



## JOCT214X-S4 Series

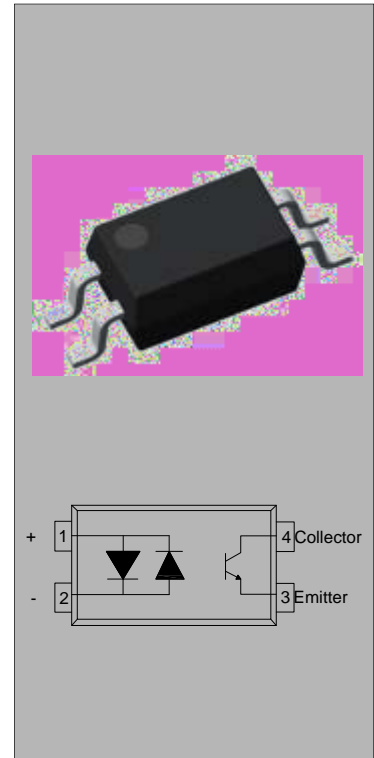
Rev.A.1.0

### DESCRIPTION:

The products are transistor opto-couplers in a SSOP4 package. The device is a photoelectric coupler composed of light-emitting diode and phototransistor. The products are widely used in switching power supply, intelligent meter, industrial control, measuring instruments, office equipment such as copiers, household appliances: such as air conditioners, fans, water heaters, etc.

### MAIN FEATURES

- High isolation 3750 VRMS
- Operating temperature range -40°C to 110°C
- RoHS & REACH Compliance
- HBM: H3A; MM: M4; CDM:C3
- CQC approved
- VDE approved
- UL approved



### ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
Input	Forward Current	$I_F$	$\pm 50$	mA
	Peak Forward Current	$I_{FP}$	1	A
	Power Dissipation	$P_D$	75	mW
Output	Collector-emitter Voltage	$V_{CEO}$	80	V
	Emitter-collector Voltage	$V_{ECO}$	7	V
	Collector Current	$I_C$	50	mA
	Power Dissipation	$P_C$	150	mW
Total Power Dissipation		$P_{tot}$	225	mW
Isolation Voltage		$V_{iso}$	3750	Vrms
Operating Temperature		$T_{opr}$	-40~+110	
Junction Temperature		$T_j$	125	
Storage Temperature		$T_{stg}$	-55~+125	
Soldering Temperature		$T_{sol}$	260	

NOTE1

NOTE2

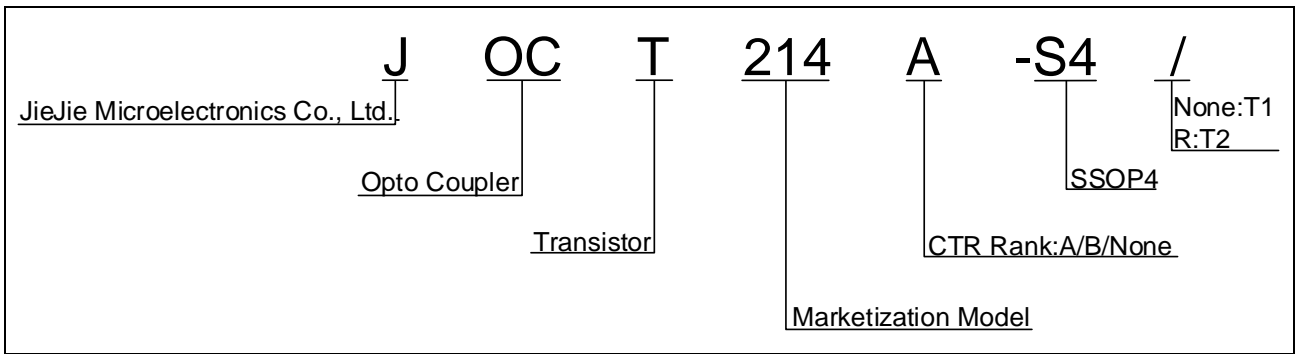
## ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	$V_F$	$I_F = \pm 10\text{mA}$	-	1.2	1.5	V
	Terminal Capacitance	$C_t$	$V=0$ , $f=1\text{MHz}$	-	30	250	pF
Output	Collector-Emitter dark current	$I_{CEO}$	$V_{CE}=20\text{V}$ , $I_F=0$	-	-	50	nA
	Collector-Emitter breakdown voltage	$BV_{CEO}$	$I_C=0.1\text{mA}$ $I_F=0$	80	-	-	V
	Emitter-Collector breakdown voltage	$BV_{ECO}$	$I_E=0.1\text{mA}$ $I_F=0$	7	-	-	V
Transfer Characteristics	Current transfer ratio	CTR	$I_F = \pm 1\text{mA}$ $V_{CE}=5\text{V}$	20	-	300	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = \pm 10\text{mA}$ $I_C = 1\text{mA}$	-	0.07	0.2	V
	Isolation resistance	$R_{IO}$	DC500V 40~60%R.H.	$5 \times 10^{10}$	$10^{11}$	-	
	Floating Capacitance	$C_{IO}$	$V=0$ , $f=1\text{MHz}$	-	0.3	1	pF
	Cut-off Frequency	$f_c$	$V_{CE}=5\text{V}$ , $I_C=2\text{mA}$ $R_L=100 \Omega$ , -3dB	-	80	-	kHz
	Rise Time	$t_r$	$V_{CE}=2\text{V}$ , $I_C=2\text{mA}$ $R_L=100 \Omega$	-	4	18	$\mu\text{s}$
	Fall Time	$t_f$		-	3	18	$\mu\text{s}$
	Response Time	$t_{on}$		-	9	25	$\mu\text{s}$
$t_{off}$		-		5	25	$\mu\text{s}$	

