



JOCMA19CL-VS4

Rev.A.1.0

DESCRIPTION:

The products are 4-pin optical relays. The device consists of an AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit in a VSON4 package.

The detector consists of a high-speed photovoltaic diode array and driver circuitry. The products are widely used in measuring and testing equipment, security and disaster prevention market, industrial machinery and equipment.

MAIN FEATURES

Isolation voltage 500 Vrms

LOW C; LOW R

Operating temperature range -40°C to 110°C

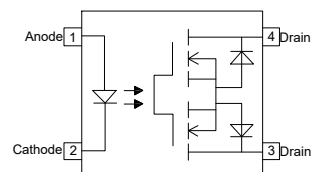
REACH & RoHS compliance

HBM: H3A; MM: M2; CDM: C3

CQC approved

VDE approved

UL approved



ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	50	mA
	Peak Forward Current	I_{FP}	1 ^①	A
	Reverse Voltage	V_R	6	V
	Input Power Dissipation	P_D	75	mW
Output	Load Voltage	V_O	30	V
	Continuous load current	I_O	2	A
	Output Power Dissipation	P_O	300	mW
Total Power Dissipation		P_{tot}	375	mW
Isolation Voltage		V_{iso}	500 ^②	Vrms
Operating Temperature		T_{opr}	-40~110	°C
Junction Temperature		T_j	125	°C
Storage Temperature		T_{stg}	-55~125	°C

Soldering Temperature	T_{sol}	260	°C
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NOTE1 : 100 μ s pulse, 100Hz frequency

NOTE2 : AC for 1 minute, R.H.=40~60%

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	$I_F=10\text{mA}$	-	1.3	1.5	V
	Reverse Current	I_R	$V_R=6\text{V}$	-	-	1	μA
	Action Current	$I_{F(ON)}$	$I_O=I_{O(MAX)}$	-	0.9	3	mA
	Reset Current	$I_{F(OFF)}$	$I_O=I_{O(MAX)}$	0.4	0.8	-	mA
Output	On Resistance	R_{on}	$I_F=5\text{mA}$ $I_O=\text{Max.}$ Within 1s on time	-	-	0.2	Ω
	Off State Leakage Current	I_{Leak}	$I_F=0\text{mA}$, $V_O=\text{Max.}$	-	-	1	μA
	Off State Capacitance	C_{off}	$I_F=0\text{mA}$	-	120	-	pF
Switching Characteristics	Isolation Resistance	R_{ISO}	DC500V 40~60%R.H.	10^{12}	-	-	Ω
	Floating Capacitance	C_{IO}	$V=0$, $f=1\text{MHz}$	-	0.8	-	pF
	Turn On Time	t_{on}	$I_F=5\text{mA}$, $I_O=\text{Max.}$	-	0.8	2	ms
	Turn Off Time	t_{off}	$I_F=5\text{mA}$, $I_O=\text{Max.}$	-	0.05	1	ms

ORDERING INFORMATION

J	OC	M	A	1	9	C	L	-VS4	/
JieJie Microelectronics Co., Ltd.	Opto Coupler	MOS	A:1NO	1:V _O :30V	9:I _O :2A	I _{FT} ≤3mA	L:LRC	VSON4	None:T1 R:T2

