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ICPLM600, ICPLM601

Truth Table (Positive Logic)

Input	Output
H	L
L	H

ELECTRICAL CHARACTERISTICS ($T_A = -40^\circ\text{C}$ to 85°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.*	Max	Unit
Forward Voltage	V_F	$I_F = 10\text{mA}$		1.45	1.80	V
Forward Voltage Temperature Coefficient	$\Delta V_F/\Delta T$	$I_F = 10\text{mA}$		-1.9		$\text{mV}/^\circ\text{C}$
Reverse Voltage	V_R	$I_R = 10\mu\text{A}$	5.0			V
Input Capacitance	C_{IN}	$V_F = 0\text{V}$, $f = 1\text{MHz}$		70		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.*	Max	Unit
High Level Supply Current	I_{CCH}	$I_F = 0\text{mA}$, $V_{CC} = 5.5\text{V}$		6.0	9	mA
Low Level Supply Current	I_{CCL}	$I_F = 10\text{mA}$, $V_{CC} = 5.5\text{V}$		7.5	10	mA
High Level Output Current	I_{OH}	$I_F = 250\mu\text{A}$, $V_{CC} = 5.5\text{V}$, $V_O = 5.5\text{V}$		2.1	30	μA
Low Level Output Voltage	V_{OL}	$I_F = 5\text{mA}$, $V_{CC} = 5.5\text{V}$, $I_{OL} = 13\text{mA}$		0.4	0.6	V

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.*	Max	Unit
Input Threshold Current	I_{TH}	$V_{CC} = 5.5\text{V}$, $V_O = 0.6\text{V}$ $I_{OL} = 13\text{mA}$		2.4	5	mA

* Typical values at $T_A = 25^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS ($T_A = -40^\circ\text{C}$ to 85°C unless otherwise specified)

SWITCHING ($T_A = -40^\circ\text{C}$ to 85°C , $I_F = 7.5\text{mA}$, $V_{CC} = 5\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ.*	Max	Unit
Propagation Delay Time to Logic Low	T_{PHL}	$R_L = 350\Omega$, $C_L = 15\text{pF}$, $T_A = 25^\circ\text{C}$		41	100	ns
Propagation Delay Time to Logic High	T_{PLH}			50	100	
Pulse Width Distortion	$ t_{PHL} - t_{PLH} $	$R_L = 350\Omega$, $C_L = 15\text{pF}$		9	35	
Propagation Delay Skew	t_{PSK}				40	
Output Rise Time	t_r			40		
Output Fall Time	t_f			10		
Common Mode Transient Immunity at Logic High	CM_H	ICPLM600 $I_F = 0\text{mA}$, $V_{OH} = 2.0\text{V}$, $R_L = 350\Omega$, $V_{CM} = 10\text{Vp-p}$, $T_A = 25^\circ\text{C}$		1000		$\text{V}/\mu\text{s}$
		ICPLM601 $I_F = 0\text{mA}$, $V_{OH} = 2.0\text{V}$, $R_L = 350\Omega$, $V_{CM} = 50\text{Vp-p}$, $T_A = 25^\circ\text{C}$	5000			
Common Mode Transient Immunity at Logic Low	CM_L	ICPLM600 $I_F = 7.5\text{mA}$, $V_{OL} = 0.8\text{V}$, $R_L = 350\Omega$, $V_{CM} = 10\text{Vp-p}$, $T_A = 25^\circ\text{C}$		1000		
		ICPLM601 $I_F = 7.5\text{mA}$, $V_{OL} = 0.8\text{V}$, $R_L = 350\Omega$, $V_{CM} = 50\text{Vp-p}$, $T_A = 25^\circ\text{C}$	5000			

* Typical values at $T_A = 25^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS

Notes :