## NOTE1

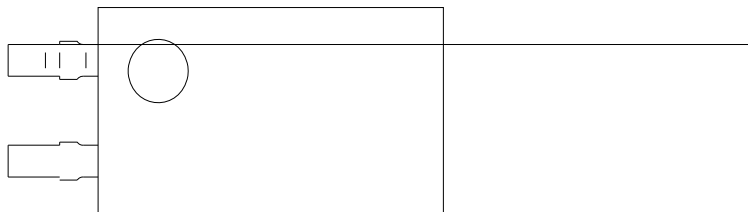
Grade Sign	Min. (%)	Max. (%)

ORDERING INFORMATION



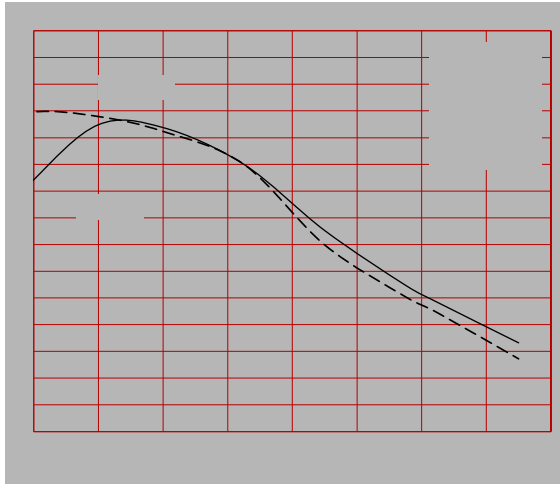
Packing Quantity	
Option	Quantity

MARKING

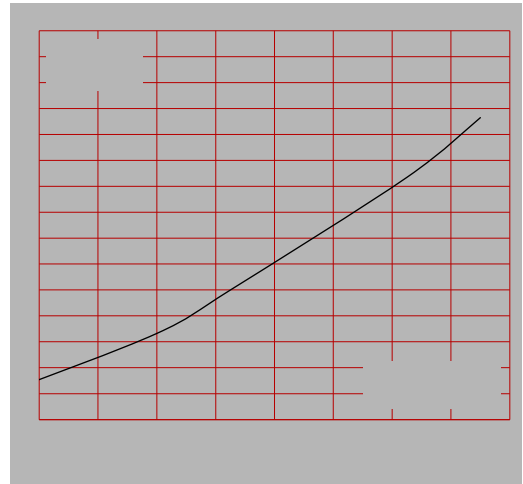




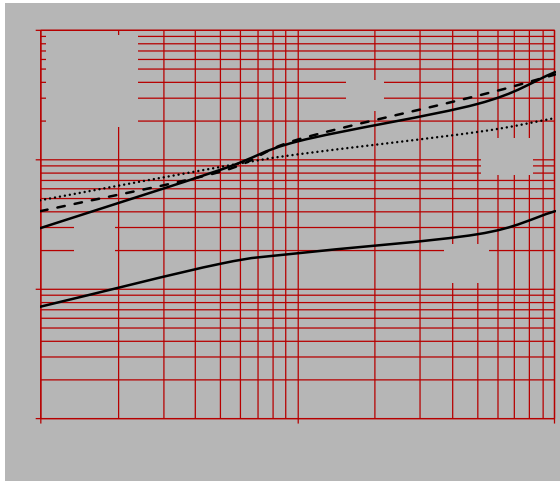
**FIG.7:** Normalized Current Transfer Ratio vs. Ambient Temperature



