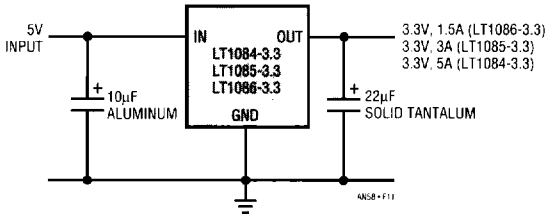
Low Dropout Linear Regulators

3.3V Linear Regulators for Any Microprocessor Application

Most microprocessor systems today and in the future will require a 3.3V regulated supply, but are given 5V by the main power source. Linear Technology now has 3.3V fixed output low dropout regulators which are fully specified for inputs of 5V and up, delivering outputs of 3.3V ±2%. This family of low dropout regulators includes the LT1086-3.3, the LT1085-3.3, and LT1084-3.3. Output currents of these devices range from 1.5A to 5A, with only an output capacitor needed to complete a design. These regulators were designed to operate with input to output differentials as low as 1V, making them ideal for 5V to 3.3V regulation with minimum parts count and minimum design work.

Two of these regulators, the LT1085-3.3 and LT1086-3.3 are available in the surface mount DD package, allowing the regulator to fit on crowded processor boards. This 3-lead surface mount package can handle in excess of 2W of power dissipation with proper board mounting techniques. These devices are also available in inexpensive 3-lead TO-220 packages in commercial temperature range (0°C to 125°C). For more information on 5V to 3.3V conversion, see Design Note 74 and Application Note 58 from Linear Technology.

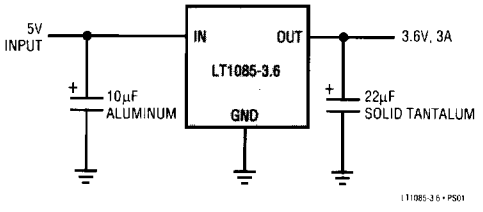


LOAD CURRENT	DEVICE	PASS DEVICE	SHUTDOWN CURRENT	TOLERANCE
150mA	LT1121-3.3	PNP	16mA	3% (100mV)
700mA	LT1129-3.3	PNP	16mA	3% (100mV)
800mA	LT1117-3.3	NPN	–	2% (65mV)
1.5A	LT1086-3.3	NPN	–	1.6% (53mV)
3A	LT1085-3.3	NPN	–	1.6% (53mV)
5A	LT1084-3.3	NPN	–	1.6% (53mV)

3.6V Regulator for the Power PC™ Microprocessor

The Power PC processor is bringing a new level of computing power to personal computers and workstations, but motherboard designers are faced with a new challenge: how to obtain a 3.6V regulated voltage to power the chip? The circuit shown here uses an LT1085-3.6 low dropout linear regulator to supply up to 3A of load current from a 5V supply. The LT1085-3.6 is fully specified for use with 5V logic inputs and will effectively regulate a 3.6V ±2% output for these processor applications. All that is required is the LT1085-3.6 and an output capacitor to perform the step-down.

A surface mount power DD package is available for on-card regulation without taking up much board space. The LT1085-3.6 can regulate from inputs as high as 28V, with a 3-lead TO-220 package offered to handle higher dissipation in these applications. The LT1086-3.6 is also available for 3.6V applications with load currents of up to 1.5A.



Guaranteed Specifications

V_{IN}	I_{OUT}	V_{OUT} MIN	V_{OUT} MAX
5V to 15V	0A to 3A	3.500	3.672
5V to 15V	0A to 2.5A	3.528	3.672
4.75V	0A to 3A	3.350	3.672
4.75V	0A to 2.5A	3.450	3.672
4.75V	0A to 1.5A	3.528	3.672