

## 27W 移动电源方案说明

### 版本/修订历史

| 版本    | 日期         | 修订内容        | 拟制/修订人 |
|-------|------------|-------------|--------|
| V1.0  | 2021-11-25 | 初版释放        | zyq    |
| V1.1  | 2021-11-27 | 修改 VSET 描述  | zyq    |
| V1.11 | 2022-03-21 | 修改 PDO 错别字  | zyq    |
| V1.12 | 2022-07-13 | 修改 PPS 包电流值 | tfg    |
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|       |            |             |        |
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## 概述

针对 iPhone13ProMax 可支持 27W 快速充电的特性，近期有客户对英集芯 PD 移动电源方案提出支持输出 PD 27W 的定制需求。针对此需求，在 IP5356 型号基础上进行定制。相关定制型号如下红字：

IP5356\_LED\_BZ\_27W\_F：基于 IP5356\_LED\_BZ\_TLP

IP5356\_LED\_CL\_27W\_F：基于 IP5356\_LED\_CL\_TLP

IP5356\_LED\_CC\_27W\_F：基于 IP5356\_LED\_CC\_TLP

IP5356\_LED\_CLL\_27W\_F：基于 IP5356\_LED\_CLL\_TLP

IP5356\_188\_BZ\_27W\_F：基于 IP5356\_188\_BZ\_TLP

IP5356\_188\_CL\_1W\_27W\_F：基于 IP5356\_188\_CL\_1W\_TLP

IP5356\_188\_CC\_27W\_F：基于 IP5356\_188\_CC\_TLP

IP5356\_188\_CLL1W\_27W\_F：基于 IP5356\_188\_CLL1W\_TLP

定制参数统一更新如下：

- 1) 修改 PDO 为：5V@2.4A、9V@3A、3.3V-5.9V@3A、3.3V-11.0V@2.25A
- 2) 修改负载能力满足 27W PDO

# 1、型号使用方案推荐

| 型号                     | 电量显示 | LED 快充指示灯 | 容量设置        | 电芯充满电压 | lightning 解密 | 第二路 PD 功能 |          | 备注          |
|------------------------|------|-----------|-------------|--------|--------------|-----------|----------|-------------|
|                        |      |           |             |        |              | CL 输入 PD  | CL 输出 PD |             |
| IP5356_LED_BZ_27W_F    | LED  | LED6      | LED5        | LED3   | -            | √         | -        |             |
| IP5356_188_BZ_27W_F    | 188  | -         | LED6        | 4.2V   | -            | √         | -        |             |
| IP5356_LED_CL_27W_F    | LED  | LED4      | LED5        | LED3   | LED6         | √         | -        |             |
| IP5356_188_CL_1W_27W_F | 188  | -         | 固化 10000mAH | 4.2V   | LED6         | √         | -        |             |
| IP5356_LED_CC_27W_F    | LED  | LED6      | LED5        | LED3   | -            | -         | √        | 推荐选型 C-C 线材 |
| IP5356_188_CC_27W_F    | 188  | -         | LED6        | 4.2V   | -            | -         | √        |             |
| IP5356_LED_CLL_27W_F   | LED  | -         | LED5        | LED3   | -            | -         | √        | 推荐选型 C-L 线材 |
| IP5356_188_CLL1W_27W_F | 188  | -         | 固化 10000mAH | 4.2V   | -            | -         | √        |             |

不支持：-

支持：√



## 2、型号外围差异

|              | IP5356_XXX_XXX_TLP                                         | IP5356_XXX_XXX_27W_F                                     |
|--------------|------------------------------------------------------------|----------------------------------------------------------|
| 电感<br>(推荐参数) | 2.2uH±20%<br>直流内阻: 8mΩ<br>额定电流: 12A<br>饱和电流: 18A<br>一体成型电感 | 2.2uH±20%<br>直流内阻: 8mΩ<br>额定电流: 15A<br>饱和电流: 21A<br>绕线电感 |
| VSYS 电容      | 4*22uF                                                     | 4*22uF+100uF 固态电容                                        |
| 锂电保护<br>过流阈值 | 10A                                                        | 13A                                                      |
| 其他           | 一致                                                         |                                                          |

## 3、Layout 布局建议

按照 IP5356\_XXX\_XXX\_TLP 系列的方案进行 layout。由于 IP5356\_XXX\_XXX\_27W\_F 系列输出功率更大，额外需要注意事项如下：

- 电感由于采用的是绕线电感，在 layout 时，为了避免影响 EMI，需要把电感放平躺；
- 由于该方案功率更大，需要在外围采用有效的散热措施：
  - 保证安全条件下，尽可能的进行露铜处理；
  - 添加散热胶；
  - 尽可能选用 ESR 小的绕线电感；
  - USB 座子外壳尽量接地，减小座子本身内阻；
  - 功率环路尽可能短且粗；

