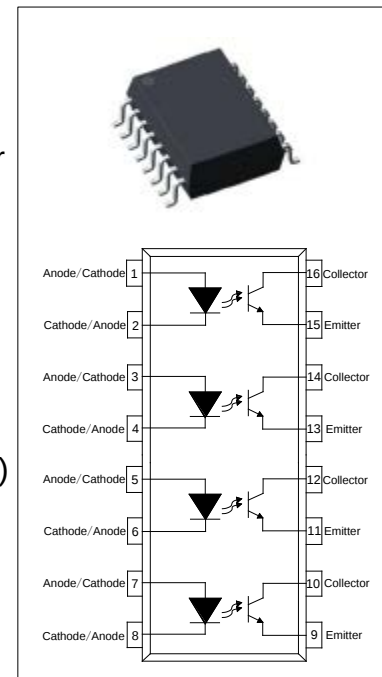


DESCRIPTION:

The JOC247 is a photoelectric coupler composed of light-emitting diode and photo transistor. It is packaged in a 16-pin at SSOP16. The products are widely used in DC-DC converter, communications equipment, programmable controller and signal transmission.

MAIN FEATURES

Current transfer ratio: 50%-600% ($I_F=5\text{mA}$, $V_{CE}=5\text{V}$, $T_a=25^\circ\text{C}$)
 High isolation voltage between input and output ($V_{ISO}=3750\text{ V}_{rms}$)
 Collector-emitter breakdown voltage $BV_{CEO}\geq 80\text{V}$
 Operating temperature range -55°C to 110°C
 UL、VDE、CQC approvals



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}	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}	200	mW
Isolation Voltage		V_{iso}	3750 ^②	V_{rms}
Operating Temperature		T_{opr}	$-55\sim+110$	$^\circ\text{C}$
Storage Temperature		T_{stg}	$-55\sim+125$	$^\circ\text{C}$
Soldering Temperature		T_{sol}	260	$^\circ\text{C}$

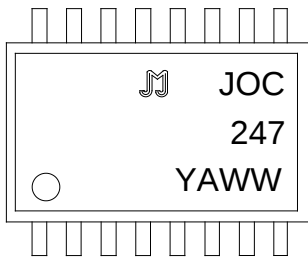
NOTE1: 100 μs pulse, 100Hz frequency

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	1.3	V
			$I_F=20\text{mA}$	-	1.24	1.4	
	Reverse Current	I_R	$V_R=6\text{V}$	-	-	1	μA
	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	$CTR^{\text{①}}$	$I_F=5\text{mA}$ $V_{CE}=5\text{V}$	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=20\text{mA}$ $I_C=1\text{mA}$	-	0.06	0.2	V
	Isolation resistance	R_{IO}	DC500V 40~60%R.H.	5×10^{10}	10^{11}	-	Ω
	Floating Capacitance	C_{IO}	$V=0$, $f=1\text{MHz}$	-	0.4	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	$V_{CE}=2\text{V}$, $I_C=2\text{mA}$ $R_L=100\Omega$	-	5	18	μs
	Fall Time	t_f		-	4	18	μs
	Response Time	t_{on}		-	9	25	μs
		t_{off}		-	5	25	μs

ORDERING AND MARKING INFORMATION

MARKING INFORMATION					
		JOC : Company Abbr. 247 : Part Number Y : Fiscal Year A : Manufacturing Code WW : Work Week			
ORDERING INFORMATION					
JOC247(Z)-G					
JOC – Company Abbr. 247– Part Number Z – Tape and Reel Option (T1) G – Green					
Packing Quantity					
Option	Quantity	Quantity – Inner box	Quantity –Outer box		
T1	2000 Units/Reel	2 Reels/Inner box	10 Inner box/Outer box =40k Units		

