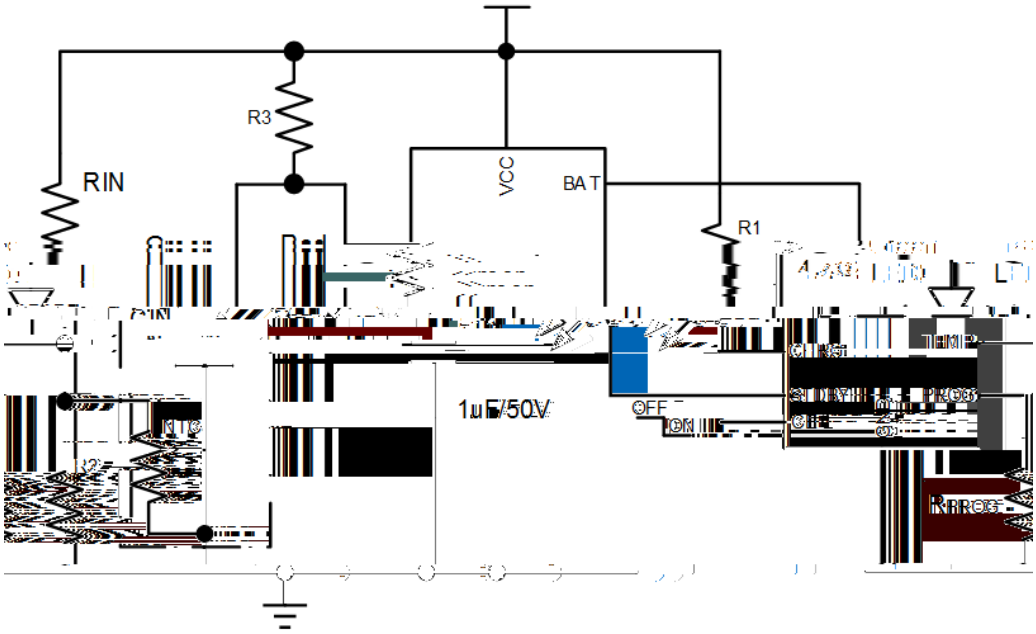
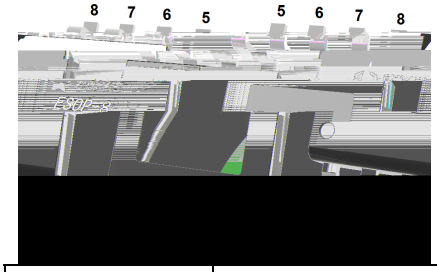


├4χ Ę ₓ ɩ ɸYFF ヤ ɾ ⊐ ↄ ķ ヤ ñYFF ↄ я `H ɪ ₓ ɩ ɸ ⊐ ↄ ķFLQ i ₥ ǐ Ѧ71:Ғ ŧ ᴸ ↄ گ ɪ ⓠ گ ₿ ♬ ά ö `HYFF ヤ ғ ɪ ┤ ╨ ↄ я ψ

├5χ ĘFHĄ ő j ɾ Ў P FX í ˙ `H ɪ ب Ń FHĄ ő Ừ ヤ ă ì JQG ɪ EUF0738 ; SVH0715 * Ẃ Ť Ă ↑ õ ɪ j ˡ Ń FHĄ ő ´ ì ì YFF



1	TEMP	Χ ↄ ↄ – □ ў ₅ ╨ ヤ
2	6 8 5 -	- v ² … € k Ù å Š ñ - 4 * k ² - - v Ý 4
3	GND	ъ ⊐ ş
4	VCC	ↄ ◊ ゟ ☋ ヤ
5	BAT	ↄ – ゟ ☋ ヤ
6	STDBY	Ã ◖ ゟ ˛ Χ ↄ Ḣ ă ″ Y ˜ ヤ
7	CHRG	Ã ◖ ゟ ˛ Χ ↄ ↑ õ ″ Y ˜ ヤ
8	CE	Æ ť ゟ ☋ ヤ ɪ Ḥ ↄ Ẉ Æ ť

