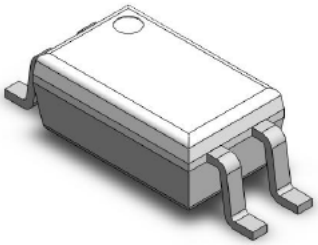
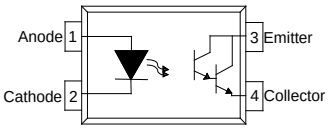
JOC215 Series

Rev.A.1.0

DESCRIPTION:

The JOC215 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar darlington phototransistor detector in a plastic SSOP4 package. With the robust coplanar double mold structure, JOC215 series provide the most stable isolation feature. The products are widely used in switch mode power supplies, programmable controllers, household appliances and office equipment.





MAIN FEATURES

Current transfer ratio（CTR: 600%-7500% @I_F=1mA, V_{CE}=2V）
High isolation voltage between input and output
(V_{iso}=3750 Vrms)
Operating temperature up to +110°C
Collector-Emitter voltage BV_{CEO}≥40V
MSL class 1
CQC approved
VDE approved
UL approved
The products comply with RoHS, REACH and HF

ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	60	mA
	Peak Forward Current	I_{FP}	1①	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	100	mW
Output	Collector-emitter Voltage	V_{CEO}	40	V
	Emitter-collector Voltage	V_{ECO}	6	V
	Collector Current	I_C	80	mA
	Power Dissipation	P_C	150	mW
Total Power Dissipation		P_{tot}	250	mW

Isolation Voltage	V_{iso}	3750②	Vrms
Operating Temperature	T_{opr}	-55~+110	℃
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	-	-	1.4	V
	Reverse Current	I_R	V_R=6V	-	-	1	μA
	Terminal Capacitance	C_t	V=0, f=1kHz	-	10	-	pF
Output	Collector-Emitter dark current	I_{CEO}	V_{CE}=10V, I_F=0	-	-	100	nA
	Collector-Emitter breakdown voltage	BV_{CEO}	I_C=0.1mA I_F=0	40	-	-	V
	Emitter-Collector breakdown voltage	BV_{ECO}	I_E=0.1mA I_F=0	6	-	-	V
Transfer Characteristics	Current transfer ratio	CTR①	I_F=1mA V_{CE}=2V	600	-	7500	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=20mA I_C= 5mA	-	0.8	1	V
	Isolation resistance	R_{IO}	DC500V 40~60%R.H.	10^{12}	10^{14}	-	Ω
	Floating Capacitance	C_{IO}	V=0, f=1MHz	-	0.4	1	pF
	Cut-off Frequency	f_c	V_{CE}=5V, I_C=10mA R_L=100Ω, -3dB	-	1	-	kHz
	Rise Time	t_r	V_{CE}=2V, I_C=10mA R_L=100Ω	-	95	300	μs
	Fall Time	t_f		-	84	250	μs

ORDERING AND MARKING INFORMATION

MARKING INFORMATION

JOC : Company Abbr.
215 : Part Number
VYAWW : LOT NO.

ORDERING INFORMATION

JOC215(Z)-GV

JOC – Company Abbr.
215 – Part Number
Z – Tape and Reel Option (T1/T2)
G – Green
V – VDE Option (V or None)

Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity –Outer box
T1	3000 Units/ Reel	3 Reels/Inner box	5 Inner box/Outer box =45k Units
T2	3000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box =45k Units