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

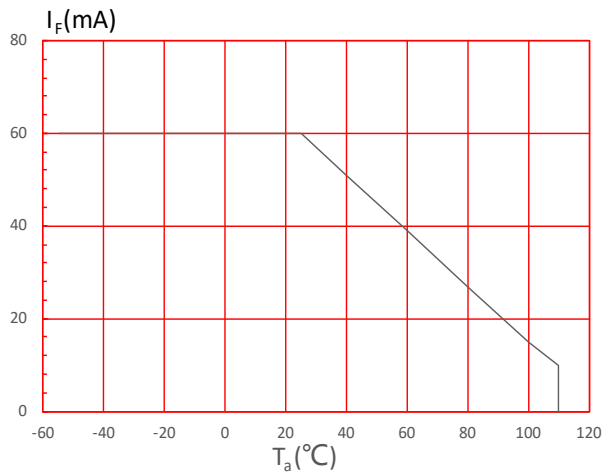


FIG.2: Collector Power Dissipation vs. Ambient Temperature

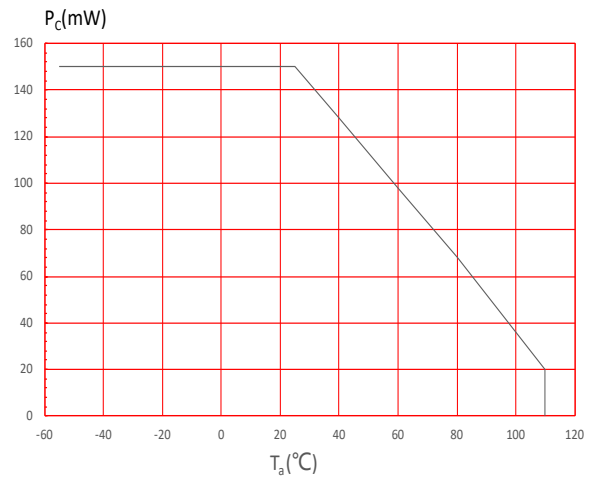


FIG.3: Forward Current vs. Forward Voltage

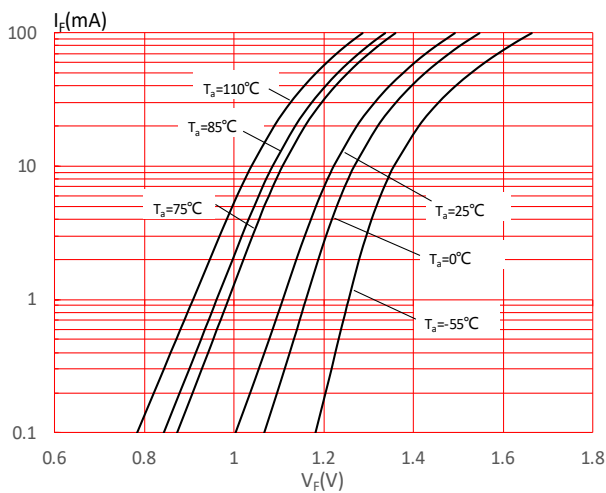


