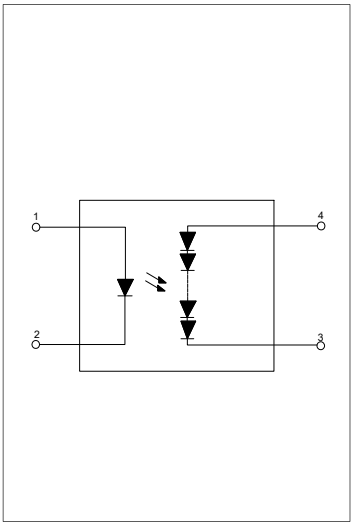
JOCV1B33-US4

Rev.A.1.0

DESCRIPTION:

The products are voltage opto-couplers in a USON4 package. The device consists of a high-voltage output detector circuit.It is capable of directly driving gates of power MOSFETs or IGBTs. The products are widely used in supply for electronic circuit and drive solid state relay.



MAIN FEATURES

Isolation voltage 500 Vrms
Operating temperature range -40°C to 110°C
RoHS & REACH Compliance
HBM: H3A; MM: M4; CDM: C3

ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

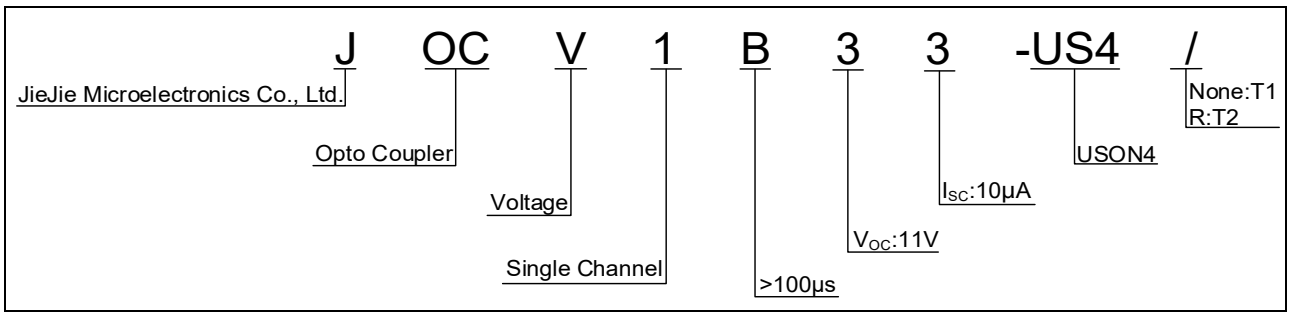
Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	50	mA
	Peak Forward Current	I_{FP}	1①	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	75	mW
Isolation Voltage		V_{iso}	500②	Vrms
Operating Temperature		T_{opr}	-40~+110	℃
Junction Temperature		T_j	125	℃
Storage Temperature		T_{stg}	-55~+125	℃
Soldering Temperature		T_{sol}	260	℃