Packing Quantity	
Option	Quantity
VSON4	3000 Units/Reel

Characteristics Curves

FIG.1: LED Dropout Voltage vs. Ambient Temperature

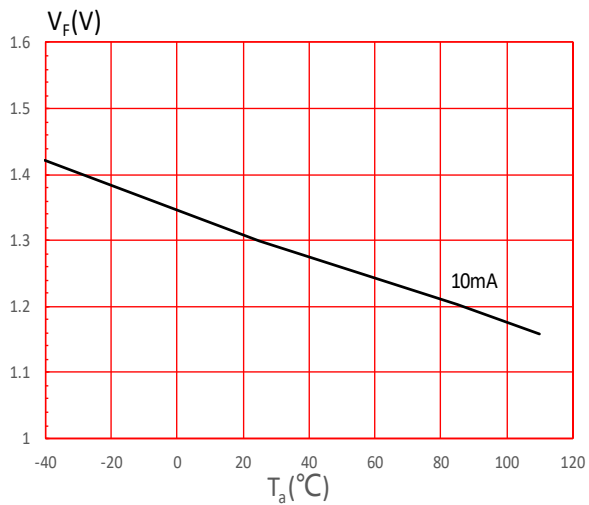


FIG.3: On Resistance vs. Ambient Temperature

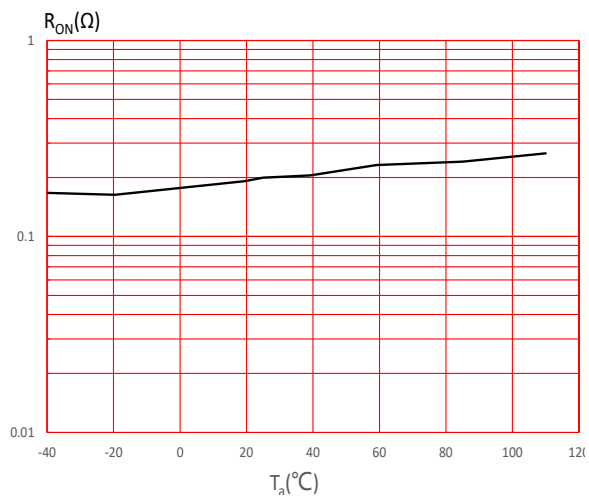


FIG.5: LED Operate Current vs. Ambient Temperature