FIG.4: Normalized Collector Dark Current vs. Ambient Temperature

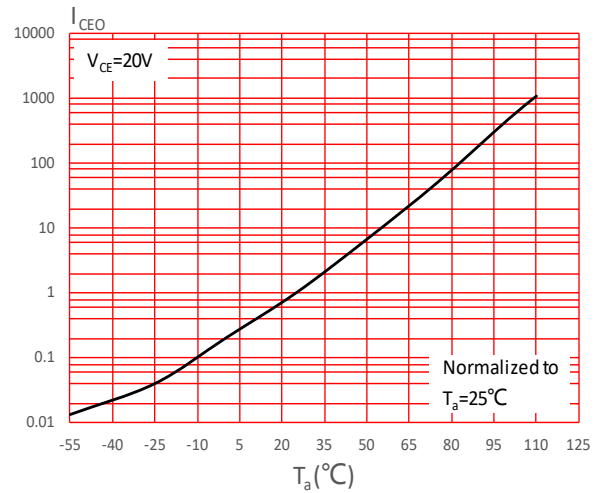


FIG.5: Collector Current vs. Collector-emitter Voltage

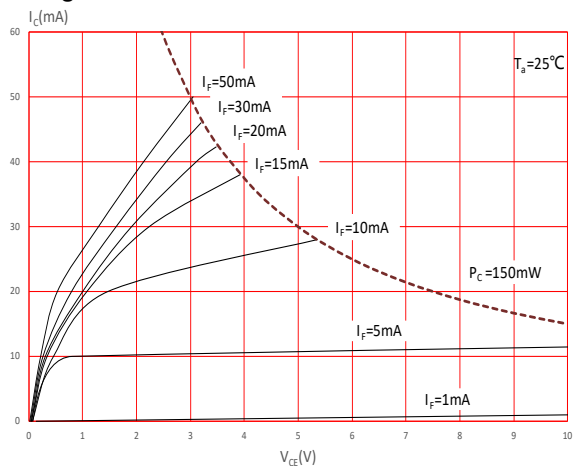


FIG.6: Normalized Current Transfer Ratio vs. Forward Current

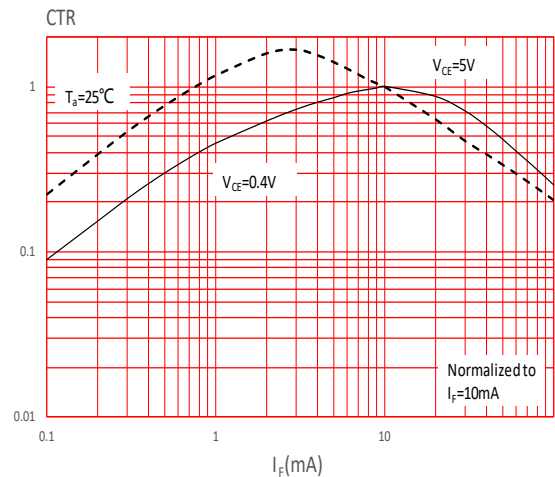