NOTE1: 100μs pulse, 100Hz frequency
NOTE2: AC for 1minute, R.H.=40~60%

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

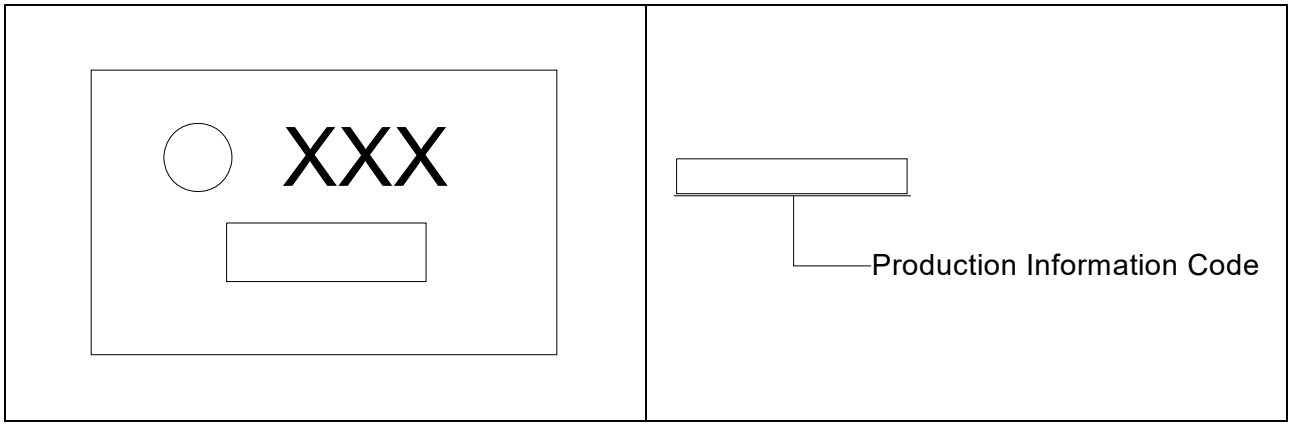
Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F=10mA	-	2	2.5	V
	Reverse Current	I_R	V_R=6V	-	-	1	μA
Output	Open Circuit Voltage	V_{OC}	I_F=10mA I_O=0mA	11	-	-	V
	Short Circuit Current	I_{SC}	I_F=10mA V_O=0V	10	-	-	μA
Transfer Characteristics	Isolation resistance	R_{IO}	DC500V 40~60%R.H.	10^{12}	-	-	Ω
	Response Time	t_{on}	I_F=10mA， C_L=1000pF, R_{SH}=510kΩ	-	100	-	μs
		t_{off}		-	50	-	μs

