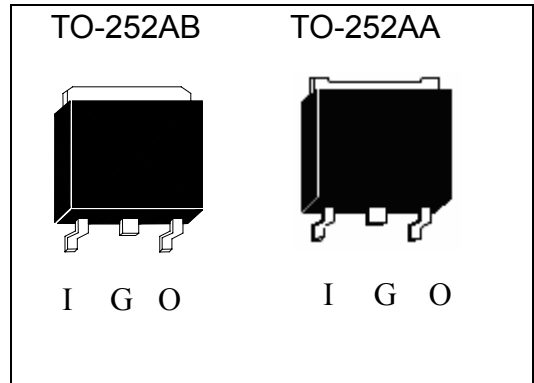


Three Terminal Positive Voltage Regulators

LM78D05J3



These voltage regulators are monolithic integrated circuits designed as fixed voltage regulators for a wide variety of applications including local, on-card regulation. These regulators employ internal current limiting, thermal shutdown, and safe-area compensation. With adequate heatsinking they can deliver output currents in excess of 1.0A. Although designed primarily as fixed voltage regulator, these devices can be used with external components to obtain adjustable voltages and currents.

Maximum Ratings (@ $T_A=25^{\circ}\text{C}$, unless otherwise noted)

Rating	Symbol	Value	Unit
Input Voltage	V_{IN}	35	V
Output Current	I_o	1	A
Power Dissipation @ $T_c=25^{\circ}\text{C}$	P_D	15	W
Operating Junction Temperature Range	T_J	-40 to +125	$^{\circ}\text{C}$

Ordering Information

Device	Rank	Output Voltage Tolerance	Package	Shipping
LM78D05J3-A-T3-G	A	$\pm 3\%$	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs/Tape & Reel
LM78D05J3-B-T3-G	B	$\pm 5\%$		

Thermal Data

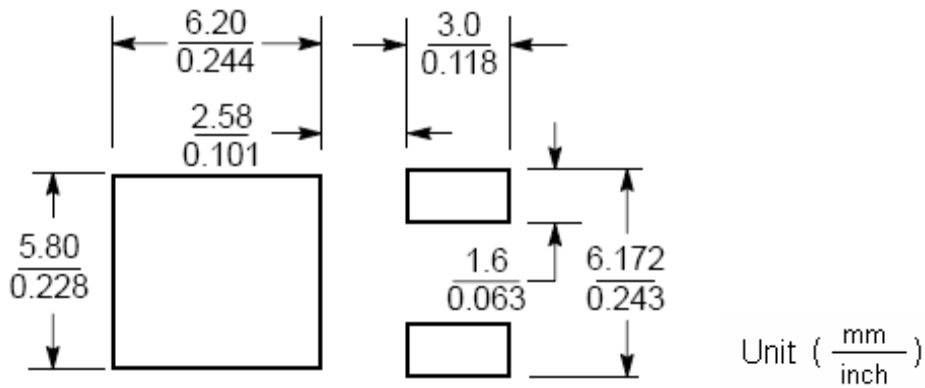
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{\theta JC}$	6.7	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	50 (Note)	$^{\circ}\text{C}/\text{W}$

Note : Surface mounted on 1 in² copper pad of FR-4 board, $t \leq 5$ sec; 110 $^{\circ}\text{C}/\text{W}$ when mounted on minimum copper pad.

