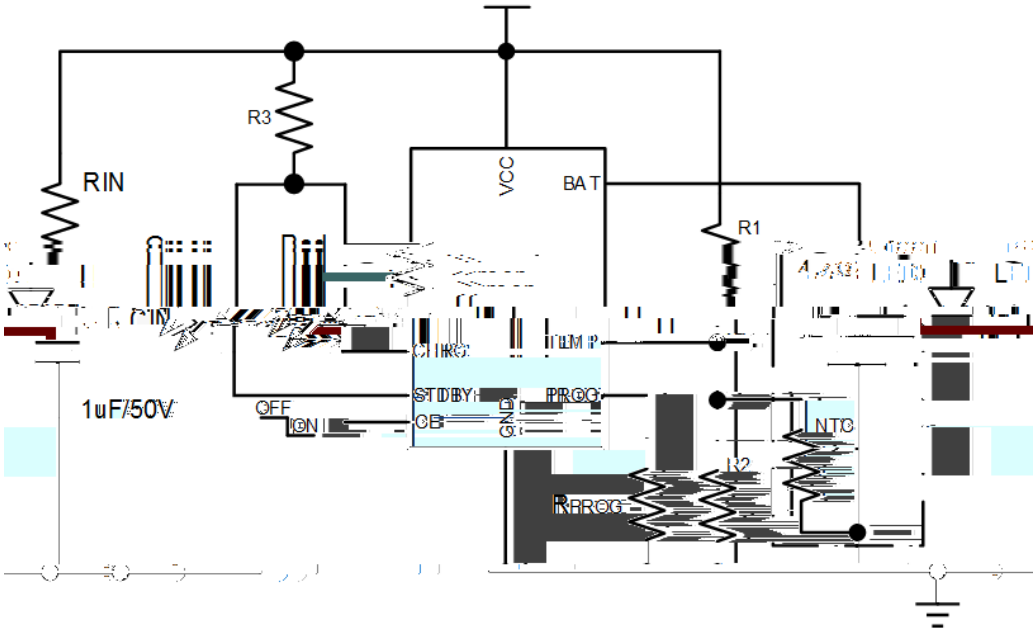
BRCL4079SE-4.2 ©%² . … k 9 ‘ ä 9o• ä ¤ è †o• ä Å _ A % -eO Y ÿ P - ˜ož

BRCL4079SE-4.2 J É v / É 9 ¿ Å O ò k Q ¬ û 5 Ù B « ^ ƒ) k … ± BRCL4079SE-4.2 è Ž ` ” • ò Ý # + z c ž k - U ` USB › y F ˜ › W •ož

