User Guide

MP2722 Evaluation Kit (EVKT-MP2722)



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Overview

Introduction

The EVKT-MP2722 is an evaluation kit for the MP2722. It is used to demonstrate the capabilities of the MP2722, an I²C-controlled, single-cell, 5A, narrow-voltage DC (NVDC) buck charger with USB Type-C dual-role power (DRP) detection. The device can accept a 4V to 16V input voltage (V_{IN}) to charge the battery. The default function of this board is preset for charger mode, and the charge-full voltage is preset to 4.2V for a single-cell Li-ion battery.

Kit Contents

EVKT-MP2722 kit contents (items below can be ordered separately):

#	Part Number	Item	Quantity
1	EV2722-RH-00A	MP2722 evaluation board	1
2	EVKT-USBI2C-02	Includes one USB-to-I ² C communication interface, one USB cable, one ribbon cable	1
3	Online resources	Include GUI and supplemental documents	-
•	GUI	SB Cable USB-to-I ² C Communication Interface Ribbon Cable EV2722-RH-00A Output Load	Battery

Figure 1: EVKT-MP2722 Evaluation Kit Set-Up



Features and Benefits

- Fully Integrated CC Controller Compliant with USB Type-C 1.3
- USB-C Dual-Role Power (DRP) with Try.SNK and Try.SRC Mode Support
- Supports USB BC 1.2 and Non-Standard Adapters
- 26V Sustainable Input Voltage (V_{IN})
- Configurable 80mA to 5A Charge Current (I_{CC}) via the I²C
- Configurable 100mA to 3.2A Input Current Limit (I_{IN_LIM}) via the I²C
- Minimum V_{IN} Loop for Maximum Adapter Power Tracking
- Comprehensive Safety Features:
 - Fully Customizable JEITA Profile
 - o Additional Negative Temperature Coefficient (NTC) Thermistor Input
 - Configurable Die Temperature Regulation from 60°C to 120°C
 - Complete Charge and Pre-Charge Safety Timers
 - Watchdog Safety Timer
- Configurable 750kHz to 1.5MHz Switching Frequency (f_{SW})
- Ultra-Low 8.5µA Battery Discharge Current in Shipping Mode
- Down to 30mA Termination Current Settings for Wearable Applications
- I²C Port for Flexible System Parameter Setting and Status Reporting
- Configurable Boost Converter for Source Mode and USB On-The-Go (OTG)
- Accuracy:
 - ±0.5% Battery Regulation Voltage (V_{BATT_REG})
 - **±5% l**cc
 - \circ ±5% $I_{IN_{LIM}}$
 - ±2% Output Regulation in Boost Mode
- Available in a Small QFN-22 (2.5mmx3.5mm) Package

 \mathbf{A} All changes made in I²C mode are not retained once the evaluation board shuts down.

1 Information written in OTP mode cannot be changed.

Adjustable Features

l ² C	ОТР
 Charge Current (ITC, IPRE, ICC, ITERM) Battery-Full Voltage VIN_LIM Regulation Voltage IIN_LIM Regulation Current VSYS_MIN Regulation Voltage Safety Charge Timer Over-Voltage Protection (OVP)	 EN_STAT_IB Default Value EN_PG_NTC2 Default Value Hold-Off Timer Default Value Default fsw IIN_MODE Default Value Default Charge Current (ITC, IPRE, ICC, ITERM) Default Battery-Full Voltage Default VIN_OVP Threshold VSYS_MIN Default Value Watchdog Timer Default Value Default Boost Output Voltage CC1/CC2 Default Configurations
Thresholds NTC Thresholds Thermal Regulation Point CC1/CC2 Configuration Options Switching Frequency (fsw) Output Voltage in Source Mode Output Current Limit in Source Mode	(CC_CFG, RP_CFG, FORCE_CC) AUTOOTG, AUTODPDM Default Value HVEN Default Value NTC1_ACTION Default Value BOOST_STP_EN Default Value BOOST_OTP_EN Default Value Interrupt Mask Default Value