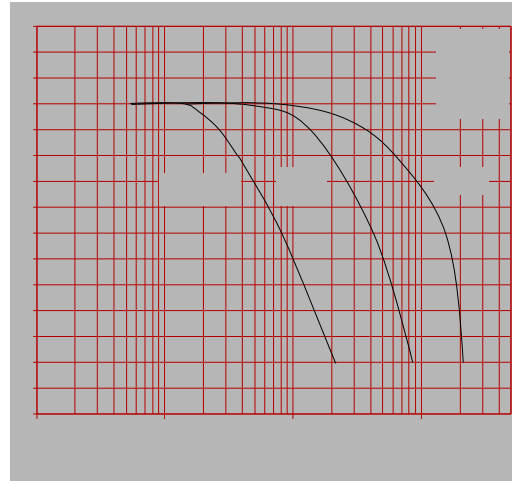
**FIG.8:** Normalized Collector-emitter Saturation Voltage vs. Ambient Temperature



**FIG.9:** Response Time vs. Load Resistance

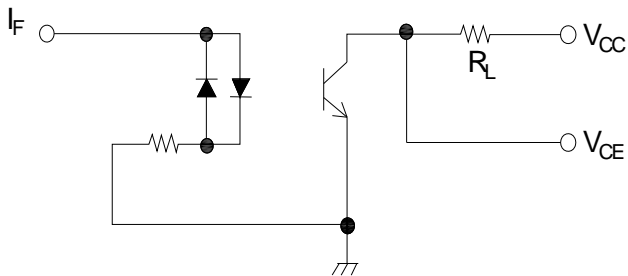


**FIG.10:** Frequency Response



**Test Circuits**

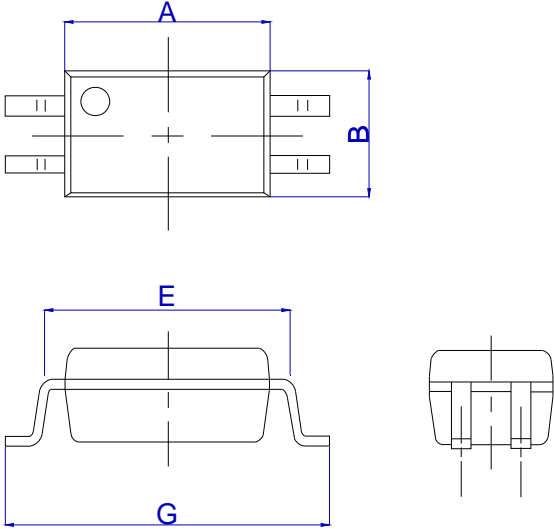
**FIG.11:** Test Circuits of Response Time



**FIG.12:** Curves of Response Time

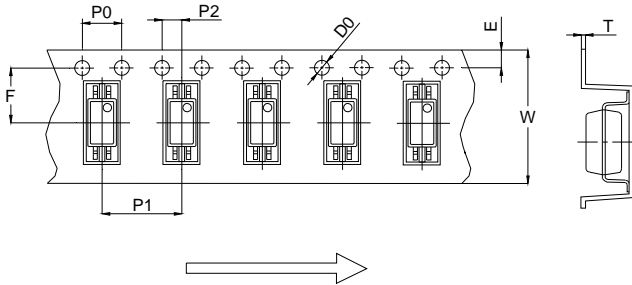


Package Dimension (Unit: mm)



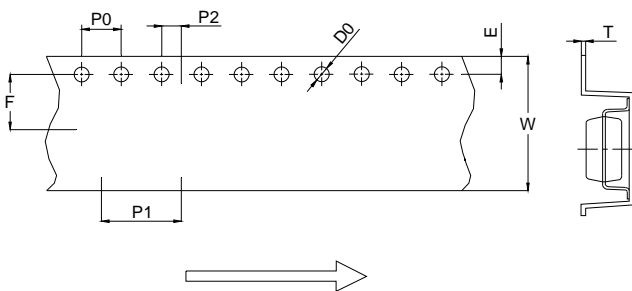
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option None



