

External Component Recommendations for the MC13783 Reference Design

by: Power Management and Audio Application Team

1 Introduction

The recommendations for external components used for a reference or application design implemented with the MC13783 are outlined in this document. The MC13783 is a power management and user interface (PMUI) integrated circuit that can be used in Freescale's 3G cellular platforms or other portable handheld applications such as non 3G protocol cellular, gaming devices, personal media players, remote controlled toys, etc.

The purpose of this application note is to provide the suggested parts list to design with the MC13783. The parts listed are suggested, but not mandated. Other suitable parts may be available or even preferred for application optimizations. It is recommended to follow the guidelines of the MC13783 data sheet and to utilize conventional judgment on part selection as well as for component placement and board layout.

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2 Application Block Diagram

Figure 1 is a typical application diagram of the MC13783 with its functional components. Refer to Section 3, "Recommended External Components", on page 3 for the recommended external components parts list.

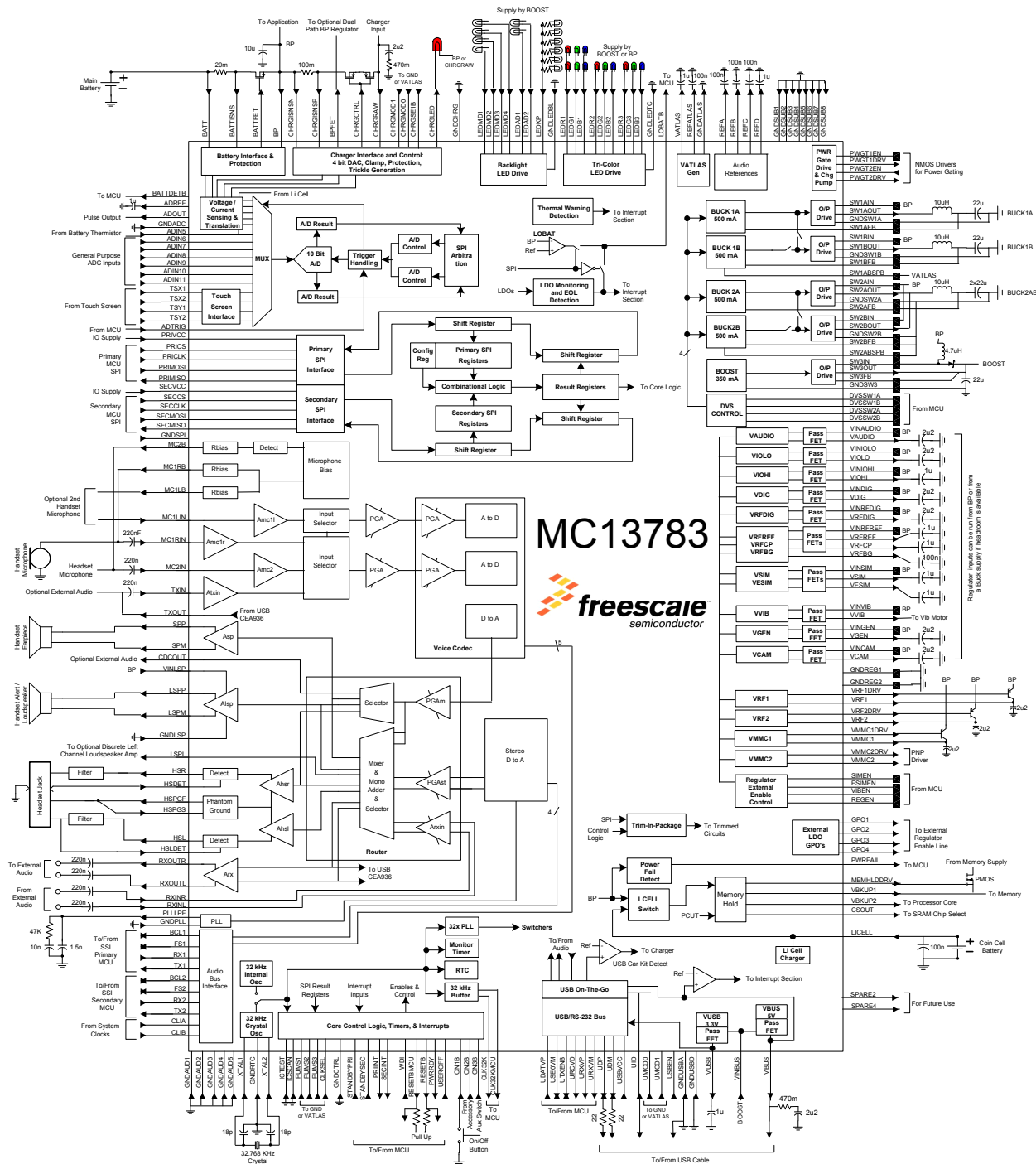


Figure 1. MC13783 Application Block Diagram

External Component Recommendations for the MC13783 Reference Design Application Note, Rev. 0.2

3 Recommended External Components

Table 1 shows the recommended external components by pin for a typical MC13783 application.