## 4、兼容性测试数据

该数据以型号 IP5356\_LED\_BZ\_27W\_F 测试

| IP5356_LED_CL_27W_TLP A 口输出 |            |                    |       |       |      |               |               |               |      |
|-----------------------------|------------|--------------------|-------|-------|------|---------------|---------------|---------------|------|
| 序号                          | 设备型号名称     | 设备系统版本             | 充电线类型 | 充电协议  | 充电标识 | 黑屏充电电压\<br>电流 | 待机充电电压\<br>电流 | 亮屏充电电压\<br>电流 | 当前电量 |
| 1                           | 小米 6       | 11.0.5.0 (PCACNXM) | A-T-C | QC3.0 | 快速充电 | 6.19V, 2.46A  | 6.17V, 2.59A  | 6.18V, 2.59A  | 14%  |
| 2                           | 小米 8       | 12.0.2.0 (QECCNXM) | A-T-C | QC3.0 | 快速充电 | 6.02V, 2.29A  | 6.02V, 2.29A  | 6.02V, 2.29A  | 8%   |
| 3                           | 小米 9       | 12.0.3.0 (QFACNXM) | A-T-C | QC3.0 | 快速充电 | 8.96V, 1.80A  | 8.96V, 1.80A  | 8.96V, 1.80A  | 38%  |
| 4                           | 小米 9 Pro   | 12.0.2.0 (QFKCNXM) | A-T-C | QC3.0 | 快速充电 | 8.35V, 1.82A  | 8.35V, 1.82A  | 8.35V, 1.82A  | 2%   |
| 5                           | 小米 CC9     | 11.0.4.0 (PFXCNXM) | A-T-C | QC3.0 | 快速充电 | 6.01V, 2.37A  | 6.01V, 2.37A  | 6.01V, 2.37A  | 46%  |
| 6                           | 小米 CC9 Pro | 12.0.1.0 (QFDCNXM) | A-T-C | QC3.0 | 快速充电 | 7.85V, 1.26A  | 7.85V, 1.26A  | 7.85V, 1.26A  | 3%   |