ORDERING INFORMATION



Packing Quantity	
Option	**Quantity**
USON4	3000 Units/Reel

MARKING



Characteristics Curves

FIG.1: Max. Allowable LED Forward Current vs. Ambient Temperature

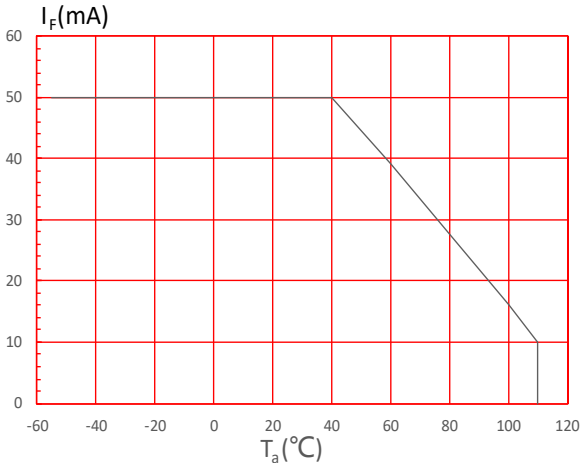


FIG.2: Forward Current vs. Forward Voltage

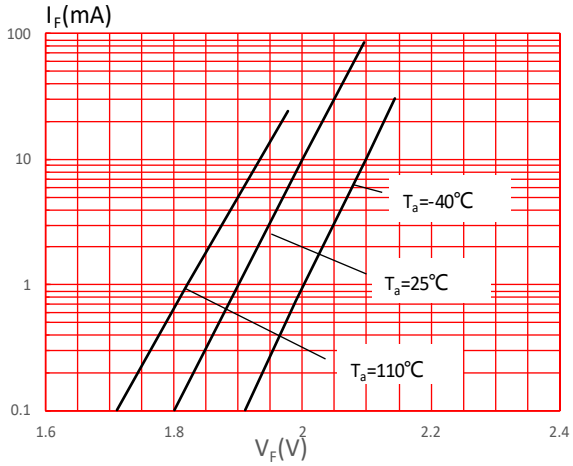


FIG.3: Open Circuit Voltage vs. Forward Current

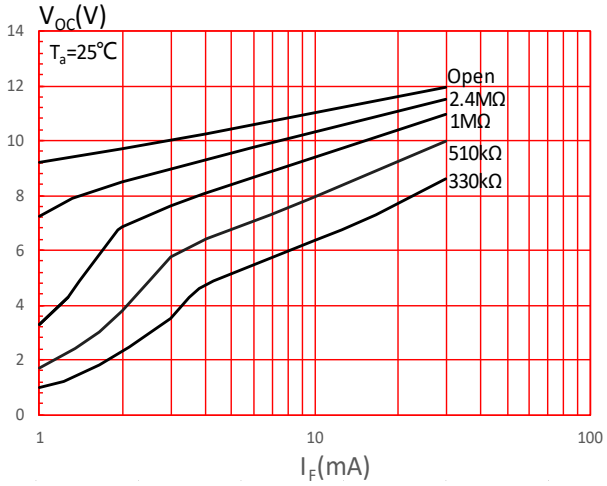


FIG.4: Short Circuit Current vs. Forward Current

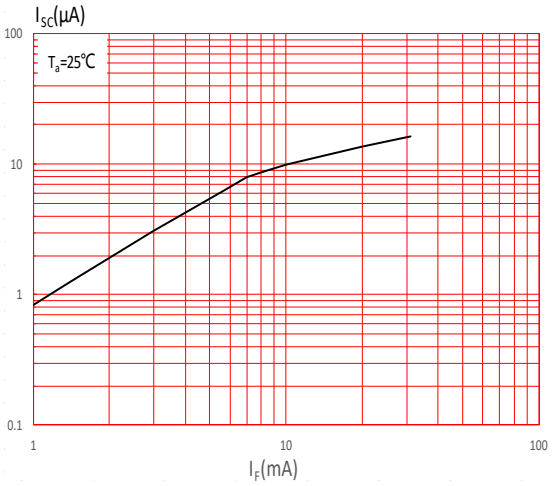


FIG.5: Open Circuit Voltage vs. Ambient Temperature

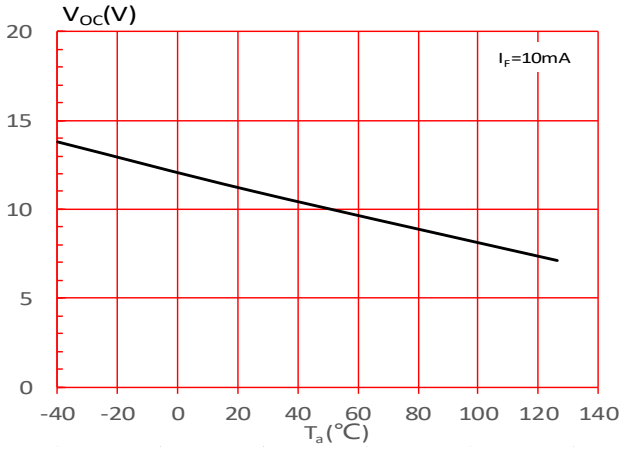
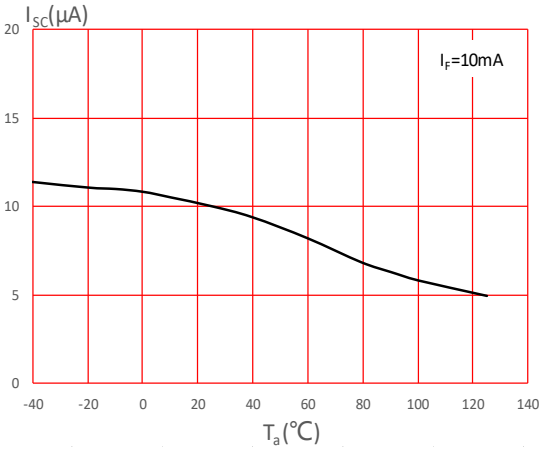
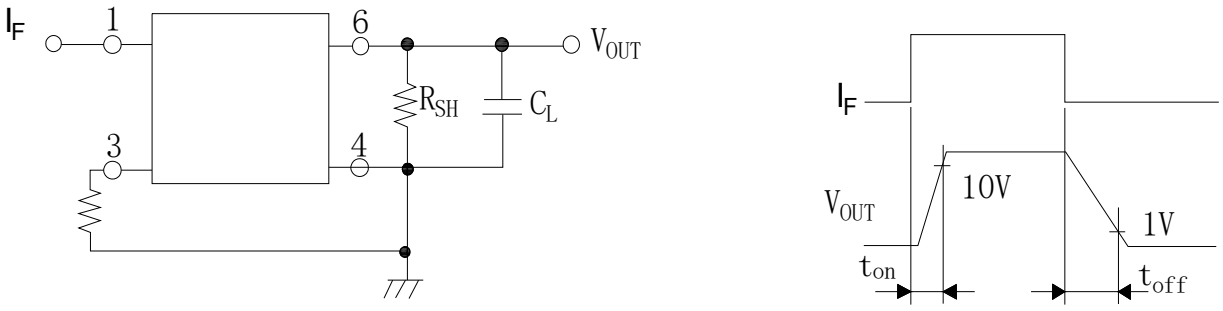