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

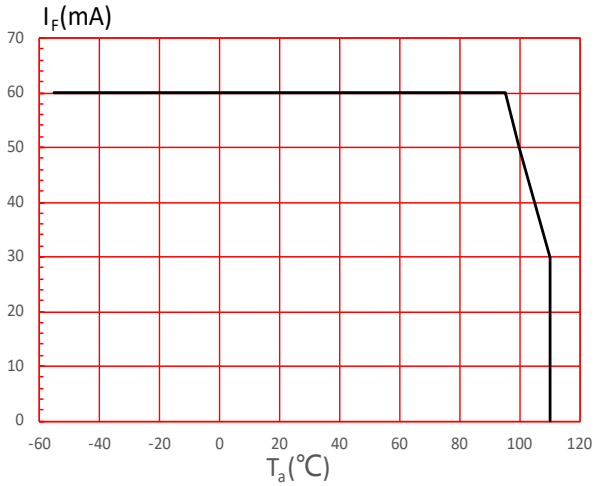


FIG.2: Collector Power Dissipation vs. Ambient Temperature

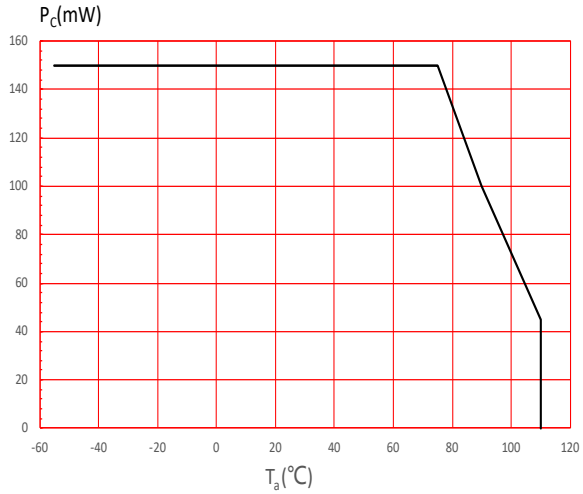


FIG.3: Forward Current vs. Forward Voltage

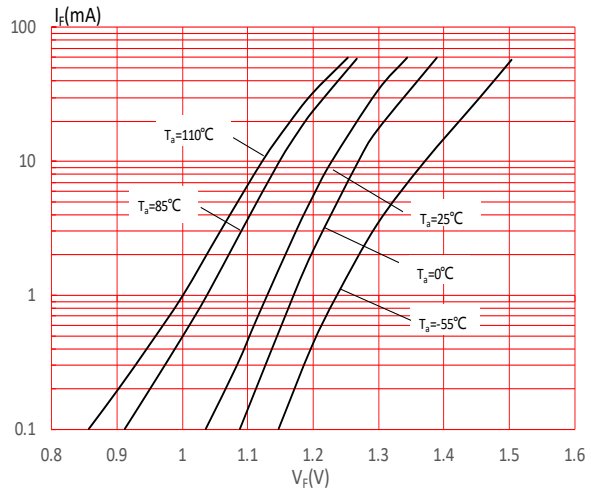


FIG.4: Collector Dark Current vs. Ambient Temperature

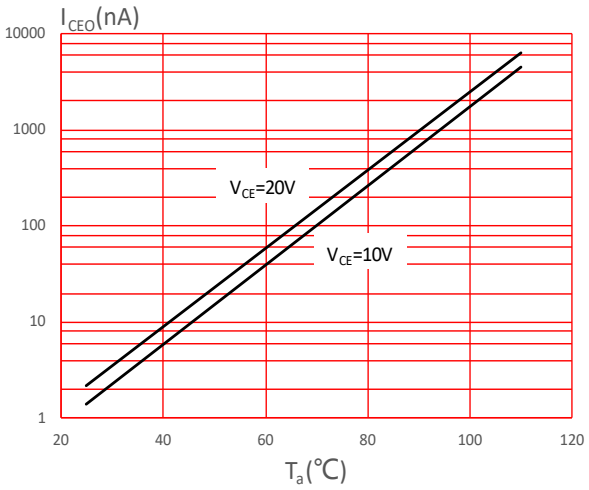


FIG.5: Collector Current vs. Collector-emitter Voltage