Kit Specifications



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Features	Specifications
Supply for Board	4V to 16V
Operating Input Voltage	4V to 16V
Operating Systems Supported	Windows XP, 7, or later
System Requirements	Minimum 21.6MB free
GUI Software	Programming tool MP2722
EVB Size (LxW)	6.3cmx6.3cm



Section 1. Hardware Specifications

1.1 Personal Computer Requirements

The following minimum requirements must be met to use the EVKT-MP2722:

- Operating System of Windows XP, 7, or later
- Net Framework 4.0
- PC with a minimum of one available USB port
- At least 21.6MB of free space

1.2 EV2722-RH-00A Specifications

The EV2722-RH-00A is an evaluation board for the MP2722. For more information, refer to the EV2722-RH-00A datasheet.



Feature	Specifications
Supply for Evaluation Board	4V to 16V
Operating Input Voltage	4V to 16V
EVB Size (LxW)	6.3cmx6.3cm

Figure 2: EV2722-RH-00A Evaluation Board

1.3 EVKT-USBI2C-02 Specifications

The EVKT-USBI2C-02 refers to the USB-to-I²C communication interface, which connects the EVB, the PC, and its supporting accessories (see Figure 3). It provides I²C capabilities. Together with MPS Virtual Bench Pro and I²C GUI tools, it provides a quick and easy way to evaluate the performance of MPS digital products. For more details, refer to the EVKT-USBI2C-02 datasheet.







Section 2. Software Requirements

2.1 Software Installation Procedure

Programming occurs through the MPS I²C GUI. Follow the instructions below to install the software:

Note: This software can be downloaded from the MPS website.

- 1. Download and extract the relevant files from the MPS website.
- 2. Double click the ".exe" file to open the set-up guide (see Figure 4). If a protection window comes up, click "More info," then click "Run anyway."
- 3. Follow the prompts in the set-up guide.
- 4. Wait for the status screen to verify that installation is complete (see Figure 5).

🛃 Setup - Programming Tool-MP2722 1.2	- 0.0	-	\times
Select Destination Location Where should Programming Tool-MP2722	2 1.2.0 be installed?		
Setup will install Programming To	ool-MP2722 1.2.0 into the f	ollowing folder.	
To continue, click Next. If you would like t	o select a different folder,	click Browse.	
C:\Program Files (x86)\MPS\Programmin	ig Tool\MP2722	Browse	
At least 21.6 MB of free disk space is requ	uired.		
	< Back Next	> Ca	ncel

Figure 4: MPS I²C GUI Set-Up Guide

Completing the De Installation Wizard	vice Driver 1
The device driver installation wiz software for your hardware devic the software you currently have	tard did not update any of your ces because it was not better than installed.
Driver Name V Silicon Laboratories Inc	Status Ready to use
< Back	Finish Cancel

Figure 5: Driver Set-Up Success



Section 3. Evaluation Kit Test Set-Up

3.1 Hardware Set-Up (1)

The hardware must be properly configured prior to use. Follow the instructions below to set up the EVB:

- 1. Connect the EVB to the EVKT-USBI2C-02 communication interface with the 3-pin ribbon cable or 10-pin ribbon cable, and ensure that they are connected.
- 2. Connect SCL, SDA, and GND (see Figure 6). Refer to the MP2722 datasheet for additional clarification.
- 3. Connect the EVKT-USBI2C-02 to the computer.

Note:

1) It is important to adhere to the order of these steps. Failing to do so may cause damage to the communication pins (SCL and SDA) during a hot-plug event.