|    |                  |                           |       |       |       |              |              |              |     |
|----|------------------|---------------------------|-------|-------|-------|--------------|--------------|--------------|-----|
| 7  | 小米 10 Pro        | 12.0.2.0 (QJACNXM)        | A-T-C | QC3.0 | 快速充电  | 8.62V, 1.47A | 8.62V, 1.47A | 8.62V, 1.52A | 50% |
| 8  | 小米 10 至尊版        | 12.0.6.0 (QJJCNCXM)       | A-T-C | QC3.0 | 快速充电  | 8.74V, 1.87A | 8.74V, 1.87A | 8.74V, 1.87A | 16% |
| 9  | 小米 11 Pro        | 12.5.10.0 (RKACNXM)       | A-T-C | PPS   | 快速充电  | 8.06V, 2.25A | 8.04V, 2.28A | 8.04V, 2.28A | 14% |
| 10 | Mix2S            | 12.0.1.0 (QDGCNXM)        | A-T-C | QC3.0 | 快速充电  | 6.28V, 1.28A | 6.03V, 1.41A | 6.03V, 1.41A | 2%  |
| 11 | Mix3             | 12.0.1.0 (QEECNXM)        | A-T-C | QC3.0 | 快速充电  | 6.00V, 2.45A | 5.97V, 2.55A | 5.97V, 2.61A | 11% |
| 12 | Redmi 10X        | 12.0.8.0 (QJOCNXM)        | A-T-C | QC3.0 | 快速充电  | 6.41V, 2.21A | 6.24V, 1.95A | 6.25V, 1.95A | 20% |
| 13 | Redmi K20 PRO    | 12.0.3.0 (QFKCNXM)        | A-T-C | QC3.0 | 快速充电  | 8.74V, 1.86A | 8.74V, 1.86A | 8.74V, 1.86A | 11% |
| 14 | Redmi K30 5G     | 12.0.2.0 (QGICNXM)        | A-T-C | QC3.0 | 快速充电  | 8.95V, 1.82A | 8.95V, 1.82A | 8.95V, 1.82A | 60% |
| 15 | 三星 S8            | One UI 1.0                | A-T-C | AFC   | 加速充电  | 8.88V, 1.22A | 8.88V, 1.22A | 8.88V, 1.22A | 64% |
| 16 | 三星 S9            | One UI 2.1                | A-T-C | AFC   | 加速充电  | 8.99V, 1.04A | 8.99V, 1.14A | 8.99V, 1.14A | 4%  |
| 17 | 三星 S10           | One UI 2.1                | A-T-C | AFC   | 加速充电  | 8.80V, 1.64A | 8.80V, 1.64A | 8.80V, 1.64A | 19% |
| 18 | 三星 S20           | One UI 2.5                | A-T-C | AFC   | 加速充电  | 8.82V, 1.60A | 8.81V, 1.64A | 8.81V, 1.64A | 19% |
| 19 | 三星 note8         | One UI 1.0                | A-T-C | AFC   | 加速充电  | 8.85V, 1.23A | 8.85V, 1.33A | 8.85V, 1.33A | 50% |
| 20 | 三星 note9         | One UI 2.1                | A-T-C | AFC   | 加速充电  | 8.82V, 1.55A | 8.81V, 1.64A | 8.81V, 1.64A | 13% |
| 21 | 三星 note10+       | One UI 2.1                | A-T-C | AFC   | 加速充电  | 8.79V, 1.64A | 8.79V, 1.64A | 8.79V, 1.64A | 28% |
| 22 | 三星 A9            | Samsung Experience 9.0    | A-T-B | AFC   | 加速充电  | 9.10V, 1.58A | 9.10V, 1.58A | 9.10V, 1.58A | 1%  |
| 23 | VIVO IQOO        | IQOOUI                    | A-T-C | DCP   | 正在充电  | 5.10V, 1.86A | 5.11V, 1.87A | 5.11V, 1.87A | 2%  |
| 24 | VIVO IQOO5 Pro   | IQOOUI                    | A-T-C | DCP   | 正在充电  | 4.95V, 1.76A | 4.95V, 1.76A | 4.95V, 1.76A | 15% |
| 25 | VIVO X23         | Funtouch                  | A-T-B | DCP   | 普通充电  | 5.09V, 1.78A | 5.09V, 1.78A | 5.09V, 1.78A | 10% |
| 26 | VIVO Z5x         | Funtouch                  | A-T-B | QC2.0 | 双引擎闪充 | 9.12V, 1.81A | 9.12V, 1.81A | 9.12V, 1.81A | 1%  |
