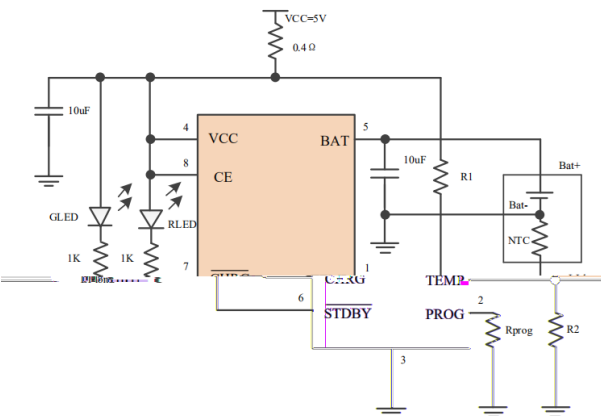


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PIN Num.	Symbol	Function
1	TEMP	P“† yÿµ€ož1: + 36' Nñ P 4:) nß~ ŷß€ožòç: + 36' 94 9ÿµ 9 êñŸ9ÿµ 9 kþv5 P“† äê zké- 1t¶ ož òç: + 36"ÿµ 9 y \$•ké- 1ÐÒožòç1: + 36' Nñªk P“† !y 1tW2ož
2	PROG	Év- v—â y- v!y€ožR685-' N%² ÙB ŠñªUY+- v g—áož"Ä- %<k4' 9t²ò" <z"Év- %<k4' 9t²ò " <ož"- ÙÁ ñÄ%"k4' 9CUYÿG µ „Ù!y- vy/ (': # g<685- 8685.h×
3	- 4 *	,ª
4	VCC	ÿµ 93ÿµ€ož4' 9 ÄB è W• >ožç<)) (': ' 9[49 S<žk(8)2 @@1 µz ô 62%"k4ž(':' v49 ['ož
5	BAT	P N€ož1 P 3€ Nñ4' ož"/ìtW2W•êñ62%"k(':' v 49 ['ož(':' g PU^- vy <²ò 9ož
6	9:*(?	P- è6P€ožç P- èžtÄB•¼ ñz uk6P- èožkék4' 1Ô9äŠÁož
7	).8-	- ÙÁ6P€ožç- ~g P- žkÄB•¼ z uk6P- 3" gožkék 4' Ô9äŠÁož
8	CE	/ì... ÿµ€ožä uÿµ... 3oW•ÙÁkz uÿµ µtW2- ÙÁož)+ ' U Yt::2 uêñ)359 uÜ ož
9	EPAD	y°D & ,B ož¥- •@U ´~°D Nñ6)(ªkY ë N‡yì ½Å ož

PARAMETER	SYMBOL	RATINGS	UNITS
Input Supply Voltage		-0.3~10	V
TEMP, CE ĖPROG Pins Voltage		-0.3~V _{CC} +0.3	
BAT Pin Voltage		-0.3~8	
STDBY,CHRG Pins Voltage		-0.3~10	
STDBY,CHRG Pins Output sink current		10	mA
Operating Ambient Temperature Range	T _A	-40~85	°C
Junction Temperature	T _J	-40~150	°C
Storage Temperature	T _{sta}	-40~125	°C

1 Absolute Maximum Ratings(Ta=25 °C)

PARAMETER	SYMBOL	RATINGS	UNITS
Lead Temperature (Soldering, 10s)	T _{solder}	260	°C
ESD	HBM	2000	V
	MM	200	V

