



JOC SZ21X-M4, JOC SZ31X-M4 Series

Rev.A.1.0

DESCRIPTION:

The products are 4-pin thyristor opto-couplers. The device combines an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon zero-crossing photo triac in a plastic SOP4 package. The products are widely used in solenoid/valve controls, lighting controls, motor controls, temperature controls, static AC power switches, solid state relays, interfacing microprocessors up to 265 V_{AC} peripherals.

MAIN FEATURES

High isolation 3750 VRMS

DC input with zero-crossing photo triac output

Operating temperature range -55 to 110

REACH & RoHS compliance

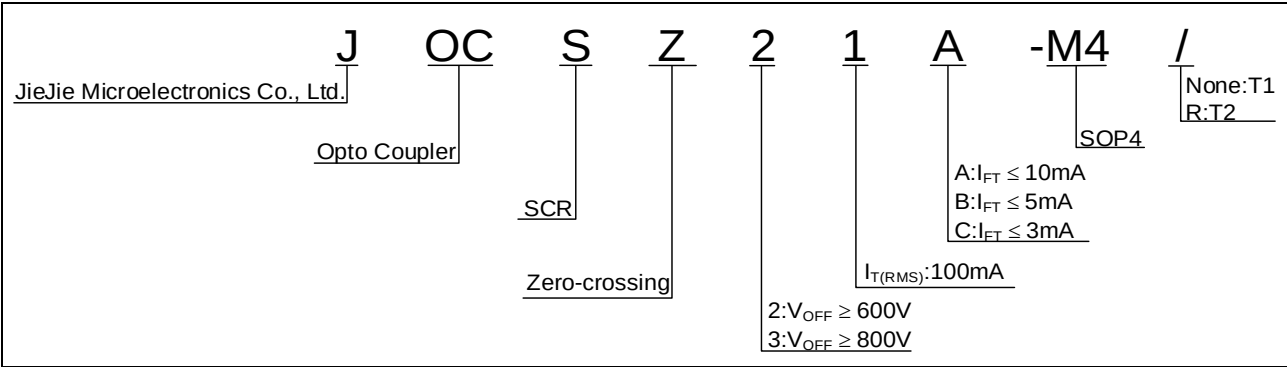
Operating Temperature	T_{opr}	-55~110	
Junction Temperature	T_j	125	
Storage Temperature	T_{stg}	-55~125	
Soldering Temperature	T_{sol}	260	
Peak pulse voltage ($T_j=25^\circ\text{C}$; non-repetitive, off-state)	V_{pp}	1	kV

NOTE1: 100 μs 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	$I_F=10\text{mA}$	-	1.2	1.5	V
	Reverse Current		I_R	$V_R=6\text{V}$	-	-	1	μA
	Input Capacitance		C_{in}	$V=0, f=1\text{kHz}$	-	10	-	pF
Output	Peak Off-state Current, Either Direction		I_{OFF}	$V_{OFF}=\text{Rated } V_{OFF}$ $I_F=0$	-	-	100	nA
	Peak On-state Voltage, Either Direction		V_{TM}	$I_{TM}=100\text{mA}$	-	1.8	2.5	V
	Critical Rate of Rise of Off-state voltage		dV/dt	$V_{PEAK}=\text{Rated } V_{PEAK}$ $I_F=0$	2000	-	-	V/ μs
Transfer Characteristics	LED Trigger Current	JOCSZ21A JOCSZ31A	I_{FT}	Terminal Voltage=3V $I_{TM}=100\text{mA}$	-	-	10	mA
		JOCSZ21B JOCSZ31B			-	-	5	
		JOCSZ21C JOCSZ31C			-	-	3	
	Holding Current		I_H	$I_{TM}=2\text{mA}$, $I_F=\text{Rated } I_{FT}$	-	500	-	μA
	Isolation Resistance		R_{ISO}	DC500V 40~60%R.H.	10^{12}	10^{14}	-	Ω
	Floating Capacitance		C_{IO}	$V=0$, $f=1\text{MHz}$	-	10	-	pF
	Response Time		t_{on}	$V_D=6\text{V}$, $R_L=100\Omega$, $I_F=20\text{mA}$	-	15	50	μs
Zero-Crossing Characteristics	Inhibit Voltage		V_{IH}	$I_F=\text{Rated } I_{FT}$	-	-	20	V
	Leakage in Inhibited State		I_{OFF2}	$I_F=\text{Rated } I_{FT}$ $V_{OFF}=\text{Rated } V_{OFF}$	-	-	5	mA

