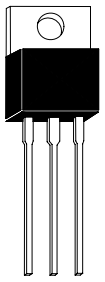
3-TERMINAL NEGATIVE VOLTAGE REGULATOR

LM7912E3



TO-220

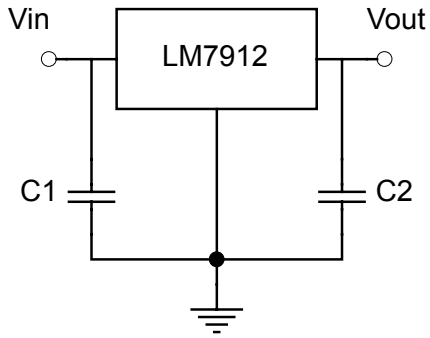
Description

The LM7912E3 series of three-terminal negative regulators are available in the TO-220 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 1.5A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.
LM7912E3 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)

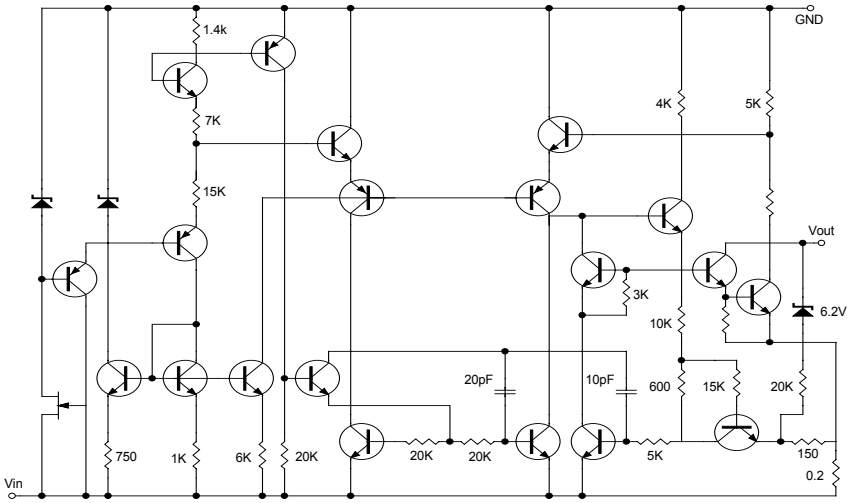
- Input Voltage ..... -35 V
- Total Power Dissipation ..... Internally limited
- Operating Junction Temperature ..... -40 °C to +125 °C
- Maximum Junction Temperature ..... 125 °C
- Storage Temperature Range ..... -65 °C to +150 °C
- Lead Temperature (Soldering 10S) ..... 230 °C

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



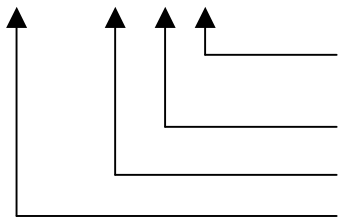
Electrical Characteristics

Vin= -19V, Io=500mA, Cin=2.2μF, Cout=1μF, 0°C≤Tj≤125°C (unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Units
			Min	Typ	Max	
Vo	Output Voltage	Tj=25°C	-11.4	-12	-12.6	V
	Output Voltage	P_D≤15W, 5mA≤ I_O≤ 1A -15.5V≥Vin≥ -27V	-11.4	-12	-12.6	
ΔVo	Line Regulation	Tj=25°C, -14.5V ≥ Vin≥-30V	-	-	240	mV
		Tj=25°C, -16V≥Vin≥-22V	-	-	120	
ΔVo	Load Regulation	5mA≤ I_O≤1.5A	-	-	240	mV
		250mA≤ I_O≤750mA	-	-	120	
IQ	Quiescent Current	I_O≤1A, Tj=25°C	-	3	8	mA
ΔIQ	Quiescent Current Change	5mA≤ I_O≤1A	-	-	0.5	mA
		-14.5V≥Vin≥-30V	-	-	1.0	
ΔVo / ΔT	Output Voltage Drift	Io=5mA	-	-0.8	-	mV/°C
Vn	Output Noise Voltage	Ta=25°C, 10Hz≤ f ≤100KHz	-	200	-	μV
RR	Ripple Rejection	ΔVi=10V, f=120Hz	54	68	-	dB
VD	Dropout Voltage	Tj=25°C, I_O=1A	-	2	-	V
Isc	Short Circuit Current	Tj=25°C, V_{in}=-35V	-	2.2	-	A
Ipk	Peak Output Current	Tj=25°C	1.3	2.2	-	A

Ordering Information

Device	Package	Shipping
LM7912E3-B-UB-X	TO-220 (Pb-free lead plating package)	50 pcs/tube, 20 tubes/box, 4 boxes / carton