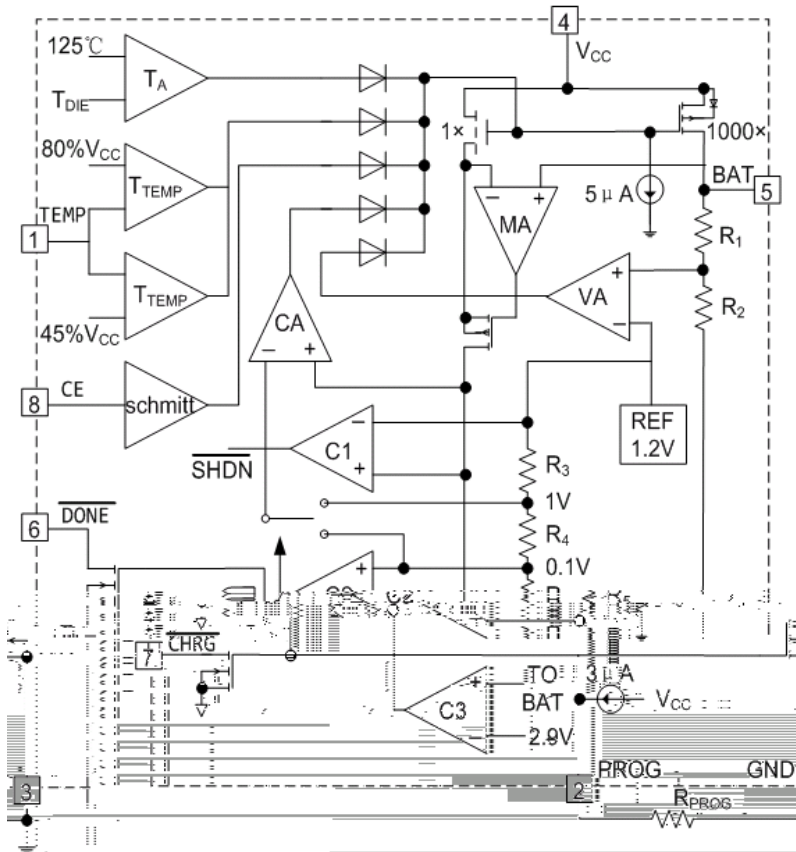
2 Electrical Characteristics(Ta=25 °C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Voltage			4.5		6.5	V
V _{CC} Under voltage Lockout Threshold	V _{UVL}	V _{CC} from Low to High		3.9		V
V _{CC} Under voltage Lockout Hysteresis	ΔV _{UVL}			150		mV
Input Supply Current	I _{CC}	Charge Mode, R _{PROG} =10K		150	500	μA
		Standby Mode (Charge Terminated)		50	100	
		Shutdown Mode: R _{PROG} Not Connected, V _{CC} <V _{BAT} , or V _{CC} <V _{UVL}		50	100	
CE "High" Level Voltage	V _{CEH}		1.5		V _{CC}	V
CE "Low" Level Voltage	V _{CEL}				0.4	V
Trickle Charge Threshold	V _{TRIKL}	R _{PROG} =10K, V _{BAT} Rising		2.9		V
Trickle Charge Hysteresis	ΔV _{TRIKL}	R _{PROG} =10K		100		mV
Trickle Charge Current	I _{TRIKL}	R _{PROG} =1K	90	100	110	mA
BAT Pin Current	I _{BAT}	R _{PROG} =1K, Current Mode(V _{BAT} =4.0V)	900	1000	1100	mA
		R _{PROG} =2K, Current Mode(V _{BAT} =4.0V)	450	500	550	
		Standby Mode, V _{BAT} =V _{FLOAT}	0	-2.5	-6.0	μA
		Shutdown Mode (R _{PROG} Not Connected)		f 1	f 2	
		Sleep Mode, V _{CC} =0V			-2	
PROG Pin Voltage	V _{PROG}	R _{PROG} =1K, Current Mode	0.9	1.0	1.1	V
PROG Pin Pull-Up Current	I _{PROG}			3		μA
Regulated Output (Float) Voltage	V _{FLOAT}	R _{PROG} =10K	4.158	4.200	4.242	V
C/10 Termination Current Threshold	I _{TERM}	R _{PROG} =1K		0.1		mA/mA