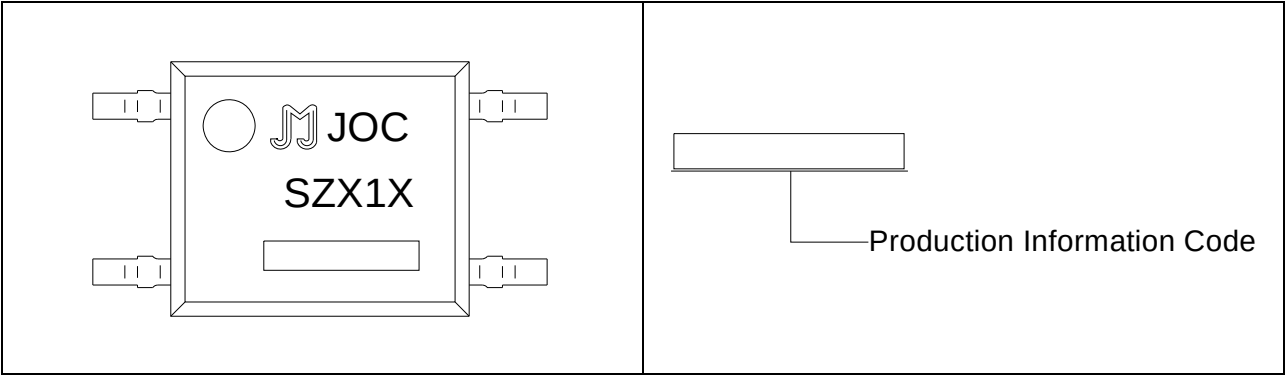
NOTE3: Test voltage must be applied within dV/dt ratings.**NOTE4:** Refer to Fig.14 & Fig.15

ORDERING INFORMATION



Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity –Outer box
SOP4	3000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box =30k Units