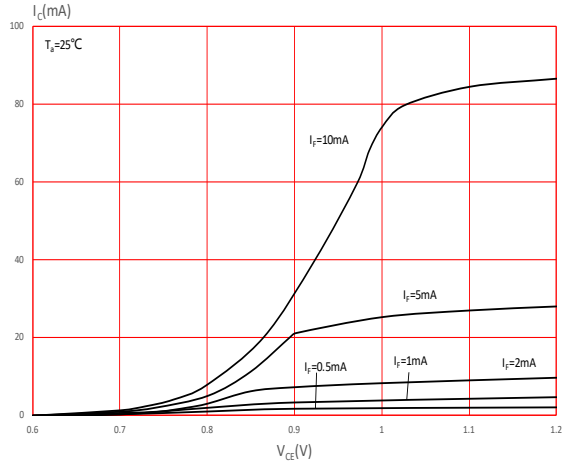


FIG.6: Collector Current vs. Collector-emitter Voltage

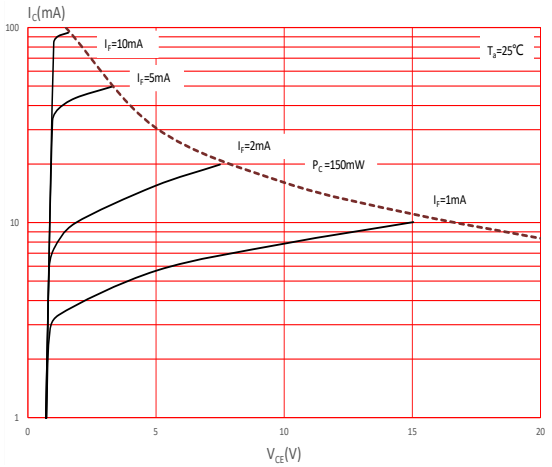


FIG.7: Normalized Current Transfer Ratio vs. Forward Current

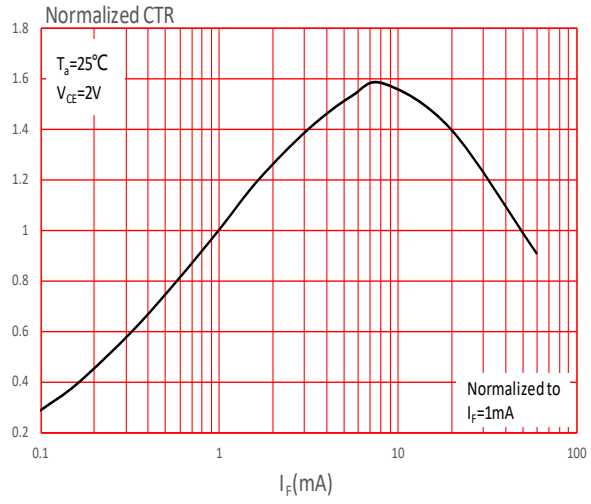


FIG.8: Normalized Current Transfer Ratio vs. Ambient Temperature

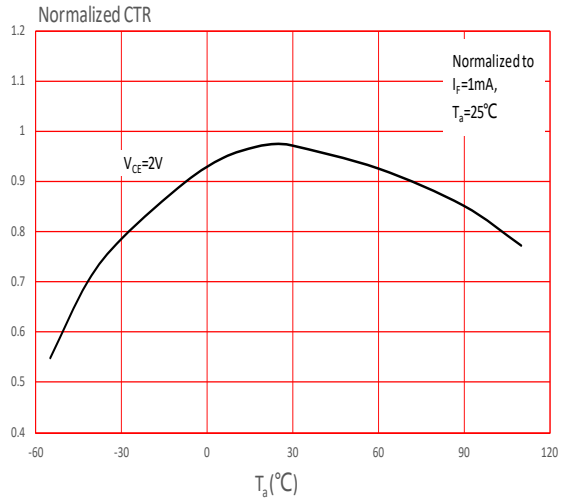


FIG.9: Collector-emitter Saturation Voltage vs. Ambient Temperature

