

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% @ $I_F=1\text{mA}$, $V_{CE}=2\text{V}$)

High isolation voltage between input and output

($V_{iso}=3750\text{ Vrms}$)

Operating temperature up to $+110^\circ\text{C}$

Collector-Emitter voltage $BV_{CEO} \geq 40\text{V}$

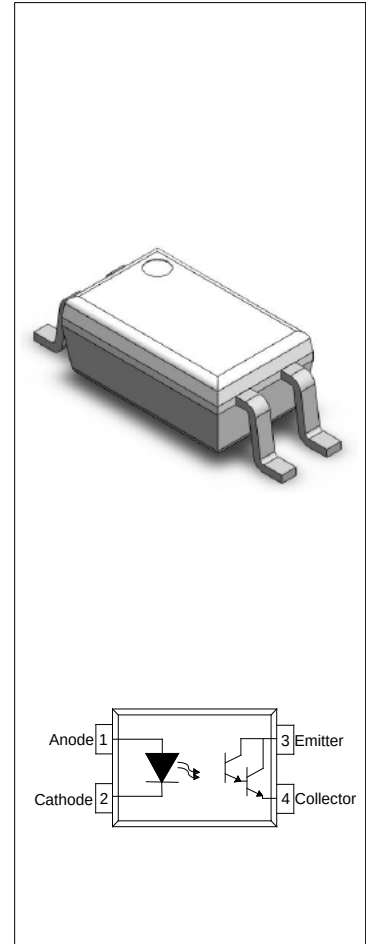
MSL class 1

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}	1 ^①	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}	3750 ^②	V _{rms}
Operating Temperature	T_{opr}	-55~+110	°C
Storage Temperature	T_{stg}	-55~+125	°C
Soldering Temperature	T_{sol}	260	°C

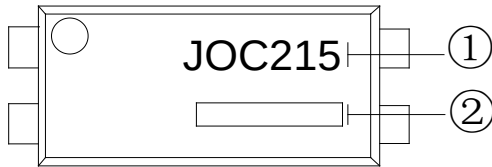
NOTE1: 100μs pulse, 100Hz frequency

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	$CTR^{①}$	$I_F=1mA, V_{CE}=2V$	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	$V_{CE}=2V, I_C=10mA$	-	95	300	μs
	Fall Time	t_f	$R_L=100Ω$	-	84	250	μs

ORDERING AND MARKING INFORMATION

MARKING INFORMATION			
		① : Part Number & Rank ② : Production Information Code	
Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity –Outer box
SSOP4	3000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box =30k Units

