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| --- | --- | --- | --- |
| **PIN** |  | **TYPE** | **DESCRIPTION** |
|  |  |
| **NAME** | **NO.** |  |  |
| VBUS | 1,24 | P | Charger Input Voltage. The internal n-channel reverse block MOSFET (RBFET) is connected between VBUS and PMID with VBUS on source. Place a 1µF ceramic capacitor from VBUS to PGND and place it as close as possible to IC. (Refer to Application Information Section for details) 充电器的输入电压。内部n沟道反向块MOSFET(RBFET)通风装置之间的连接和PMID源通风装置。1µf陶瓷电容器从PGND通风装置,将其尽可能IC。(请参考应用程序信息部分细节) |
| D+ | 2 | I | Positive line of the USB data line pair. D+/D– based USB host/charging port detection. The detection includes data |
|  |  | Analog | contact detection (DCD) and primary detection in bc1.2. 积极的USB数据线。基于D + / D - USB主机/充电端口检测。检测包括数据  接触bc1.2检测(以便)和主要检测。 |
| D– | 3 | I | Negative line of the USB data line pair. D+/D– based USB host/charging port detection. The detection includes data |
|  |  | Analog | contact detection (DCD) and primary detection in bc1.2. 消极的USB数据线。基于D + / D - USB主机/充电端口检测。检测包括数据  接触bc1.2检测(以便)和主要检测。 |
| STAT | 4 | O | Open drain charge status output to indicate various charger operation. Connect to the pull up rail via 10kohm. LOW明渠充电状态指示各种充电器输出操作。通过10 kohm连接到拉起铁路。低 |
|  |  | Digital | indicates charge in progress. HIGH indicates charge complete or charge disabled. When any fault condition occurs, STAT pin blinks at 1Hz. 表明在进步。高表明电荷完整或禁用。当发生任何故障情况时,统计销眨眼在1赫兹。 |
| SCL | 5 | I  Digital | I2C Interface clock. Connect SCL to the logic rail through a 10kΩ resistor. I2C接口时钟。sci连接到逻辑铁路通过10 kΩ电阻器。 |
| SDA | 6 | I/O Digital | I2C Interface data. Connect SDA to the logic rail through a 10kΩ resistor. 2C接口数据。SDA连接到逻辑铁路通过10 kΩ电阻器 |
| INT | 7 | O | Open-drain Interrupt Output. Connect the INT to a logic rail via 10kΩ resistor. The INT pin sends active low, 256us pulse排水明沟中断输出。INT连接到一个逻辑铁路通过10 kΩ电阻器。INT销发送活性低,256年美国的脉搏 |
|  |  | Digital | to host to report charger device status and fault. 举办充电器设备状态和故障报告。 |
| OTG | 8 | I | USB current limit selection pin during buck mode, and active high enable pin during boost mode. USB电流限制在巴克选择销模式,活跃的高使销在提高模式。 |
|  |  | Digital | In buck mode with USB host, when OTG = High, IIN limit = 500mA and when OTG = Low, IIN limit = 100mA. 在巴克模式USB主机,当OTG =高,射程限制= 500 ma,当OTG =低,射程限制= 100 ma。  The boost mode is activated when the REG01[5:4]=10 and OTG pin is High. |
| CE | 9 | I | Active low Charge Enable pin. Battery charging is enabled when REG01[5:4]=01 and CE pin = Low. CE pin must be |
|  |  | Digital | pulled high or low. 活跃的低电荷使销。电池充电时启用REG01[25:4]= 01和CE销=低。CE销必须  高或低。 |
| ILIM | 10 | I | ILIM pin sets the maximum input current limit by regulating the ILIM voltage at 1V. A resistor is connected from ILIM pin to |
|  |  | Analog | ground to set the maximum limit as IINMAX = (1V/RILIM) × 530. The actual input current limit is the lower one set by ILIM and by I2C REG00[2:0]. The minimum input current programmed on ILIM pin is 500mA. ILIM销集的最大输入电流限制通过调节ILIM电压1 v。从ILIM电阻器连接销  地设置最大限度IINMAX =(1 v / RILIM)×530。实际输入电流限制较低的一组ILIM和I2C REG00 2:0。最低输入电流设定在ILIM销500 ma |
| TS1 | 11 | I | Temperature qualification voltage input #1. Connect a negative temperature coefficient thermistor. Program temperature |
|  |  | Analog | window with a resistor divider from REGN to TS1 to GND. Charge suspends when either TS pin is out of range. Recommend 103AT-2 thermistor. TS1 and TS2 pins have to be shorted together. 温度资格电压输入# 1。连接一个负温度系数热敏电阻。程序温度  窗口的电阻分压器REGN壹空间接地。收取暂停当TS销的范围。推荐103 2热敏电阻。壹空间和TS2针必须一起做空。 |
| TS2 | 12 | I  Analog | Temperature qualification voltage input #2. TS1 and TS2 pins have to be shorted together. 温度资格电压输入# 2。壹空间和TS2针必须一起做空。 |
| BAT | 13,14 | P | Battery connection point to the positive terminal of the battery pack. The internal BATFET is connected between BAT and SYS. Connect a 10uF closely to the BAT pin. 电池连接电池的正极。蝙蝠和系统之间的内部BATFET连接。10 uf蝙蝠销紧密联系起来。 |
| SYS | 15,16 | P | System connection point. The internal BATFET is connected between BAT and SYS. When the battery falls below the minimum system voltage, switch-mode converter keeps SYS above the minimum system voltage. (Refer to Application Information Section for inductor and capacitor selection) 系统连接。蝙蝠和系统之间的内部BATFET连接。当电池电量低于最低系统电压,开关型变换器使系统在最小系统电压。(指应用程序信息部分电感器和电容器的选择) |