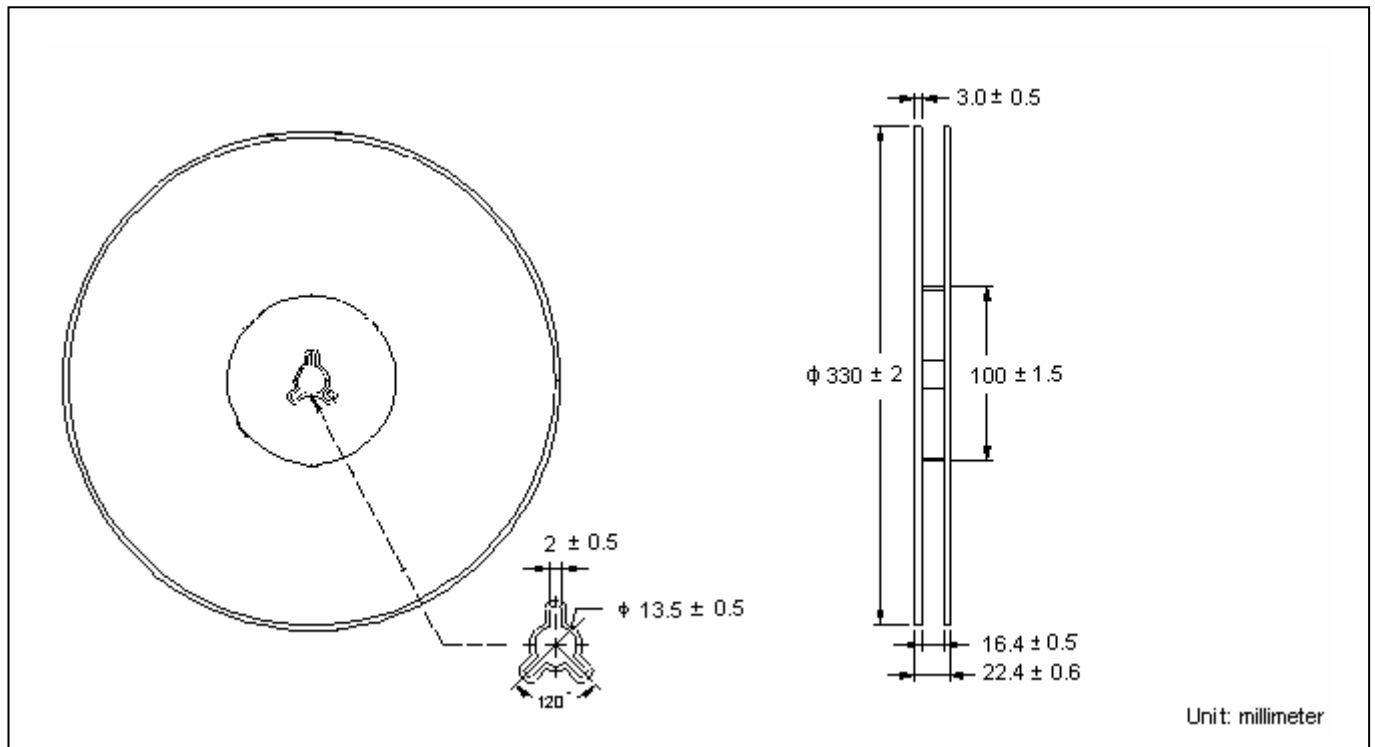
Electrical Characteristics $V_{IN}=10V, I_{OUT}=500mA, T_J=25^{\circ}C, C_{IN}=0.33\mu F, C_{OUT}=0.1\mu F,$
 unless otherwise specified

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage LM78D05 A-rank LM78D05 B-rank	V_O		4.85 4.75	5.0 5.0	5.15 5.25	V
Output Voltage LM78D05 A-rank LM78D05 B-rank	V_O	$5.0mA \leq I_{OUT} \leq 1.0A, P_D \leq 15W$	4.85 4.75	5.0 5.0	5.15 5.25	V
Line Regulation	ΔV_O	$7V \leq V_{IN} \leq 25V$ $8V \leq V_{IN} \leq 25V$	- -	- -	50 25	mV
Load Regulation	ΔV_O	$5.0mA \leq I_{OUT} \leq 1.5A$ $250mA \leq I_{OUT} \leq 750mA$	- -	- -	100 50	mV
Quiescent Current	I_Q	$I_{OUT} \leq 1.0A$	-	-	8	mA
Quiescent Current Change	ΔI_Q	$5.0mA \leq I_{OUT} \leq 1.5A$ $7V \leq V_{IN} \leq 25V$	- -	- -	0.5 1.3	mA
Dropout Voltage	V_D	$I_{OUT} = 1.0A$	-	2	-	V
Peak Output Current	I_{PK}		1.7	-	-	A