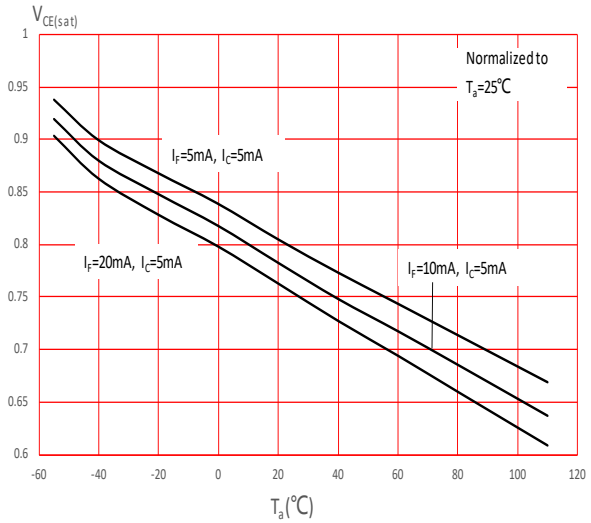


FIG.10: Response Time vs. Load Resistance

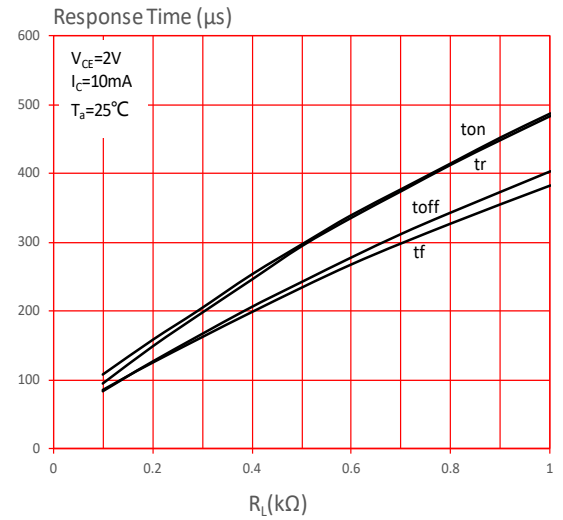
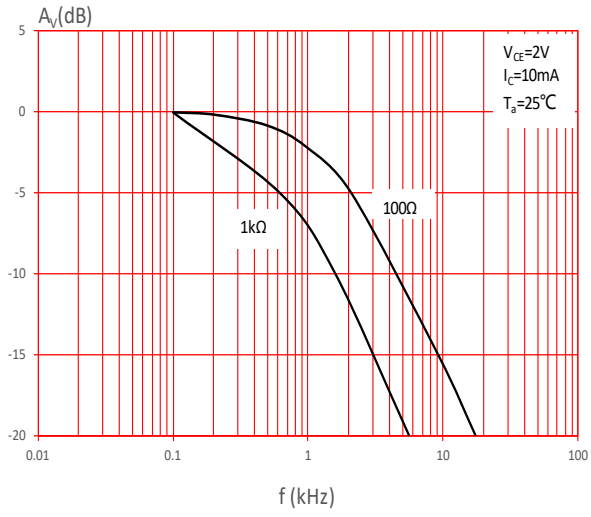


FIG.11: Frequency Response



Test Circuits

FIG.12: Test Circuits of Response Time

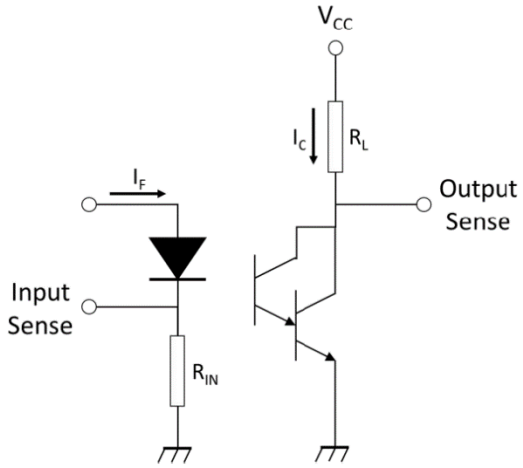


FIG.13: Curves of Response Time

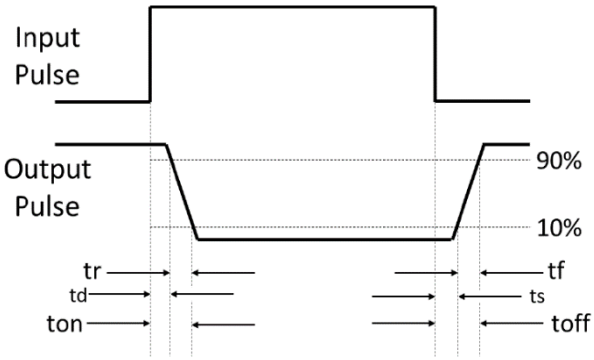
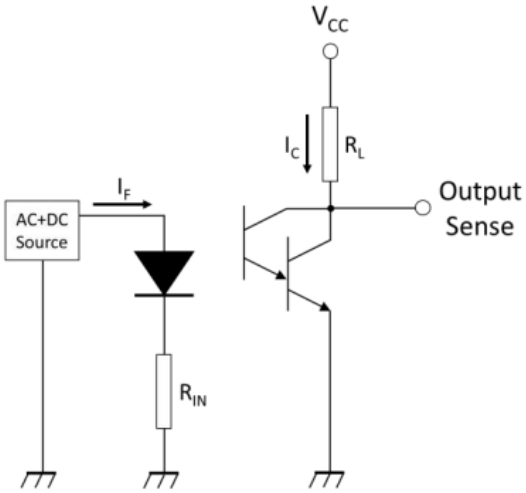
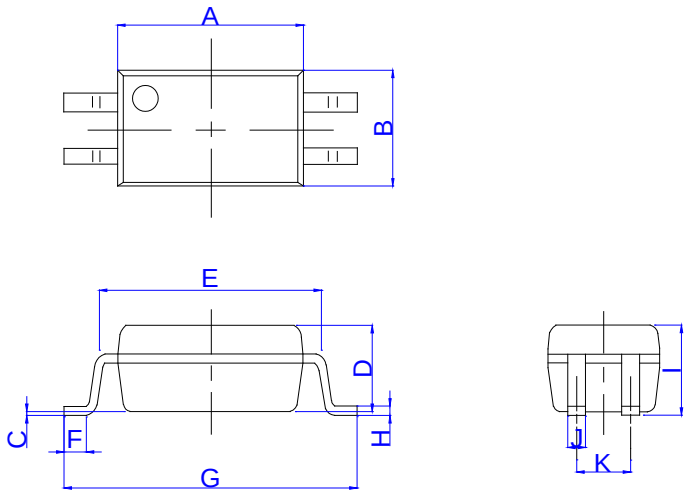