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

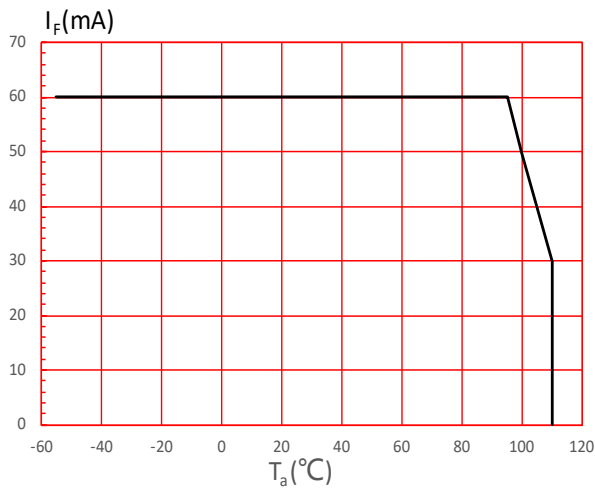


FIG.2: Collector Power Dissipation vs. Ambient Temperature

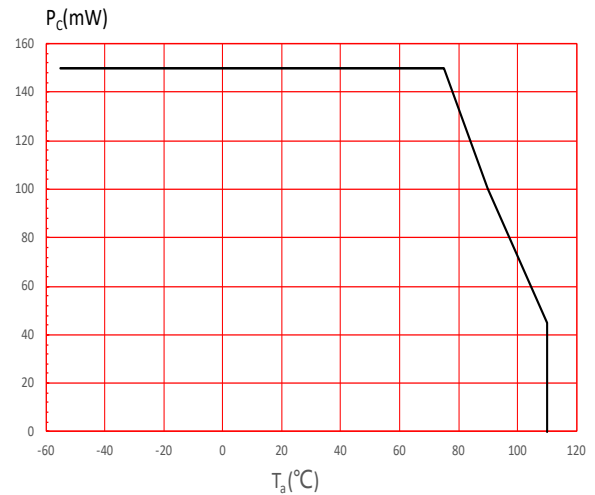


FIG.3: Forward Current vs. Forward Voltage

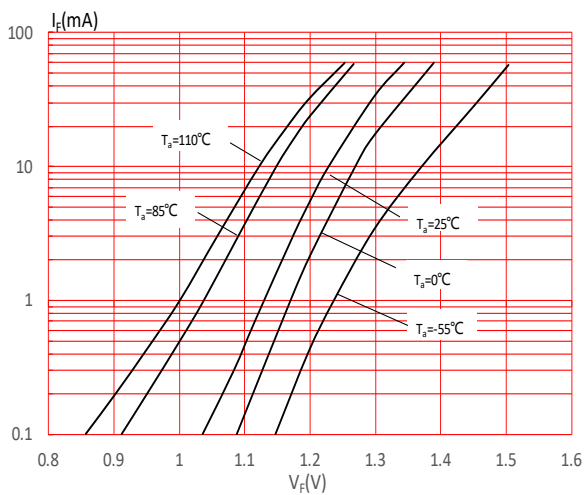


FIG.4: Collector Dark Current vs. Ambient Temperature

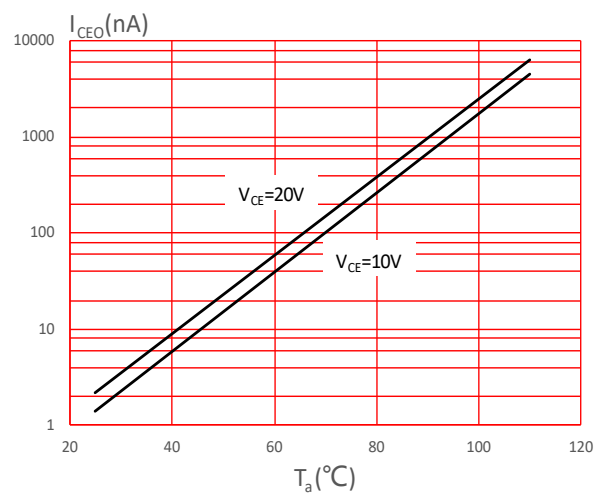