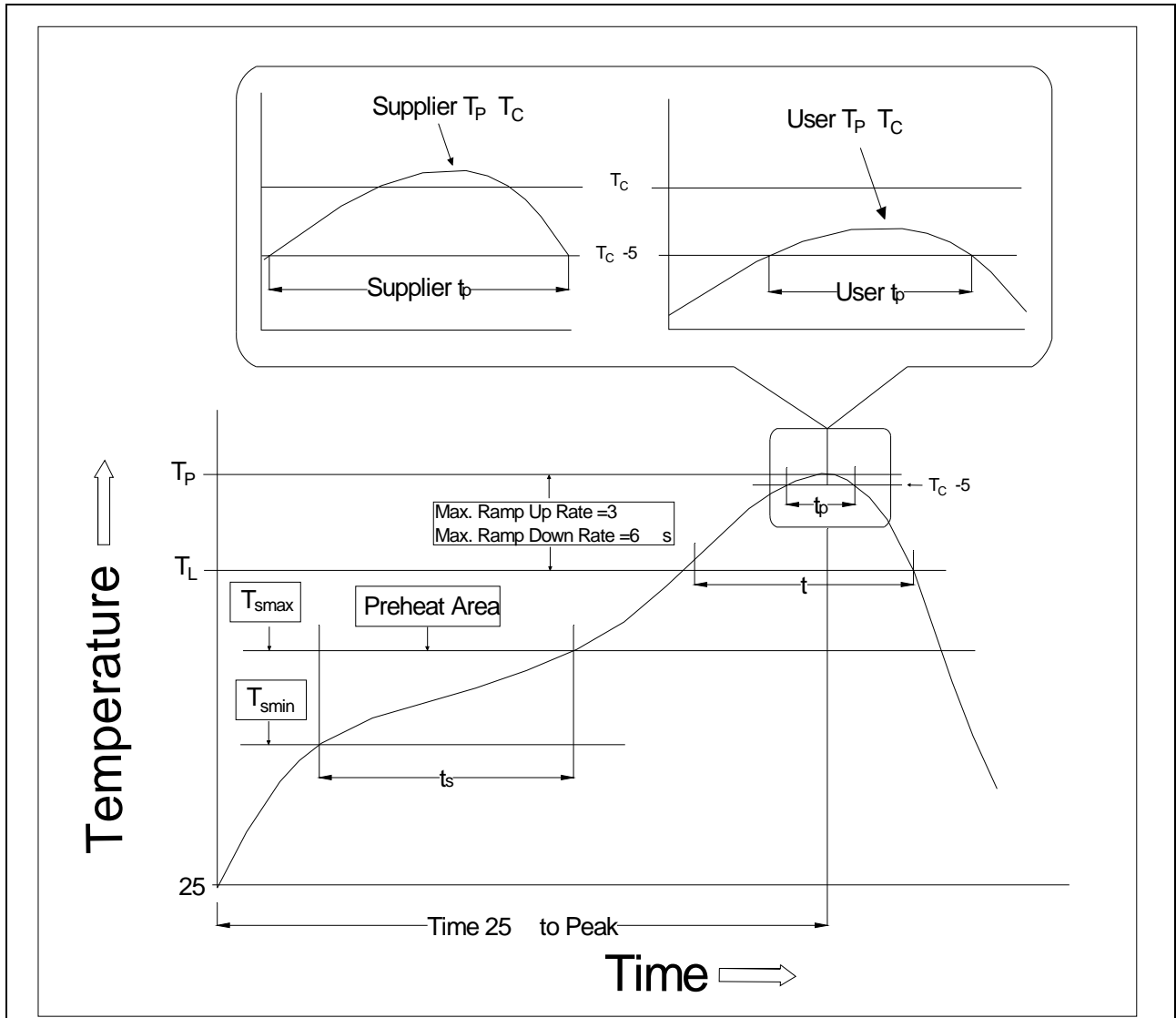
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	5.40	5.50	5.60	0.213	0.217	0.220
T	0.20	0.25	0.30	0.008	0.010	0.012
W	11.90	12.10	12.30	0.469	0.476	0.484

Option R



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	
P0	3.90		4.10	0.154... n		
P2						
F				φ2	3.. š	3 R 3
W						

REFLOW INFORMATION




Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	100	150
Temperature Max. (T <sub>smax</sub> )	150	200
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds	60-120 seconds
Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3 /second max.	3 /second max.
Liquidus Temperature (T <sub>L</sub> )	183	217
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235 +0 /-5	260 +0 /-5
Time (t <sub>P</sub> ) within 5 of 260	20 seconds	30 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	6 /second max.	6 /second max.
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 1

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