MARKING



Characteristics Curves

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

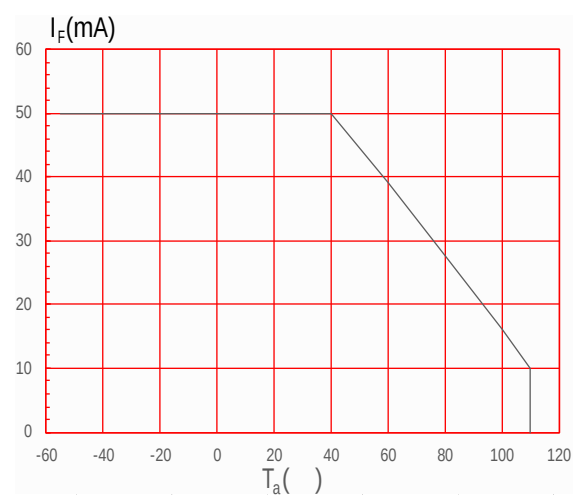


FIG.2: On-state Terminal Current vs. Ambient Temperature

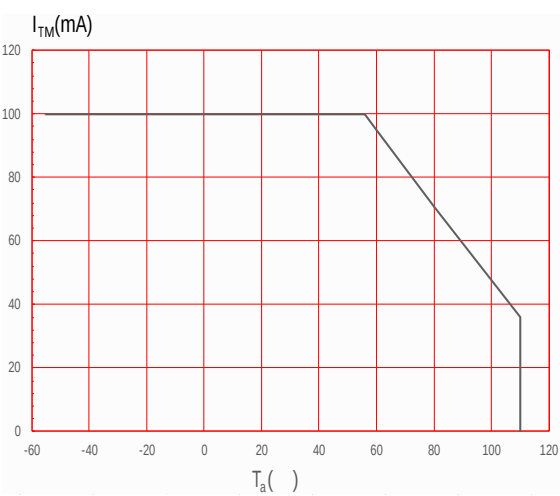


FIG.3: Forward Current vs. Forward Voltage

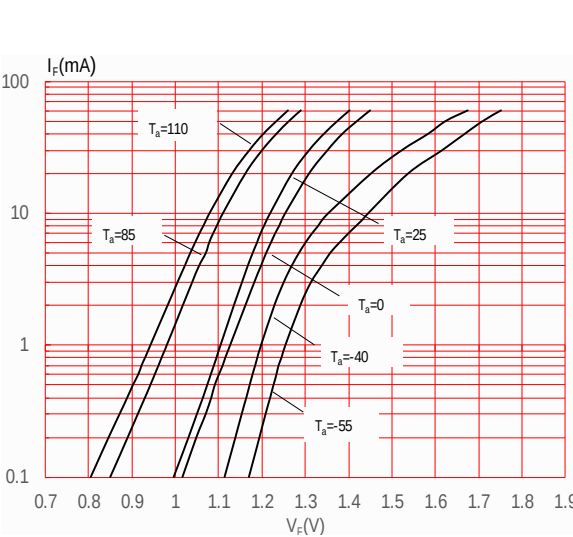


FIG.4: Normalized Off-state Terminal Current vs. Ambient Temperature

FIG.7: Normalized On-state Terminal Voltage vs. Ambient Temperature



FIG.8: On-state Terminal Voltage vs. On-state Terminal Current