1. The V_{CC} supply must be bypassed by a $0.1\mu F$ capacitor or larger with good high frequency characteristic and should be connected as close as possible to the package V_{CC} and GND pins.
2. t_{PLH} – Propagation delay is measured from the 3.75mA level on the HIGH to LOW transition of the input current pulse to the 1.5 V level on the LOW to HIGH transition of the output voltage pulse.
3. t_{PHL} – Propagation delay is measured from the 3.75mA level on the LOW to HIGH transition of the input current pulse to the 1.5 V level on the HIGH to LOW transition of the output voltage pulse.
4. t_{PSK} – The magnitude of the worst case difference in t_{PHL} and/or t_{PLH} that will be seen between devices at any given temperature within the worst case operating condition range.
4. t_r – Rise time is measured from the 10% to the 90% levels on the LOW to HIGH transition of the output pulse.
5. t_f – Fall time is measured from the 90% to the 10% levels on the HIGH to LOW transition of the output pulse.
6. CM_H – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the HIGH state (i.e., $V_{OUT} > 2.0V$).
7. CM_L – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the LOW output state (i.e., $V_{OUT} < 0.8V$).



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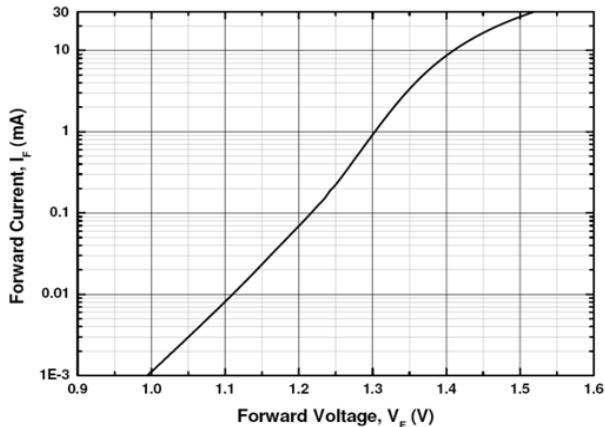