FIG.5: Collector Current vs. Collector-emitter Voltage

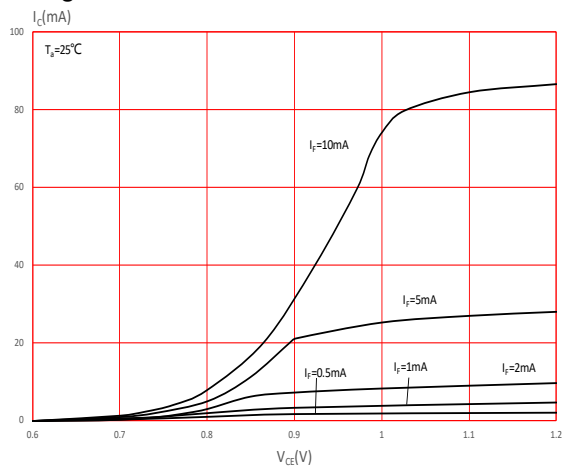


FIG.6: Collector Current vs. Collector-emitter Voltage

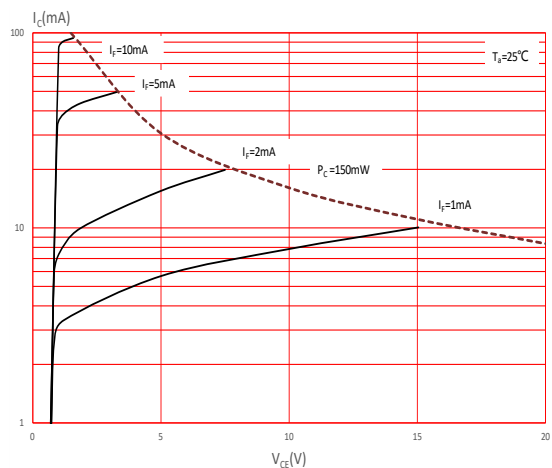
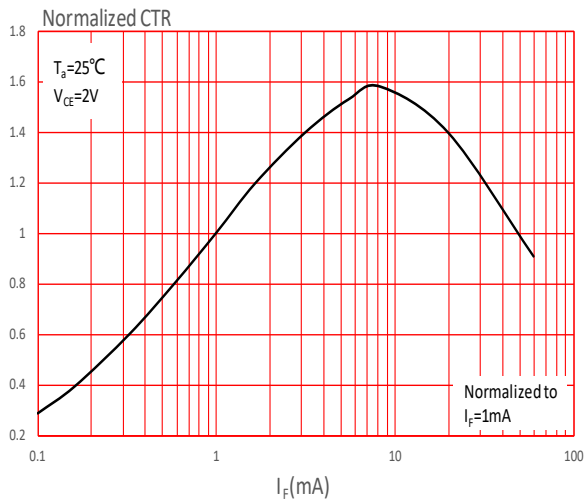
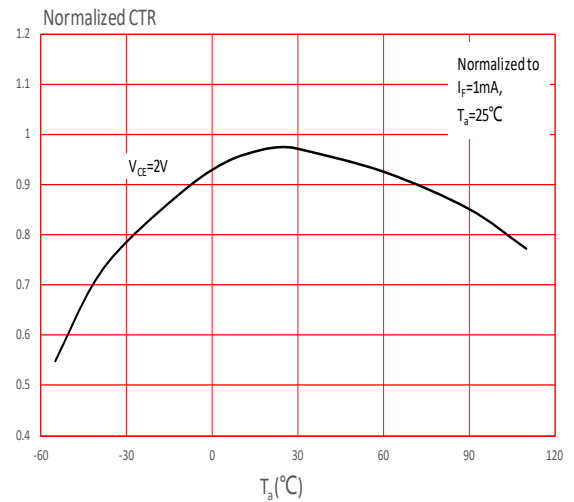
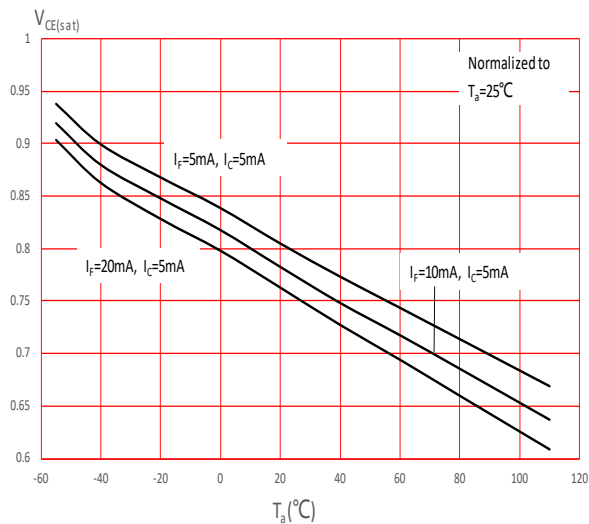
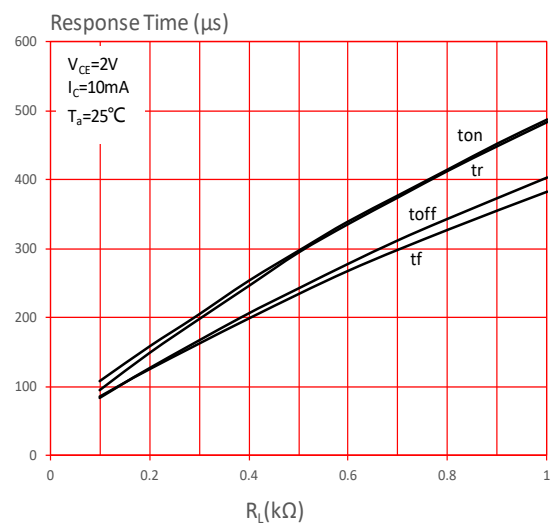
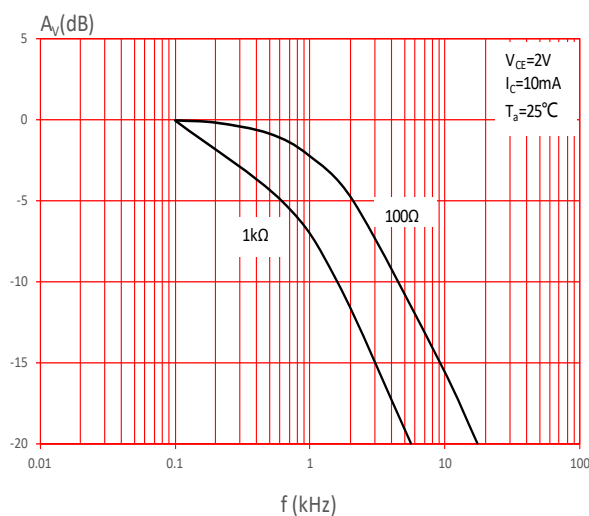