FIG.14: Test Circuits of Frequency Response



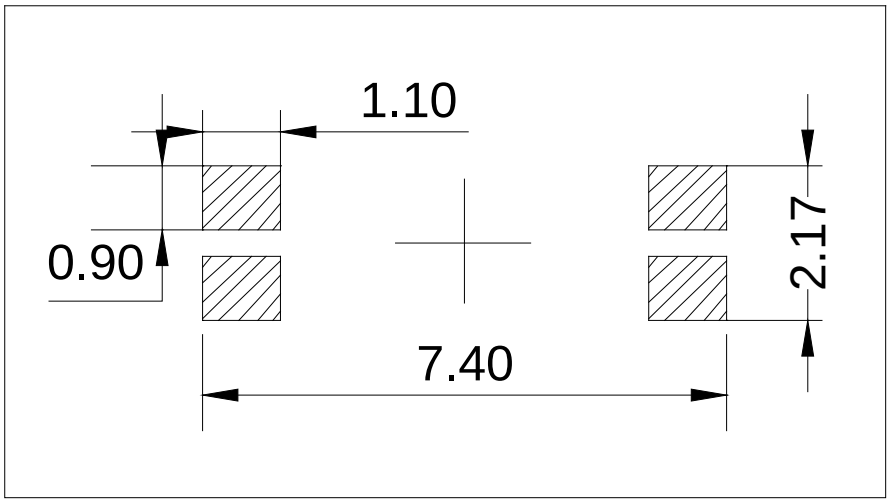
Package Dimension (Unit: mm）

Standard SSOP4 Type:



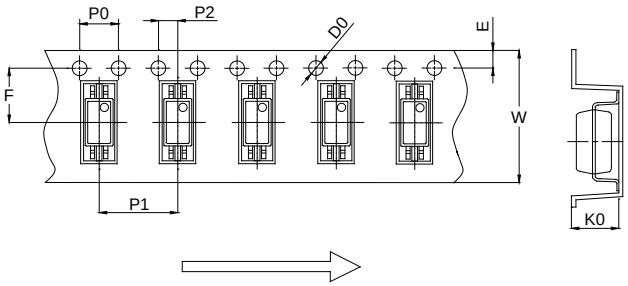
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.20		4.60	0.166		0.182
B	2.50		2.90	0.099		0.115
C		0.10			0.004	
D	1.90		2.10	0.075		0.083
E	4.90		5.50	0.194		0.217
F		0.50			0.020	
G	6.70		7.30	0.265		0.289
H		0.20			0.008	
I		2.10			0.083	
J		0.40			0.016	
K		1.27			0.050	

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



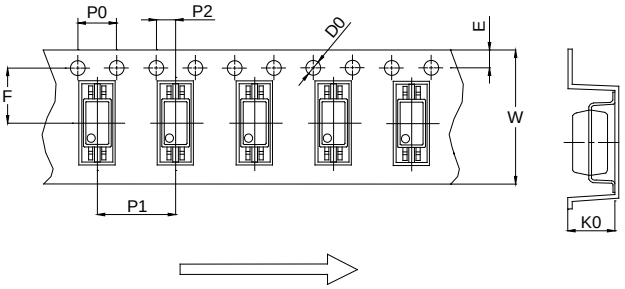
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option SSOP4(T1)