FIG.6: Short Circuit Current vs. Ambient Temperature

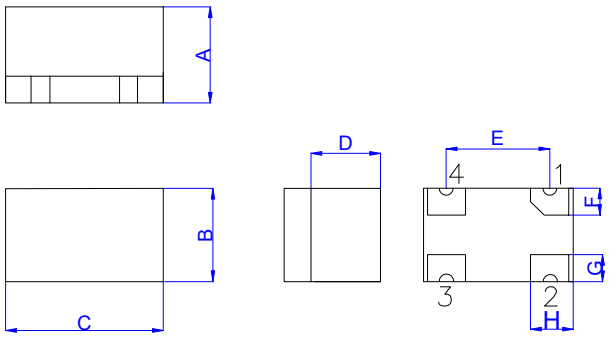


Test Circuits

FIG.7: Response Time Test Circuit, Waveform

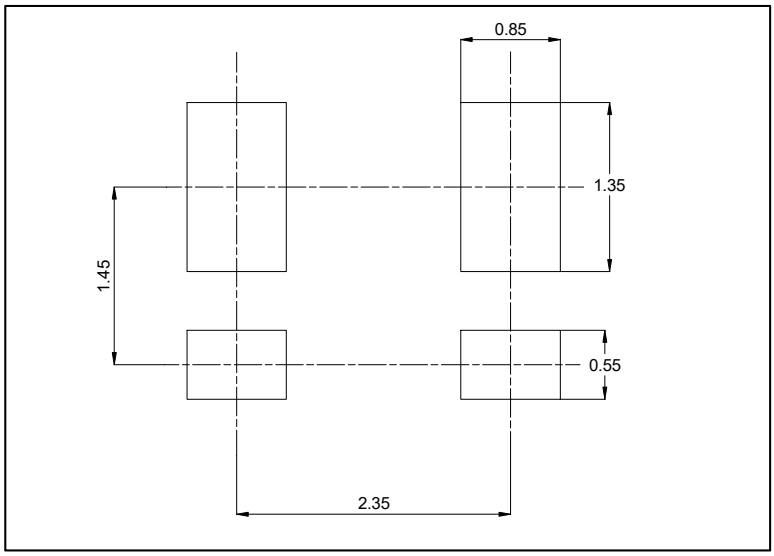


Package Dimension (Unit: mm)

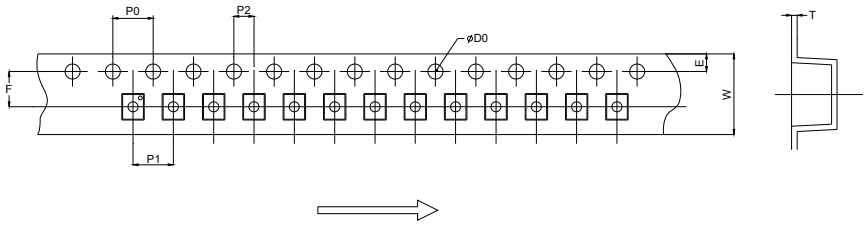


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.40	1.50	1.60	0.055	0.059	0.063
B	2.00	2.10	2.20	0.079	0.083	0.087
C	3.30	3.40	3.50	0.130	0.134	0.138
D	0.98	1.08	1.18	0.039	0.043	0.046
E	2.25	2.35	2.45	0.089	0.093	0.096
F	1.10	1.20	1.30	0.043	0.047	0.051
G	0.30	0.40	0.50	0.012	0.016	0.020
H	0.75	0.85	0.95	0.030	0.033	0.037