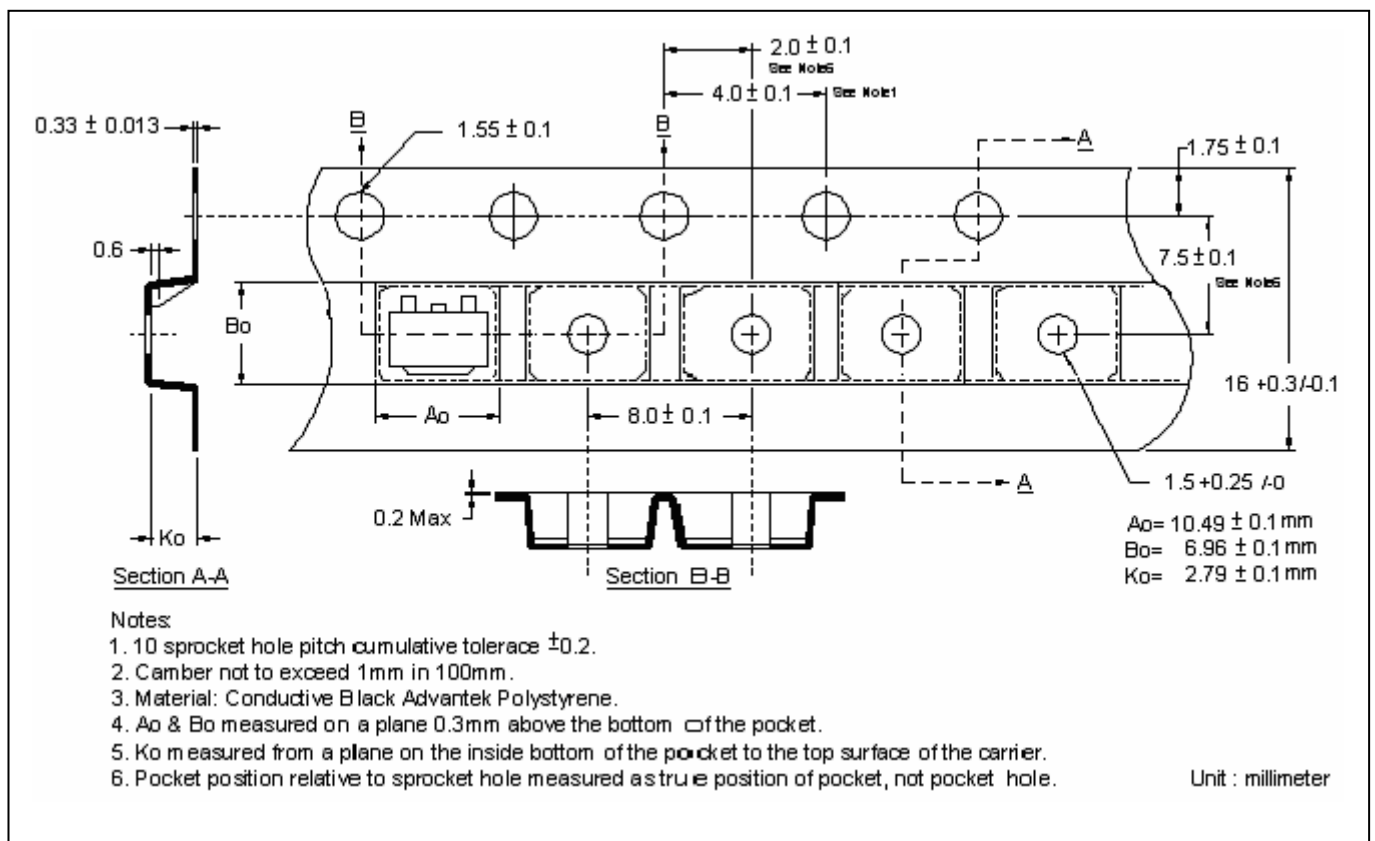
Recommended soldering footprint



Reel Dimension



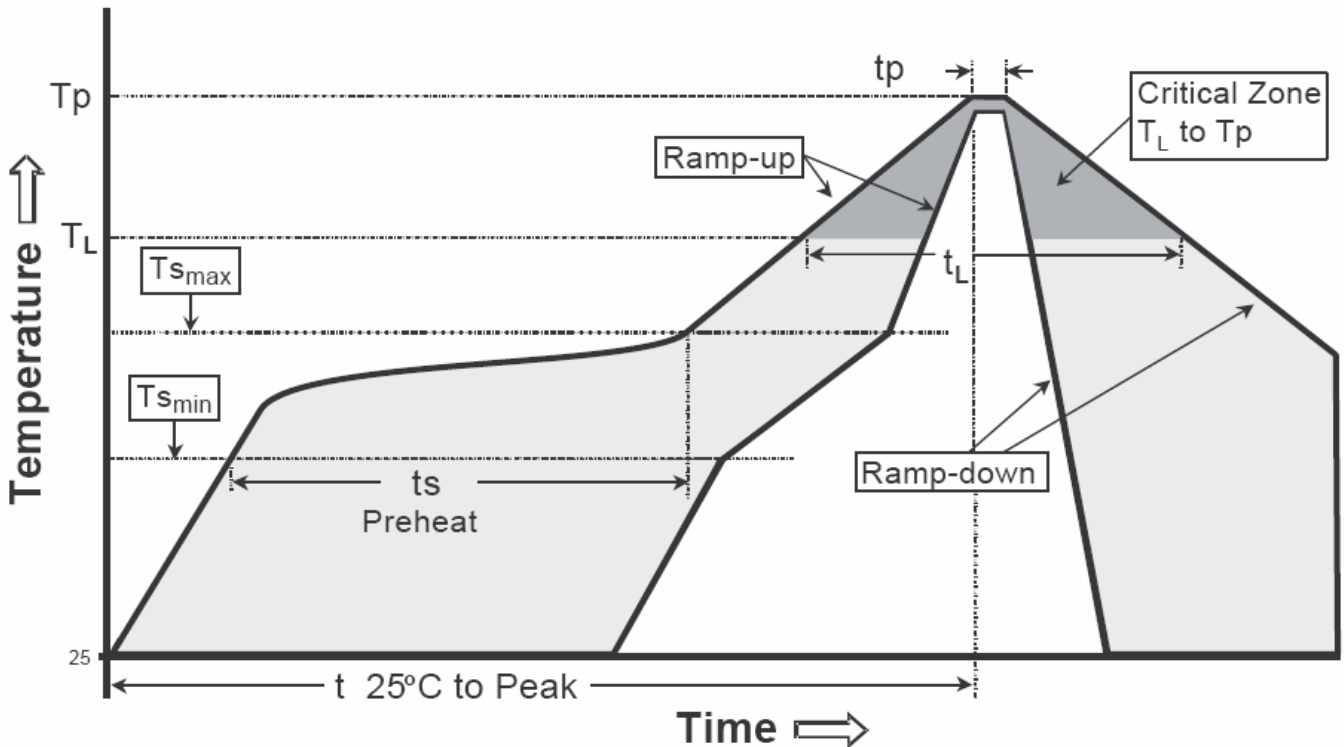