◆

BRCL4058PSE-4.2 ĩ ₲ Ḣ Ỹ Ω Vِ ص ﻯ Ʒ ï ﻉ ﻫ ﻯ ɒ ` ˜ Ḍ ɔ − ﭙ ɾ ở ħ ɔ ╚/ở ħ ɔ ﻯ ﺍ ớ Χ ɔ ʜ Ḛ ĩ ﻗ ώ ě ﻫ ﺯ 1.0A ﻉ Χ ɔ ɔ ╚ ε Θ ' Ⱥ ♬ ₱ ɯ ̛ Ḅ PCB ụ ṕ ζ ⁼ ° 1% ﺍ ẏ ╣ Χ ɔ ﻯ BRCL4058PSE-4.2 ﻍ ă ˝ Ⱥ ﻝ ɱ ɧ P ﺵ ﺍ ' MOSFET ʒ ♬ ﺩ ` ɔ ت ﺍ ṇ ﺍ ﺵ ̃ ⁀ ╨ ﺍ ă ᵘ ɱ ɧ ɔ ╚ ₅ ╨ ɔ ﮒ ɬ % ﺍ ᵍ Χ ɔ ʜ ɔ ت ﻙ ﺍ ﺏ Ⱥ ᵘ ɱ ɧ Ƒ ţ j ﻙ ḅ % ﺍ BRCL4058PSE-4.2 ﻑ ﺍ Ⓠ ì USB ɔ ◊ Ṫ Ă

◆ ₇

Ḛ VCC Ậ ő ɔ ﻯ ″ ₆ UVLO ﺅ ﺵ ɔ Ẉ Ⓠ i ħ ɒ PROG Ậ ő ﻟ ﺏ ﺱ ɵ ﮊ ف ì ˝ Ⱥ ﻁ ẏ ﻣ 1% ₱ ħ ɔ ﮒ ﺍ Ẋ ħ Ḛ Ⱥ ɔ − ﻟ Χ ɔ ʜ ﮊ ˛ ﻝ ف Ḥ ﺍ Ⱥ Χ ɔ Ỉ ﻉ Ầ Ḋ ḅ ' BAT Ậ ő ɔ Ẉ Ḥ ̂ ̂ V TRIKL ﺍ ¨ Χ ɔ ʜ ف ﻕ ╚ Χ ɔ ₩ Ã ɒ Ỉ ₩ Ã ﻉ ﺍ BRCL4058PSE-4.2 ώ ě ﻁ 1/10 ₱ ħ Χ ɔ ɔ ╚ ﺍ Ⓠ ﻛ Ṅ ɔ − ɔ ﻯ ώ ″ ˙ Ⱥ Ḡ ﻕ ɔ Ẉ ﺍ ﻙ ă ḫ ɲ ﻉ ◗ ɔ ╚ Χ ɔ

Ḛ BAT Ậ ő ɒ ﻯ ″ ₆ V TRIKL Ⓠ i Ḥ ﺍ Χ ɔ ʜ ف ﻕ ở ╚ ₩ Ã ﺍ % Ḥ ᵇ ɔ − ώ ě ở ħ ﻫ Χ ɔ ɔ ╚ Ḛ BAT

Ṁ ╣ Χ ɔ ﻯ ε V FOLOAT ζ Ḥ ﺍ BRCL4058PSE-4.2 ف ﻕ ở ﻯ Χ ɔ ₩ Ã ﺍ ħ Χ ɔ ɔ ╚ Ầ Ḋ ̊

ᵤ₆ ₱ ħ Ө ﻫ 1/10 ﺍ Χ ɔ Ỉ ﻉ ﻝ

ﭙ ɾ Ⱥ ف ì ɒ PROG Ậ ő ﻟ ﺱ ɵ ﮊ ﻫ ɔ ﮒ ˝ ₱ ħ ﻫ ɔ − Χ ɔ ɔ ╚ ĩ PROG Ậ ő ﮊ ˛ ﻫ ħ ɔ ﮒ ⁼ Χ ɔ ɔ ╚ ﭙ ɾ ï ˚ ʀ Ã ˝ ɯ ﺍ Χ