| 27 | OPPO K3          | ColorOS V7                | A-T-C | VOOC  | VOOC  | 4.20V, 3.43A | 4.20V, 3.43A | 4.20V, 3.43A | 3%  |
| 28 | OPPO K5          | ColorOS V7                | A-T-C | VOOC  | VOOC  | 4.31V, 3.48A | 4.31V, 3.48A | 4.31V, 3.48A | 8%  |
| 29 | OPPO K7x         | ColorOS V11.1             | A-T-C | VOOC  | VOOC  | 4.10V, 3.56A | 4.10V, 3.56A | 4.10V, 3.56A | 21% |
| 30 | OPPO Find X      | ColorOS V7.1              | A-T-C | DCP   | 正在充电  | 5.13V, 1.13A | 5.13V, 1.13A | 5.13V, 1.13A | 1%  |
| 31 | OPPO Find X2     | ColorOS V7.1              | A-T-C | VOOC  | VOOC  | 4.71V, 2.83A | 4.71V, 2.83A | 4.71V, 2.83A | 51% |
| 32 | OPPO R17         | ColorOS V7                | A-T-C | VOOC  | VOOC  | 4.63V, 3.42A | 4.63V, 3.42A | 4.63V, 3.42A | 2%  |
| 33 | OPPO R9SK        | Color OS V3.0             | A-T-B | VOOC  | VOOC  | 4.66V, 3.44A | 4.66V, 3.44A | 4.66V, 3.44A | 2%  |
| 34 | OPPO R11S        | Color OS V6.0.1           | A-T-B | VOOC  | VOOC  | 4.97V, 3.52A | 4.96V, 3.50A | 4.98V, 3.54A | 2%  |
| 35 | OPPO Reno SE 5G  | ColorOS V7.2              | A-T-B | VOOC  | VOOC  | 4.67V, 2.61A | 4.67V, 2.61A | 4.67V, 2.61A | 13% |
| 36 | OPPO Reno Ace    | ColorOS V7                | A-T-C | VOOC  | VOOC  | 4.70V, 2.98A | 4.70V, 2.98A | 4.70V, 2.98A | 1%  |
| 37 | Realme X         | realme UI V1.0            | A-T-C | VOOC  | VOOC  | 4.24V, 3.48A | 4.24V, 3.48A | 4.24V, 3.48A | 1%  |
| 38 | Realme X 青春      | realme UI V1.0            | A-T-B | VOOC  | VOOC  | 4.45V, 3.41A | 4.45V, 3.41A | 4.45V, 3.42A | 1%  |
| 39 | 红魔 3             | RedMagic OS V2.0          | A-T-C | QC3.0 | 普通充电  | 8.51V, 1.84A | 8.51V, 1.84A | 8.51V, 1.84A | 2%  |
| 40 | 努比亚 Z17          | nubia UI V7.0             | A-T-C | QC3.0 | 普通充电  | 4.74V, 2.13A | 4.86V, 2.03A | 4.86V, 2.03A | 2%  |
| 41 | 坚果 R1            | smartisan OS v7.1.1       | A-T-C | QC3.0 | 普通充电  | 6.15V, 2.67A | 6.15V, 2.67A | 6.15V, 2.47A | 2%  |
| 42 | 一加 One plus7 Pro | Hydrogen OS 10.0.7.GM21   | A-T-C | warp  | 快速充电  | 4.59V, 3.35A | 4.59V, 3.35A | 4.59V, 3.35A | 2%  |
| 43 | 一加 One plus8T    | Hydrogen OS 11.0.6.8.KB05 | A-T-C | VOOC  | 快速充电  | 4.82V, 2.08A | 4.82V, 2.08A | 4.82V, 2.08A | 20% |
| 44 | Pixel 2          | Android 8.0.0             | A-T-C | DCP   | 正在充电  | 5.09V, 1.37A | 5.09V, 1.37A | 5.09V, 1.37A | 2%  |
| 45 | Pixel 3XL        | Android 9                 | A-T-C | DCP   | 正在充电  | 4.92V, 1.42A | 4.92V, 1.42A | 4.92V, 1.42A | 2%  |
| 46 | 魅族 16S           | Flyme8.1.0.0A             | A-T-C | MTK   | 普通充电  | 8.03V, 2.15A | 5.11V, 1.78A | 5.11V, 1.78A | 5%  |
| 47 | LG G7            | Android 9                 | A-T-C | QC3.0 | 快速充电  | 6.91V, 1.55A | 6.83V, 0.92A | 6.63V, 0.90A | 2%  |