Figure 6: EVB to MPS I²C Communication Interface Wire Connection

3.2 Powering Up the EVB

- 1. Connect the load terminals to:
 - a. Positive (+): SYS
 - b. Negative (-): GND
- 2. Connect the battery terminals to:
 - a. Positive (+): BATT
 - b. Negative (-): GND
- 3. If using a battery simulator, preset the battery voltage to be between 0V and 4.2V, then turn it off. Connect the battery simulator output to the BATT and GND pins, respectively.
- 4. Preset the power supply output to be between 4V and 16V, and then turn off the power supply.
- 5. Connect the power supply terminals to:
 - a. Positive (+): VIN
 - b. Negative (-): PGND
- 6. Ensure the battery voltage is present (if using a battery simulator, turn on the battery simulator). Turn the power supply on. The IC should start up automatically.

3.3 Software Set-Up

After connecting the hardware according to the steps above, follow the steps below to use the GUI software:

1. Start the software. It should automatically check the EVB connection.



 If the connection is successful, "Device connected" will be shown at the bottom left of the screen (see Figure 7).

CONFIG REGISTER MAP			Read Status
Converta Setting KG_PST NEG_PST KG_PST 0STAT VPC_VTC2 0PG UDOHT_TMR 0.00HT UDOHT_TMR 0.00HT VPLR2 0.1-1.0MegHz N_VR2 0.0HT N_VR1 0.0HT	Control Ex,BOOST Ex,BOOST Ex,BOOST Ex,CHO Ex,CHO	Image: Construction of the construction of	CO Statu DPDM_STAT 0000-Not shared INDPM_STAT Image: Comparison of the shared INDPM_STAT Image: Comparison of the shared VIN_GO Image: Comparison of the shared CCL_SRC_STAT Image: Comparison of the shared CCL_SRC_STAT Image: Comparison of the shared
NVDC YS_MIN 100-3 588V NTTFE_DS 0-8ATTFE_T on * NUTTET_LOX 1-105 oday * Otarge Parameters N_MODE 000-Follow IN_LIM * N_MM 500 ** N_ATT	Orig OLM 11-3 BA VEXOST 111-5 59 BATLLOW 00-3 0V taling * BOOST_GP_EN • • HV Charger HVN • HVD HVUP Update AB Read AB	VIN.SRC_EN Image: Constraint of the second sec	TOPOFF_ACTIVE

Figure 7: Connected Status Shows Successful Connection

- If the connection is unsuccessful, a warning should appear at the bottom. There are two potential warnings.
 - If the application shows "Device disconnected", this means that the evaluation board is not connected correctly (see Figure 8).
 - If the application shows "USB disconnected", this means that the USB-to-I²C communication interface is not connected correctly (see Figure 9 on page 10).