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

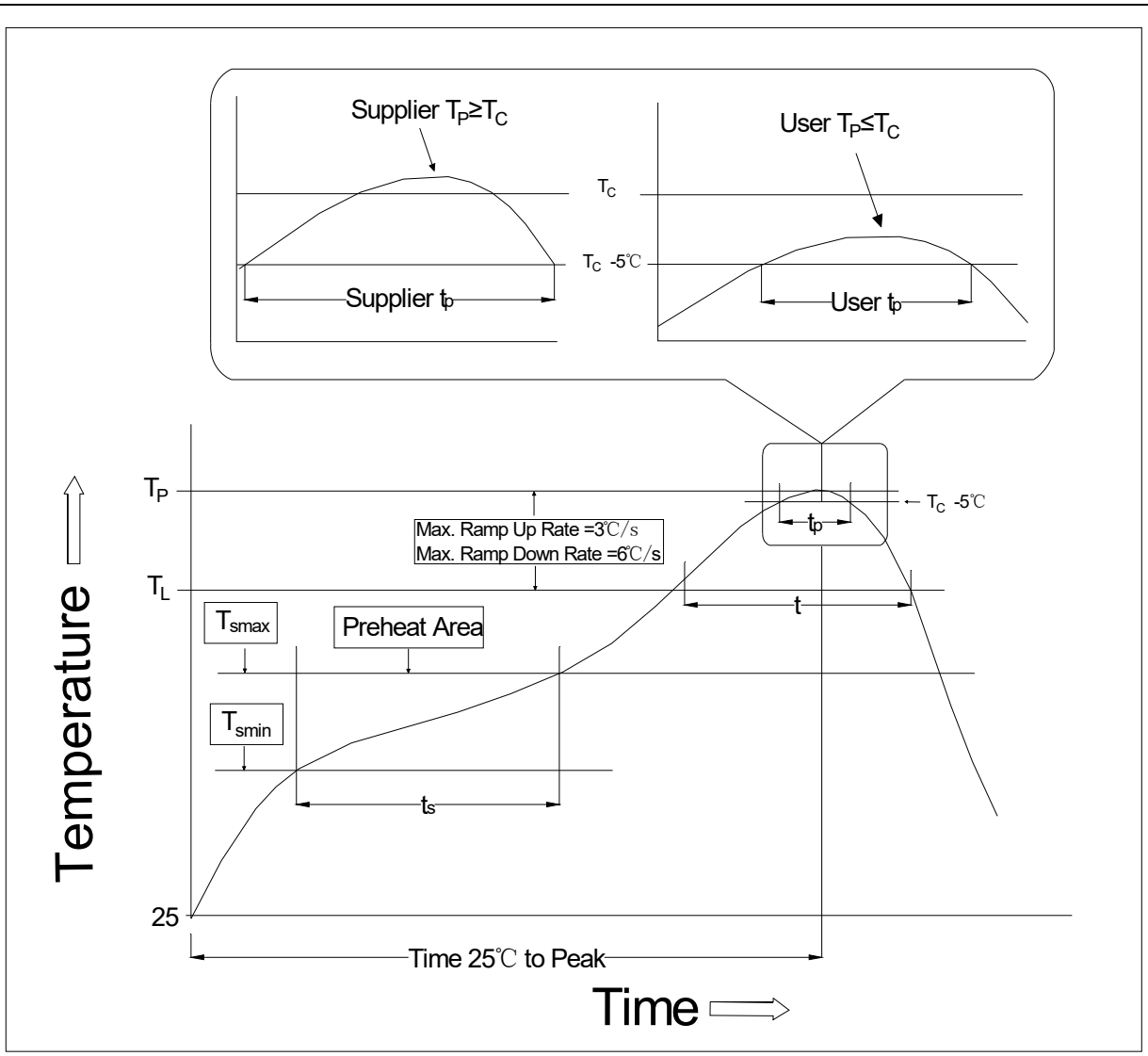


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)



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. (Tsmin)	100℃	150℃
Temperature Max. (Tsmax)	150℃	200℃
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3℃/second max.	3℃/second max.
Liquidus Temperature (TL)	183℃	217℃
Time (tL) Maintained Above (TL)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235℃+0℃/-5℃	260℃+0℃/-5℃
Time (tP) within 5℃ of 260℃	10 seconds	10 seconds
Ramp-down Rate (TP to TL)	3-6℃/second	3-6℃/second
Time 25℃ 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 3

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