FIG.7: Normalized Current Transfer Ratio vs. Forward Current

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

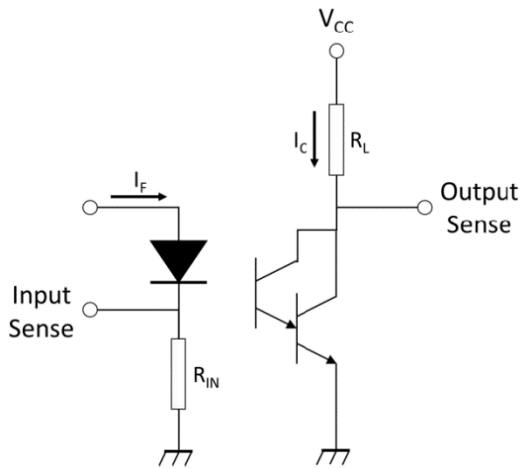


FIG.13: Curves of Response Time

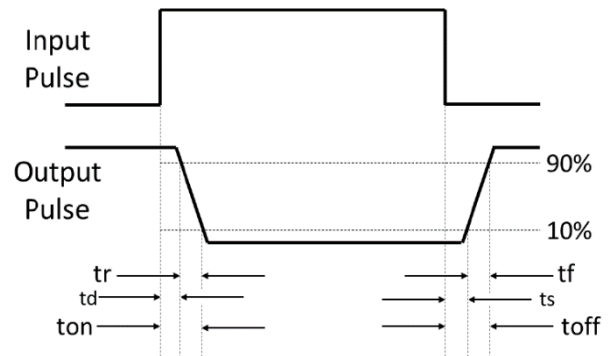
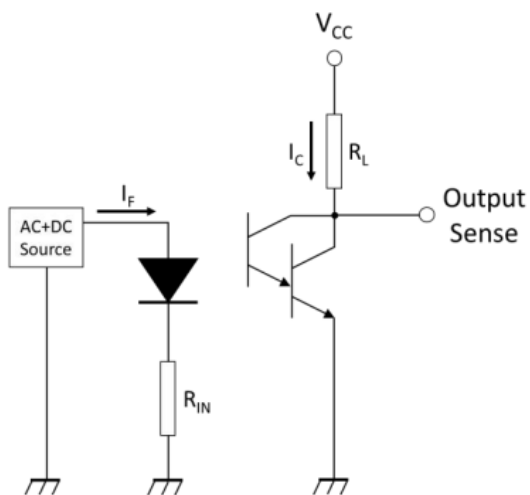
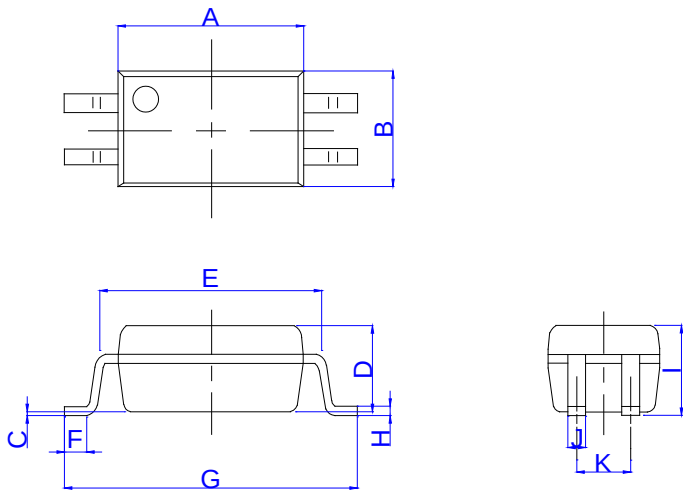