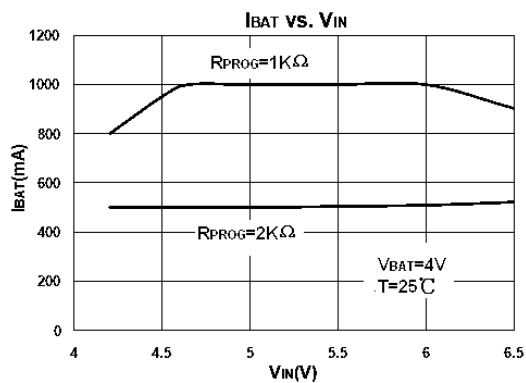
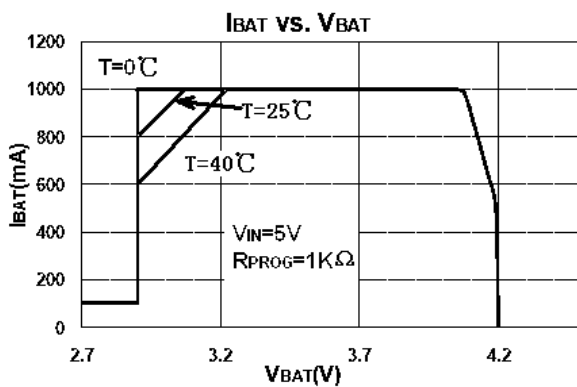
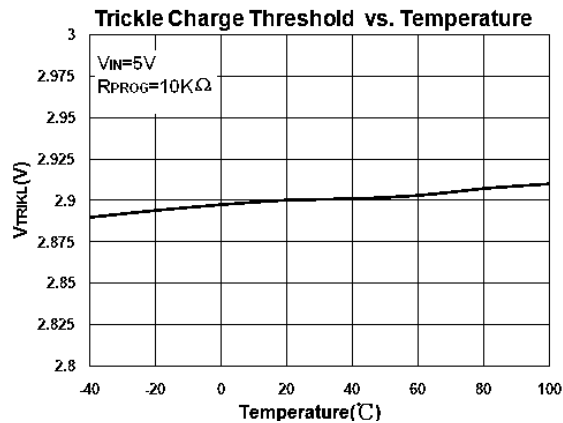
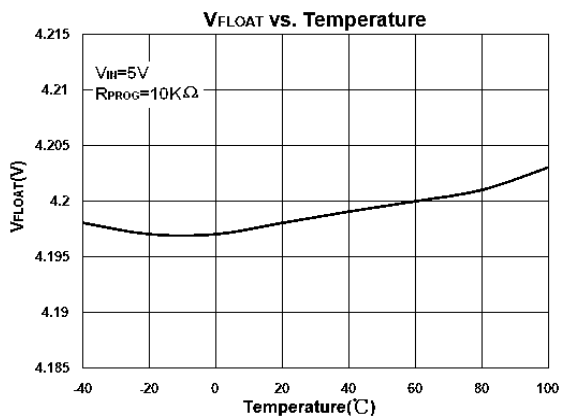
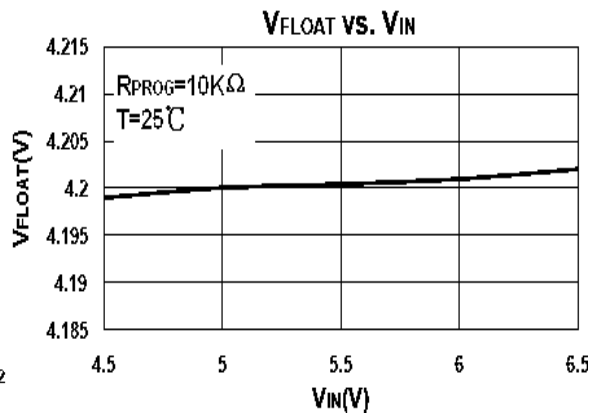
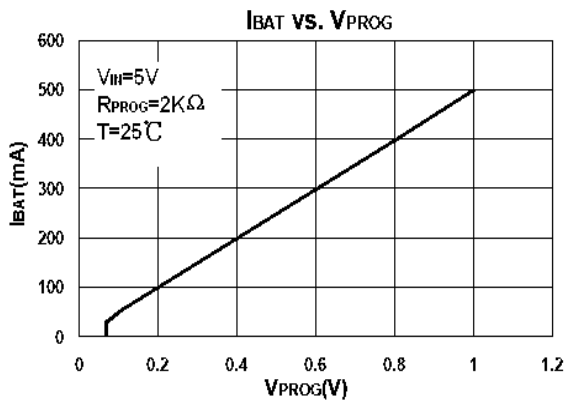
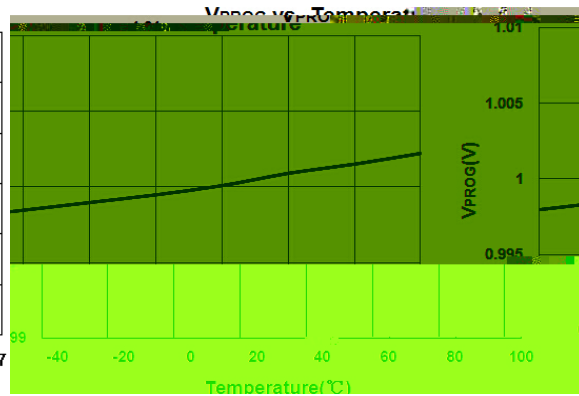
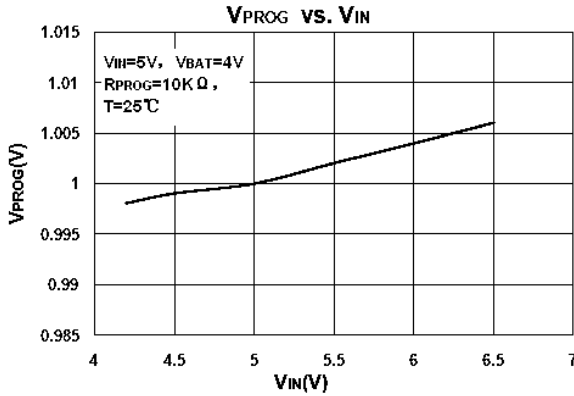
Electrical Characteristics(Ta=25)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Termination Comparator Filter Time	t_{Term}	I_{BAT} Falling Below I_{TERM}	0.3	0.8	2.0	mS
Recharge Battery Threshold	V_{RECHG}	$V_{\text{FLOAT}} \dot{=} V_{\text{RECHG}}$		150		mV
Recharge Comparator Filter Time	t_{RECHARGE}	V_{BAT} High to Low	0.3	0.8	2.0	mS
$V_{\text{CC}} - V_{\text{BAT}}$ Lockout Threshold	A_{MSD}	V_{CC} from Low to High		100		mV
		V_{CC} from High to Low		80		mV
TEMP High Shift Voltage Level			76	80	82	%V _{CC}
TEMP Low Shift Voltage Level			43	45	49	
Soft-Start Time	t_{SS}	$I_{\text{BAT}}=0$ to $I_{\text{BAT}}=1000V/R_{\text{PROG}}$		20		μS
Power FET “ON” Resistance (Between V_{CC} and BAT)	R_{ON}	$I_{\text{BAT}}=1000\text{mA}$		400		m
Junction Temperature in Constant Temperature Mode	$T_{\text{J(REG)}}$			125		$^{\circ}\text{C}$