$$R_{PROG}=900/I_{CHG}$$ ﺍ ă $$I_{CHG}=900/R_{PROG}$$

ﮊ ˛ ﻫ Χ ɔ ɔ ╚ ﺍ ﻥ ﺹ ˇ ð PROG Ậ ő ɔ ﻯ ﻩ Ḥ ﻫ ﺍ ʀ Ã ḅ ï Χ

$$I_{BAT}=(V_{PROG}Ö900)/R_{PROG}$$

Ⱥ Χ ɔ ɔ ╚ ﻫ Ẓ ɾ ﻯ ﺍ ﺡ Ɑ ♬ ¸ ̃ Ḿ ẹ ﷺ ﺍ ű ť □ ẙ í ˙ ʜ ᴗ Ḥ Χ ɔ ɔ ╚ ﺍ j ª ﻉ ﺍ ╨ Ν ﻥ o Ө Ĉ ψ ê j Ḣ ﻕ ₇ ¡ Ẅ Ẓ ɾ ﻯ ﺍ ˈ ⁞ Ỽ ﺅ ∂ Ǯ ɒ ᵀ ゲ ﷺ ɳ ﻫ R PROG

R PROG(K)	I CHG(mA)
6133	638
5165	733
5138	783
41<4	7;8
41;3	853
418;	8<3
417:	973
416:	9<3
415:	:88
4154	;33
4143	<43

◆ ɞ

Ẹ Ϫ ɔ ɔ ╚ ƥ ƺ ˙ ѡ ㇒ ╢ Ϫ ɔ я ª ᴗɞ ⱷ ħ Ө1/10

◆

BRCL4058PSE-4.2 ف ă ь Ѧ Ầ ◖ ژ ¸ ￼ ↑ õ ″Y˜ Ậ ő CHRG ⫐ STDBY Ệ BRCL4058PSE-4.2 ſ ⁂ Ϫ ɔ ↑ õ ̀H ı CHRG ژ ¸ ï ˥ ı Ʊ Ệ ↑ õ CHRG ژ ¸ ح ڳ õ Ϫ ɔ Ḣ ă ̀H ı STDBY ژ ¸ ï ˥ Ệ ɔ – ɾ ì ǎ ɔ – □ ỷ ầ Ẃ ̀H ı CHRG ⫐ STDBY ⁋ ژ ¸ ح ڳ õ

Ṅ TEMP Ậ ő ì ş ˈ Ꝙ ԋ ژ ɔ – □ ỷ ˇ ⅄ ı ť ḅ ˈ BAT Ậ ő ì Ѧ 10 ₱F ɔ ķ Ẋ ħ ɔ – j ف ì ı ʎ ˇ LED ль ʎ ˇ LED Ṅ Ꝙ 1-4s￼ ᵕ Ϙ ڎ ♣

Ϫ ɔ ʜ ↑ õ	ʎ ˇ OHG FKUJ	ʎ ˇ OHG VWGE\
Ϫ ɔ	Ʒ	ȸ
Ϫ ɔ ʎ Ƀ	ȸ	Ʒ
я ژ ح ı ɔ – ɾ ì ı ɔ – ˈ ف ì ǎ ɔ – □ ỷ ầ Ẃ	ȸ	ȸ
EDW Ậ ő ì 43x I ɔ ķ ħ ɔ – ˈ ف ì +WH P S@ J QG,	ʎ ˇ OHG ль ʎ ˇ OHG Ṅ Ꝙ 407v￼ ᵕ Ϙ ڎ ♣	

◆

ḅ ˈ ъ Ɑ □ ỷ ″ ح ˙ ĺ ϕ Ө 145 ł ı ɲ ԡ ♬ ɾ ɪ ע ث Ṅ ̊ ṇ Ϫ ɔ ɔ ╙ Ĵ ı ť ˈ گ Ƀ BRCL4058PSE-4.2 ص ♬ ı Ẋ ы ḇ ŧ Ä ώ ح ʎ ḧ ɔ ث — ı ' ſ ת ť ד ￼ i ں ǎ ≡ ω ̈ Ω ą BRCL4058PSE-4.2