IP2722						R/W
CONFIG REGISTER MAP					Rei	ad Status
					Status DPDM_STATS	0000-Not started
General Setting	Control		NTC Settings	Î	VINDPM_STAT	\bigcirc
G_RST REG_RST	EN_BOOST		NTC1_ACTION		IINDPM_STAT	õ
_STAT_IB 0-STAT 💌	EN_BUCK		NTC2_ACTION		VIN GD	õ
_PG_NTC2 0-PG +	EN_CHG		WARM_ACT	01-Reduce VBATT_RE(+	VIII DOV	0
оск_снд	AUTO_DPDM		COOL_ACT	10-Reduce ICHG -	VIN_RDY	0
	FORCEDPDM	FORCEDPDM	JEITA_VSET	00100mV 👻	LEGACYCABLE	0
V_FREQ 01-1.0MegHz ¥	TYPE-C		JEITA_ISET	00-50% of ICHG *	THERM_STAT	0
J_VIN_TRK	O met		VHOT	10-23.0% (60°C) -	VSYS_STAT	1- BATT>SYS MIN
IN_OVP 00-6.3V -	CC_CFG	101–Disabled V	VWARM	01-32.6% (45°C) 💌	CHG_STAT	000-Not charging
EN 0-when switching	AU1001G		VCOOL	10-64.8% (10°C) 💌	CC1_SNK_STAT	00-vRa(<0.2V)
VATCHDOG_RST WATCHDOG_RST	KP_CFG	00-default USB ¥	VCOLD	01-74.2% (0°C) -	CC2_SNK_STAT	00-vRa(<0.2V)
VATCHDOG 01-40s -	FORCE_CC	11-Force to HighZ *	Impedance Test		CC2_SRC_STAT	00-vOPEN
A NUMC			VIN SPC EN		TOPOFF_ACTIVE	0
y muc	OLIM	11-3.0A *	IVIN SRC	0000.504	BFET_STAT	1-discharging
YS_MIN 100-3.588V -	VBOOST	111-5.15V ×	VIN TEST	00.0.31/	BATT_LOW_STAT	0-higher than
ATTFET_DIS 0-BATTFET on •	BATT_LOW	00-3.0V falling V	(m_n_s)	00-0.37	OTG NEED	
ATTHET_DLY	BOOST_STP_EN		INT Mask		VIN TEST HICH	0
ATTFET_RST_EN	BOOST_OTP_EN		MASK_THERM		VIIV_TEST_HIGH	0
Charge Parameters	A HV Charger		MASK_DPM		DEBUGACC	0
MODE 000-Follow IIN_LIM -	Conversion Rev		MASK_TOPOFF		AUDIOACC	0
N_LIM 500 -	mA HVEN		MASK_CC_INT		Fault	
RATT 4.2 -	W + HVUP	HVUP	▼ MASK_BATT_LOW	•	WATCHDOG FAULT	
	Updat	e All Read All			WAICHDOG_PAULI	-

Figure 8: Warning Indicates Unsuccessful Connection (Evaluation Board is Not Connected)