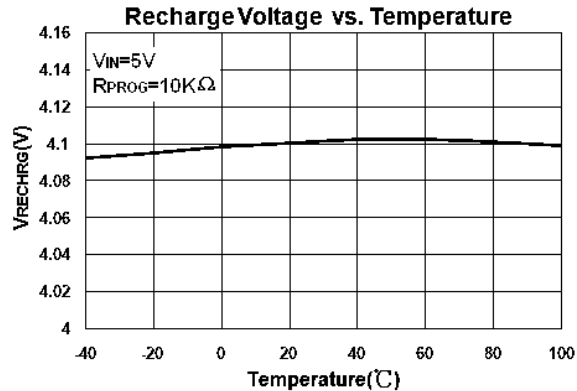
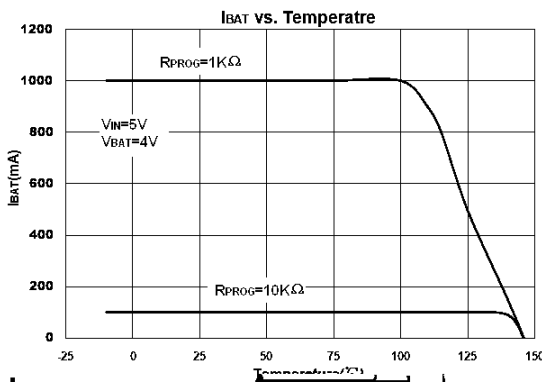
Principle block diagram