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| **PIN** |  | **TYPE** | **DESCRIPTION** |
|  |  |
| **NAME** | **NO.** |  |  |
| PGND | 17,18 | P | Power ground connection for high-current power converter node. Internally, PGND is connected to the source of the nchannel LSFET. On PCB layout, connect directly to ground connection of input and output capacitors of the charger. A single point connection is recommended between power PGND and the analog GND near the IC PGND pin. 电力接地大电流电源转换器节点。在内部,PGND连接的源nchannel LSFET。在PCB布局,直接连接到地面连接输入和输出电容的充电器。单点连接建议之间权力PGND和模拟IC PGND销附近的接地。 |
| SW | 19,20 | O | Switching node connecting to output inductor. Internally SW is connected to the source of the n-channel HSFET and the |
|  |  | Analog | drain of the n-channel LSFET. Connect the 0.047µF bootstrap capacitor from SW to BTST  . 交换节点连接到输出电感器。内部软件连接到n沟道的来源HSFET和  排水的n沟道LSFET。连接0.047µf引导电容器从西南到BTST。 |
| BTST | 21 | P | PWM high side driver positive supply. Internally, the BTST is connected to the anode of the boost-strap diode. Connect the 0.047µF bootstrap capacitor from SW to BTST. PWM高边司机积极的供给。在内部,BTST boost-strap二极管的正极相连。连接0.047µf引导电容器从西南到BTST。 |
| REGN | 22 | P | PWM low side driver positive supply output. Internally, REGN is connected to the cathode of the boost-strap diode. For  VBUS above 6V, connect 1-µF ceramic capacitor from REGN to analog GND. For VBUS below 6V, connect a 4.7-μF (10V rating) ceramic capacitor from REGN to analog GND. The capacitor should be placed close to the IC. REGN also serves as bias rail of TS1 and TS2 pins. PWM偏低司机积极提供输出。在内部,REGN boost-strap二极管的负极相连。为  通风装置6 v以上,从REGN 1-µF陶瓷电容器连接到模拟接地。通风装置低于6 v,连接4.7 -μf(10 v评级)陶瓷电容器REGN模拟接地。电容器应放在靠近IC。REGN也是偏向铁路TS1,TS2的别针。 |
| PMID | 23 | P | Battery Boost Mode Output Voltage. Connected to the drain of the reverse blocking MOSFET and the drain of HSFET. The minimum capactiance required on PMID to PGND is 20uF (bq24195L) or 60uF (bq24195) 提高电池输出电压模式。连接到下水道的反向阻断HSFET MOSFET和漏极。所需的最小电容在PMID PGND 20佛罗里达大学(bq24195L)或60佛罗里达大学(bq24195) |
| PowerPAD | – | P | Exposed pad beneath the IC for heat dissipation. Always solder PowerPAD™ to the board, and have vias on the Power Pad plane star-connecting to PGND and ground plane for high-current power converter. 接触垫下集成电路散热。总是焊料PowerPAD™向董事会,通过电源板平面上star-connecting PGND和地平面大电流电源转换器。 |

The bq24195L, bq24195 is an I2C controlled power path management device and a single cell Li-Ion battery charger. It integrates the input reverse-blocking FET (RBFET, Q1), high-side switching FET (HSFET, Q2), lowside switching FET (LSFET, Q3), and BATFET (Q4) between system and battery. The device also integrates the bootstrap diode for the high-side gate drive.

Device Power Up

Power-On-Reset (POR)

The internal bias circuits are powered from the higher voltage of VBUS and BAT. When VBUS or VBAT rises above UVLOZ, the sleep comparator, battery depletion comparator and BATFET driver are active. I2C interface is ready for communication and all the registers are reset to default value. The host can access all the registers after POR.