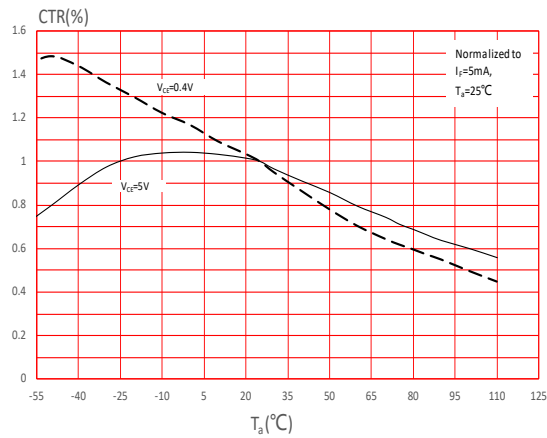
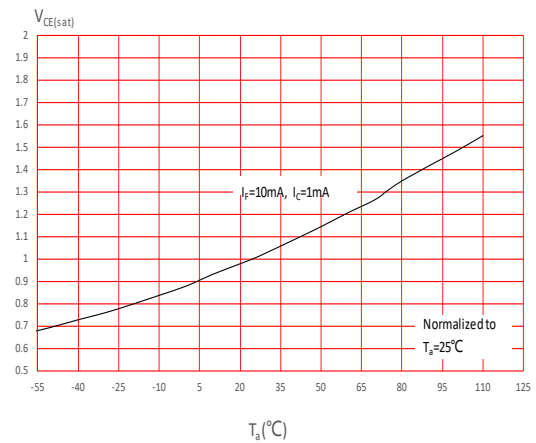
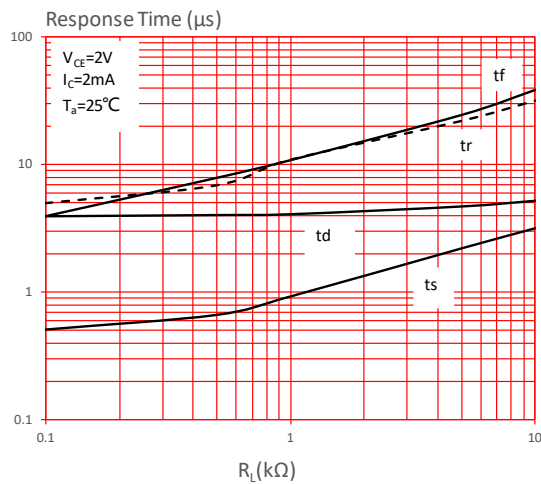
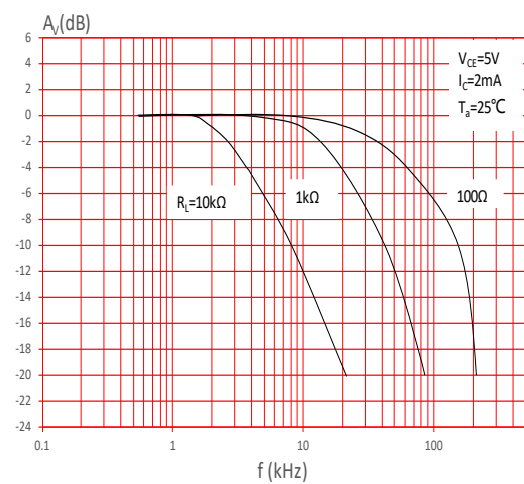
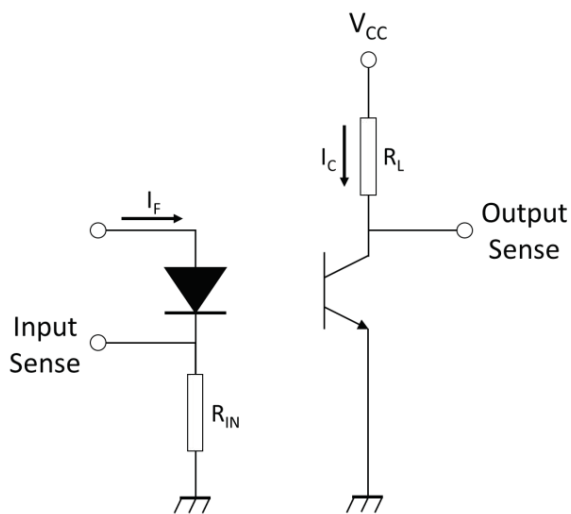
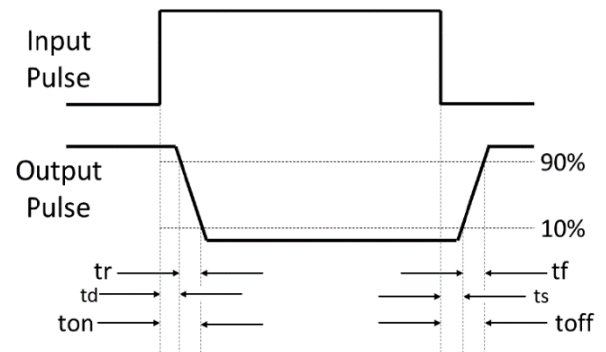
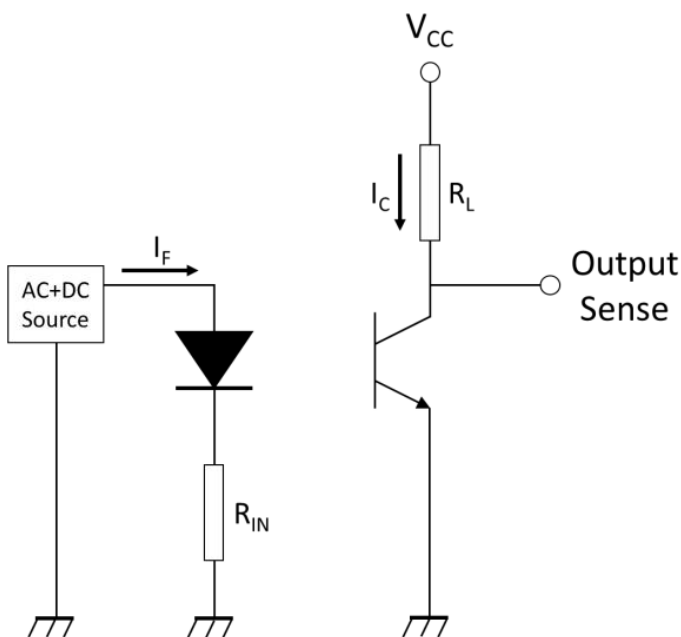
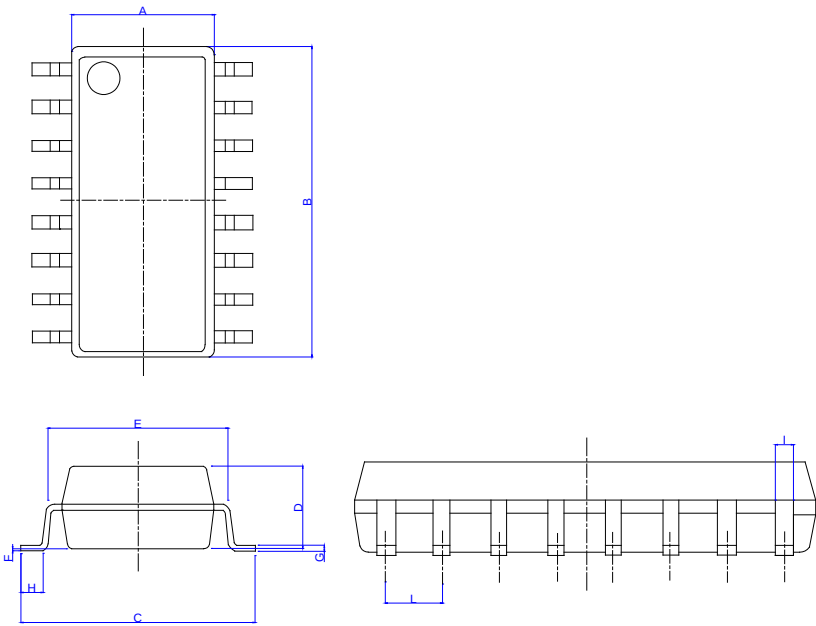