TEST CIRCUITS

FIG.12: Test Circuits of Turn On Time

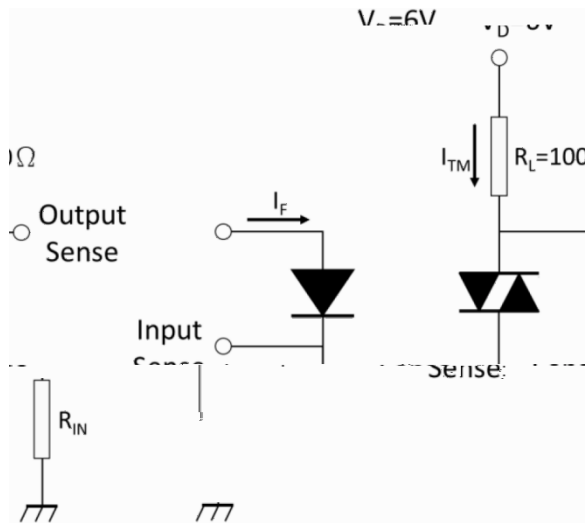


FIG.13: Waveforms of Turn On Time

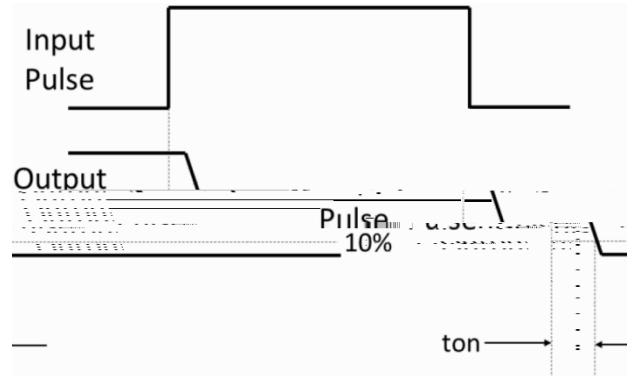


Fig.14: Test Circuits of dV/dt

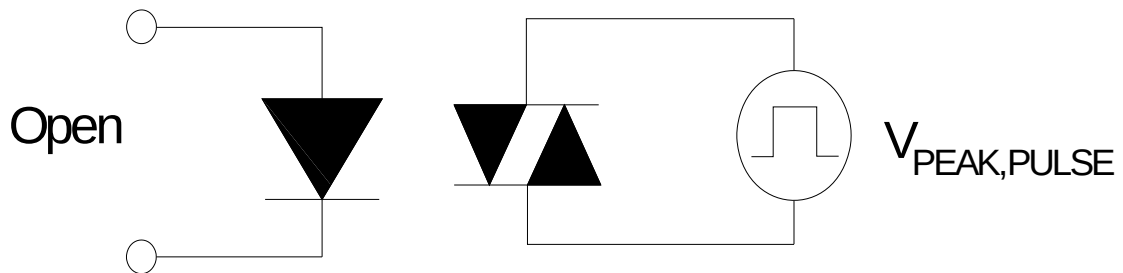


Fig.15: Waveforms of dV/dt

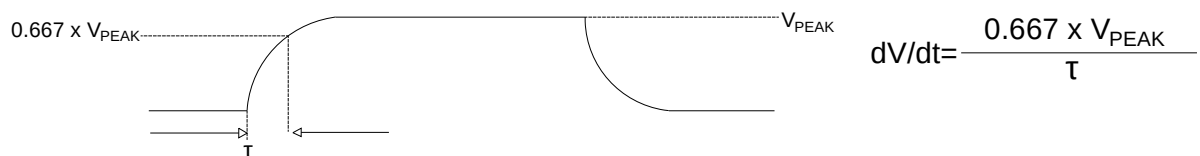
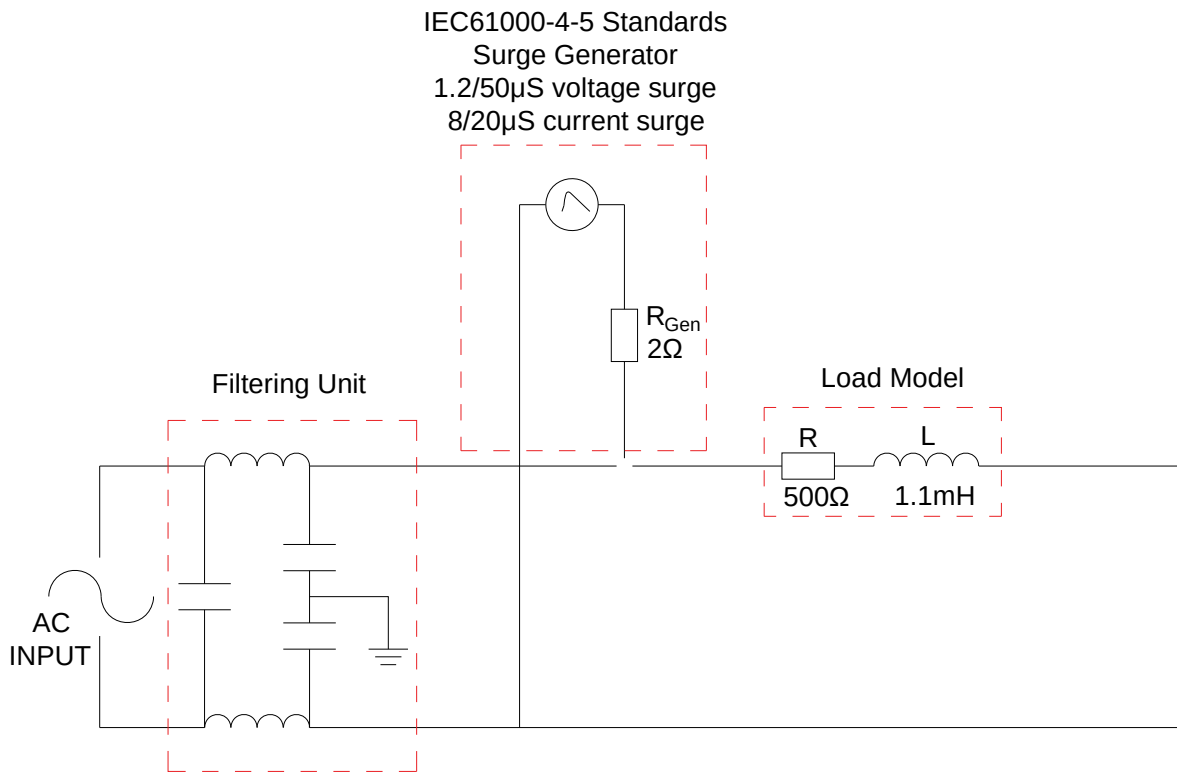
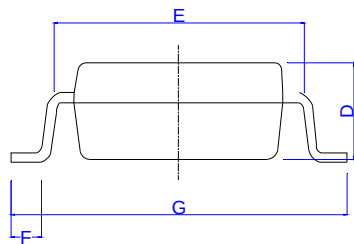
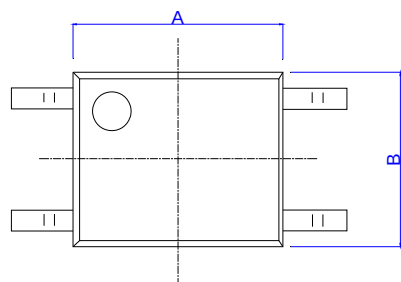


FIG.16: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



Package Dimension (Unit: mm)