◆

ꟾR1 ⁼ R2ꬹΘ ⌊ ⁞ ʕΩ ɔ − ꬹ□ ỷ ˇ ⅄ ꭓ ⁼ ♬ ѽ ɔ ڳꬹɔ ڳΘ⁋ . ḧ ı א ȝ æب ˝ ḅ ï χ

Ϟ ϕ ϕ ḧꬹɔ − □ ỷ ꭓ ꭓ ꟾTL~TH ı ε Ʊ ʌ TLωTH)ψ ɔ − ʌ Æ ɬꬹ ĩ ق □ ỷ ⊮ ʕΩ♬ ѽ ɔ ڳ ε NTC ζ ı RTLꟾ Ʊ ꭓ □ ỷ TL`HꬹڳΘ ı RTH ꟾ Ʊ ꭓ □ ỷ TH`HꬹڳΘ ı ꭓ RTL ü RTH ı ۹ ψ ı ꭓ □ ỷ TL`H ı ⊮ ⅂ ő TEMP ⊰ꬹɔ я ꟾ χ

$$VTEMPL = \frac{R2||RTL}{\quad\quad}VIN$$

ꭓ □ ỷ TH`H ı ⊮ ⅂ ő TEMP ⊰ꬹɔ я ꟾ χ

$$VTEMPL = \frac{R2||RTH}{R1 + R2||RTH}VIN$$

ɬ ɑ ı ⊰

$$VTEMPL = VHIGH = k2 \times Vcc(k2 = 0.8)$$

$$VTEMPL = VLOW = k1$$

ꭓ ˈ ɹ ê χ

$$R1 = \frac{RTL \times RTH(k2 - k1)}{(RTL - RTH)k2 \times k1}$$

$$R2 = \frac{RTL \times RTH(k2 - k1)}{k2 - k2 \times k1) \quad RTL(k1 - k2 \times k1) - RTH(}$$

ª ת ı ḅ ' ɔ − ɲ ɱ ĩ* □ ỷ ⊮ ʕ ε PTC ζꬹ♬ ѽ ɔ ڳ ı ꭓ ı ă Ç ˈ ℚ ч Ⅵ ê ˙ χ

$$R1 = \frac{RTL \times RTH(k2 - k1)}{(RTH - RTL)k2 \times k1}$$

$$R2 = \frac{RTL \times RTH(k2 - k1)}{RTH(k1 - k2 \times k1) - RTL(k2 - k2 \times k1)}$$

ϰ i ꭓ ꬹò Ṁ ʌ ˈ ℚ˜ ¸ ı ể ϕ ḧꬹ□ ỷ ꭓ ḅ ת ɔ ◊ ɔ я Vcc ĩ ṇ ꟾ ꬹ ı ϰ ת R1 R2 RTH RTL ѽ ꟾ ψ Ʊ ʌ ı RTH RTL ˈ ụ ợ ʢ ꟾ ꬹɔ − ė q ă ụ ợ ḥ ⁻ ⅄ ⁝ ệ ˙

ꭓ ḥ ڴ Ẓ ɬ ʌ ı ⅄ ᴱ ꟾ ├ • ⊰ꬹ□ ỷ ⁼ ớ ı ⅝ ḅ ợ ♬ Ʒ ĭ ı ꭓ R2 ˈ ℚ j ɬ ı ă ᴱ ɬ R1 o ˈ R1 ꬹò Ṁ Ѽ ψ ệ ⅄ ᴅ ı ꭓ % j W ك

◆ **α β**

ʌ ɲ ɱ ⅄ ѣ ҙ ɔ ت Ḿ ژ ϑ ɔ я ڤ Φ ˇ í ı Ẋ ꭓ VCC ″ ₆ ⅄ ѣ ҙ ѣ ں ℚ i ɵ ˙ Æ ⵋ ɔ ᴴ Ʒ ˙ Y ꭓ ȳ ₩ Ã UVLO ɔ ت Ṅ Æ ⵋ ɔ ᴴ Ʒ ˙ Y ꭓ ȳ ₩ Ã ḅ ' UVLO ⅝ ҙ ᴴ ʌ ⊮ ч ı ꭓ VCC ″ ₆ ⅝ ɔ − ɔ я ⵔ 100mV ɵ ˙ ⵋ ɔ ᴴ Ṅ j ɦ ڰ ȳ ₩ Ã