Electrical Characteristic Curve



Electrical Characteristic Curve



Description of the Principle

BRCL4056ZZ is a 2-cell Li-ion battery charger IC. It is designed to charge two 3.7V Li-ion cells in series. The IC features a precharge phase, a constant current phase, and a constant voltage phase. The precharge phase is used to bring the battery voltage up to a level where the constant current phase can be initiated. The constant current phase is used to charge the battery at a constant current until the battery voltage reaches the constant voltage phase. The constant voltage phase is used to top up the battery until the battery is fully charged. The IC also includes a charge terminated signal to indicate when the battery is fully charged.

The IC is configured using two resistors, RPRG and RCHRG. RPRG is used to set the precharge current, and RCHRG is used to set the constant current. The IC is also configured using a capacitor, CFB, which is used to filter the feedback signal. The IC is also configured using a diode, D1, which is used to protect the battery from reverse current.

The IC is configured using the following components:

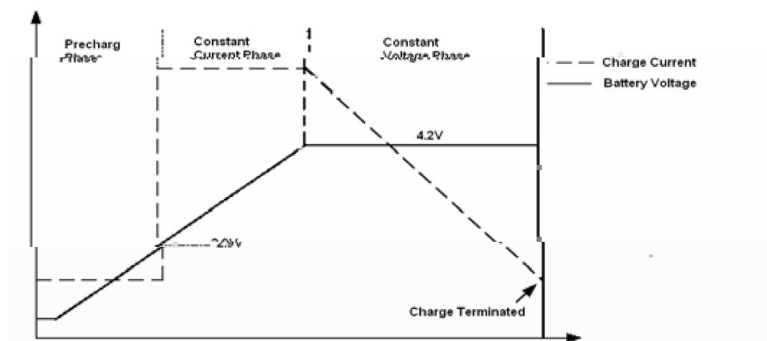
- RPRG: 1KΩ
- RCHRG: 10KΩ
- CFB: 10μF
- D1: 1N4148

The IC is configured using the following settings:

- VIN: 5V
- VBAT: 4V
- VRECHRG: 4.1V

The IC is configured using the following parameters:

- Precharge Phase: ~20%
- Constant Current Phase: ~20%
- Constant Voltage Phase: ~20%
- Charge Terminated: ~20%



V € < Â / Description of the Principle

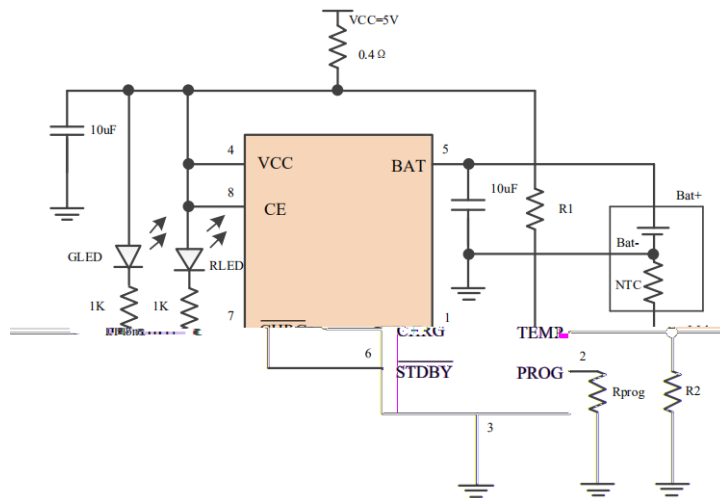
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$$\frac{V_{IN} - V_{TEMPH}}{R_{TH}} = \frac{R_2 // R_{TH}}{R + R_2 // R_{TH}} \times V_{IN}$$