CONFIG REGISTER MAP O Central Setting BLS AST O Central Setting BLS AST O Central Setting BLS AST NS AT JB O-STAT D-State D-State DALDOFT, TMR D-State NN KC ACTION D-Reduce VEAT OC C, CHG OD-TOBOM NN KC ACTOOR D-Reduce VEAT NN KC ACTOOR D-REDUCE PROM NN KC ACTOOR D-REDUCE PROM NN KC ACTOOR D-REDUCE PROM NATTEC LOX D-REL CC NATTEC LOX D-REL CC NATTEC LOX D-REL CC NATTEC LOX D-REL CC NATION OR D-REL CC <th>P2722</th> <th></th> <th></th> <th></th> <th></th> <th>MONITOR</th> <th>R/V</th>	P2722					MONITOR	R/V
CONFIG REGISTER MAP © General Setting EG_RST REG_RST REG_RST REG_RST INDOM_STATS ODOD Status DEVELOS DEVELOS </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
General Setting EG_RST REG_RST REG_RST REG_RST REG_RST REG_RST INDOM_STAT DODM_STAT DODM_STAT DINDM_STAT INDOM_STAT INDAC INDOM_STAT INDOM_S	ONFIG REGISTER MAP					Status	ead status
O General Setting						DPDM STATS	0000-Not started
EG_RST	General Setting	Control		NTC Settings) i	VINDPM_STAT	
LISTAT_UB LISTAT_UB LISTAT_UC	G_RST REG_RST	EN_BOOST		NTC1_ACTION		UNIDPM STAT	ă
QLPG_MTC2 D=PG ▼ QLC_HG ▲UTO_JCPDM ▲UTO_JCPDM DOLOFF_TIMR ● ● VREQ 01-10 Meg/kL ▼ ● AUTO_JCPDM ● ● VREQ 01-10 Meg/kL ▼ ● N_CVP 00-6.53 ▼ ● ● TIPE C ● VHOT 10-23.0% (80°C) ▼ VHOT VHOT 10-23.0% (80°C) ▼ VHOT VARAM 01-23.0% (80°C) ▼ VHOT VARAM 01-23.0% (80°C) ▼ VHOT VHOT 10-43.9% (10°C) ▼ VCOLD 01 MOC 01-46.9% (10°C) ▼ VCOLD 01 MOC 01-40.9% (10°C) ▼ O 02 MOC 01-40.9% (10°C) ▼ O 03 MTFELDIS 0-AATTFET on ▼ ● 04 MODE ▼ MASK_TOPOFF ● 04 MASK_TOPOFF ● MASK_TOPOFF ● 04 MASK_TOPOFF ● ●	_STAT_IB 0-STAT +	EN_BUCK		NTC2_ACTION		100700_0001	0
COC_CHG Impediate	PG_NTC2 0-PG V	EN_CHG		WARM_ACT	01-Reduce VBATT_RE(-	VIN_GD	
ALDOF_TIMR IETA_VSET 0060% of ICHG IETA_VSET 0060% of ICHG IETA_VSET V/REQ 01-10MegHz IETA_VSET 0060% of ICHG IETA_VSET 0060% of ICHG IETA_VSET V/NT 00-50% of ICHG III-Stabled IIII-Stabled IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	CK_CHG	AUTO_DPDM		COOL_ACT	10-Reduce ICHG V	VIN_RDY	0
VLFREQ 01-10MagHz TYPE_C UNN_TRK 0-400 mm 0-400 mm </td <td>DLDOFF_TMR</td> <td>FORCEDPDM</td> <td>FORCEDPDM</td> <td>JEITA_VSET</td> <td>00100mV 💌</td> <td>LEGACYCABLE</td> <td>0</td>	DLDOFF_TMR	FORCEDPDM	FORCEDPDM	JEITA_VSET	00100mV 💌	LEGACYCABLE	0
LVN_TRK C,CrG 101-Dhaabled = LOVP 00-5.37 ** C,CrG 101-Dhaabled = NUCHOOG.RST Watchboog.RST 0-when switching = 0 SMIN 100-3.588V = 0 0 SMIN 100-3.588V = 0 0 SMIN 10-30.588V = 0 0 SAMIN 10-3.05.88V = 0 0 BATTIFET.on = 0 0 0.03.0V taling = BOOT_COTP_EN 0 0 0 0 MODE 000-Follow IN_LIM = HVEN MaSk_CINFO 0 </td <td>FREQ 01-1.0MegHz •</td> <td>O more</td> <td></td> <td>JEITA_ISET</td> <td>00-50% of ICHG *</td> <td>THERM_STAT</td> <td>0</td>	FREQ 01-1.0MegHz •	O more		JEITA_ISET	00-50% of ICHG *	THERM_STAT	0
CC/CFG 101-Deathed * MI 0-when switching * EN 0-when switching * NCHDOG,RST WATCHOOG,RST NCHOOG 01-defaul USB * FORCE_CC 11-Force to High * NCC 01-defaul USB * OUM 01-326% (45*C) * VCOL 10-44.6% (10*C) * VCOL 01-44.6% (10*C) * VCOL 01-42.6% (45*C) * VCOL 01-44.6% (10*C) * VCOL 01-44.6% (10*C) * VCOL 01-74.2% (0*C) * VCOL 01-74.2% (0*C) * OUM 11-3.0A * WIN,SRC_EN 00-05.4W (aling * BATI_LOW 00-3.0V (aling * BOOST_STP_EN 00-0.3V * BATI_LOW 00-3.0V (aling * BOOST_STP_EN 00-0.3V * BOOST_STP_EN 00-0.0V (aling * BOOST_STP_EN </td <td>LVIN_TRK</td> <td>(TTPE-C</td> <td></td> <td>VHOT</td> <td>10-23.0% (60°C) 👻</td> <td>VSYS STAT</td> <td>1-</td>	LVIN_TRK	(TTPE-C		VHOT	10-23.0% (60°C) 👻	VSYS STAT	1-