◆

ñ Χ ɔ Ỉ ɤ ɋ ɻ Ɓ ı BRCL4058PSE-4.2 ٧ o ﻩ ɾ Ⱥ ʊ ω̃1.8ms ▾ ᒪ ᵡ H ɮ ⅝ ﻩ ʜ ᑊ ḾBAT Ậ ŭ i ɔ я ɷ Φ ف ʌ ˇ í Ẹ ɔ – ɔ я ر 4.05V ε ᶻ ₇ Ḿ Ẓ ɔ – ķ ﻩ 80% 90% ζ Ꝏ ï ᵡ H ı Χ ɔ Ỉ ɤ ﻩ Ậ Ầ Ḋ ف Ȝ ɔ – ɋ ʌ ᵡ Y ƿ ε ᾶ ì ḝ ζ Ⱥ ◗ Χ ɔ ↑ ő ı Ẋ d ﻩ ɷ Φ ᵕ Ω ό Χ ɔ Ỉ ɤ ᵏ ʊ ﻩ ₓ ɭ ƿ W Χ ɔ Ỉ ɤ ص ٧ Ⱥ ı CHRG Ậ ŭ ɮ ɷ ʊ Ⱥ ï ᵡ I ↑ ő

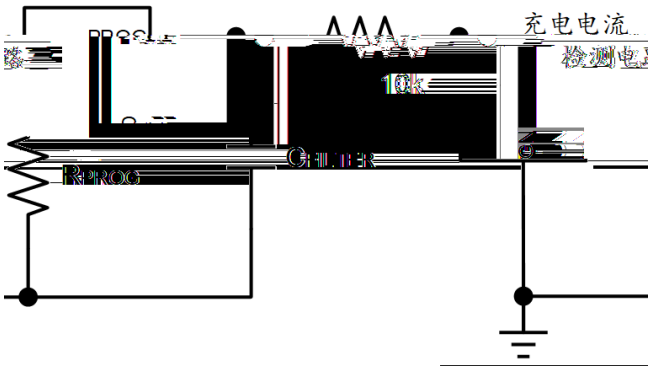
◆

ᴱ ɭ ɔ – ль Χ ɔ ʜ ﻩ ɮ ₓ ٧ ف ı ở ħ ɔ я ₩ Ã ɾ ɪ ɤ ت ő ſ ᶻ ƿ ᵡ ﻩ Ⱥ ᵘ ɯ ɔ ķ ﻩ ừ ï Ȝ ᵡ Y ٧ ħ ƿ ≡ ω̃ ì ɔ – ᵡ H ı ₩ ᵔ ᵒ ᵒ ɳ ɻ ᒪ ɔ я ı ấ ɲ ﻩ ɾ Ⱥ ɮ ₓ ɔ ķ Ẹ ﻩ ɾ ᶻ Ꝏ Ө ﻩ Ḥ ESR ﻫ ɔ ķ ᵡ H ı ấ ɲ ɯ ɾ Ⱥ ль ɔ ķ ₩ ỉ ﻩ 1 Ƒ ɔ ɠ ƿ ᵡ Æ ɾ ɔ ķ ı ₓ j ₓ ɭ ₩ ỉ ɔ ɠ

ƿ ở ħ ɔ ᒪ ₩ Ã ʌ ı ɳ ɾ ɪ ɤ ت ʌ ﻩ ĩ PROG Ậ ŭ ı ắ j ĩ ɔ – ở ħ ɔ ᒪ ₩ Ã ﻩ ٧ ħ ớ ᵽ PROG Ậ ŭ ɠ i ﻩ ẽ φ Ẹ PROG Ậ ŭ i ≡ ω̃ Ꝛ ɾ ɔ ķ ı RPROG J̌ Ꝏ ح ɾ 20k Ƒ ᵡ H Χ ɔ ʜ ı Ꝏ ٧ ħ ɬ ắ PROG ` ᵽ ﻩ ᵢ ᵘ ɔ ķ ᵡ ɳ ɸ ħ ɔ ɠ ﻩ ω ᶻ ķ ƿ ɠ Ө PROG Ậ ŭ i ﻩ ‖ ᵽ ļ ' Ẓ Ȝ Y ƿ 100kHz Ꝏ i ɬ % ı ḅ ' PROG Ậ ŭ è ƿ Ⱥ ķ ớ ق ɔ ı CPROG ı ₙ ı ﻩ ɾ ï Ã ᑊ ɯ ٧ RPROG ﻩ ω ᶻ ɔ ɠ Ө χ