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$$\frac{V_{TEMPDI}}{R_{TL}} = \frac{R_2 // R_{TL}}{R_1 + R_2} \times V_{IN}$$

V € < Â / Description of the Principle

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é U † ±

$$R1 = \frac{R_{TL} R_{TH} (K_2 - K_1)}{(R_{TL} - R_{TH}) K_1 K_2}$$

$$R2 = \frac{R_{TL} R_{TH} (K_2 - K_1)}{R_{TL} (K_1 - K_1 K_2) - R_{TH} (K_2 - K_1 K_2)}$$

c ò k ò ç P Ä B © 3 “ † © f g 6 :) h ½ } Š k R TH Ê R TL k é [U Y < ‘ ± ñ

$$R1 = \frac{R_{TL} R_{TH} (K_2 - K_1)}{(R_{TH} - R_{TL}) K_1 K_2}$$

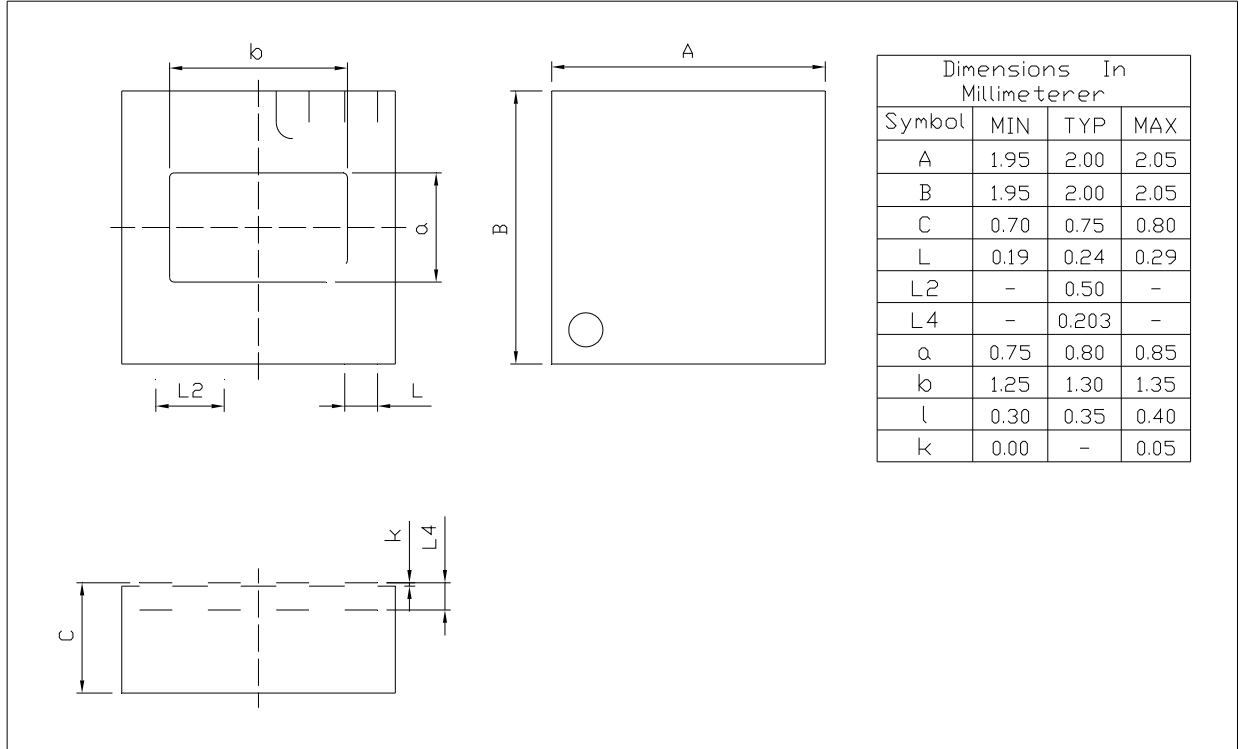
$$R2 = \frac{R_{TL} R_{TH} (K_2 - K_1)}{R_{TH} (K_1 - K_1 K_2) - R_{TL} (K_2 - K_1 K_2)}$$