BRCL4079SE-4.2 J 4 Ä B PMOSFET ë ã k … – - è k ñ Y ¬ } Ù B y Š y œ Y


R3
RIN
VCC
BAT
R1
1uF/50V
OFF
ON
STDBY
CE
GND
PROG
NTC
R2
RPROG

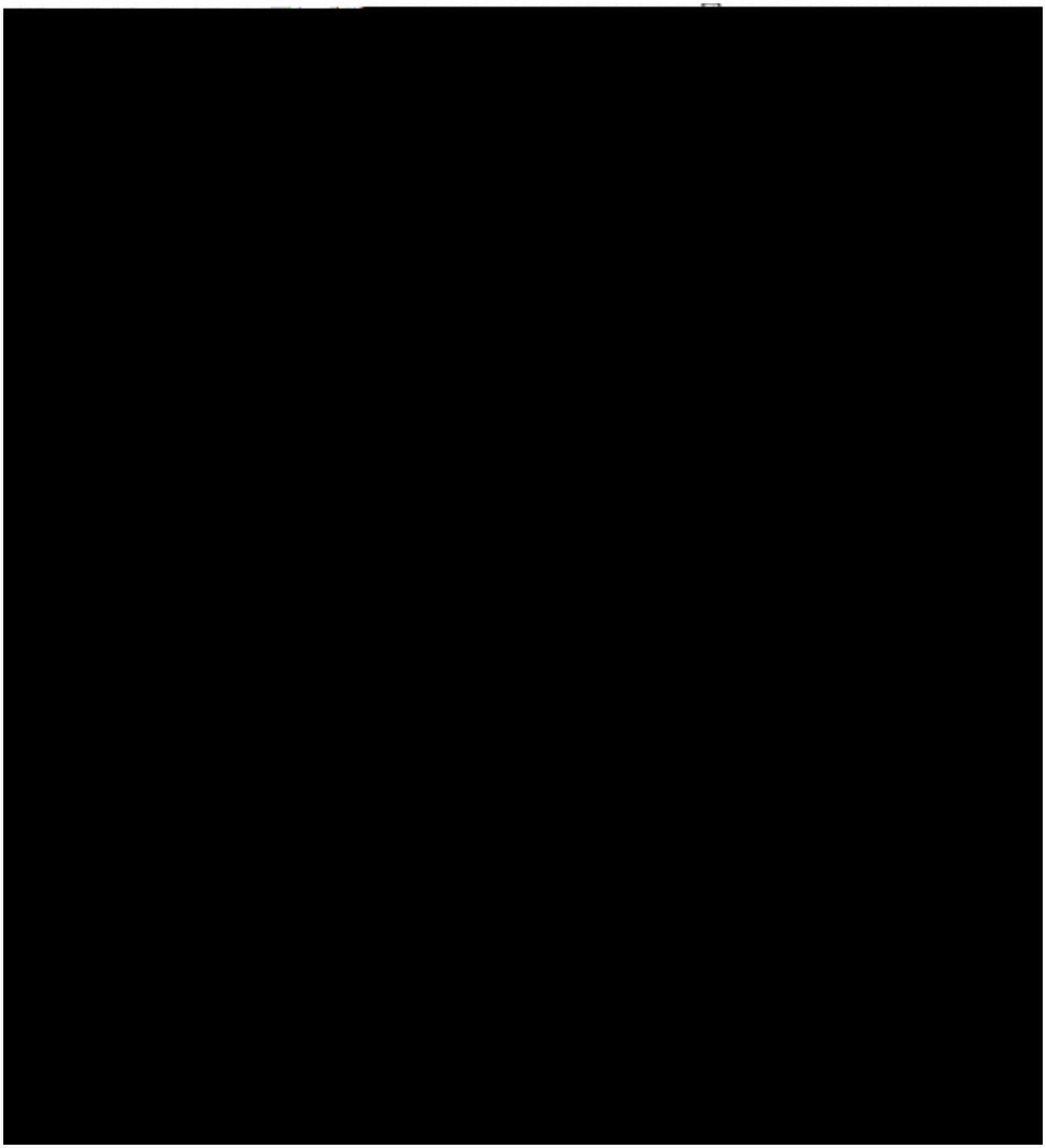
PARAMETER	SYMBOL	RATINGS	UNITS
VCC Pin Voltage	V_{VCC}	-0.3~36.0	V
BAT Pin Voltage	V_{BAT}	-4.2~18.0	
CHRG/STDBY Pin Voltage	$V_{CHRG/STDBY}$	-0.3~13.0	
PROG Pin Voltage	V_{PROG}	-0.3~5.5	
Other Pin Voltage	$V_{TEMP/CE}$	-0.3~5.5	
Operating Ambient Temperature Range	T_{OP}	-40~+85	°C
Storage Temperature	T_{stg}	-65~+150	°C
Lead Temperature (Soldering, 10s)	T_{solder}	260	°C
ESD	HBM	2000	V
	CDM	1000	V

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Voltage	V_{CC}		4.5	5.0	36.0	V
Input Power Supply Current	I_{CC}	Charging mode (R_{PROG}=1.0K)		260	360	A
		Standby mode, charging terminated		180	300	A
		Shutdown mode (R_{PROG} not connected, V_{CC}<V_{BAT},or V_{CC} Ø V_{UV})		180	300	A
		OVP mode(V_{CC}=30V)		180	300	A
Regulated Output (Float) Voltage	V_{FLOAT}	0 0 T_A 0 85 , R_{PROG}=1.0k	4.158	4.2	4.242	V
BAT Pin Current	I_{BAT}	R_{PROG}=1.0k È Current mode	855	950	1045	mA
		Standby mode, V_{BAT}=4.2V	0	-2.5	-6	A
		Shutdown mode (R_{PROG} not connected)		f 1	f 2	A
		Sleep mode,V_{CC}=0V		-1	-2	A
Trickle Charge Current	I_{TRIKL}	V_{BAT} { V_{TRIKL} È R_{PROG}=1.0k	62	95	128	mA
Trickle Charge Threshold	V_{TRIKL}	R_{PROG}=1.0k V_{BAT} from Low to High	2.3	2.5	2.7	V
Trickle Charge Hysteresis V_{CC}V	V_{TR_HYS}	R_{PROG}=1.0k	120	160	200	mV