|    |                      |                         |               |        |      |              |              |              |     |
|----|----------------------|-------------------------|---------------|--------|------|--------------|--------------|--------------|-----|
| 48 | 荣耀 Magic2            | Magic UI 3.1.0          | A-T-C         | 高压 SCP | 超级快充 | 8.57V, 2.13A | 8.46V, 1.86A | 8.46V, 1.85A | 5%  |
| 49 | 荣耀 Note10            | EMUI 9.1.0              | A-T-C         | SCP    | 超级快充 | 4.63V, 4.47A | 4.63V, 4.47A | 4.63V, 4.47A | 5%  |
| 50 | 荣耀 20 Pro            | Magic UI 3.1.0          | A-T-C         | SCP    | 超级快充 | 4.57V, 4.43A | 4.56V, 4.45A | 4.57V, 4.43A | 20% |
| 51 | 荣耀 20S               | Magic UI 2.1.1          | A-T-C         | SCP    | 超级快充 | 4.78V, 3.65A | 4.78V, 3.69A | 4.78V, 3.69A | 14% |
| 52 | 荣耀 20 青春版            | EMUI 9.1.1              | A-T-C         | SCP    | 超级快充 | 4.50V, 2.60A | 4.49V, 2.61A | 4.49V, 2.61A | 13% |
| 53 | 华为 P20               | EMUI 10.0.0             | A-T-C         | SCP    | 超级快充 | 4.55V, 4.11A | 4.55V, 4.11A | 4.55V, 4.11A | 5%  |
| 54 | 华为 P30 Pro           | EMUI 10.1.0             | A-T-C         | SCP    | 超级快充 | 4.57V, 4.91A | 4.57V, 4.91A | 4.57V, 4.91A | 2%  |
|    | 华为 P30 Pro           | HarmonyOS 2.0.0.165     | A-T-C         | SCP    | 超级快充 | 4.63V, 4.55A | 4.62V, 4.51A | 4.62V, 4.51A | 24% |
| 55 | 华为 P40 Pro           | EMUI 11.0.0.176         | A-T-C         | SCP    | 超级快充 | 4.56V, 4.80A | 4.58V, 4.82A | 4.59V, 4.83A | 17% |
|    | 华为 P40 Pro           | HarmonyOS 2.0.0.127     | A-T-C         | SCP    | 超级快充 | 4.74V, 4.83A | 4.71V, 4.84A | 4.70V, 4.82A | 17% |
| 56 | Mate20 Pro           | EMUI 10.0.0             | A-T-C         | SCP    | 超级快充 | 4.76V, 4.98A | 4.76V, 5.01A | 4.77V, 4.98A | 4%  |
| 57 | Mate30               | EMUI 11.0.0.176         | A-T-C         | SCP    | 超级快充 | 4.53V, 4.85A | 4.54V, 4.87A | 4.54V, 4.86A | 11% |
|    | Mate30               | HarmonyOS 2.0.0.127     | A-T-C         | SCP    | 超级快充 | 4.67V, 4.85A | 4.66V, 4.91A | 4.66V, 4.90A | 11% |
| 58 | Mate40Pro            | EMUI 11.0.0.170         | A-T-C         | SCP    | 超级快充 | 4.37V, 4.81A | 4.36V, 4.85A | 4.36V, 4.88A | 19% |
|    | Mate40Pro            | HarmonyOS 2.0.0.128     | A-T-C         | SCP    | 超级快充 | 4.39V, 4.86A | 4.40V, 4.84A | 4.40V, 4.84A | 19% |
| 59 | Nova4                | EMUI 10.0.0             | A-T-C         | FCP    | 快速充电 | 9.06V, 1.43A | 4.94V, 1.45A | 4.94V, 1.45A | 22% |
| 60 | iPhone8              | 13.6.1                  | A-T-Lightning | DCP    | 正常充电 | 5.09V, 1.73A | 5.09V, 1.73A | 5.09V, 1.73A | 4%  |
| 61 | iPhoneXS MAX         | 13.6.1                  | A-T-Lightning | DCP    | 正常充电 | 5.09V, 2.35A | 5.09V, 2.35A | 5.09V, 2.35A | 7%  |
| 62 | iPhone11 Pro         | 13.6.1                  | A-T-Lightning | DCP    | 正常充电 | 5.09V, 2.09A | 5.09V, 2.09A | 5.09V, 2.09A | 59% |
| 63 | iPhone12             | 14.1                    | A-T-Lightning | DCP    | 正常充电 | 5.08V, 2.36A | 5.08V, 2.36A | 5.08V, 2.36A | 13% |
| 64 | iPhone13             | 15.0                    | A-T-Lightning | DCP    | 正常充电 | 5.04V, 2.38A | 5.04V, 2.33A | 5.04V, 2.33A | 17% |
| 65 | iPhone13 Pro         | 15.0                    | A-T-Lightning | DCP    | 正常充电 | 5.03V, 2.33A | 5.03V, 2.33A | 5.03V, 2.33A | 20% |
| 66 | iPhone13 Pro Max     | 15.0                    | A-T-Lightning | DCP    | 正常充电 | 5.01V, 2.32A | 5.01V, 2.32A | 5.01V, 2.32A | 12% |
| 67 | Apple iPad Pro A1980 | 13.3                    | A-T-C         | DCP    | 正常充电 | 5.11V, 1.40A | 5.11V, 1.40A | 5.11V, 1.40A | 2%  |
| 68 | Apple iPad A2270     | 14                      | A-T-Lightning | DCP    | 正常充电 | 5.08V, 2.29A | 5.08V, 2.29A | 5.08V, 2.29A | 16% |
| 69 | Apple iPad Pro A2229 | 14.4.1                  | A-T-C         | DCP    | 正常充电 | 4.91V, 0.95A | 4.91V, 0.95A | 4.91V, 0.95A | 5%  |
| 70 | MacBook A1534        | OS X EI Capitan 10.11.6 | A-T-C         | \      | \    | \            | \            | 5.11V, 2.15A | 2%  |
| 71 | MacBook Air A2179    | macOS Catalina 10.15.7  | A-T-C         | \      | \    | \            | \            | 5.06V, 2.37A | 5%  |
| 72 | MacBook Pro A1707    | macOS Mojave 10.14.6    | A-T-C         | \      | \    | \            | \            | 5.11V, 2.28A | 6%  |
| 73 | MacBook Pro A1990    | macOS Mojave 10.14.6    | A-T-C         | \      | \    | \            | \            | 5.11V, 2.32A | 2%  |
| 74 | 联想 ThinkPad T14s     | WIN10 家庭中文版 1904        | A-T-C         | \      | \    | \            | \            | 4.92V, 1.49A | 39% |
| 75 | 三星 Galaxy Book Pro   | WIN10 家庭版 1904          | A-T-C         | \      | \    | \            | \            | 4.85V, 1.95A | 5%  |
| 76 | 任天堂 Nintendo Switch  | 8.1.1                   | A-T-C         | \      | \    | \            | \            | 5.10V, 1.43A | 7%  |