FIG.7: Normalized Current Transfer Ratio vs. Ambient Temperature

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

FIG.9: Response Time vs. Load Resistance

FIG.10: Frequency Response


Test Circuits

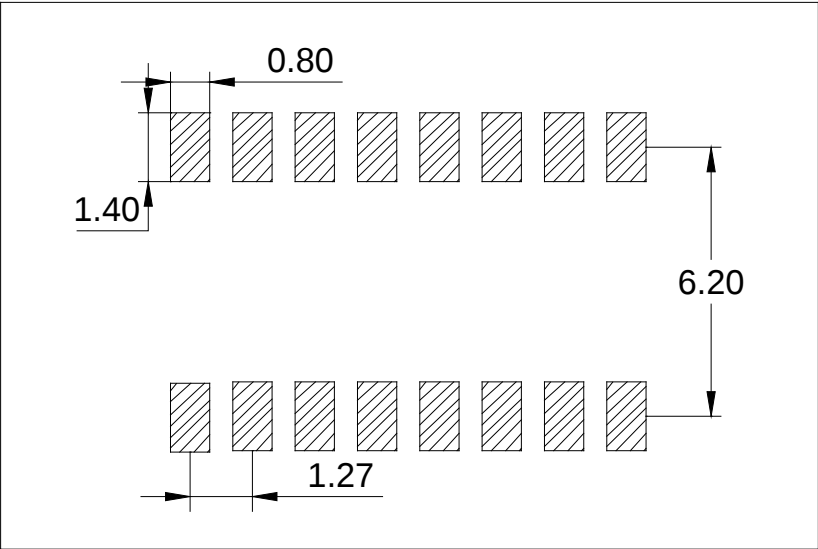
FIG.11: Test Circuits of Response Time

FIG.12: Curves of Response Time

FIG.13: Test Circuits of Frequency Response


Package Dimension (Unit: mm)

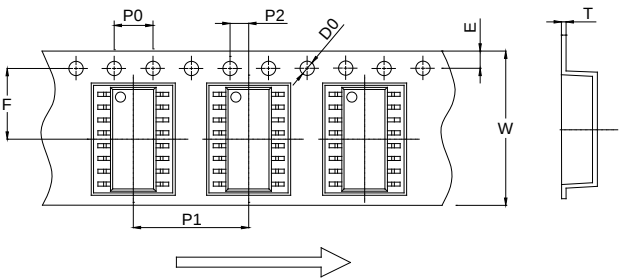


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.20		4.80	0.165		0.189
B	9.99		10.59	0.393		0.417
C	6.70		7.30	0.264		0.287
D	1.80		2.40	0.071		0.094
E	5.00		5.60	0.197		0.220
F	0.00		0.20	0.000		0.008
G	0.10		0.30	0.004		0.012
H	0.40			0.016		
I	0.30		0.50	0.012		0.020
L	1.02		1.52	0.040		0.060