FIG.14: Test Circuits of Frequency Response



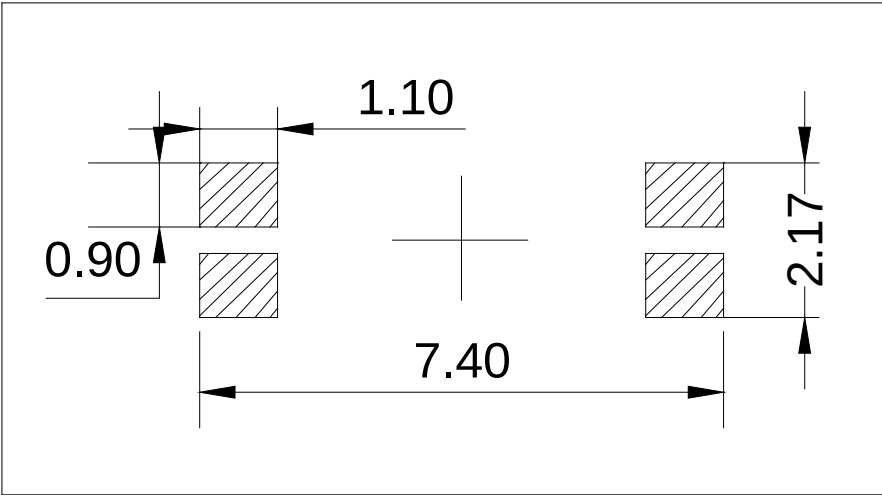
Package Dimension (Unit: mm)

Standard SSOP4 Type:



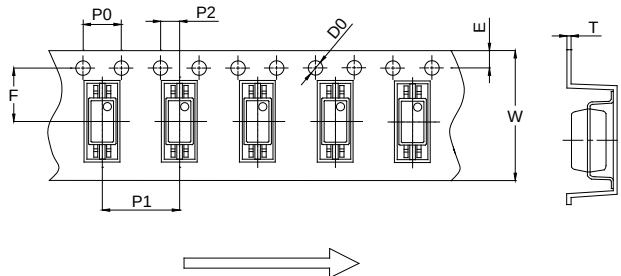
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.20		4.60	0.166		0.182
B	2.50		2.90	0.099		0.115
C		0.10			0.004	
D	1.90		2.10	0.075		0.083
E	4.90		5.50	0.194		0.217
F		0.50			0.020	
G	6.70		7.30	0.265		0.289
H		0.20			0.008	
I		2.10			0.083	
J		0.40			0.016	
K		1.27		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

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



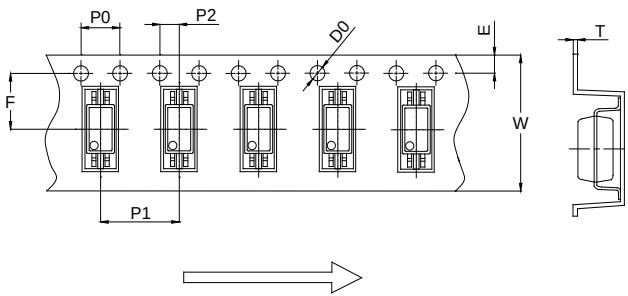
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option T1