Fig 1 Forward Current vs Forward Voltage

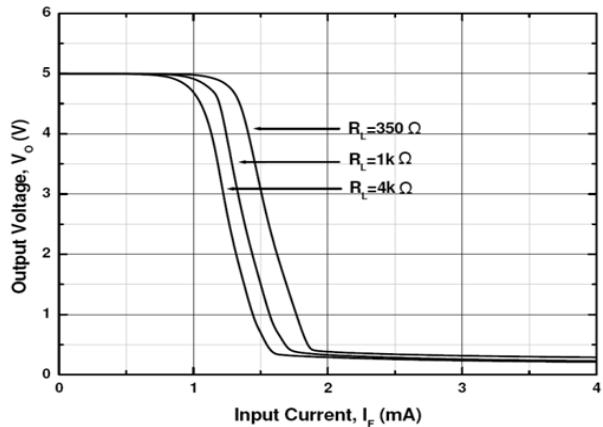


Fig 2 Output Voltage vs Forward Current

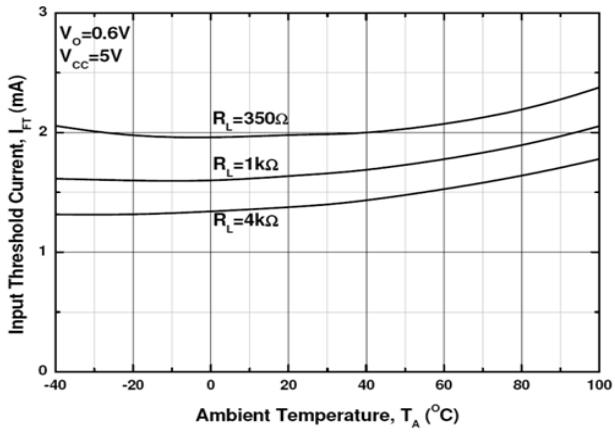


Fig 3 Input Threshold Current vs T_A

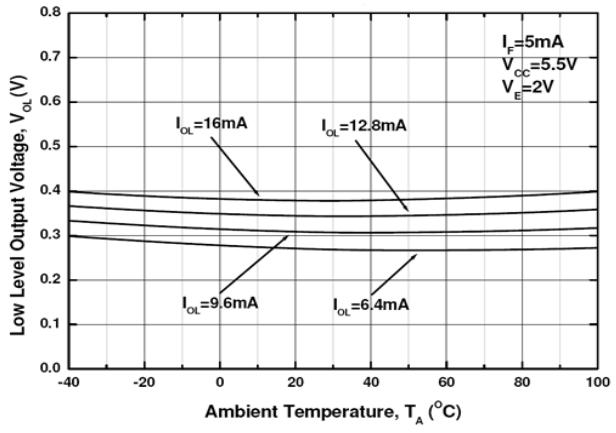


Fig 4 Low Level Output Voltage vs T_A

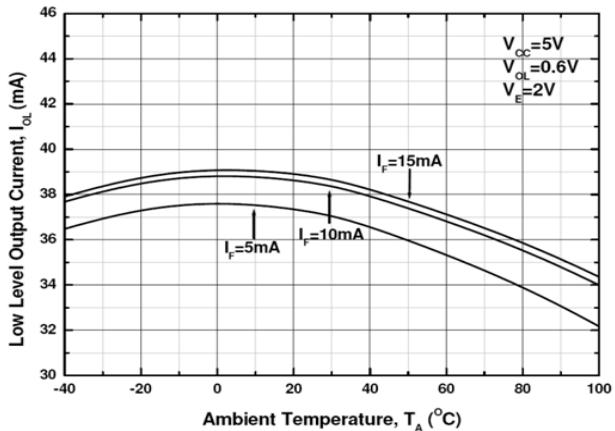


Fig 5 Low Level Output Current vs T_A

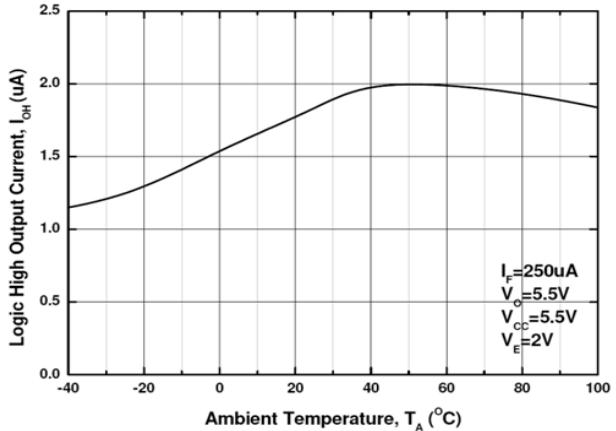


Fig 6 High Level Output Current vs T_A



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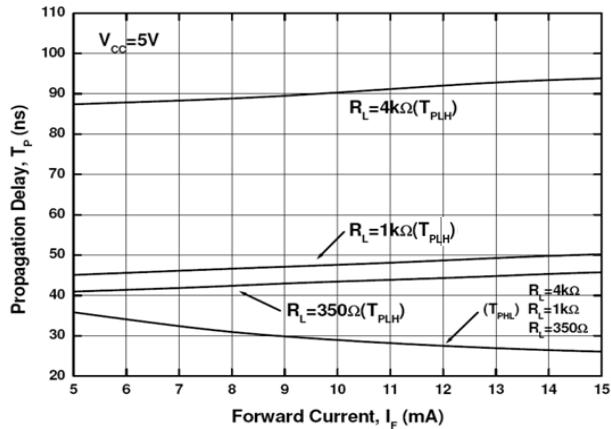