## IP5356\_LED\_CL\_27W\_TLP C口输出

| 序号 | 设备型号名称     | 设备系统版本             | 充电线类型 | 充电协议 | 充电标识 | 黑屏充电电压\<br>电流 | 待机充电电压\<br>电流 | 亮屏充电电压\<br>电流 | 当前电量 |
|----|------------|--------------------|-------|------|------|---------------|---------------|---------------|------|
| 1  | 小米 6       | 11.0.5.0 (PCACNXM) | C-T-C | PPS  | 极速充电 | 10.62V, 1.54A | 10.62V, 1.54A | 10.62V, 1.54A | 4%   |
| 2  | 小米 8       | 12.0.2.0 (QECCNXM) | C-T-C | PPS  | 快速充电 | 5.51V, 2.87A  | 5.50V, 2.87A  | 5.50V, 2.87A  | 7%   |
| 3  | 小米 9       | 12.0.3.0 (QFACNXM) | C-T-C | PPS  | 快速充电 | 8.30V, 1.36A  | 8.30V, 1.36A  | 8.30V, 1.36A  | 12%  |
| 4  | 小米 9 Pro   | 12.0.2.0 (QFCCNXM) | C-T-C | PPS  | 快速充电 | 8.10V, 1.61A  | 8.07V, 1.61A  | 8.07V, 1.61A  | 7%   |
| 5  | 小米 CC9 Pro | 12.0.1.0 (QFDCNXM) | C-T-C | PPS  | 快速充电 | 7.90V, 1.68A  | 7.93V, 1.68A  | 7.93V, 1.68A  | 2%   |