EN G-withen switching * AUTOOTIG * CCL_SNK_STA CCL_SN	N_OVP 00-6.3V -	CC_CFG	101–Disabled -	VWARM	01-32.6% (45°C) 👻	CHG STAT	000-Not charging
AltCHDOG_RST WATCHDOG_RST WATCHDOG_RST CC2_SNLSTAT COLD AltCHDOG 01-40s •	EN 0-when switching *	AUTOOTG		VCOOL	10-64.8% (10°C) -	CC1_SNK_STAT	00-vRa(<0.2V)
AICHDOG DI-405 V INVDC S.MIN 100-3588V V S.MIN 100-3588V V S.MIN 100-3588V V ITTET_DIS 0-BATTFET on V ITTET_ST_EN 0-DO ST talling V BOOST_STP_EN 0-DO ST TALLINV 0-DO ST V BOOST_STP_EN 0-DO ST V BOOST_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_STP_STP_N 0-DO ST V BOOST_STP_STP_STP_STP_STP_STP_STP_STP_STP_S	ATCHDOG_RST WATCHDOG_RST	RP_CFG	00-default USB 💌	VCOLD	01-74.2% (0°C) -	CC2_SNK_STAT	00-vRa(<0.2V)
NVDC OTG VIN, SRC, EN Other SMIN 1100-3588V * 000-5400 MIN, SRC, EN 0000-540 * 0000-540 * SMIN 1100-3588V * 000-540 * 0000-540 * 0000-540 * 0000-540 * SMIN 110-03-588V * 000-540 * 000-540 * 0000-540 * 0000-540 * SMIN 110-05 delay * 000-500 * 111-5.150 * 000-000-540 * <	ATCHDOG 01-40s	FORCE_CC	11–Force to HighZ 💌	A Instantion Test		CC1_SRC_STAT	00-VOPEN
NVC OLIM 11-30.4 OLIM Intraction Output Intraction Output Intraction Output O		OTG		() impedance resc		TOPOEE ACTIVE	
S.MIN 100-3588V * Charge Parameters MODE 000-Follow IIN_LIM * HVID S00 * mA MODE 000-Follow IIN_LIM * MASK 10POFF MULP HVID HVID HVID HVID HVID MASK 2011 0M	NVDC	OUM	11.2.04	VIN_SRC_EN		REFT STAT	1 discharging
ITTRET_DIS 0-BATTFET on * ITTRET_DIV 1-10s delay * ITTRET_RST_EN 00-30 * BOOST_STP_EN 00-30 * </td <td>S_MIN 100-3.588V -</td> <td>VROOST</td> <td>11-3.0H +</td> <td>IVIN_SRC</td> <td>0000-5uA 👻</td> <td></td> <td>0-higher than</td>	S_MIN 100-3.588V -	VROOST	11-3.0H +	IVIN_SRC	0000-5uA 👻		0-higher than
TIFET_DLY TIFET_DLY TIFET_DST_EN OOD_Follow IIN_LIM TIFET_AST_EN OOD_Follow IIN_LIM TIFET_AST_EN OOD_Follow IIN_LIM TIME SOO TIME DOOT_TOTP_EN OOD_FOLIN TIME SOO TIME	TTFET_DIS 0-BATTFET on 👻	PATT LOW	00. 2.0V falling =	VIN_TEST	00-0.3V ·	BATTLOW_STAT	BATTLOW
ThrEF_RST_EN Image Parameters MASK_THERM Image Parameters MODE 000-Fallow IIIN_LIM * Image Parameters MASK_TOPOFF Image Parameters MODE 000-Fallow IIN_LIM * Image Parameters Image Parameters Image Parameters MODE 000-Fallow IIN_LIM * Image Parameters Image Parameters Image Parameters MASK_TOPOFF Image Parameters Image Parameters Image Parameters Image Parameters Image Parameters Image Parameters Image Parameters <td>TTFET_DLY 1–10s delay 💌</td> <td>BOOST STR EN</td> <td>00-5.0V laning +</td> <td>INT Mask</td> <td></td> <td>OTG_NEED</td> <td>0</td>	TTFET_DLY 1–10s delay 💌	BOOST STR EN	00-5.0V laning +	INT Mask		OTG_NEED	0
Oharge Parameters MASK COPM DEBUGACC MODE COD-Follow IIIN_LIM • • JUM 500 • mA	TTFET_RST_EN	BOOST_OTP_EN		MASK THERM		VIN_TEST_HIGH	0
MODE 000-Fallow IIN_LIM JUM 500 MAX CC_INT HVUP	Charge Parameters	Coost on The		MASK DPM		DEBUGACC	0
LUM 500 · mA HVUP HVUP CONTRACTOR	MODE	HV Charger		MASK TOPOFF		AUDIOACC	
Lum Buu I III HUUP HUUP A MARK BATT IOM		HVEN		MASK_CC_INT		(A) Enult	-
ATT ID - V		HVUP	HVUP	MASK BATT LOW		e raut	~
WATCHDOG_FAULT					- / /	WATCHDOG_FAULT	0