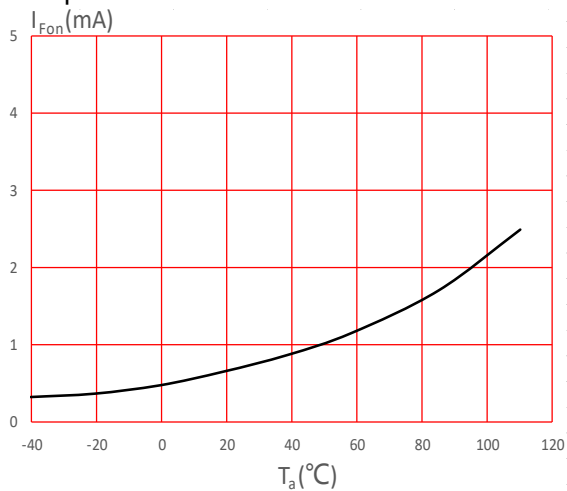


FIG.2: Output Current vs. Output Voltage

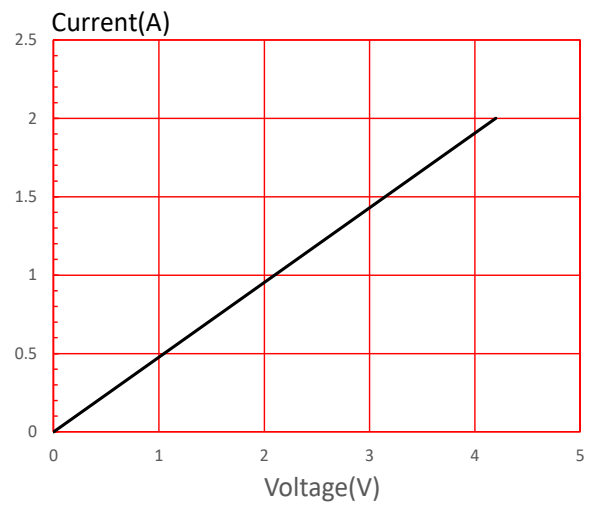


FIG.4: Load Current vs. Ambient Temperature

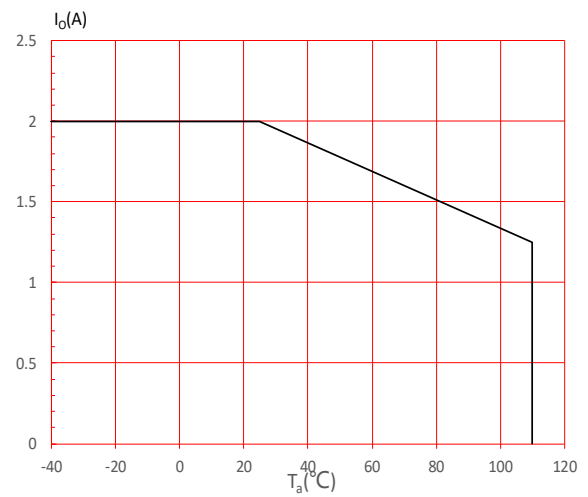


FIG.6: LED Turn Off Current vs. Ambient Temperature

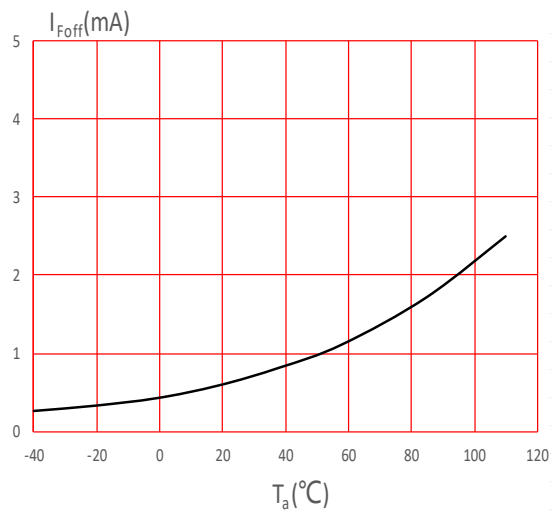