Ô4ì × ? d / Electrical Characteristics(V_{CC}=5V,V_{BAT}=3.6V,Ta=25)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
V_{CC} Under voltage Lockout Hysteresis	$V_{CC\_UV\_HYS}$	V_{CC} from High to Low	100	200	300	mV
V_{CC}-V_{BAT} Lockout Threshold	V_{ASD}	V_{CC} from Low to High	100	125	150	mV
		V_{CC} from High to Low	30	65	100	mV
C/10 Charging Termination Current	I_{TERM}	R_{PROG}=1.0k	62	95	128	mA
R_{PROG} voltage at Constant Current Mode	V_{PROG}	R_{PROG}=1.0k, Current mode	0.9	1.0	1.1	V
CHRG outputs low voltage	V_{CHRG}	I_{CHRG}=5mA		0.3	0.6	V
STDBY outputs low voltage	V_{STDBY}	I_{STDBYG}=5mA		0.3	0.6	V
Rechargeable Battery Voltage	¸ V_{RECHRG}	V_{FLOAT}-$V_{RECHARH}$	100	150	200	mV
Junction temperature in limited temperature mode	T_{LIM}			145		
Static Drain-Source On-Resistance	$R_{DS(on)}$			500		m
Soft start time	t_{ss}	I_{BAT} = 0 to I_{BAT} =950V/R_{PROG}		20		s
Recharge Comparator Filtering Time	$t_{RECHARG}$	V_{BAT} from High to Low	0.8	1.8	4.0	ms
Terminate comparator filtering Time	t_{TERM}	I_{BAT} drop to I_{CHG}/10	0.8	1.8	4.0	ms
PROG pin pull-up current	I_{PROG}			1.0		A
TEMP high-side protection voltage	V_{TEMP-H}			80	82	%V_{CC}
TEMP low-side protection voltage	V_{TEMP-L}		43	45		%V_{CC}

< Â ä ¢ / Principle block diagram



× 5 é **/ Function description**

‹ × 5 é

BRCL4079SE-4.2 ©%² . … k 9 ‘ ä 9 % -eO Y ÿ P J É v / É 9 ¿ Å - ˜ož Ü U ˆ ä 1.0A - v g ™ %² ½ — ‹ ' ñ PCB b B h y r 1% ¤ † • - 9ož BRCL4079SE-4.2 ¤ è 4%² Ä B P?ú 3 ä MOSFET C ½ ² - è k — ¬ œ Y 8 â ’ ê Ù B v y Šožœ 4 kÂ Î - ˜ è N ¬ Ù B « ^ož N ò 4 k BRCL4079SE-4.2 U Y N USB › W •ož ‹ n ¬ Ô ± º

¢ VCC – 9 UVLO y ’ u Y ¨ PROG – ª $ • N 4%² ¤ † 1% — Š k w ¢%² P - ˜ ÿ ß € , ž k%² - ² ê • ÷ož ò ç BAT – u z 9 V_{TRIKL} k é - ˜ µ@Â v - % ”ož ¨ ¥ % ” k BRCL4079SE-4.2 U ˆ ³ 1/10 — - v k Y Ž 1 P 9 U ñ%² ¶ u k R ò ë v - ož

¢ BAT – 9 V_{TRIKL} Y ž k- ˜ µ É v % ” k4 ž g P U ˆ É - vož¢ BAT – 9 ñ Â Ä • - 9 g V_{FOLOAT} h ž k BRCL4079SE-4.2 µ É 9 - % ” k - v • ÷ × 4ož ¢ - v ‘ — › 1/10 k - ² ê È Øož

‹ ¬ Ô Ô W f ´

- v © J %² N ¨ PROG – ª $ • Š Û — ož P - v © PROG – ÿ ß v 950 •ož — Š y - v J ç ¸ ” Û ‹ ‘ y

$$R_{PROG}=950/I_{CHG} \text{ k ê } I_{CHG}=950/R_{PROG}$$

RBAT – ÿ ß - v U * ! , PROG – 9 š ž G k ¸ ” ò y

$$I_{BAT}=(V_{PROG} \tilde{} 950)/R_{PROG}$$

+ 9 Ý 9 0.5A - v • k / Ì ½ O , + û Ý k ´ “ † O ò k ‘ z - v k c ê Ë y ¡ v ¸ ” ‹ ‘ ò – › - J ± ¶%² ož ï • k U ÿ G ¬ L # H ` Ý 4 R_{PROG}ož