|    |                  |                           |       |       |      |              |              |              |     |
|----|------------------|---------------------------|-------|-------|------|--------------|--------------|--------------|-----|
| 6  | 小米 10 Pro        | 12.0.2.0 (QJACNXM)        | C-T-C | PPS   | 快速充电 | 8.10V, 2.13A | 8.09V, 2.17A | 8.09V, 2.17A | 8%  |
| 7  | 小米 10 至尊版        | 12.0.6.0 (QJJCNXM)        | C-T-C | PD    | 快速充电 | 8.85V, 1.90A | 8.88V, 1.69A | 8.88V, 1.70A | 7%  |
| 8  | 小米 11 Pro        | 12.5.10.0 (RKACNXM)       | C-T-C | PPS   | 快速充电 | 7.99V, 2.16A | 7.99V, 2.15A | 7.99V, 2.15A | 22% |
| 9  | Mix2S            | 12.0.1.0 (QDGCNXM)        | C-T-C | PPS   | 快速充电 | 5.54V, 2.86A | 5.55V, 2.86A | 5.55V, 2.86A | 23% |
| 10 | Mix3             | 12.0.1.0 (QEECNXM)        | C-T-C | PPS   | 快速充电 | 5.52V, 2.85A | 5.52V, 2.85A | 5.52V, 2.85A | 31% |
| 11 | Redmi 10X        | 12.0.8.0 (QJOCNXM)        | C-T-C | QC3.0 | 快速充电 | 6.43V, 2.20A | 6.40V, 2.36A | 6.40V, 2.36A | 9%  |
| 12 | Redmi K20 PRO    | 12.0.3.0 (QFKCNXM)        | C-T-C | PPS   | 快速充电 | 8.23V, 1.39A | 8.23V, 1.39A | 8.23V, 1.39A | 7%  |
| 13 | Redmi K30 5G     | 12.0.2.0 (QGICNXM)        | C-T-C | PPS   | 快速充电 | 8.69V, 2.40A | 8.64V, 2.42A | 8.64V, 2.42A | 10% |
| 14 | 三星 S8            | One UI 1.0                | C-T-C | PD    | 加速充电 | 8.92V, 1.21A | 8.92V, 1.29A | 8.92V, 1.29A | 2%  |
| 15 | 三星 S9            | One UI 2.1                | C-T-C | PD    | 加速充电 | 8.94V, 1.13A | 8.94V, 1.13A | 8.94V, 1.17A | 3%  |
| 16 | 三星 S10           | One UI 2.1                | C-T-C | PD    | 加速充电 | 8.87V, 1.64A | 8.87V, 1.64A | 8.87V, 1.64A | 4%  |
| 17 | 三星 S20           | One UI 2.5                | C-T-C | PPS   | 超快充电 | 8.69V, 2.31A | 8.52V, 2.32A | 8.52V, 2.32A | 6%  |
| 18 | 三星 note8         | One UI 1.0                | C-T-C | PD    | 加速充电 | 9.02V, 1.18A | 9.01V, 1.28A | 9.01V, 1.26A | 3%  |
| 19 | 三星 note9         | One UI 2.1                | C-T-C | PD    | 加速充电 | 8.95V, 1.64A | 8.95V, 1.64A | 8.95V, 1.64A | 4%  |
| 20 | 三星 note10+       | One UI 2.1                | C-T-C | PPS   | 超快充电 | 8.48V, 2.31A | 8.49V, 2.31A | 8.52V, 2.32A | 6%  |
| 21 | VIVO IQOO        | IQOOUI                    | C-T-C | PD    | 正在充电 | 4.85V, 1.88A | 4.85V, 1.88A | 4.85V, 1.88A | 11% |
| 22 | VIVO IQOO5 Pro   | IQOOUI                    | C-T-C | PD    | 正在充电 | 8.93V, 1.92A | 8.93V, 1.92A | 8.93V, 1.92A | 11% |
| 23 | OPPO K3          | ColorOS V7                | C-T-C | VOOC  | VOOC | 4.31V, 4.08A | 4.29V, 4.07A | 4.31V, 4.08A | 7%  |
| 24 | OPPO K5          | ColorOS V7                | C-T-C | PD    | 正在充电 | 4.83V, 2.16A | 4.95V, 1.10A | 4.95V, 1.10A | 5%  |
| 25 | OPPO Find X      | ColorOS V7.1              | C-T-C | DCP   | 正在充电 | 4.86V, 1.88A | 4.94V, 1.17A | 4.94V, 1.17A | 3%  |
| 26 | OPPO Find X2     | ColorOS V7.1              | C-T-C | PD    | 正在充电 | 8.93V, 1.92A | 8.93V, 1.92A | 8.93V, 1.92A | 14% |
| 27 | OPPO R17         | ColorOS V7                | C-T-C | VOOC  | VOOC | 4.26V, 4.03A | 4.26V, 4.02A | 4.28V, 4.08A | 5%  |
| 28 | OPPO Reno Ace    | ColorOS V7                | C-T-C | PD    | 正在充电 | 9.00V, 1.94A | 9.00V, 1.94A | 9.00V, 1.94A | 4%  |
| 29 | Realme X         | realme UI V1.0            | C-T-C | VOOC  | VOOC | 4.34V, 4.04A | 4.34V, 4.07A | 4.33V, 4.04A | 4%  |
| 30 | 红魔 3             | RedMagic OS V2.0          | C-T-C | PPS   | 正常充电 | 8.53V, 2.09A | 8.51V, 2.09A | 8.51V, 2.09A | 6%  |
| 31 | 努比亚 Z17          | nubia UI V7.0             | C-T-C | PPS   | 正常充电 | 7.39V, 1.33A | 7.38V, 1.42A | 7.38V, 1.42A | 5%  |
| 32 | 坚果 R1            | smartisan OS V7.1.1       | C-T-C | PPS   | 正常充电 | 8.04V, 2.06A | 8.23V, 2.11A | 8.23V, 2.11A | 10% |
| 33 | 一加 One plus7 Pro | Hydrogen OS 10.0.7.GM21   | C-T-C | PD    | 快速充电 | 4.82V, 2.25A | 4.86V, 1.87A | 4.86V, 1.87A | 4%  |
| 34 | 一加 One plus8T    | Hydrogen OS 11.0.6.8.KB05 | C-T-C | PD    | 快速充电 | 8.85V, 2.72A | 8.84V, 2.80A | 8.84V, 2.80A | 3%  |
| 35 | Pixel 2          | Android 8.0.0             | C-T-C | PD    | 快速充电 | 8.97V, 1.58A | 8.95V, 1.68A | 8.95V, 1.68A | 7%  |
| 36 | Pixel 3XL        | Android 9                 | C-T-C | PD    | 快速充电 | 8.99V, 1.92A | 8.82V, 2.05A | 8.82V, 2.05A | 9%  |
| 37 | 魅族 16S           | Flyme8.1.0.0A             | C-T-C | PD    | 正常充电 | 4.87V, 1.80A | 4.87V, 1.80A | 4.87V, 1.80A | 3%  |
| 38 | LG G7            | Android 9                 | C-T-C | PPS   | 快速充电 | 4.65V, 2.30A | 4.79V, 1.27A | 4.79V, 1.27A | 12% |
| 39 | 荣耀 Magic2        | Magic UI 3.1.0            | C-T-C | PD    | 快速充电 | 9.01V, 1.14A | 9.01V, 1.14A | 9.01V, 1.14A | 4%  |
| 40 | 荣耀 Note10        | EMUI 9.1.0                | C-T-C | PD    | 快速充电 | 8.93V, 1.85A | 8.94V, 1.83A | 8.94V, 1.83A | 2%  |
| 41 | 荣耀 20 Pro        | Magic UI 3.1.0            | C-T-C | PD    | 快速充电 | 8.99V, 1.39A | 4.83V, 2.09A | 4.83V, 2.09A | 4%  |
| 42 | 荣耀 20S           | Magic UI 2.1.1            | C-T-C | PD    | 快速充电 | 8.99V, 1.45A | 9.01V, 1.27A | 9.01V, 1.27A | 30% |
| 43 | 荣耀 20 青春版        | EMUI 9.1.1                | C-T-C | PD    | 快速充电 | 9.00V, 1.31A | 8.98V, 1.42A | 8.98V, 1.42A | 5%  |
| 44 | 华为 P20           | EMUI 10.0.0               | C-T-C | PD    | 快速充电 | 8.95V, 1.63A | 8.97V, 1.66A | 8.97V, 1.66A | 6%  |
| 45 | 华为 P30 Pro       | EMUI 10.1.0               | C-T-C | PD    | 快速充电 | 8.99V, 1.35A | 8.99V, 1.35A | 8.99V, 1.35A | 5%  |
| 46 | 华为 P40 Pro       | HarmonyOS 2.0.0.127       | C-T-C | PD    | 快速充电 | 8.99V, 1.31A | 8.99V, 1.36A | 8.99V, 1.36A | 8%  |