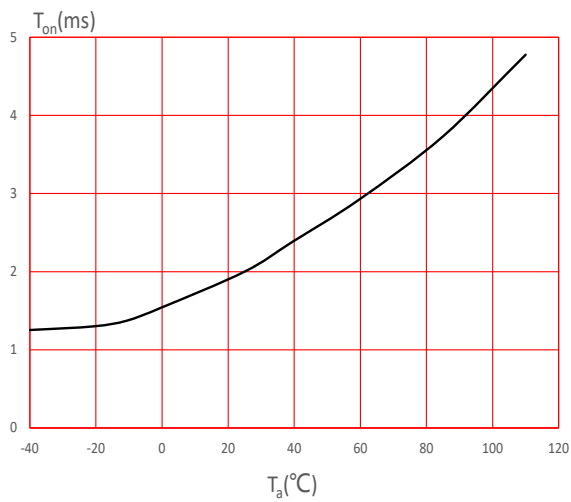
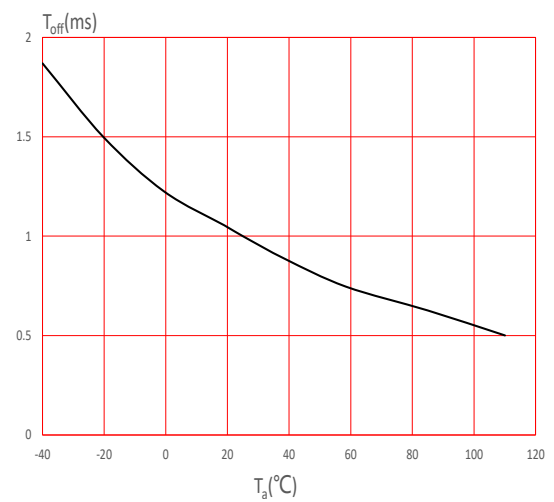
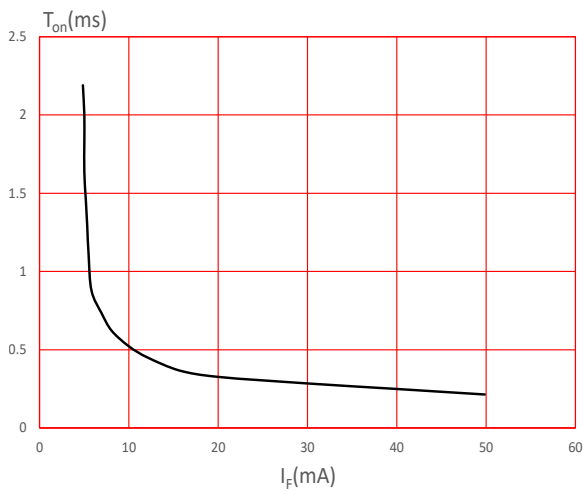
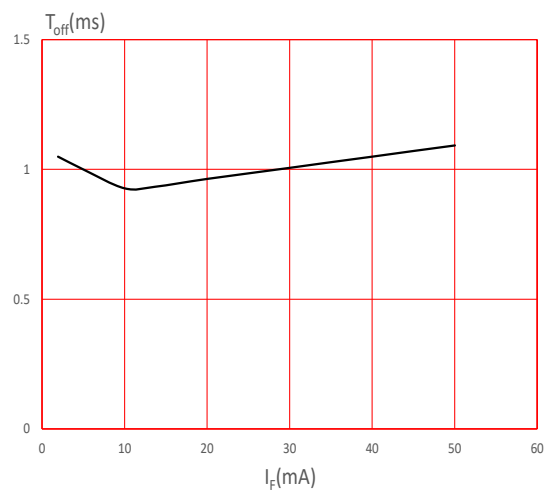
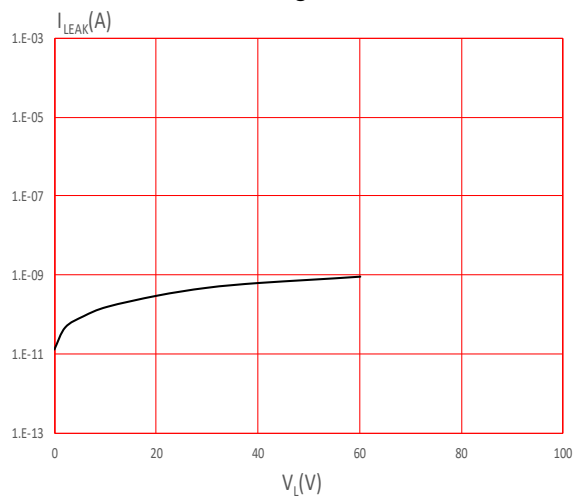
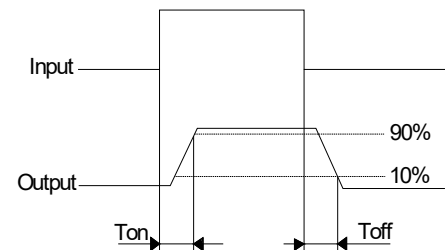
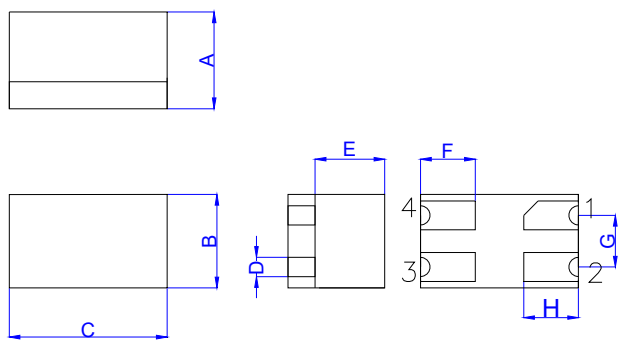