Fig 7 Propagation Delay vs Forward Current

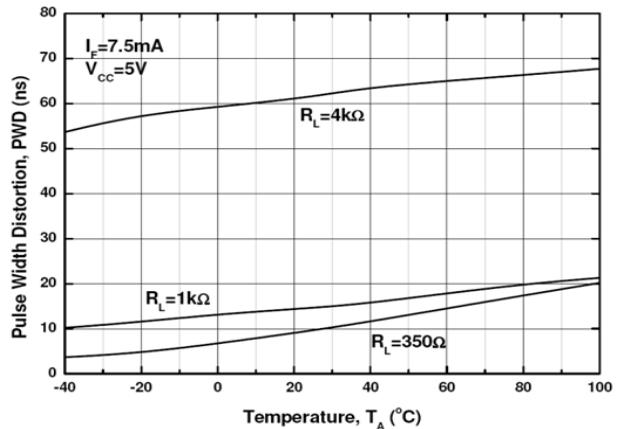


Fig 8 Pulse Width Distortion vs T_A

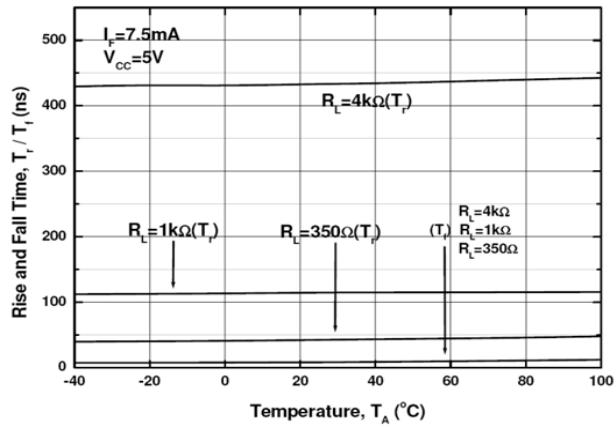
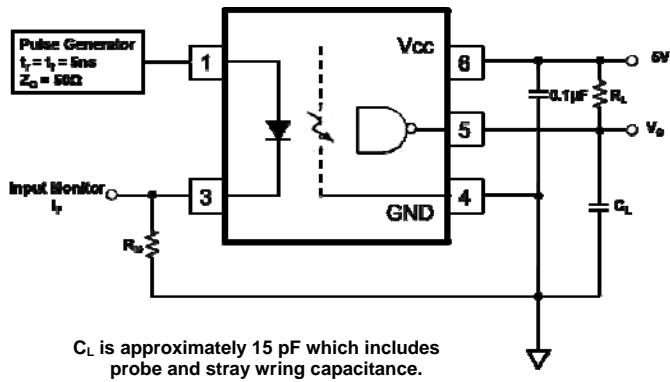


Fig 9 Rise and Fall Time vs T_A

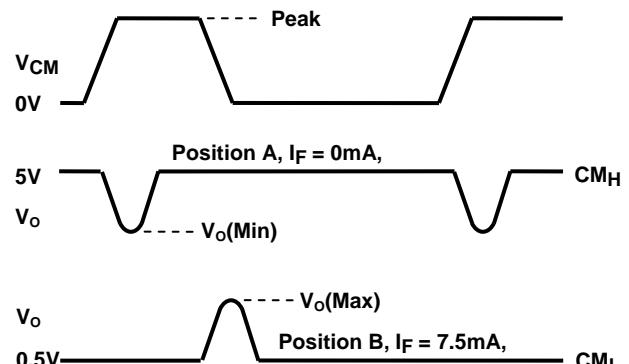
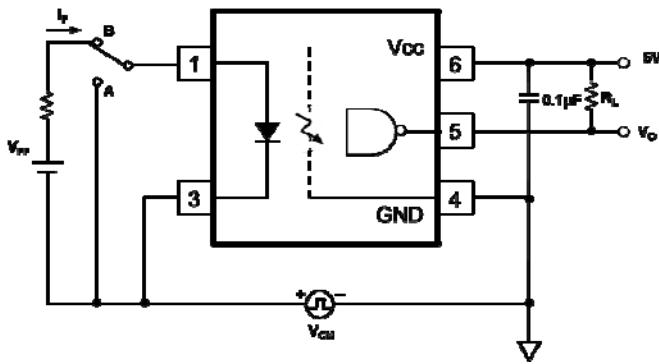
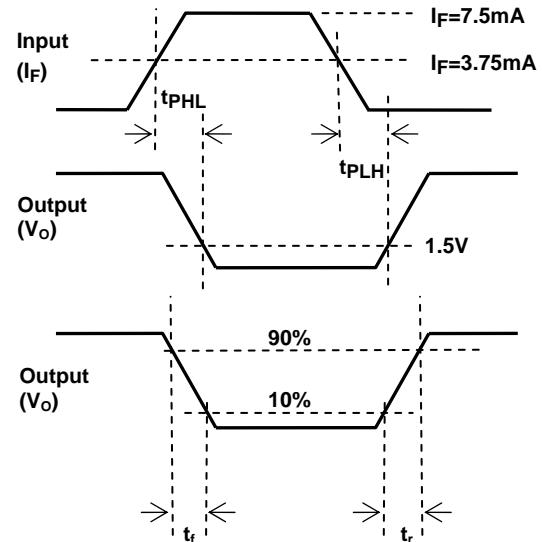


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Switching Time Test Circuit



Common Mode Transient Immunity Test Circuit

Common mode transient immunity in logic high level is the maximum tolerable (positive) dV_{CM}/dt on the leading edge of the common mode pulse signal V_{CM} , to assure that the output will remain in a logic high state (i.e., $V_O > 2.0V$).

