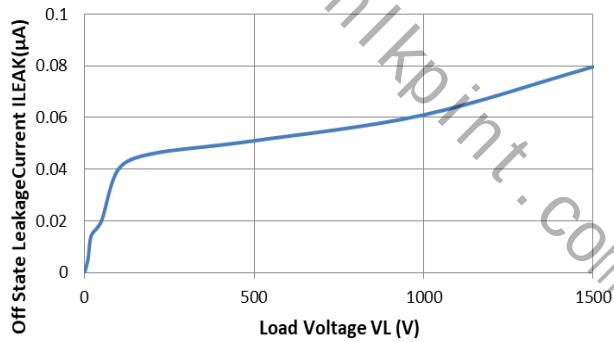


Fig. 10 Turn On Time V.S. Forward Current

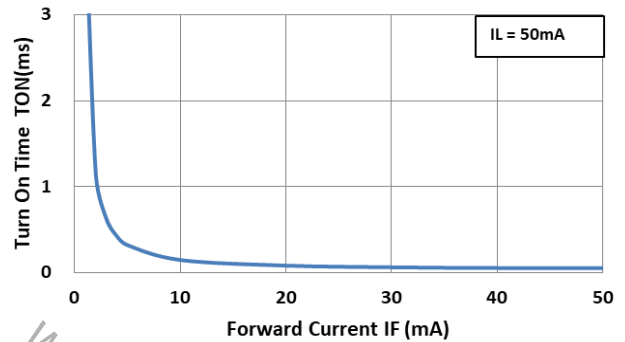
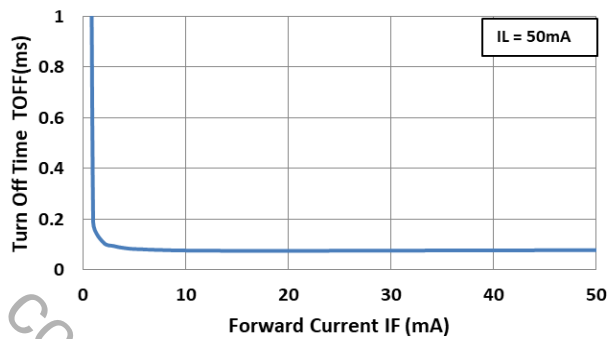


Fig. 11 Turn Off Time V.S. Forward Current

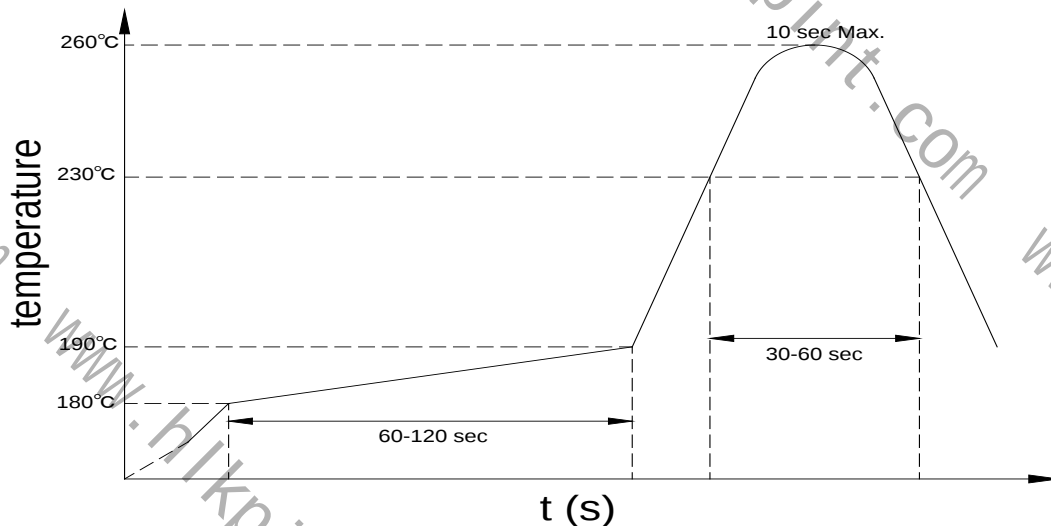


● **Recommended Soldering Conditions**

(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 : | 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) |
| ■ 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

KAQV258 X (Y)

Notes:

KAQV258 = Part No.

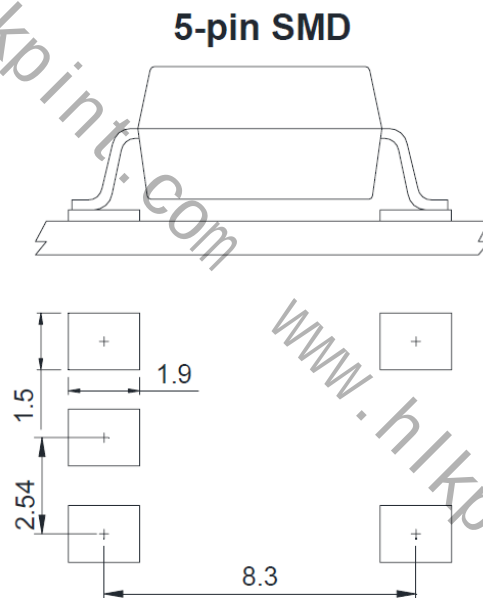
X = Lead form option (blank or A)

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.

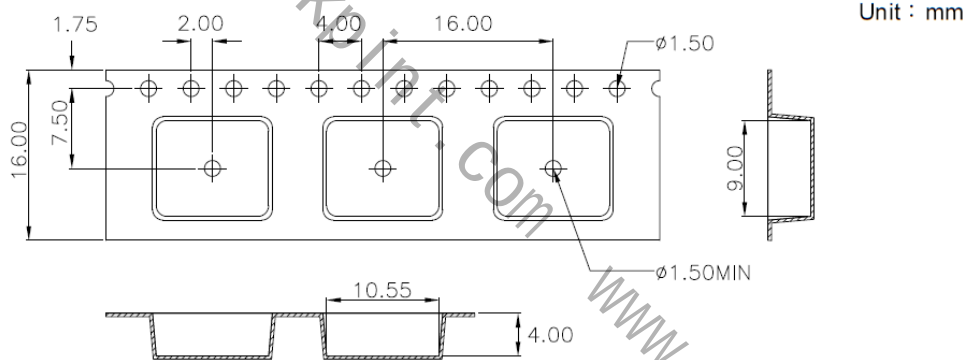


Unit : mm

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● 6-pin SMD Carrier Tape & Reel



TOLERANCE : $\pm 0.2\text{mm}$