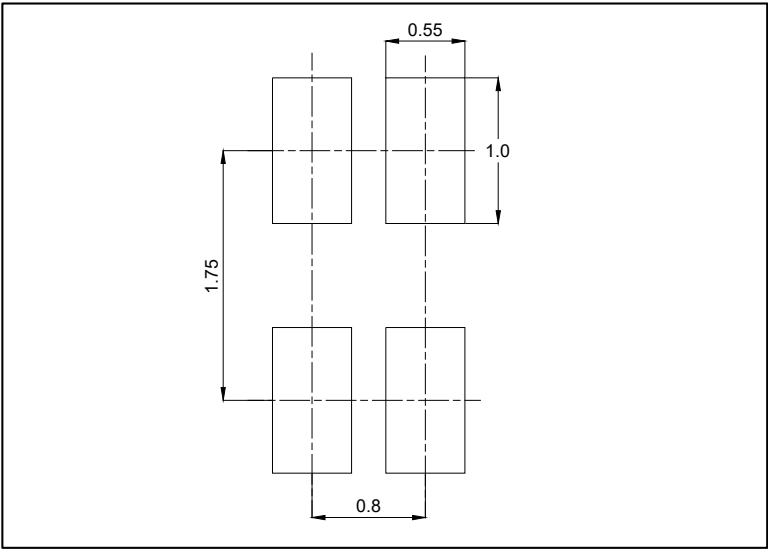
FIG.7: Turn On Time vs. Ambient Temperature**FIG.8:** Turn Off Time vs. Ambient Temperature**FIG.9:** Turn On Time vs. LED Forward Current**FIG.10:** Turn Off Time vs. LED Forward Current**FIG.11:** Off State Leakage Current vs. Load Voltage**Fig.12:** Turn on/Turn off time

Package Dimension (Unit: mm)

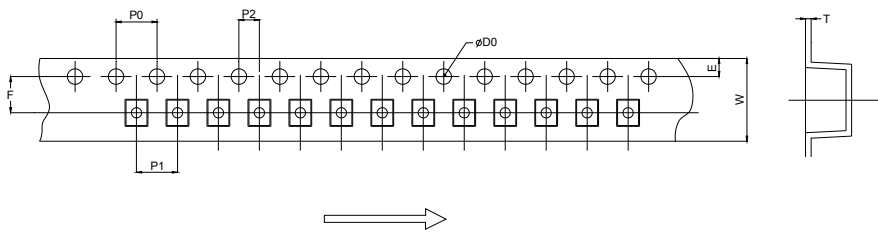


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.30		1.70	0.051		0.067
B	1.25		1.65	0.049		0.065
C	2.25		2.65	0.089		0.104
D	0.10		0.50	0.004		0.020
E	0.88		1.28	0.035		0.050
F	0.65		1.05	0.026		0.041
G	0.60		1.00	0.024		0.039
H	0.65		1.05	0.026		0.041

