Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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MAX20038

Automotive High-Current Step-Down Converter with USB Protection/Host Charger Adapter Emulation

Industry's First Synchronous USB Buck Converter with I^2C, Short to V_{BAT} and Protection/Host Charge Emulator

NDA Required. Request Full Data Sheet and Software

Description

The MAX20037/MAX20038 ICs combine a 3.5A automotive- grade step-down converter, USB host charger adapter emulator, and USB protection switches for automotive USB host applications. The device family also includes a USB load current-sense amplifier and configurable feedback-adjustment circuit, designed to provide automatic USB voltage compensation for voltage drops in captive cables often found in automotive applications. The ICs limit the USB load current using both a fixed internal peak-current threshold of the DC-DC converter and a user-configurable external USB load current-sense amplifier threshold.

The ICs allow flexible configuration options for both stand-alone and supervised applications, and can be programmed for desired operation using both external programming resistors and/or internal I^2C registers through the I^2C bus.

The ICs are optimized for high-frequency operation and include programmable frequency selection from 310kHz to 2.2MHz, allowing optimization of efficiency, noise, and board space based on application requirements. The fully synchronous DC-DC converters feature integrated high-side and low-side MOSFETs, an external SYNC input/output, and can be configured for spread-spectrum operation.

The MAX20037/MAX20038 are are available in a small (5mm x 5mm) 28-pin TQFN package designed to minimize required components and layout area.

Key Features

- One-Chip Solution Directly from Car Battery to Portable Device
  - 4.5V to 28V (40V Load Dump) Input Voltage
  - 5V, 3.5A Output Current Capability
  - Device-Attach Detection Output
  - Low-Q Current Skip and Shutdown Modes
- Low-Noise Features Prevent Interference with AM Band and Portable Devices
  - Fixed-Frequency 275kHz to 2.2MHz Operation
  - Fixed-PWM Option at No Load
  - Spread Spectrum for EMI Reduction
  - SYNC Input/Output for Frequency Parking
- Optimal USB Power and Communication for Portable Devices
  - User-Programmable Voltage Gain Adjusts Output for Up to 600mΩ Cable Resistance
  - User-Programmable USB Current Limit
  - USB 480Mbps/12Mbps/1.5Mbps Data Switches
  - Integrated iPod®/iPhone®/iPad® and Samsung® Charge-Detection Termination Resistors
  - Supports USB BC1.2 CDP and DCP Modes
  - Supports China YD/T 1591-2009
  - Compatible with USB On-the-Go Specification
- Robust Design Keeps Vehicle System and Portable Devices Safe in Automotive Environment
  - Short-to-Battery Protection on DC-DC Converter Pins
  - Short-to-VBUS Protection on USB Pins (MAX20037)
  - Short-to-Battery Protection on USB Pins (MAX20038)
  - ± 15kV Air/±8kV Contact ISO 10605*
  - ± 15kV Air/±8kV Contact IEC 61000-4-2*
  - Reduced Inrush Current with Soft-Start
  - Overtemperature Protection
  - -40°C to +125°C Operating Temperature Range

Applications/Uses

- Automotive Connectivity/Telematics
- Automotive Radio and Navigation
- Dedicated USB Charging Port (DCP)
- USB Port for Host and Hub Applications

Part Number	Supported Charging Configurations	Supported USB Battery Charging Specification	Charging Modes	Current Limit Switch Control	CDP Emulation	Remote Wake-Up Support	V_{BUS}Reset Time (sec)	Package/Pins
							typ	
MAX20038 **NEW!**	Apple 1.0A Apple 2.1A China YD/T 1591-2009 Samsung Galaxy Tablet 2A USB CDP USB Dedicated Charger USB SDP	1.2	Auto Detection Auto Detection with Apple 1A Auto Detection with Apple 2A CDP Emulation Pass-Through Forced Dedicated Charger Pass-Through Samsung Galaxy Tablet 2A	CEN	Yes	No	0.016	TQFN-CU/28
See All USB Host Adapter Emulator (22)								

MAX20038EVKIT: Evaluation Kit for the MAX20038

Quality and Environmental Data

Request Reliability Report for: MAX20038

Lead-Free Package Tin (Sn) Whisker Reports

Device	Fab Process	Technology	Sample size	Rejects	FIT at 25°C	FIT at 55°C
MAX20038ATIC/V+T*	Contact reliability engineer for information					
MAX20038ATIB/V+T*	Contact reliability engineer for information					
MAX20038ATID/V+*	Contact reliability engineer for information					
MAX20038ATIE/V+*	Contact reliability engineer for information					
MAX20038ATIE/V+T*	Contact reliability engineer for information					
MAX20038ATIA/V+*	Contact reliability engineer for information					
MAX20038ATIB/V+*	Contact reliability engineer for information					
MAX20038ATIC/V+*	Contact reliability engineer for information					
MAX20038ATID/V+T*	Contact reliability engineer for information					
MAX20038ATIA/V+T*	Contact reliability engineer for information					

Note : The failure rates are summarized by technology and mapped to the associated material part numbers. The failure rates are highly dependent on the number of units tested.

Quality Management System >
Environmental Management System >