Carrier Tape Dimension



Recommended wave soldering condition

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

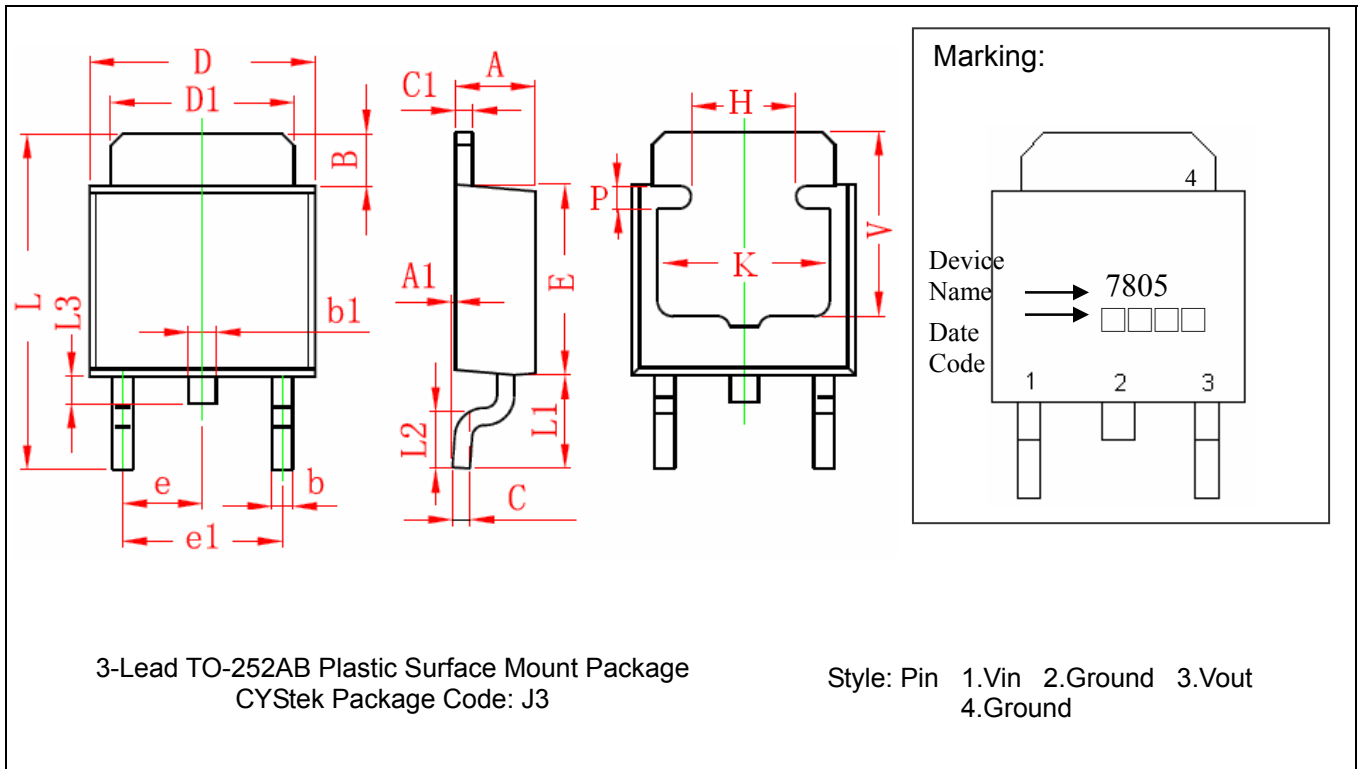
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	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-252AB Dimension