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

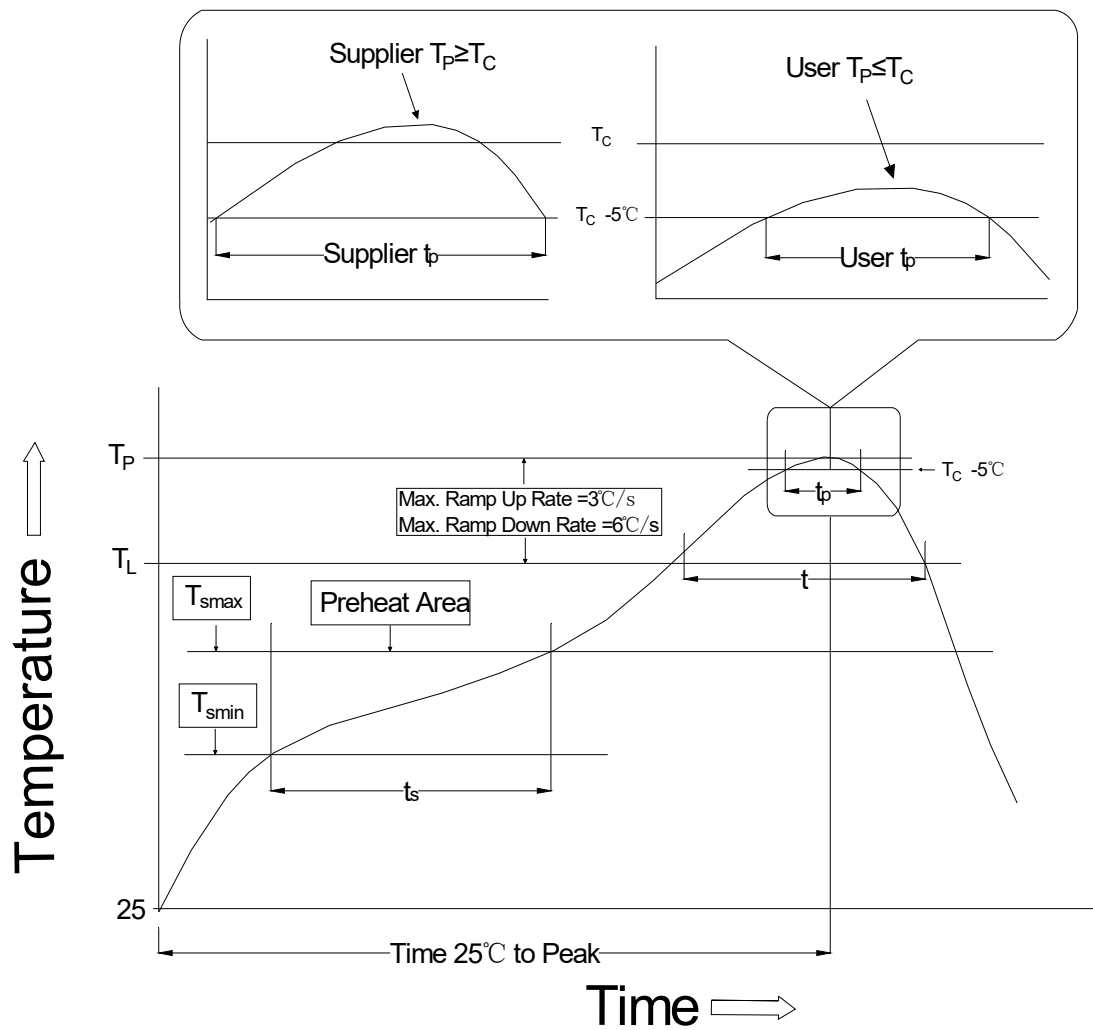


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	3.90	4.00	4.10	0.154	0.157	0.161
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	3.40	3.50	3.60	0.134	0.138	0.142
T	0.20	0.25	0.30	0.008	0.010	0.012
W	7.70	8.00	8.30	0.303	0.315	0.327

REFLOW INFORMATION



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	100°C	150°C
Temperature Max. (T_{smax})	150°C	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidus Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C+0°C/-5°C	260°C+0°C/-5°C
Time (t_P) within 5°C of 260°C	10 seconds	10 seconds
Ramp-down Rate (T_P to T_L)	3-6°C/second	3-6°C/second
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.
2. Avoid direct contact between the epoxy body and any tools or surfaces exceeding its maximum storage temperature.
3. Application of pressure on the epoxy body is prohibited at elevated temperatures. In specific scenarios, any applied force must not exceed 2.5N.
4. Ensure the component has cooled to ambient temperature before proceeding with any subsequent manufacturing steps.
5. The component has a shelf life of one year when stored under standard conditions.
6. Recommend storage Temp.: 0~40°C;
Recommend storage humidity: <60%;
MSL level: MSL 1

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