$$R_{PROG} \leq \frac{1}{2\pi \cdot 10^5 \cdot C_{PROG}}$$

ɾ Ä ˜ ɣ G ﻩ ĩ Χ ɔ ɔ ᒪ ắ j ĩ ᾽ õ ɔ ᒪ æ ḅ ı ḅ ' Ⱥ ȡ Φ ƿ Ḥ ɔ ᒪ ₩ Ã Â ʜ ɔ ◊ ль ɔ – Ẋ ỉ ı ₙ ʁ BAT Ậ ŭ ᒪ ₓ Ẉ ẓ ɔ ᒪ ụ Ẃ ⅝ õ ɔ ᒪ ỉ ᾽ ˜ ɾ ﻩ ɭ ƿ ф ٧ ɻ ᵀ ı ˡ ƿ PROG Ậ ŭ i ﻩ ɾ Ⱥ ٧ ɒ RC ▾ ᒪ ʜ ᑊ ‖ ₓ W ẓ ﻩ ɔ – ɔ ᒪ ɛ ḅ ï g Ä ˜ ζ ƿ PROG Ậ ŭ ⁼ ▾ ᒪ ɔ ķ ɵ ɮ ɯ Ф ˜ Ⱥ 10k ﻩ ɔ ɠ Ꝏ ʒ ٧ ħ ớ



◆

ᵬ ᗡ ᒧ □ Ə ᵎ ₓ ʏ ᵑ □ ů PCB ų ṕ ق ɔ ⁼ Ṃ Ꝁ ɻ ʒ ٧ ʌ ᒣ ᵻ ٧ ⋮ ᵎ Ω PD ᒧ □ ˡ ᵻ Ꝏ ï ʒ Ã ∂ ê χ

$$T_J = P_D \ddot{O} \ddot{O}_{JA} + T_A$$

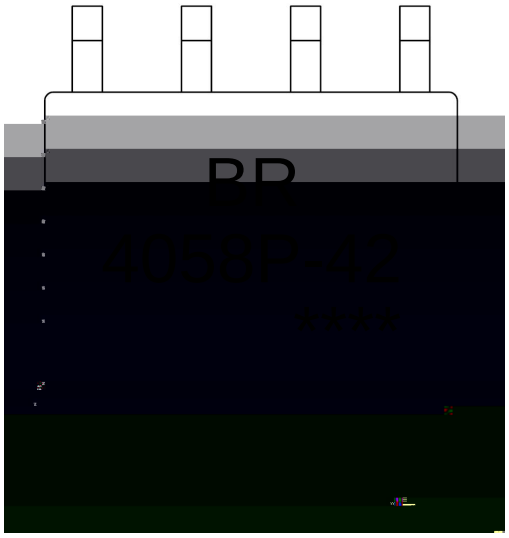
◆

ɻ ớ Ϫ ɔ IC▯ ı ' Ὼ ǟ PD ǯ ɭ ˈ я Ţ ε V_{IN}-V_{BAT} ζ ⁼ Ϫ ɔ ɔ ╚ ε I_{CHG} ζ ˜ ḧ :

$$P_D = \varepsilon V_{IN}\text{-}V_{BAT}\ \zeta\ {}^{*}I_{CHG}$$

Ẹ ɔ − ɔ я ˛ Ӈ ε ḅ 3.6V ζ ̀H ı я Ţ ˛ ᶻ ı ĺ ϕ ɔ ╚ Ϫ ɔ ı ᵻ d ʌ ♬ Ⱥ ˛

Ẹ ɔ − ɔ я ″ ≍ ε ḅ 4.0V ζ ̀H ı я Ţ ̊ ṇ ı % ̀H ṇ Ẅ ч ᶻ ɔ ╚ ε 5%~10% ζ Ƙ ˈ Ȝ ̓Y PD ƥ ᵀ ת ḫ ı ώ ≍ ̃Ὼ ɥ ὤ ' ı Ч ᵽ Ϫ ɔ ѧ ẙ



ب ˝ χ

EU χ ѭ ҳ и Ґђ

738 ; S χ ѭ ҙ N Ґђ

75 χ Ґђ ˊ ڑ ˛ ɔ я 7!5y

---- χ ѭ ı ғ ӈ N Ґђ ı ҿ ı ғ ӈ N Ψ ק

Wh p shrdwxrh Prriioh irr IU Uhiorw Vroghriqj+Pe-Frhh,