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Ø □ =) ⌀ / Package Dimensions

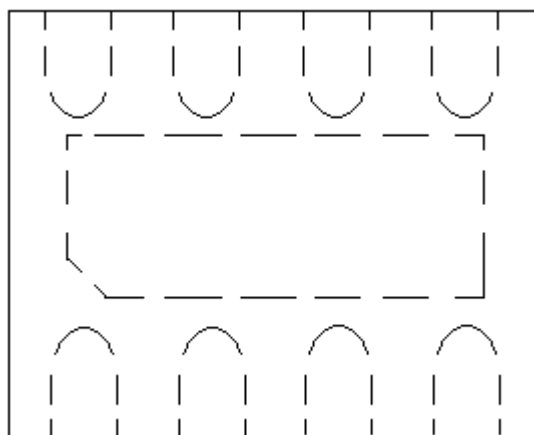
DFN2 x2-8L-0.75

Unit:mm



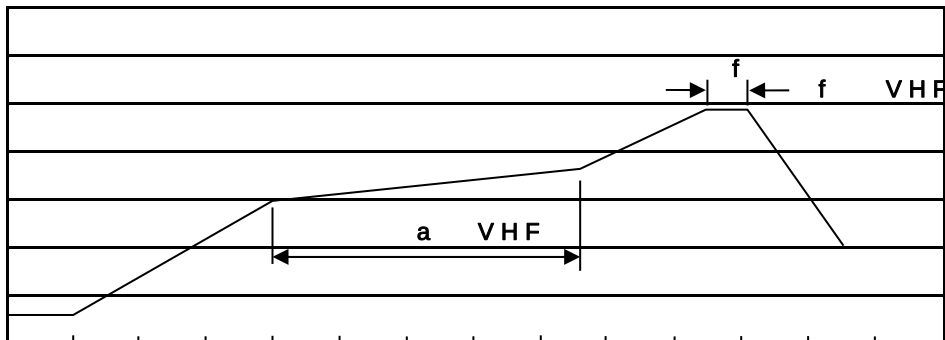
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7HPSHUDWXXUH



7LPH VHF

a č y

- 10• Ä ½ “† 150 ½180 - k ž • 60 ½90sec;
- 20• Q > “† 245 r5 - k ž • 4 Ò 5 r0.5sec;
- 30•D N ò i Ò 0 ,† 2 ½10 - /sec.

Note:

- 1.Preheating:150~180 - , Time:60~90sec.
- 2.Peak Temp.:245 r5 - , Duration:5 r0.5sec.
3. Cooling Speed: 2~10 - /sec.

ÂD /Că p ~ »] / Resistance to Soldering Heat Test Conditions

“† y 260 r5 - ž • y 10 r1 sec. Temp.:260 r5 - Time:10 r1 sec

G P á / Packaging SPEC.

2 & x / REEL

Package Type 7>û ~ E	Units ;>û !H					Dimension ;>û p . (unit Åmm³)		
	Units/Reel / --	Reels/Inner Box -- /-	Units/Inner Box /-	Inner Boxes/Outer Box - /1ç	Units/Outer Box /1ç	Reel	Inner Box	Outer Boxç
DFN2×2-8L	4,000	10	40,000	4	160,000	7 s ×8	210×205×205	445×230×435

„Đ y f / Notices