*: Typical

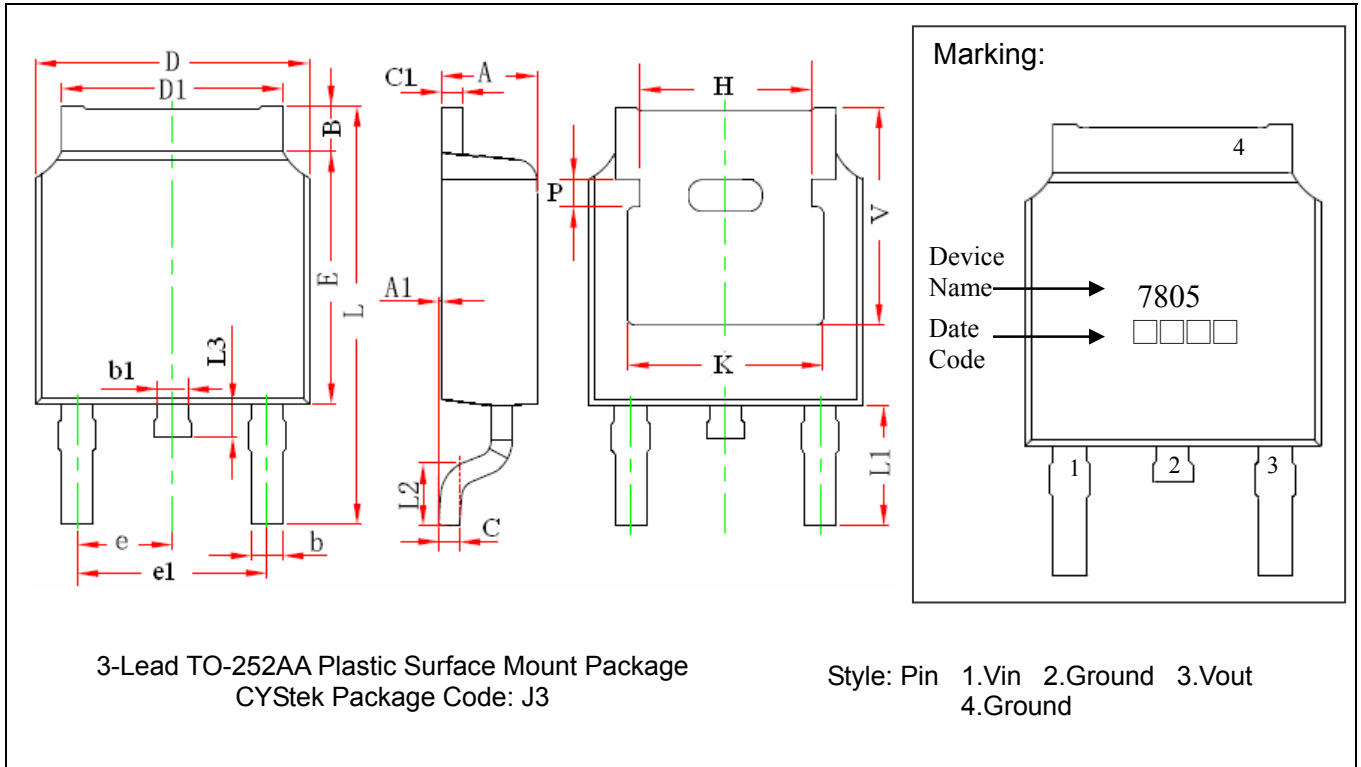
DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	*0.091		*2.300	
A1	0.000	0.005	0.000	0.127	e1	0.177	0.185	4.500	4.700
B	0.053	0.065	1.350	1.650	H	0.118	REF	3.000	REF
b	0.020	0.028	0.500	0.700	K	0.197	REF	5.000	REF
b1	0.028	0.035	0.700	0.900	L	0.374	0.390	9.500	9.900
C	0.017	0.023	0.430	0.580	L1	0.100	0.114	2.550	2.900
C1	0.017	0.023	0.430	0.580	L2	0.055	0.070	1.400	1.780
D	0.250	0.262	6.350	6.650	L3	0.024	0.035	0.600	0.900
D1	0.205	0.213	5.200	5.400	P	0.028	REF	0.700	REF
E	0.213	0.224	5.400	5.700	V	0.209	REF	5.300	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

TO-252AA 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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