Low-Dropout Regulator for Bus-Powered USB Peripherals

Maxim Integrated Products introduces the MAX5005, a full-featured low-dropout (LDO) regulator designed specifically for bus-powered USB peripherals. This device integrates four key components: a micropower 3.3 V output LDO regulator; a microprocessor (&#956P) reset supervisor; 15 kV transient voltage suppressors for D+ and D- data bus; and internal 1500-ohm data termination resistors to configure a peripheral USB device for full-speed or low-speed operation.
The LDO regulator operates from the 5 V bus, provides 3.3 V output, and is capable of delivering up to 150 mA output current. Moreover, regulator stability is guaranteed with a surface-mount 1 &#956F ceramic output capacitor. The regulator includes indefinite short-circuit protection, thermal shutdown, and near zero output to input voltage reverse leakage current.
MAX5005's internal supervisor circuit monitors the LDO regulator's output and holds the USB microcontroller in reset until the output voltage rises above a preset threshold for at least 100 ms. Since the USB port is exposed to the external world, surge protection is critical for protecting sensitive low-voltage and high-speed transceivers connected to the datalines.
The MAX5005 includes &#177 15 kV transient voltage suppressors that meet the IEC-1000-4-2 level 4 standard, thus safeguarding the datalines from potentially destructive transients. A USB peripheral device can easily be configured for full-speed or low-speed mode by simply using the MAX5005's SELR pin to switch an internal precision 1500 ohm resistor between V out and D+ or between V out and D-. The device draws 25 &#956A supply current independent of load, thus meeting the low power requirements during peripheral suspend mode.
The MAX5005 is available in the extended temperature range (-40&#176C to +85&#176C) in a 10-pin &#956MAX package (1.1 mm height).

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