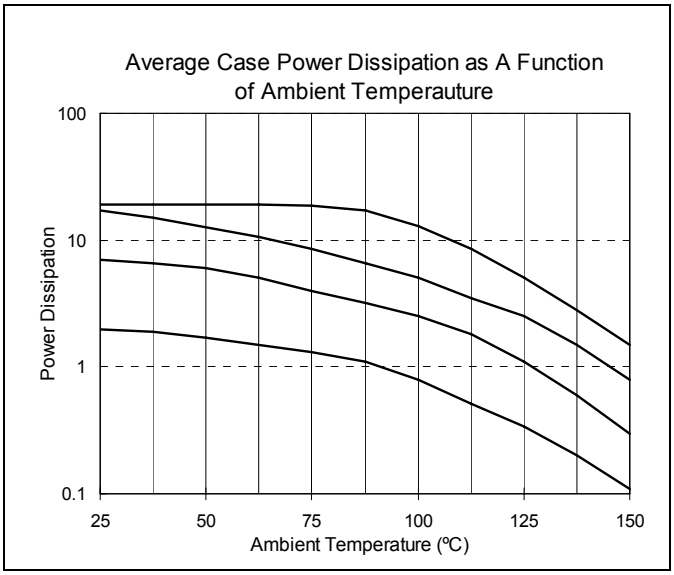
Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

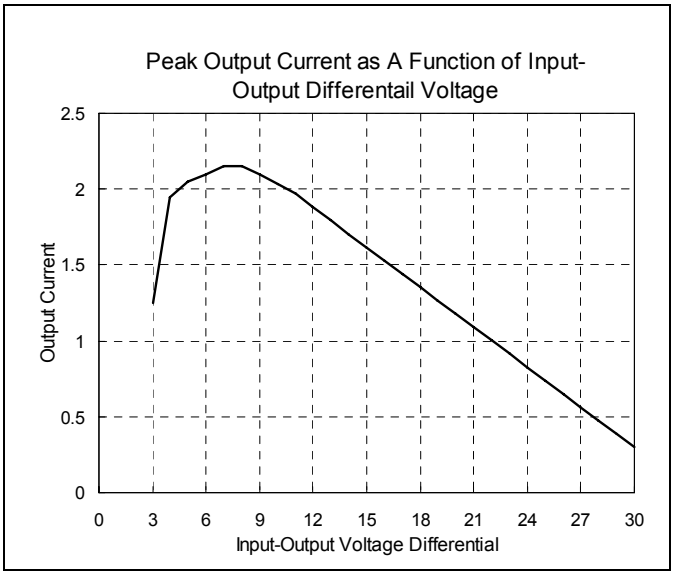
Packing spec, UB : 50 pcs / tube, 20 tubes/box

