

# LM2990

## Negative Low Dropout Regulator

### General Description

The LM2990 is a three-terminal, low dropout, 1 ampere negative voltage regulator available with fixed output voltages of -5, -5.2, -12, and -15V.

The LM2990 uses new circuit design techniques to provide low dropout and low quiescent current. The dropout voltage at 1A load current is typically 0.6V and a guaranteed worst-case maximum of 1V over the entire operating temperature range. The quiescent current is typically 1 mA with 1A load current and an input-output voltage differential greater than 3V. A unique circuit design of the internal bias supply limits the quiescent current to only 9 mA (typical) when the regulator is in the dropout mode ( $V_{OUT} - V_{IN} \leq 3V$ ). Output voltage accuracy is guaranteed to  $\pm 5\%$  over load, and temperature extremes.

The LM2990 is short-circuit proof, and thermal shutdown includes hysteresis to enhance the reliability of the device when overloaded for an extended period of time. The

LM2990 is available in a 3-lead TO-220 package and is rated for operation over the automotive temperature range of -40°C to +125°C.

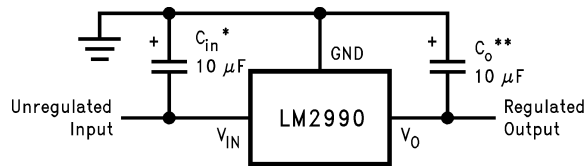
### Features

- 5% output accuracy over entire operating range
- Output current in excess of 1A
- Dropout voltage typically 0.6V at 1A load
- Low quiescent current
- Internal short circuit current limit
- Internal thermal shutdown with hysteresis
- Functional complement to the LM2940 series

### Applications

- Post switcher regulator
- Local, on-card, regulation
- Battery operated equipment

### Typical Application



01080101

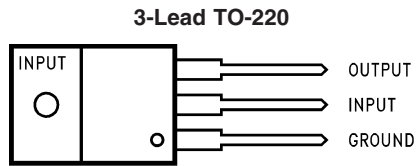
\*Required if the regulator is located further than 6 inches from the power supply filter capacitors. A 1 µF solid tantalum or a 10 µF aluminum electrolytic capacitor is recommended.

\*\*Required for stability. Must be at least a 10 µF aluminum electrolytic or a 1 µF solid tantalum to maintain stability. May be increased without bound to maintain regulation during transients. Locate the capacitor as close as possible to the regulator. The equivalent series resistance (ESR) is critical, and should be less than 10Ω over the same operating temperature range as the regulator.

### Ordering Information and Connection Diagrams

Temperature Range	Output Voltage				Package
	-5.0	-5.2	-12	-15	
-40°C to +125°C	LM2990T-5.0	LM2990T-5.2	LM2990T-12	LM2990T-15	TO-220
	LM2990S-5.0		LM2990S-12	LM2990S-15	TO-263
-55°C to +125°C	LM2990J-5.0-QML 5962-9571101QEA		LM2990J-12-QML 5962-9571001QEA	LM2990J-15-QML 5962-9570901QEA	J16A
	LM2990WG5.0-QML 5962-9571101QXA				WG16A

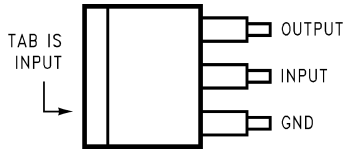
# Ordering Information and Connection Diagrams (Continued)



01080102

**Front View**  
**Order Number LM2990T-5.0, LM2990T-5.2, LM2990T-12 or LM2990T-15**  
**See NS Package Number T03B**

**TO-263 Surface-Mount Package**



01080111

**Top View**

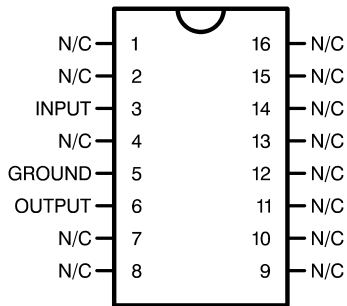


01080112

**Side View**

**Order Number LM2990S-5.0, LM2990S-12 or LM2990S-15**  
**See NS Package Number TS3B**

**16-Lead Ceramic Dual-in-Line Package**

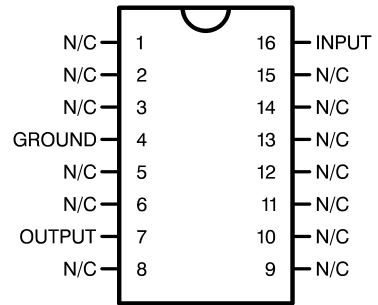


01080133

**Top View**

**Order Number LM2990J-5.0-QML (5962-9571101QEA), LM2990J-12-QML (5962-9571001QEA), or LM2990J-15-QML (5962-9570901QEA),**  
**See NS Package Number J16A**

**16-Lead Ceramic Surface Mount Package**



01080134

**Top View**

**Order Number LM2990WG5.0-QML (5962-9571101QXEA)**  
**See NS Package Number WG16A**