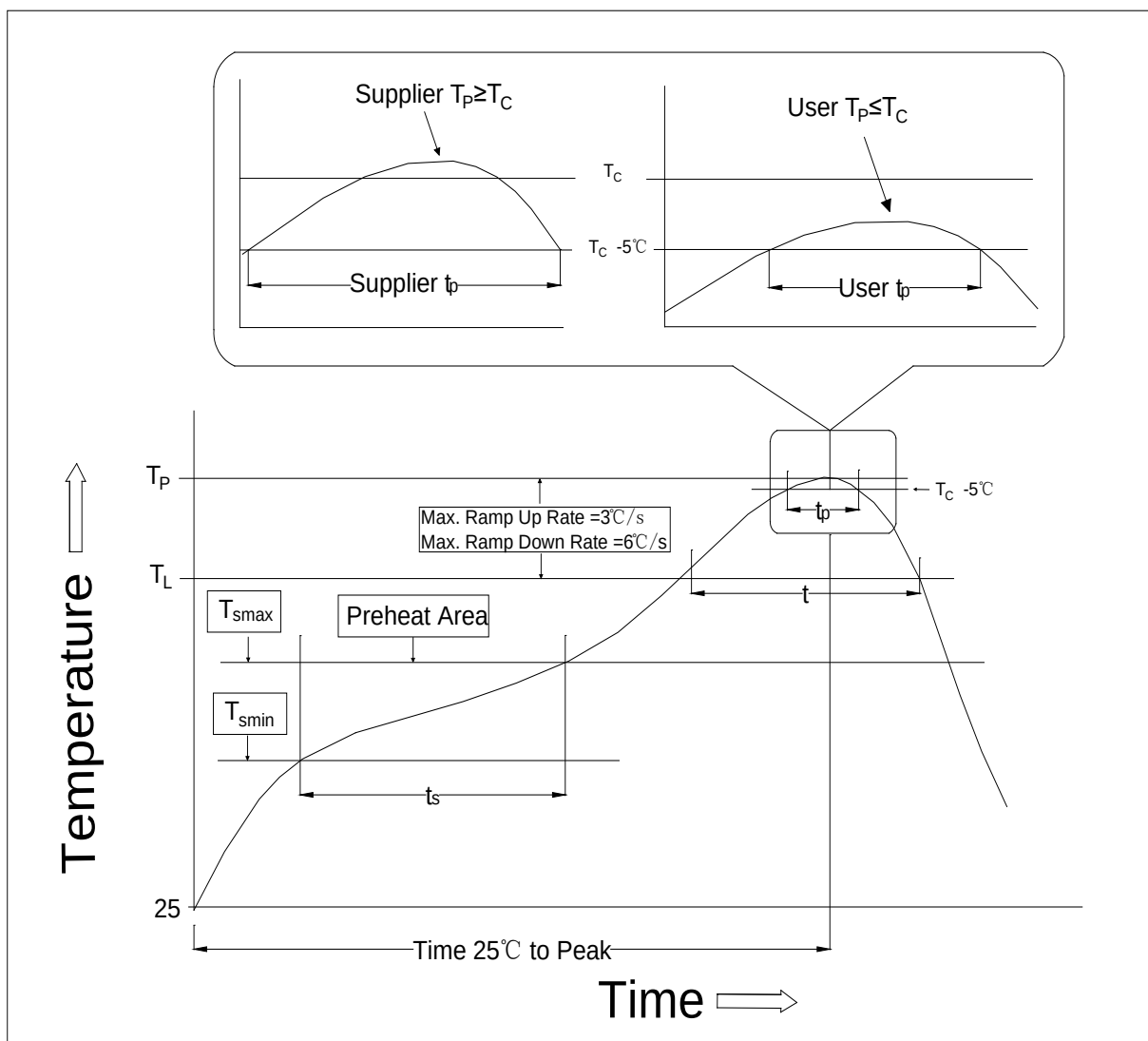
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.55	1.65		0.061	0.065
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	5.40	5.50	5.60	0.213	0.217	0.220
T	0.20	0.25	0.30	0.008	0.010	0.012
W	11.80	12.00	12.20	0.465	0.472	0.480

Option T2



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.55	1.65		0.061	0.065
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	11.80	12.00	12.20	0.465	0.472	0.480

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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