Common mode transient immunity in logic low level is the maximum tolerable (negative) dV_{CM}/dt on the trailing edge of the common mode pulse signal, V_{CM} , to assure that the output will remain in a logic low state (i.e., $V_O < 0.8V$).



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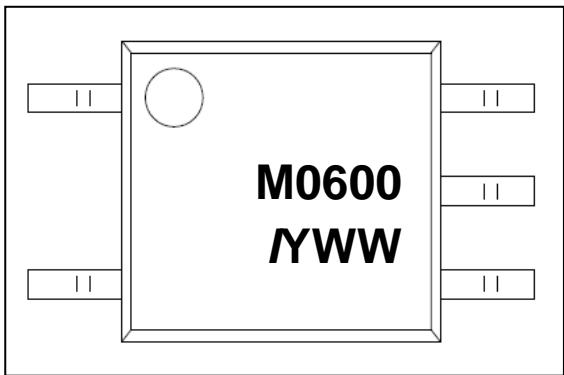
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ORDER INFORMATION

ICPLM600, ICPLM601			
After PN	PN	Description	Packing quantity
None	ICPLM600, ICPLM601	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING

Example : ICPLM600



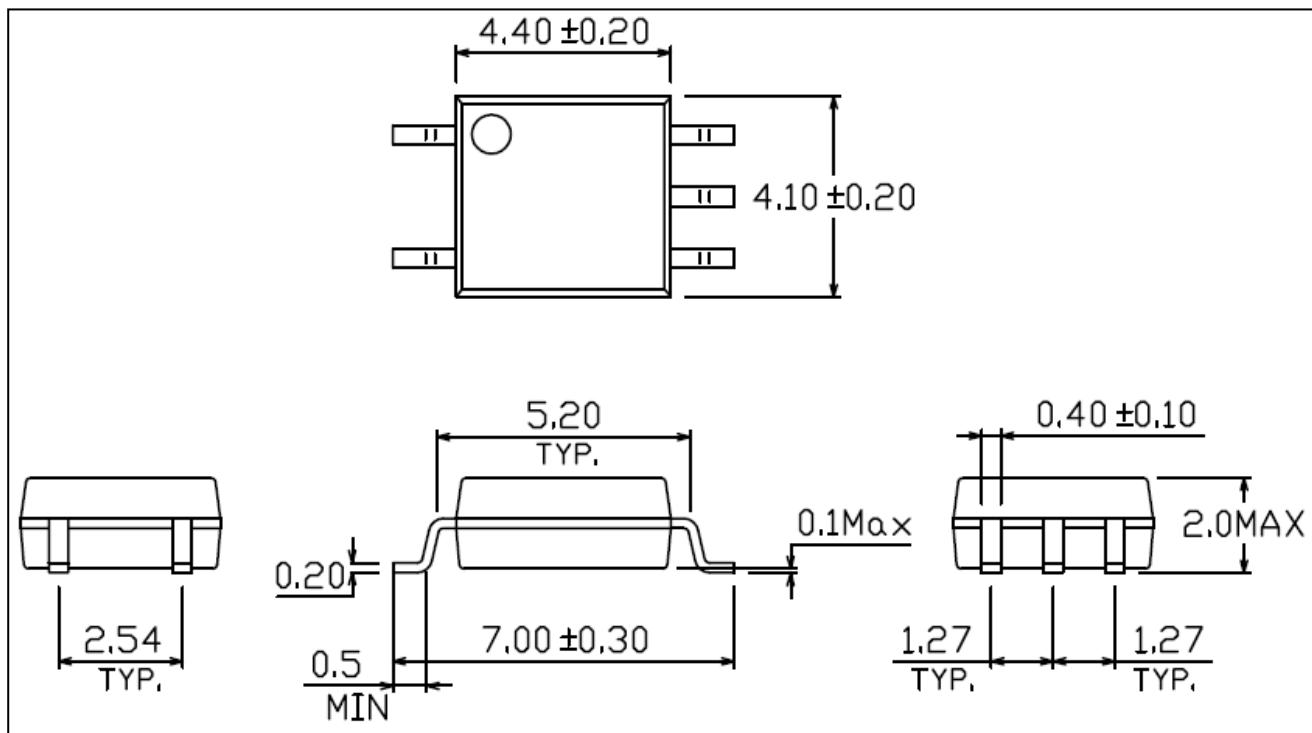
M0600 denotes Device Part Number
I denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code



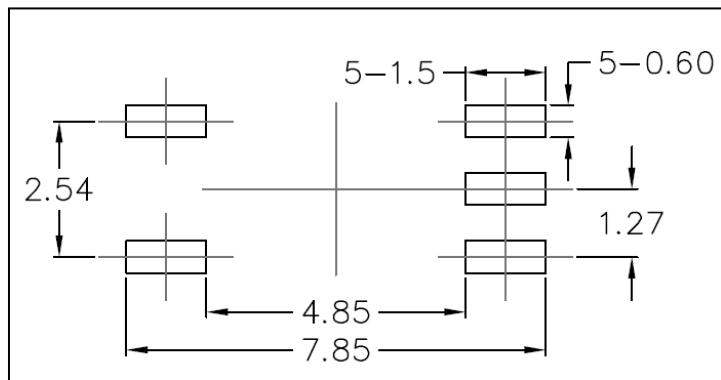
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PACKAGE DIMENSIONS (mm)



RECOMMENDED PAD LAYOUT (mm)

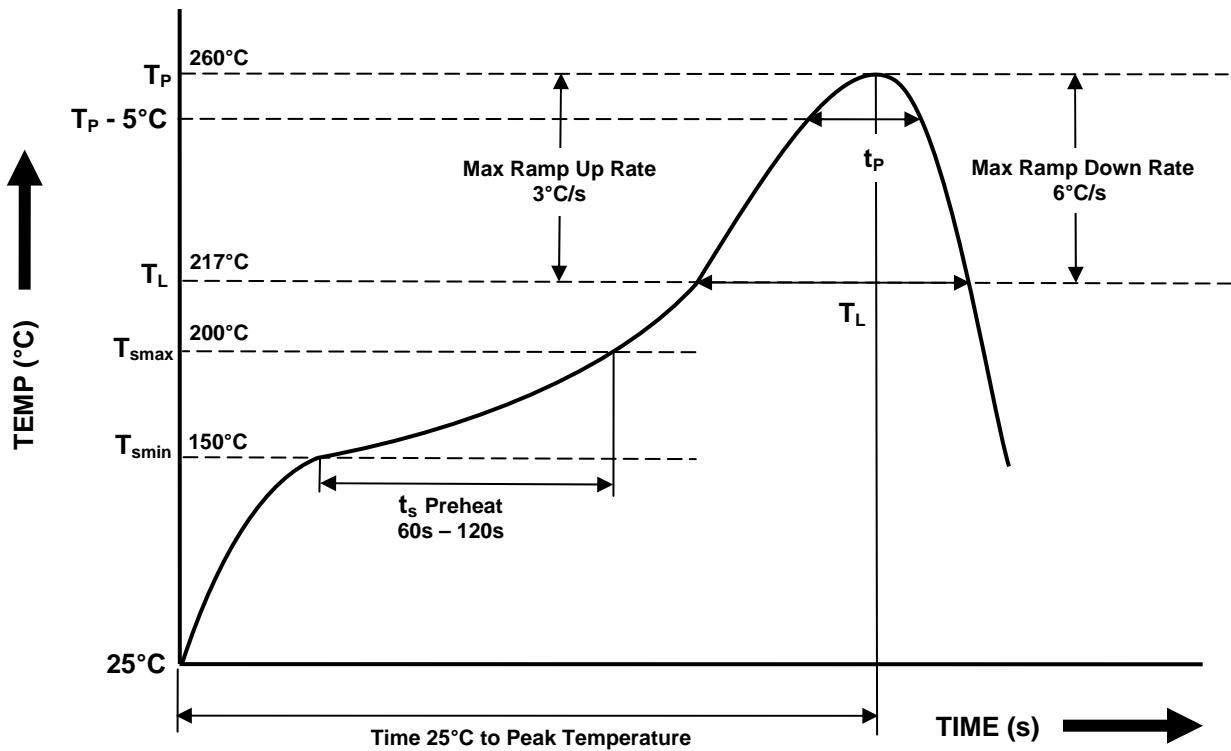




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IR REFLOW SOLDERING TEMPERATURE PROFILE (One Time Reflow Soldering is Recommended)



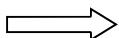
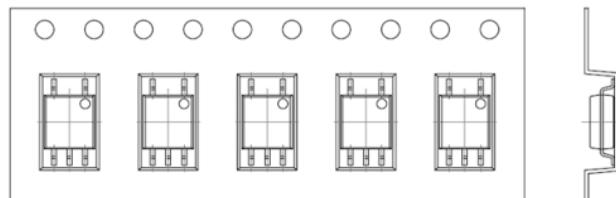
Profile Details	Conditions
Preheat <ul style="list-style-type: none">- Min Temperature (T_{SMIN})- Max Temperature (T_{SMAX})- Time T_{SMIN} to T_{SMAX} (t_s)	150°C 200°C 60s - 120s
Soldering Zone <ul style="list-style-type: none">- Peak Temperature (T_P)- Liquidous Temperature (T_L)- Time within 5°C of Actual Peak Temperature ($T_P - 5°C$)- Time maintained above T_L (t_L)- Ramp Up Rate (T_L to T_P)- Ramp Down Rate (T_P to T_L)	260°C 217°C 30s 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{Smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max



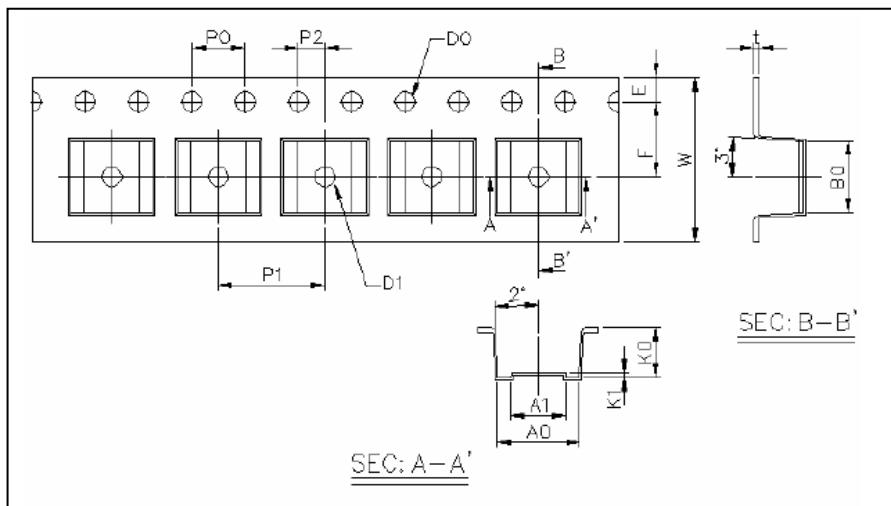
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TAPE AND REEL PACKAGING



Direction of feed from reel



Dimension No.	A0	A1	B0	D0	D1	E	F
Dimension(mm)	6.2 ± 0.1	4.1 ± 0.1	7.4 ± 0.1	1.5 ± 0.1	1.5 ± 0.1	1.75 ± 0.1	5.5 ± 0.1
Dimension No.	P0	P1	P2	t	W	K0	K1
Dimension (mm)	4.0 ± 0.1	8.0 ± 0.1	2.0 ± 0.1	0.4 ± 0.1	12.0 $+0.3 / -0.1$	3.7 ± 0.1	0.3 ± 0.1



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- Do not immerse device body in solder paste.



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