‹ **R1** x **R2** é š

R1 y R2 › } ÿ G P “ † ! y 8 y ½ } Š Š › Û G k ë † ª ¢ ò y

• — — P “ † 8 TL~TH k g ¿ TL { TH) z P … © ¿ “ † © ƒ ½ } Š g NTC h k RTL ¿ ¨ “ † TL ž Š › k RTH ¿ ¨ “ † TH ž Š › k é RTL } RTH k ; " k ¨ “ † TL ž k †%² ’ TEMP € 9 y

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

¨ “ † TH ž k †%² ’ TEMP € 9 y

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

À e k

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

$$VIN = k1 \times Vcc(k1 = 0.45) \quad VTEMPL = VLO$$

é U † ± y

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

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

c ò k ò ç P Ä B © 3 “ † © ƒ g

‹ ç Æ ¬ Ô

%² š - ² ê t Ä 2 k BRCL4079SE-4.2 y / J %² À Ä 1.8ms ¡ f ž • A û ˜ Û + BAT –
9 g Ò ! Oož ¢ P 9 ‘ 4.05V g Ý + • 9 P O 80% 90% h Y ž k - ²
ê M • • ÷ož G ‘ 4 P t Ó 4 ¨ g ê N h%² - Ù Á k w ² ” 4 g u Ê Å - ² ê o
¬ }ož ¨ Ç - ² ê i k CHRG – ÿ ß µ%² Ù Áož

‹ ; 4ì ¿ (

Q } P - ˜ ÿ ß € , k É 9 % ” F Ø ê è < Ü ¨ Ì J %² Ù B Õ Ñ ‘
4 l ož ¨ Z Ä N P ž k 4 × 4 ¼ f 9 k • ‘ J %² ÿ ß ož ¢ J Ý ƒ › z ESR —G¯
ž k • ‘ Í %² û 1 S Šož ò ç … e k é ¬ } û Šož
¨ É v % ” k y 9 F Ø ê è © PROG y 9„ N¡' 7 U@ Z€x¾ • `€ÐHa@G@‡`,Pi@‘•–Àa@lPT
GPROG § ‡‹à‰utPÐÀþ@p… |@¸ÐP`•@bPROG ²0r°¾@°þ20k S ž - ˜ U Y l ož À PROG
- µ Ì Ù k × 4 — Š Â Ý • Š ›ož PROG y 9@p‘•~ ‹P¼€Ž@h l s@Z00kHz
4 k ò ç PROG y 9` Z,[Apb lP«ð¯ 6° CPROG 6°N•UP´ • @€i@

ï ¾ ß ½ à © - v U@ •l •@‡ùàH`_ 6°_ ~r[Ap°Ð¦pZ€G •(
w û k é ÐBAT G•C˜v ß u ® v * o A 9 Á v Ï ¾ M }ož ¨ _ « ` k
%² • % RC ¡ f ˜ Û y O u ® P v g €Z7• P hož
%² 10k Š Y G ‘ l Åož