Figure 9: Warning Indicates Unsuccessful Connection (USB I²C Communication Interface is Not Connected)

- 2. If the connection is successful, proceed to Step 3. Otherwise, check connections between the EVB, communication interface, and PC. Re-plug the USB into the computer and restart the GUI.
- Click the "Read All" button to read the I²C register values. The default values should be displayed (see Figure 7 on page 9).
- 4. Find the item(s) to be changed, then select the target value(s) from the drop-down menu.
- 5. Click the "Write All" button to update the values. The changed information should be downloaded to the IC.

 \blacktriangle All changes made via the l^2 C are restored to their default values once the EVB is powered down.

3.4 Device Programming Instructions

The MP2721-xxxx is a one-time programmable (OTP) memory part, where "xxxx" is the register setting option. The factory default is "0000," and this content can be viewed in the I²C register map. Follow the instructions below to create and export customized configurations:

- 1. Using a computer, open the MPS GUI software. Ensure that the EVB has powered on.
- 2. Ensure that there is a successful connection between the EVB and computer.
- 3. Select "OTP View" in the toolbar (see Figure 10).



Figure 10: Select OTP View, Located in Toolbar

4. All selectable parameters can be changed (see Figure 11).



	ER MAP				
General Setting REG.RST IN.STATJB IN.PG_NTC2 OCK_CHG OOLDOFF_TMR W_FREQ IN_VIN_TRK IN_QVP	REG_RST 0-STAT • 0-PG • 01-1.0MegHz • 00-6.3V •	Control EN_BOOST EN_BUCK EN_CHG AUT0_DPDM FORCEDPDM CC_CFG AUT0OTG	FORCEDPDM	NTC Settings NTC1_ACTION NTC2_ACTION WARM_ACT COOL_ACT JEITA_USET JEITA_ISET VHOT VWARM MCCOOL	01-Reduce VBATT_RE(• 10-Reduce ICHG • 00100mV • 00-50% of ICHG • 10-23.0% (60°C) • 11-32.6% (45°C) •
NATCHDOG_RST WATCHDOG NVDC SYS_MIN SATTFET_DIS SATTFET_DLY	U-when switching V WATCHDOG_RST 01-40s V 0-BATTFET on V 1-10s delay V	RP_CFG FORCE_CC OLIM VBOOST BATT_LOW BOOST_STP_EN	00-default USB	VCOLD impedance Test VIN_SRC_EN IVIN_SRC VIN_TEST int Mask	01-74.2% (0°C) ▼ 01-74.2% (0°C) ▼ 0000-5uA ▼ 00-0.3V ▼
ATTEFERSTEN Charge Parameters N_MODE N_LIM RATT	000-Follow IIN LIM • 500 • mA	BOOST_OTP_EN	HVUP	MASK_THERM MASK_DPM MASK_TOPOFF MASK_CC_INT MASK_BATT_LOW	

Figure 11: Parameters that can be Adjusted in OTP Mode

- 5. Select the target value(s) from the drop-down menu(s).
- Ensure that all the parameters have been input, then click "Export for Test" in the toolbar (see Figure 12).