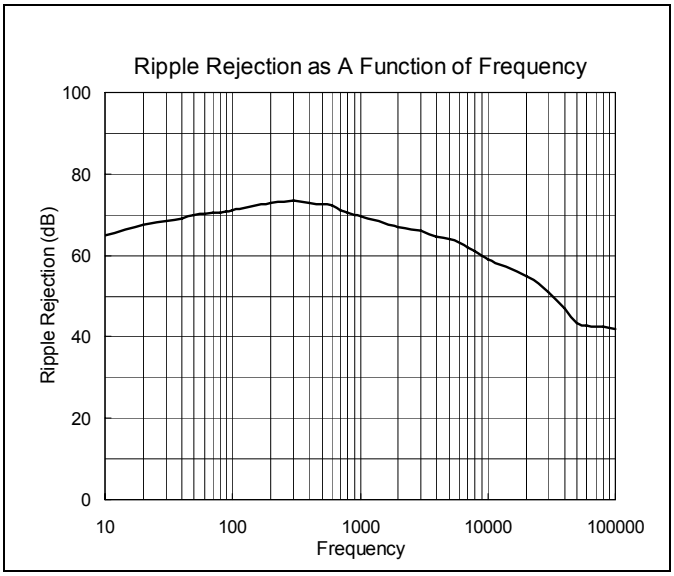
Product rank, zero for no rank products

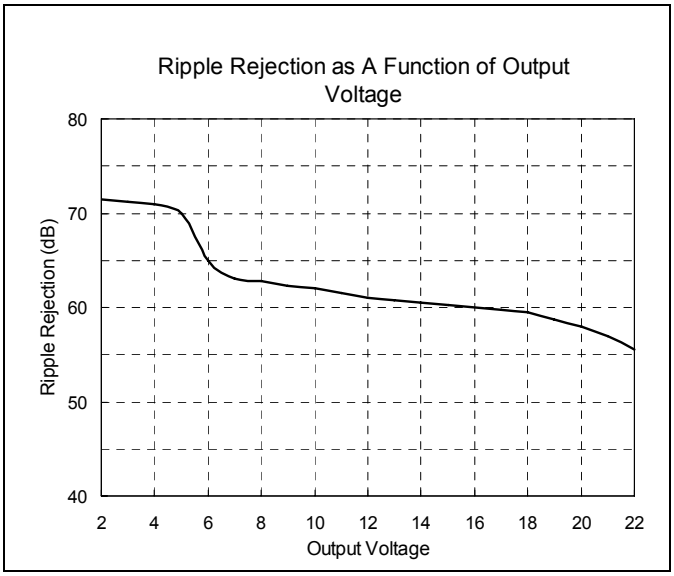
Product name

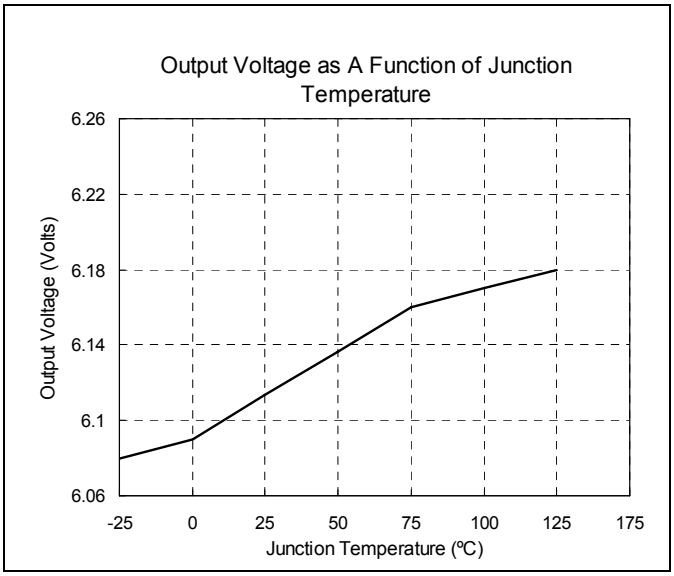
Typical Characteristics







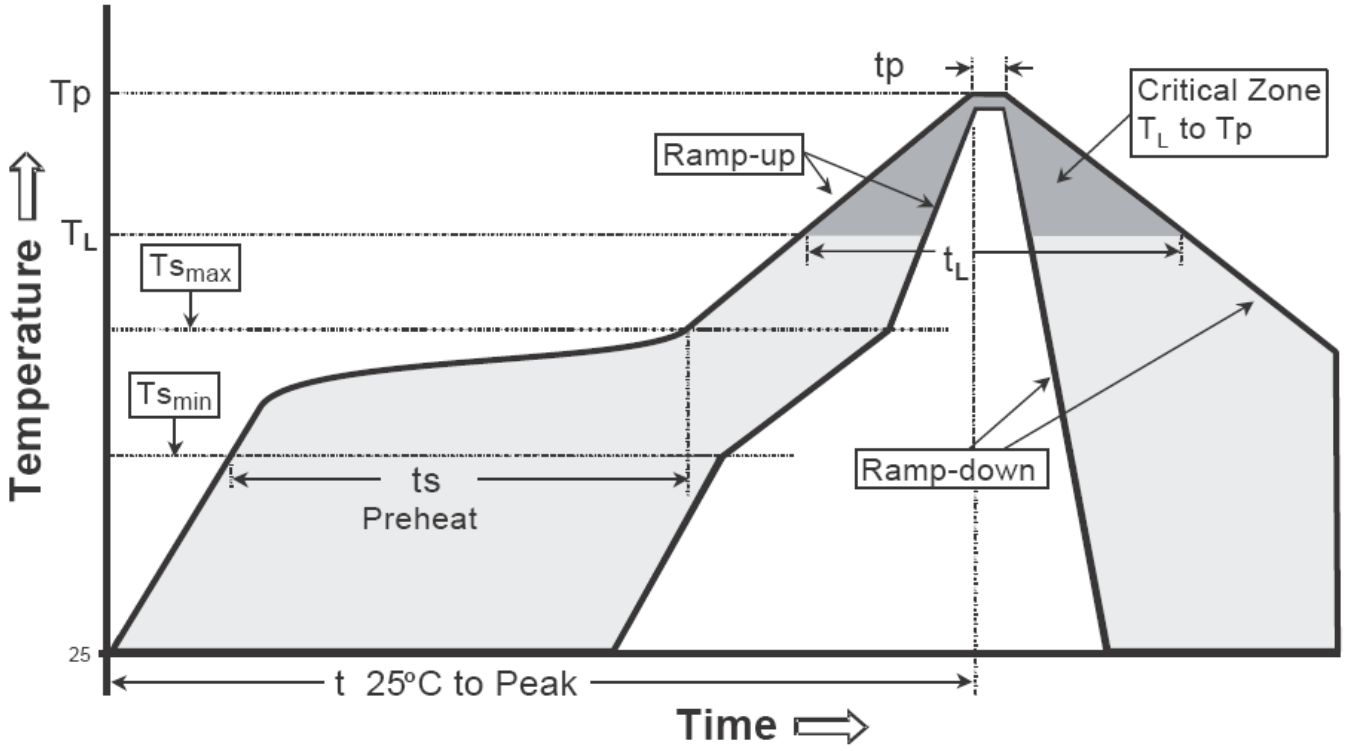




Recommended wave soldering condition

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

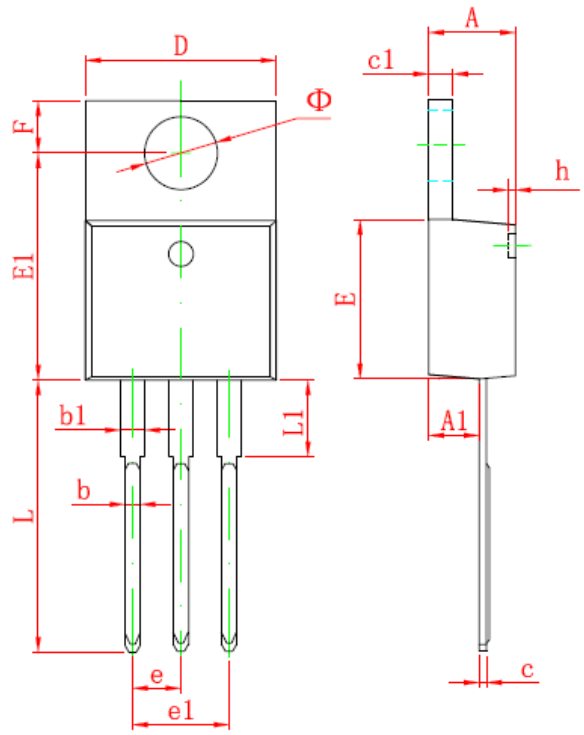
Recommended temperature profile for IR reflow



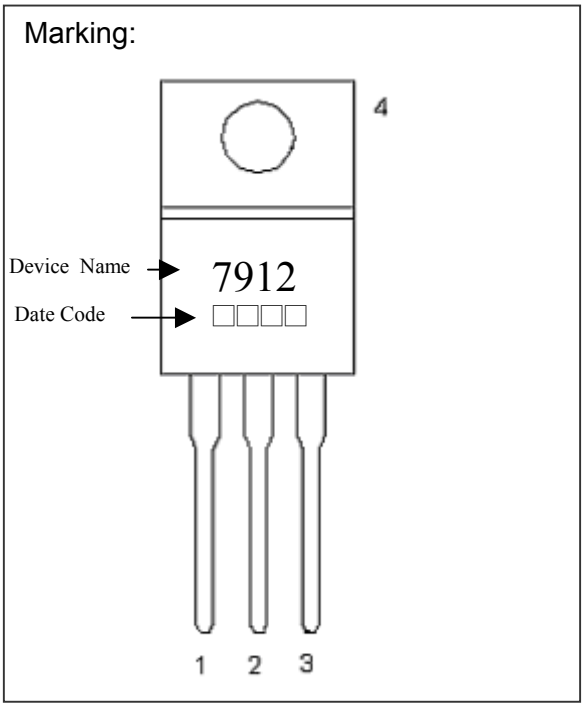
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 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-220 Dimension



3-Lead TO-220 Plastic Package
CYStek Package Code: E3



Style: Pin 1.Gnd 2.Input 3.Output
4.Input

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184	E1	12.060	12.460	0.475	0.491
A1	2.520	2.820	0.099	0.111	e	2.540*		0.100*	
b	0.710	0.910	0.028	0.036	e1	4.980	5.180	0.196	0.204
b1	1.170	1.370	0.046	0.054	F	2.590	2.890	0.102	0.114
c	0.310	0.530	0.012	0.021	h	0.000	0.300	0.000	0.012
c1	1.170	1.370	0.046	0.054	L	13.400	13.800	0.528	0.543
D	10.010	10.310	0.394	0.406	L1	3.560	3.960	0.140	0.156
E	8.500	8.900	0.335	0.350	Φ	3.735	3.935	0.147	0.155

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.