Power Up from Battery without DC Source

If only battery is present and the voltage is above depletion threshold (VBAT\_DEPL), the BATFET turns on and connects battery to system. The REGN LDO stays off to minimize the quiescent current. The low RDSON in BATFET and the low quiescent current on BAT minimize the conduction loss and maximize the battery run time. The device always monitors the discharge current through BATFET. When the system is overloaded or shorted, the device will immediately turn off BATFET and keep BATFET off until the input source plugs in again.

bq24195L,bq24195 I2C控制电源路径管理设备和单芯锂离子电池充电器。它集成了输入反向阻断场效应晶体管(RBFET Q1),高端开关场效应晶体管(HSFET Q2)lowside开关场效应晶体管(LSFET Q3)和BATFET(Q4)系统和电池之间。高端的设备还集成了自举二极管门开车。

设备上电

上电复位(运动)

内部偏置电路驱动电压高的通风装置和蝙蝠。当通风装置或VBAT高于UVLOZ,睡眠比较器,电池损耗比较器和BATFET司机是活跃的。I2C接口准备沟通和所有的寄存器都重置为默认值。运动后主机可以访问所有的寄存器。

电池从电池没有直流源

如果电池是现在和上面的电压损耗阈值(VBAT\_DEPL)BATFET打开并连接电池系统。REGN LDO保持最小化静态电流。低RDSON BATFET和低静态电流蝙蝠传导损失最小化和最大化电池运行时。设备通过BATFET总是监视放电电流。当系统过载或短路时,设备将立即关闭BATFET BATFET和保持,直到再次输入源插头。

BATFET Turn Off

The BATFET can be forced off by the host through I2C REG07[5]. This bit allows the user to independently turn off the BATFET when the battery condition becomes abnormal during charging. When BATFET is off, there is no path to charge or discharge the battery.

When battery is not attached, the BATFET should be turned off by setting REG07[5] to 1 to disable charging and supplement mode.

Shipping Mode

When end equipment is assembled, the system is connected to battery through BATFET. There will be a small leakage current to discharge the battery even when the system is powered off. In order to extend the battery life during shipping and storage, the device can turn off BATFET so that the system voltage is zero to minimize the leakage.

In order to keep BATFET off during shipping mode, the host has to disable the watchdog timer (REG05[5:4]=00) and disable BATFET (REG07[5]=1) at the same time.

Once the BATFET is disabled, the BATFET can be turned on by plugging in adapter.

Power Up from DC Source

When the DC source plugs in, the bq24195L, bq24195 checks the input source voltage to turn on REGN LDO and all the bias circuits. It also checks the input current limit before starts the buck converter.

REGN LDO

The REGN LDO supplies internal bias circuits as well as the HSFET and LSFET gate drive. The LDO also provides bias rail to TS1/TS2 external resistors. The pull-up rail of STAT can be connected to REGN as well.

The REGN is enabled when all the conditions are valid.

1. VBUS above UVLOZ

2. VBUS above battery + VSLEEPZ in buck mode or VBUS below battery + VSLEEPZ in boost mode

3. After typical 220ms delay (100ms minimum) is complete

If one of the above conditions is not valid, the device is in high impedance mode (HIZ) with REGN LDO off. The device draws less than 50µA from VBUS during HIZ state. The battery powers up the system when the device is in HIZ.

BATFET关掉

BATFET可以迫使由主机通过I2C REG07[5]。这部分允许用户独立关闭BATFET充电期间当电池条件下变得异常。当BATFET,没有路径为电池充电或放电。

当电池不附,BATFET应该关闭通过设置REG07[5]1禁用充电和补充模式。

运输模式

当终端设备组装,系统通过BATFET连接到电池。将会有一个小泄漏电流放电电池即使系统驱动。为了延长电池寿命在运输和储存期间,设备可以关掉BATFET以便系统电压是零泄漏降到最低。

为了保持BATFET在运输模式,主机必须禁用看门狗定时器(REG05[25:4]= 00)和禁用BATFET(REG07[5]= 1)在同一时间。

一旦BATFET是禁用的,可以打开BATFET插入适配器。

权力高于直流源

直流电源插头时,bq24195L bq24195检查输入电压源打开REGN LDO电路和所有的偏见。它还检查启动巴克转换器之前输入电流限制。

REGN LDO

REGN LDO供应内部偏置电路以及HSFET和LSFET开车门。LDO还提供了偏见铁路TS1 / TS2外部电阻。的牵引铁路统计可以连接到REGN。

启用了REGN当所有的条件是有效的。

1。UVLOZ上方的通风装置

2。通风装置上面电池+ VSLEEPZ巴克模式或通风装置下面电池+ VSLEEPZ推动模式

3所示。典型的后220毫秒的延迟(最低100 ms)完成

如果上述条件之一是无效的,设备处于高阻抗状态(HIZ)REGN LDO。从通风装置设备吸引不到50µa HIZ状态。电池强国HIZ系统设备时。