JA8 TcTT4 1 Tf10.4958 3T

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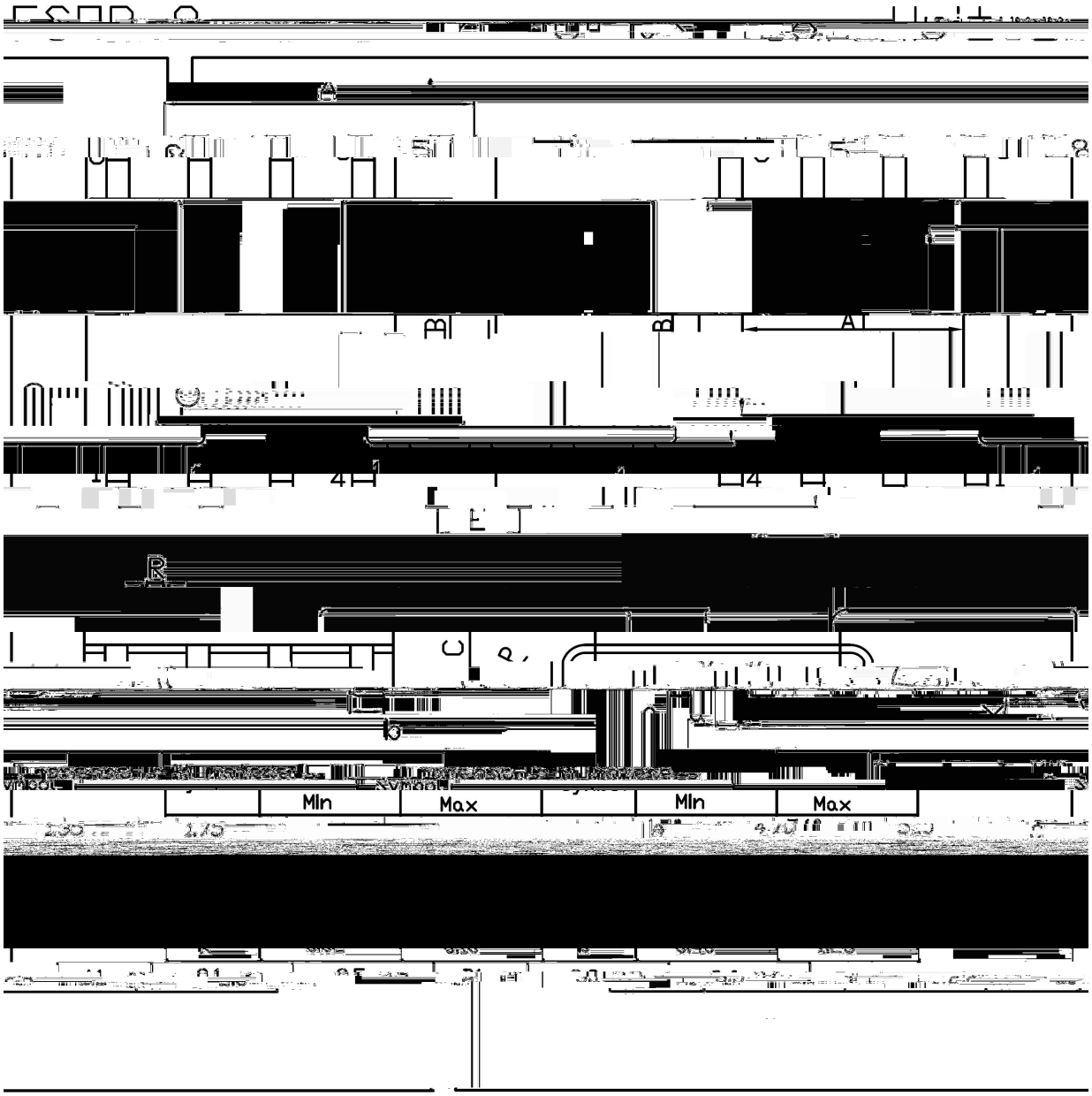
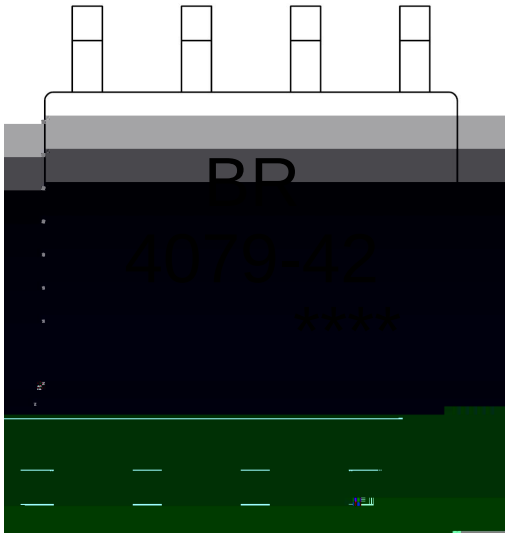
Ø ¤ =) ¢ / Package Dimensions



, M y ƒ / Marking Instructions



ª ¢ y

(8 y ¸ [W A

y º Z W A

y W n ÿ ß 9 \

y ÿ D Z W A k š ÿ D Z J

š WD t … • Ž ¢ **(** x / **)** **/** : K S V K X G Z [X K 6 X U L O R K L U X / 8 8 K L R U] 9 U R J K X O T M 6

ª ¢ y

1o• Ä ½ “ † 150 ½180 - k ž • 60 ½90sec;

2o• Q › “ † 245 r 5 - k ž • 4 Ò 5 r 0.5sec;

3o•D N ò i Ò 0 , † 2 ½10 - /sec.

Note:

1.Preheating:150~180 - , Time:60~90sec.

2.Peak Temp.:245 r 5 - , Duration:5 r 0.5sec.

3. Cooling Speed: 2~10 - /sec.

ÂD /Cã p ¯ »] / Resistance to Soldering Heat Test Conditions

“ † y 260 r 5 - ž • y 10 r 1 sec. Temp.:260±5 Time:10±1 sec

G P á / Packaging SPEC.

2 & x / REEL

Package Type 7>û ˜ E	Units ;>û ¦H	Dimension ;>û p . (unit ÆEmm³)