|    |                      |                         |               |    |      |              |              |              |     |
|----|----------------------|-------------------------|---------------|----|------|--------------|--------------|--------------|-----|
| 47 | Mate20 Pro           | EMUI 10.0.0             | C-T-C         | PD | 快速充电 | 8.96V, 1.63A | 8.96V, 1.72A | 8.96V, 1.72A | 3%  |
| 48 | Mate30               | HarmonyOS 2.0.0.127     | C-T-C         | PD | 快速充电 | 8.98V, 1.34A | 8.98V, 1.39A | 8.98V, 1.39A | 30% |
| 49 | Mate40Pro            | HarmonyOS 2.0.0.128     | C-T-C         | PD | 快速充电 | 9.01V, 1.27A | 8.99V, 1.37A | 8.99V, 1.37A | 4%  |
| 50 | NoVa4                | EMUI 10.0.0             | C-T-C         | PD | 快速充电 | 9.00V, 1.26A | 4.91V, 1.44A | 4.91V, 1.44A | 6%  |
| 51 | iPhone8              | 13.6.1                  | C-T-Lightning | PD | 正常充电 | 9.15V, 1.12A | 9.15V, 1.21A | 9.15V, 1.21A | 4%  |
| 52 | iPhoneXS MAX         | 13.6.1                  | C-T-Lightning | PD | 正常充电 | 9.16V, 1.86A | 9.16V, 2.05A | 9.16V, 2.05A | 5%  |
| 53 | iPhone11 Pro         | 13.6.1                  | C-T-Lightning | PD | 正常充电 | 9.08V, 1.90A | 9.08V, 2.04A | 9.08V, 2.03A | 4%  |
| 54 | iPhone12             | 14.1                    | C-T-Lightning | PD | 正常充电 | 9.08V, 1.96A | 9.08V, 2.06A | 9.08V, 2.06A | 8%  |
| 55 | iPhone13 Pro         | 15.0                    | C-T-Lightning | PD | 正常充电 | 9.08V, 2.02A | 9.09V, 2.14A | 9.08V, 2.29A | 5%  |
| 56 | iPhone13 Pro Max     | 15.0                    | C-T-Lightning | PD | 正常充电 | 9.13V, 2.92A | 9.13V, 2.92A | 9.13V, 2.92A | 5%  |
| 57 | Apple iPad Pro A1980 | 13.3                    | C-T-C         | PD | 正常充电 | 8.88V, 2.64A | 8.86V, 2.64A | 8.86V, 2.64A | 2%  |
| 58 | Apple iPad A2270     | 14                      | C-T-Lightning | PD | 正常充电 | 5.07V, 2.29A | 5.07V, 2.29A | 5.07V, 2.29A | 2%  |
| 59 | Apple iPad Pro A2229 | 14.4.1                  | C-T-C         | PD | 正常充电 | 8.88V, 2.70A | 8.88V, 2.70A | 8.88V, 2.70A | 2%  |
| 60 | MacBook A1534        | OS X EI Capitan 10.11.6 | C-T-C         | \  | \    | \            | \            | 4.82V, 2.27A | 26% |
| 61 | surface Book 2       | WIN10 专业版 1709          | C-T-C         | \  | \    | \            | \            | 5.08V, 2.22A | 3%  |
| 62 | HP EliteBook X360    | WIN10 家庭中文版 1803        | C-T-C         | \  | \    | \            | \            | 9.08V, 2.74A | 1%  |
| 63 | 联想 ThinkPad T14s     | WIN10 家庭中文版 1904        | C-T-C         | \  | \    | \            | \            | 9.07V, 2.98A | 60% |
| 64 | 三星 Galaxy Book Pro   | WIN10 家庭版 1904          | C-T-C         | \  | \    | \            | \            | 8.84V, 2.94A | 40% |
| 65 | 任天堂 Nintendo Switch  | 8.1.1                   | C-T-C         | \  | \    | \            | \            | 8.99V, 1.34A | 1%  |