Table 1. Recommended External Components List

Block / Pin	Component Type / Value	Vendor	Recommended Component
REFATLAS	C = 0.1 μ F	TDK	C1005X7R1C104K
VRFBG	C = 0.1 μ F	TDK	C1005X7R1C104K
REFA	C = 0.1 μ F	TDK	C1005X7R1C104K
REFB	C = 0.1 μ F	TDK	C1005X7R1C104K
REFC	C = 0.1 μ F	TDK	C1005X7R1C104K
VBKUP1	C = 1.0 μ F	TDK	C1608X5R1C105K
VBKUP2	C = 1.0 μ F	TDK	C1608X5R1C105K
ADREF	C = 2.2 μ F	TDK	C1608X5R0J225K or C2012X5R1A225K
VIOLO	C = 2.2 μ F	TDK	C1608X5R0J225K or C2012X5R1A225K
VDIG	C = 2.2 μ F	TDK	C1608X5R0J225K or C2012X5R1A225K
VREFDIG	C = 2.2 μ F	TDK	C1608X5R0J225K or C2012X5R1A225K
VGEN	C = 2.2 μ F	TDK	C1608X5R0J225K or C2012X5R1A225K
SW1A	C = 22 μ F	TDK	C2012X5R0J226MTJ and C1608X5R0J225M or C3225X5R1C226M
	L = 10 μ H	TDK	VLF 4014A
SW1B	C = 22 μ F	TDK	C2012X5R0J226MTJ and C1608X5R0J225M or C3225X5R1C226M
	L = 10 μ H	TDK	VLF 4014A

Table 1. Recommended External Components List (continued)

Block / Pin	Component Type / Value	Vendor	Recommended Component
SW2A	C = 22 μ F	TDK	C2012X5R0J226MTJ and C1608X5R0J225M or C3225X5R1C226M
	L = 10 μ H	TDK	VLF 4014A
SW2B	C = 22 μ F	TDK	C2012X5R0J226MTJ and C1608X5R0J225M or C3225X5R1C226M
	L = 10 μ H	TDK	VLF 4014A
SW1 or SW2 parallel	C = 2 x 22 μ F	TDK	2 x 22 μ F C2012X5R0J226MTJ and C1608X5R0J225K
	L = 10 μ H	TDK	VLF 5014
REFD	C = 1.0 μ F	TDK	C1608X5R1C105K
VAUDIO	C = 1.0 μ F	TDK	C1608X5R1C105K
VIOHI	C = 1.0 μ F	TDK	C1608X5R1C105K
VRFREF	C = 1.0 μ F	TDK	C1005X5R0J105K or C1608X5R0J225M To increase noise performances
VRFCP	C = 1.0 μ F	TDK	C1005X5R0J105K or C1608X5R0J225M To increase noise performances
VSIM	C = 1.0 μ F	TDK	C1608X5R1C105K
VESIM	C = 1.0 μ F	TDK	C1608X5R1C105K
VATLAS	C = 1.0 μ F	TDK	C1608X5R1C105K
VUSB	C = 1.0 μ F	TDK	C1608X5R1C105K
VMMC1	2.2 μ F	TDK	C1608X5R0J475M or C2012X5R1A225K
VMMC2	2.2 μ F	TDK	C1608X5R0J475M or C2012X5R1A225K
VRF1	2.2 μ F	TDK	C1608X5R0J475M or C2012X5R1A225K
VRF2	2.2 μ F	TDK	C1608X5R0J475M or C2012X5R1A225K

Table 1. Recommended External Components List (continued)

Block / Pin	Component Type / Value	Vendor	Recommended Component
VCAM	2.2 μ F	TDK	C1608X5R0J475M or C2012X5R1A225K
BP	10 μ F	TDK	C2012X5R1A106M or GRM21BR60J226M or JMK212BJ226MG
VBUS	1.0 μ F	TDK	Rated voltage should be higher than 20 V C2012X5R1E225M
CHRGRAW	1.0 μ F	TDK	Rated voltage should be higher than 20 V C2012X5R1E225M
SW3	22 μ F	TDK	C2012X5R0J226MTJ add C1608X5R0J106M or 2 x GRM21BR60J226M or 2 x JMK212BJ226MG or 1 x C3225X5R1C226M
RTC Oscillator	32.768 kHz Crystal	Micro Crystal	CC5V-T1-32.768kHz-9pF-30ppm No special requirements here.
Charger FETS	M1 M2 M3 M4	Vishay Fairchild Fairchild Vishay	Si8401DV FDZ293P, FDZ191 FDC697P Si8401DV
Sense Resistors	20 m Ω 100 m Ω	Vishay Panasonic	WSL0805.021%TR ERJ3RSFR10V

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