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

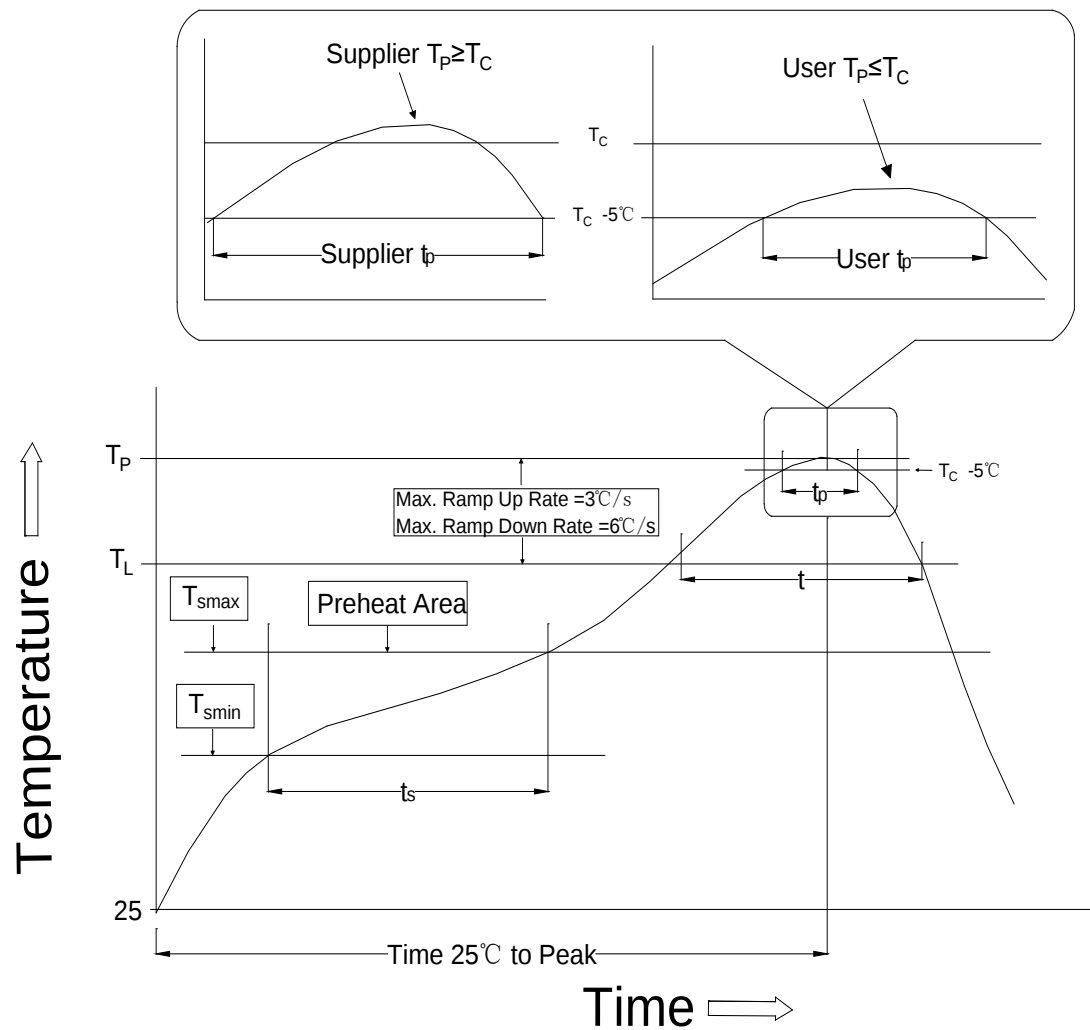


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.55	1.65		0.061	0.065
P0	3.95	4.00	4.05	0.156	0.157	0.159
P1	11.95	12.00	12.05	0.470	0.472	0.474
P2	1.95	2.00	2.05	0.077	0.079	0.081
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.45	7.50	7.55	0.293	0.295	0.297
T	0.25	0.30	0.35	0.010	0.012	0.014
W	15.90	16.00	16.10	0.626	0.630	0.634

REFLOW INFORMATION



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	100	150°C
Temperature Max. (T_{smax})	150	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	20 seconds	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

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