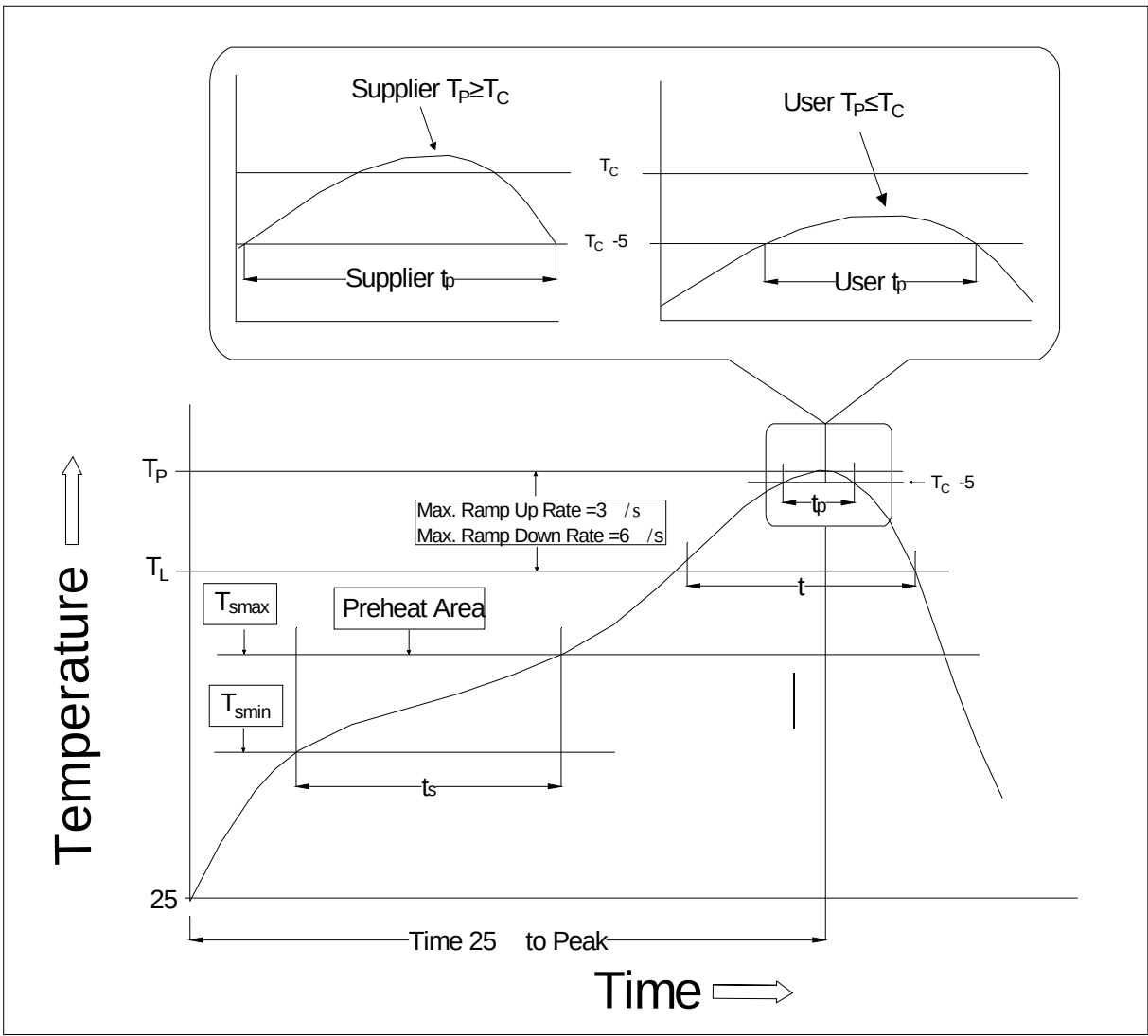


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.80	0.173		0.189
B	3.60		4.20	0.142		0.165
C						
D	1.90		2.30	0.075		0.091
E	5.00		5.60	0.197		0.220
F						
G	6.70			0.264		
H						
I						
J						

CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

1 1 .6 9 0 0 0 6 36 39 .19 20 .0 3. 0 1 0 5 . 4 4 4 8 . 4 1 10 .0 5. 0 1 0 6 .

REFLOW INFORMATION



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	100	150
Temperature Max. (T _{smax})	150	200
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	217

Time (t) - ' 12 1/

Note: