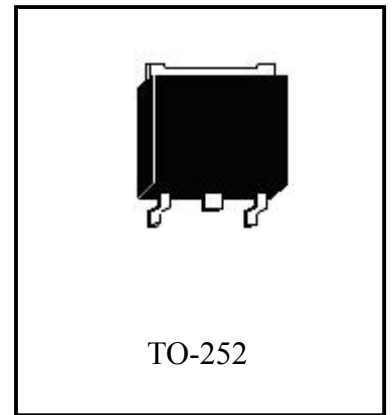


3-TERMINAL NEGATIVE VOLTAGE REGULATOR

LM7912J3



Description

The LM7912J3 series of three-terminal negative regulators are available in the TO-252 package. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation.

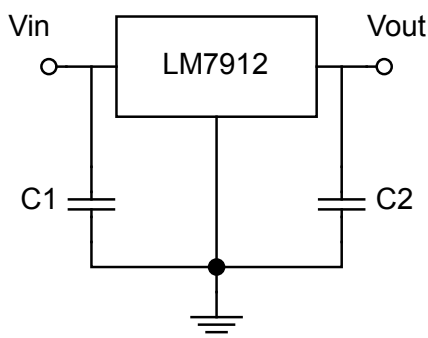
Each employs internal current limiting, thermal shutdown and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

LM7912J3 is characterized for operation from -40°C to +125°C, and if operating temperature is always high, please refer to the power dissipation curve.

Absolute Maximum Ratings (Ta=25°C)

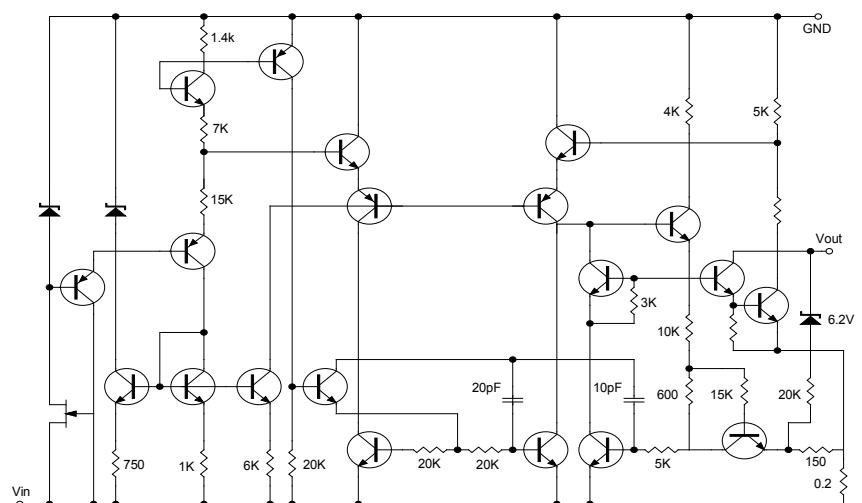
- Input Voltage -40 V
- Total Power Dissipation Internally limited
- Operating Junction Temperature -40 °C to +125 °C
- Maximum Junction Temperature 125 °C
- Storage Temperature Range -65 °C to +150 °C

Typical Application



Note:
Bypass Capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulator.

Schematic Diagram





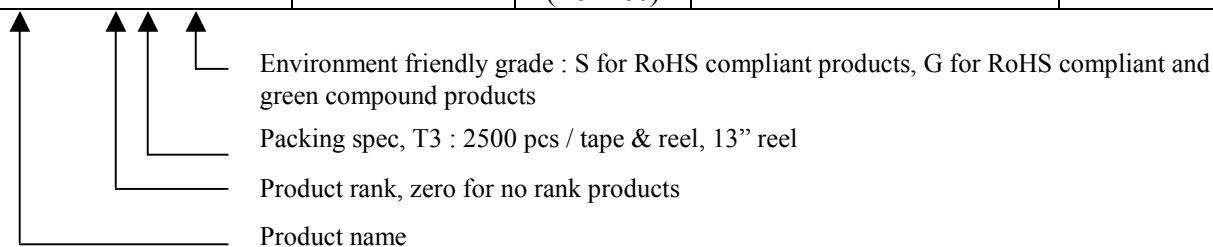
Electrical Characteristics

$V_{in} = -19V$, $I_o = 500mA$, $C_{in} = 2.2\mu F$, $C_{out} = 1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$ (unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Units
			Min	Typ	Max	
V_o	Output Voltage	$T_j = 25^\circ C$	-11.5	-12	-12.5	V
	Output Voltage	$P_D \leq 15W$, $5mA \leq I_o \leq 1A$ $-14.5V \geq V_{in} \geq -27V$	-11.4	-12	-12.6	
ΔV_o	Line Regulation	$T_j = 25^\circ C$, $-14.5V \geq V_{in} \geq -30V$	-	-	240	mV
		$T_j = 25^\circ C$, $-16V \geq V_{in} \geq -22V$	-	-	120	
ΔV_o	Load Regulation	$5mA \leq I_o \leq 1.5A$	-	-	240	mV
		$250mA \leq I_o \leq 750mA$	-	-	120	
I_Q	Quiescent Current	$I_o \leq 1A$, $T_j = 25^\circ C$	-	3	8	mA
ΔI_Q	Quiescent Current Change	$5mA \leq I_o \leq 1A$	-	-	0.5	mA
		$-15V \geq V_{in} \geq -25V$	-	-	1.0	
$\Delta V_o / \Delta T$	Output Voltage Drift	$I_o = 5mA$	-	-0.8	-	mV/ $^\circ C$
V_n	Output Noise Voltage	$T_a = 25^\circ C$, $10Hz \leq f \leq 100KHz$	-	200	-	μV
RR	Ripple Rejection	$\Delta V_i = 10V$, $f = 120Hz$	54	68	-	dB
V_D	Dropout Voltage	$T_j = 25^\circ C$, $I_o = 1A$	-	2	-	V
I_{sc}	Short Circuit Current	$T_j = 25^\circ C$, $V_{in} = -35V$	-	2.2	-	A
I_{pk}	Peak Output Current	$T_j = 25^\circ C$	1.3	2.2	-	A

Ordering Information

Device	Output Voltage Tolerance	Package	Shipping	Marking
LM7912J3-0-T3-G	$\pm 5\%$	TO-252 (Pb-free)	2500 pcs / Tape & Reel	7912



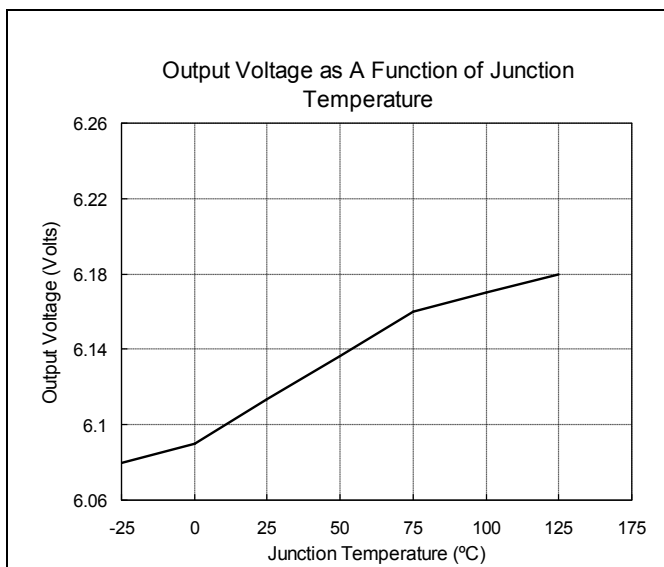
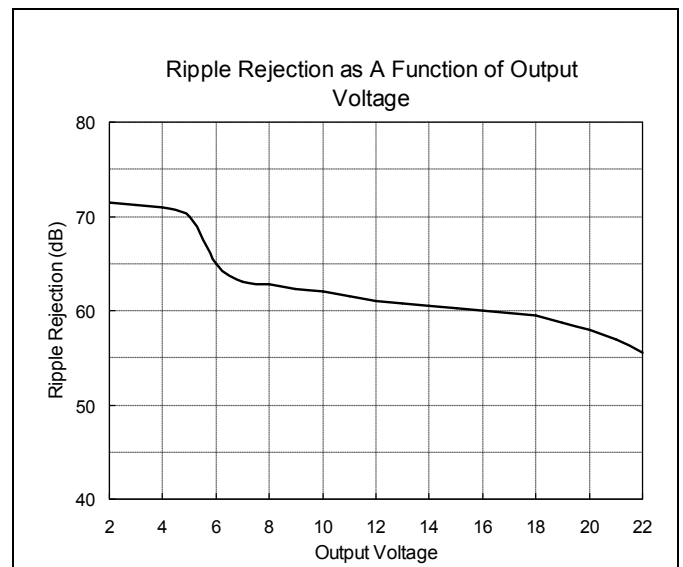
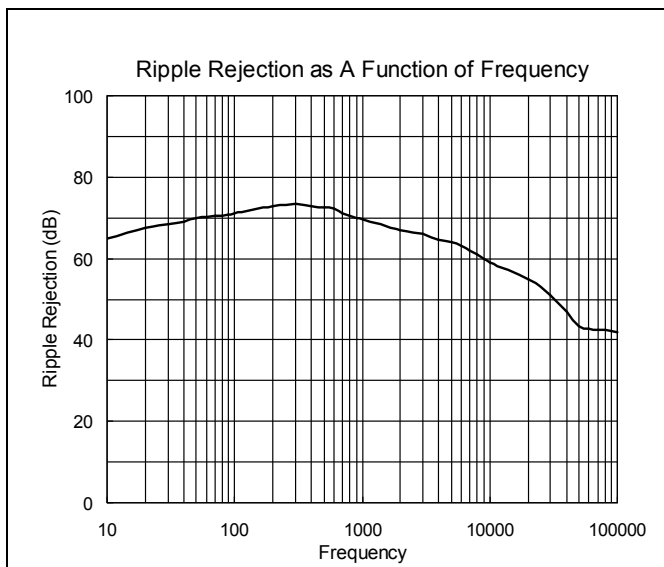
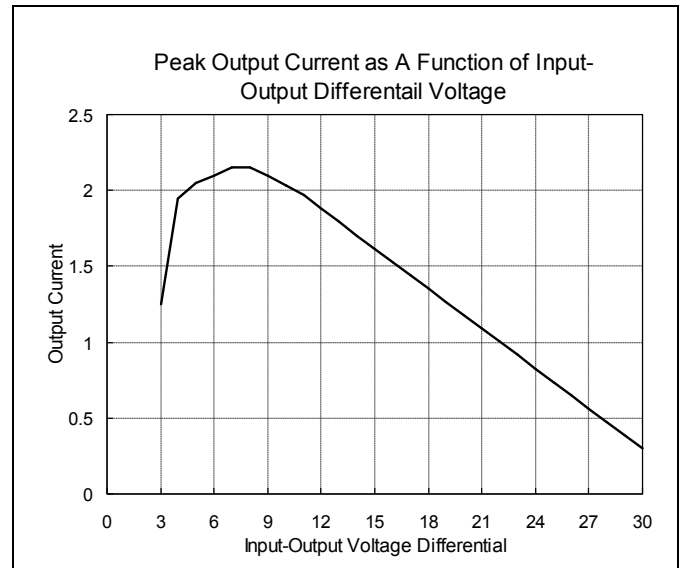
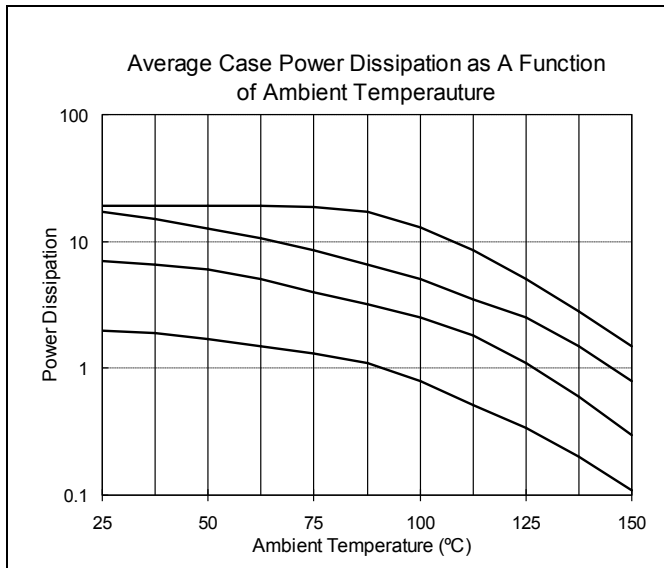
Moisture Sensitivity Level : conform to JEDEC level 3

Recommended Storage Condition:

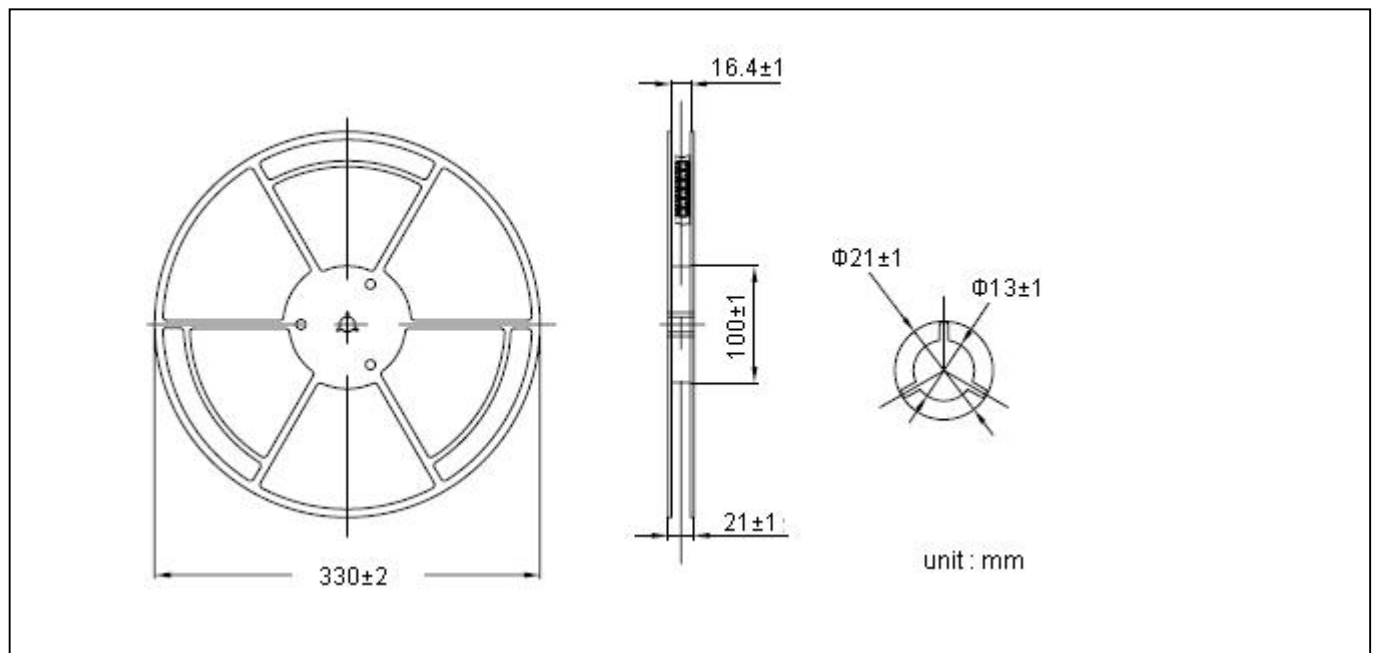
Temperature : $\leq 30^\circ C$

Humidity : $\leq 60\% RH$

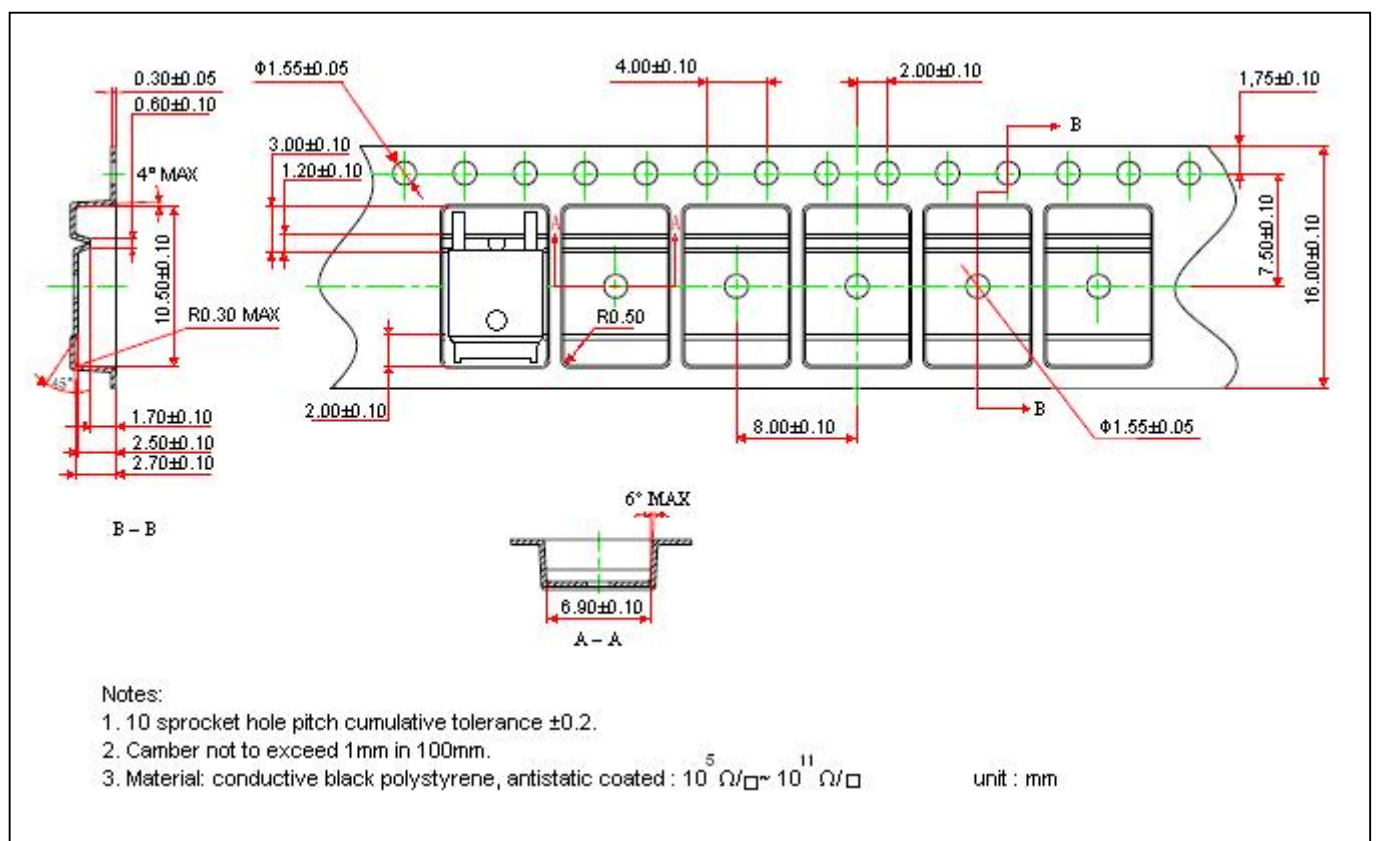
Typical Characteristics



Reel Dimension



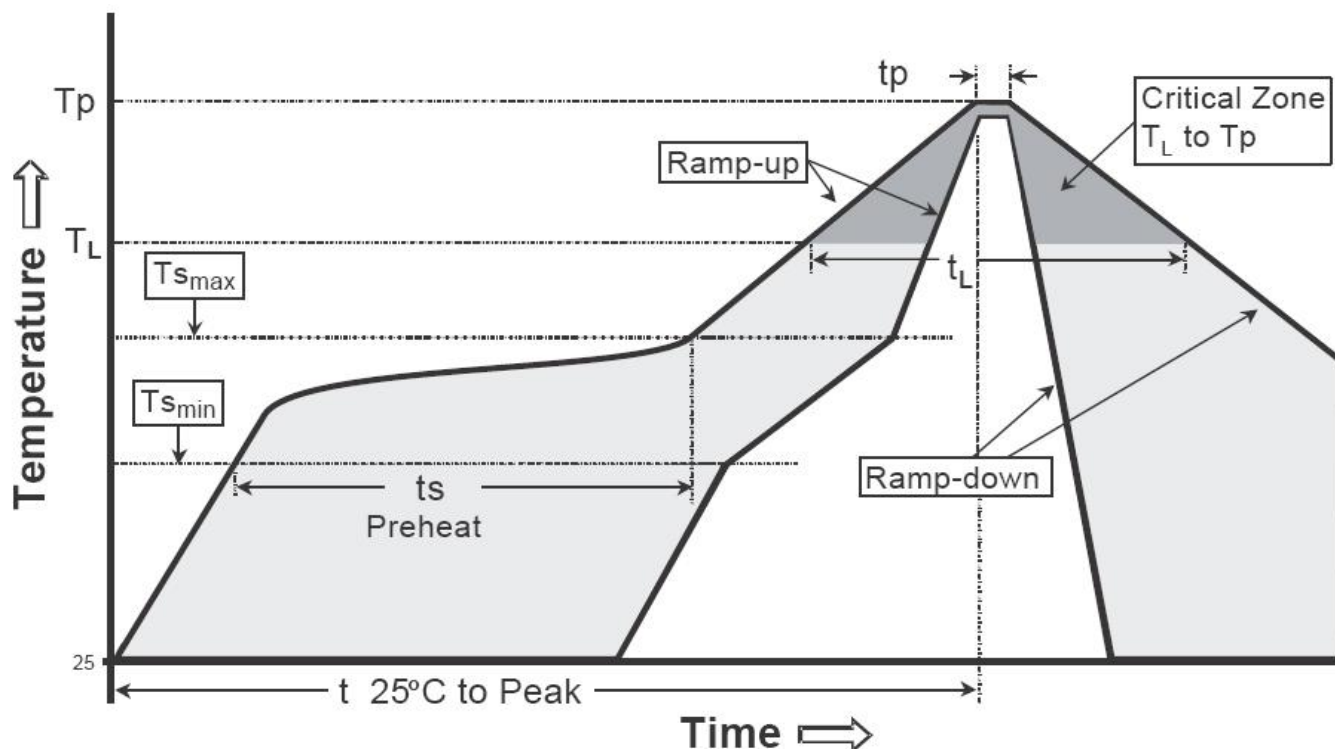
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

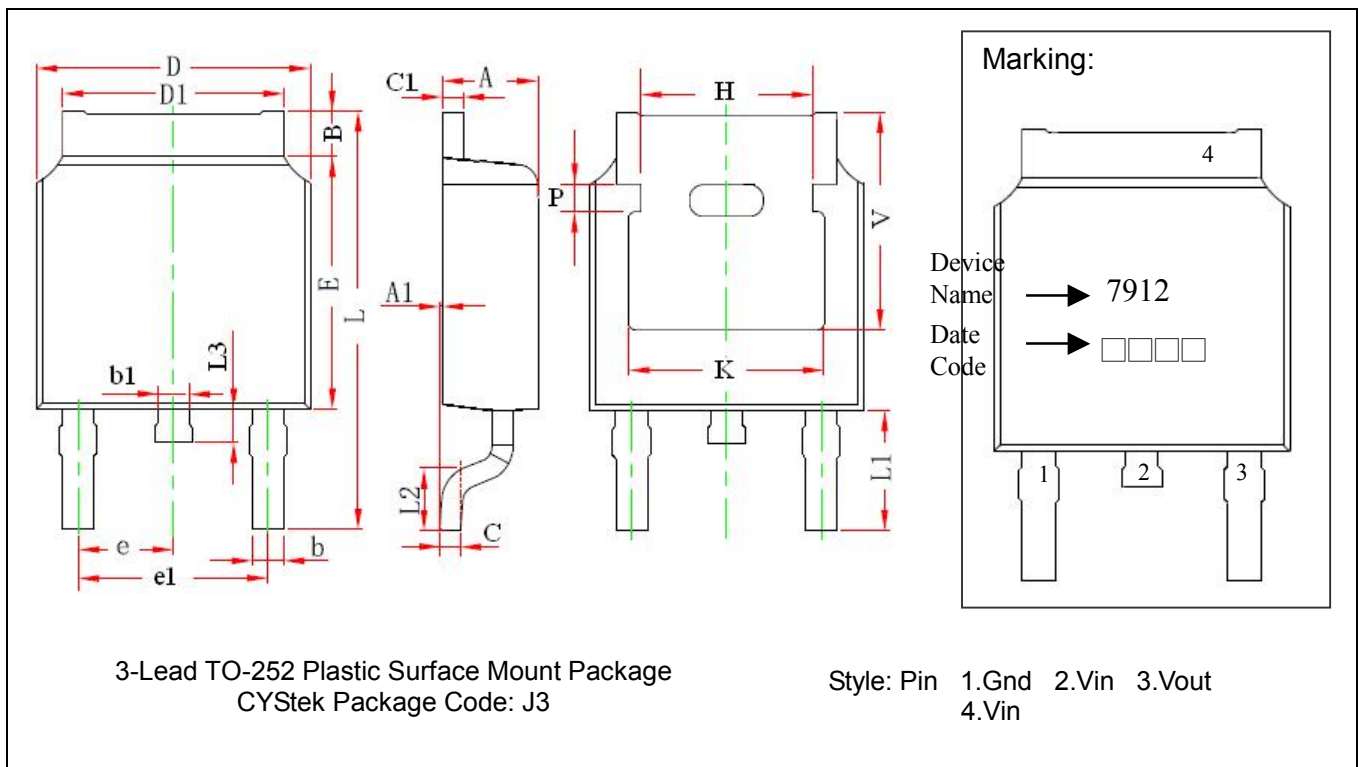
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
–Temperature Min(Ts min)	100°C	150°C
–Temperature Max(Ts max)	150°C	200°C
–Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
–Temperature (Tl)	183°C	217°C
– Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-252 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	0.086	0.094	2.186	2.386
A1	0.000	0.005	0.000	0.127	e1	0.172	0.188	4.372	4.772
B	0.039	0.048	0.990	1.210	H	0.163	REF	4.140	REF
b	0.026	0.034	0.660	0.860	K	0.190	REF	4.830	REF
b1	0.026	0.034	0.660	0.860	L	0.386	0.409	9.800	10.400
C	0.018	0.023	0.460	0.580	L1	0.114	REF	2.900	REF
C1	0.018	0.023	0.460	0.580	L2	0.055	0.067	1.400	1.700
D	0.256	0.264	6.500	6.700	L3	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	P	0.026	REF	0.650	REF
E	0.236	0.244	6.000	6.200	V	0.211	REF	5.350	REF

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead : Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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