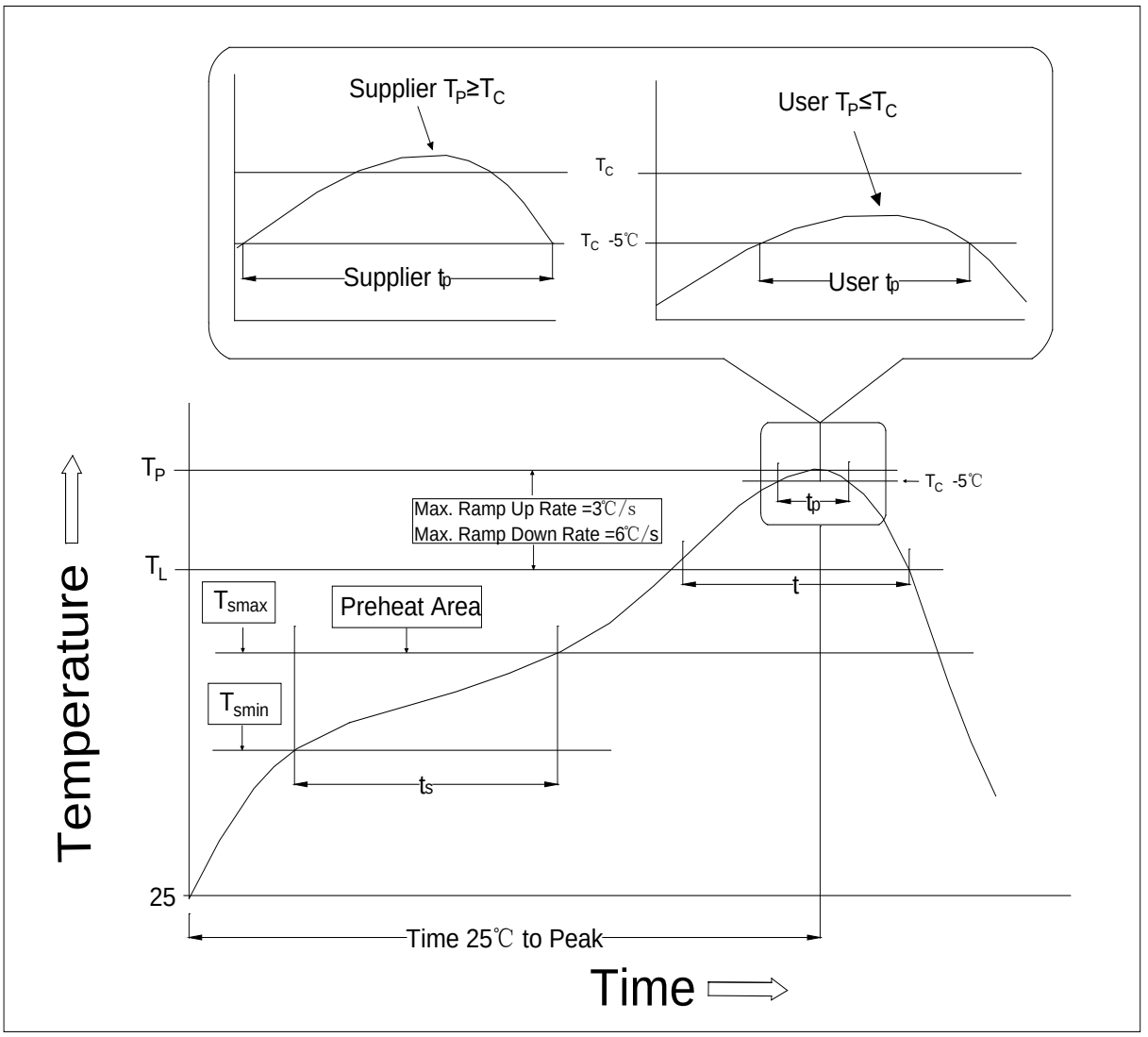
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50			0.059	
K0		2.45			0.096	
P0		4.00			0.157	
P1		8.00			0.315	
P2		2.00			0.079	
E		1.75			0.069	
F		5.50			0.217	
W		12.00			0.472	

Option SSOP4(T2)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50			0.059	
K0		2.45			0.096	
P0		4.00			0.157	
P1		8.00			0.315	
P2		2.00			0.079	
E		1.75			0.069	
F		5.50			0.217	
W		12.00			0.472	

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℃	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6℃/second max.	6℃/second max.
Time 25℃ to Peak Temperature	6 minutes max.	8 minutes max.

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