Figure 12: Click Export for Test

7. Export the selected configurations by clicking "Export" (see Figure 13).

Export OTP (Configuration		×
Part NO.	MP2722GRH 🔻	Customer Name XXXX	
	Cancel	Export	



8. Find a location for the exported file and click "Save". The configurations should be saved in a text file (see Figure 14).



🧮 Save As			×
← → • ↑ 📕	> This PC > Desktop > OTP	۷۷۷	Search OTP
Organize 🔹 Nev	w folder		·== • ?
 Downloads Documents Pictures DS EV2702-RP-00 EVKT MP2722 OneDrive 	* Name Name N	Date modified lo items match your search.	Type Size
🧢 This PC			
a	 ✓ < 		>
File name:	MP2722GRH-XXXX.txt		\sim
Save as type:	Text Files(*.txt)		~
 Hide Folders 			Save Cancel

Figure 14: Export Text File

9. Send this file to an MPS FAE to apply for the customized "xxxx" code



3.5 Troubleshooting Tips

EVKT-USBI2C-02 Driver Installation Problem

If the USBI2C-02 driver is not properly installed, manual installation is required. Follow the steps below to manually install the EVKT-USBI2C-02 driver:

Note: Find "USBXpress Device" in the Device Manager.

.... 🏺 USBXpress Device

If the PC is running Windows 10, check the driver version of USBXpress Device. Windows 10 will automatically install the older USB driver, which is not compatible. The correct driver version should be newer than 4.0.0.0 (see Figure 15).

1. Install the correct USBXpress ".exe" file. Choose either the 32-bit or 64-bit operating system.

32-bit: USBXpressInstaller_x86.exe

64-bit: USBXpressInstaller_x64.exe

2. Connect the EVKT-USBI2C-02 communication interface to the PC with a USB cable.

USBXpress Device Properties				
General Driver D	Details Events			
JSBXpres	USBXpress Device			
Driver Pro	ovider: Silicon Laboratories Inc.			
Driver Dat	te: 11/6/2015			
Driver Ver	rsion: 6.7.2.0			
Digital Sig	gner: Microsoft Windows Hardware Compatibility Publisher			
Driver Details	View details about the installed driver files.			
Update Driver	Update the driver for this device.			
Roll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.			
Disable Device	Disable the device.			
Uninstall Device	Jninstall Device Uninstall the device from the system (Advanced).			
	OK Cancel			

Figure 15: Correct Driver Version

No Supply

The IC's input pin has an under-voltage lockout (UVLO) detection circuit. If the input voltage (V_{IN}) is falls below the UVLO rising threshold, the charging function is disabled.

Shutdown Event

If the IC detects that V_{IN} is below the UVLO falling threshold (device enters a no supply state), or overtemperature protection is triggered (device enters a shutdown state), the IC stops switching and charging is suspended.

Thermal Recovery

If the die temperature exceeds the thermal protection threshold, the device enters a shutdown state. The IC starts up again once the die temperature decreases.



Section 4. Ordering Information

The components of the evaluation kit can be purchased separately depending on user needs.

Part Number	Description
EVKT-MP2722	Complete evaluation kit
Contents of EVKT-MP2722	
EV2722-RH-00A	MP2722 evaluation board
EVKT-USBI2C-02	Includes one USB-to-I ² C communication interface, one USB cable, and one ribbon cable
Online resources	Include GUI and supplemental documents

Order directly from MonolithicPower.com or our distributors.



REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	2/17/2023	Initial Release	-

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