

描述 / Descriptions

BRCO118SE is a dual channel low-dropout regulator that delivers a maximum current of 1A for each individual output. Typical dropout voltage at 1A load current is 1.3V. Each individual output voltage can be set independently as fixed voltage (e.g 1.2V, 1.8V, 2.5V, 3.3V, 5V) or adjustable output which can provide an output voltage from 1.25 to 12V with two external resistors. The output accuracy of each channel is set within 2% by trimming.

BRCO118SE offers thermal shut down and current limit functions to ensure reliability of device and power system.

Package input/output pin configuration can be customized on demand (i.e both output can share one input to save one input capacitor and corresponding PCB real estate).

BRCO118SE is available in lead (Pb)-free ESOP-8(with exposed pad for heat dissipation) package.

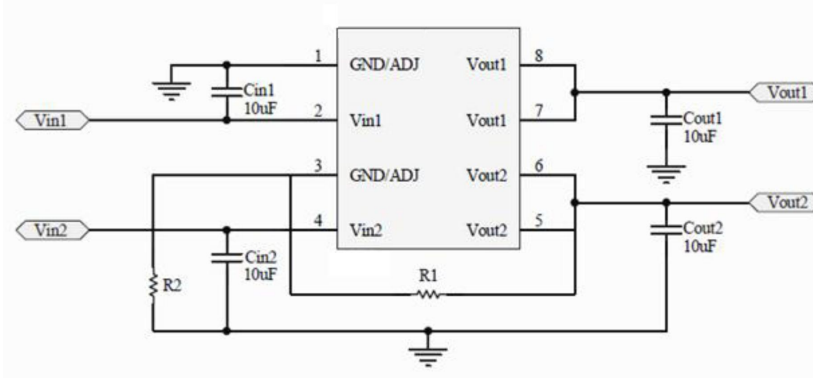
特点 / Features

- ◆ Dual channel output with each individual output can be either fixed output version or adjustable version.
- ◆ Maximum output current for each channel is 1A
- ◆ Range of operation input voltage: Max 12V
- ◆ Standby current of each output: 2mA (typ.)
- ◆ Line regulation: 0.1%/V (typ.)
- ◆ Load regulation: 10mV (typ.)
- ◆ Environment Temperature: -20°C~85°C
- ◆ Compatible with tantalum capacitor, electrolytic capacitor and MLCC.
- ◆ Halogen free product.

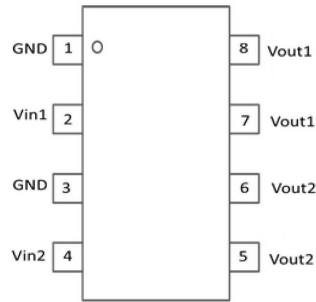
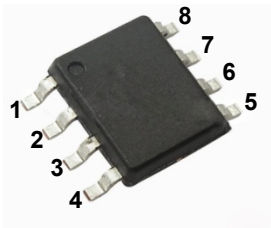
应用 / Applications

- ◆ Power Management for Computer Mother Board, Graphic Card
- ◆ LCD Monitor and LCD TV
- ◆ DVD Decode Board
- ◆ ADSL Modem
- ◆ Post Regulators for Switching Supplies

应用电路 / Typical Application



引脚 / Pinning



绝对最大额定值 / Absolute Maximum Ratings(Ta=25°C)

Parameter	Rating	Unit
Max Input Voltage	12	V
Operating junction temperature	125	°C
Ambient temperature	-20~+85	°C
Storage temperature	-40~+150	°C
Lead temperature &Time	+260 (Recommended 10S)	°C
Package Thermal Resistance	10	°C/W

Note:

- 1) Exceed these limits to damage to the device.
- 2) Exposure to absolute maximum rating conditions may affect device reliability.

电性能参数 / Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Type	Test Conditions	Min	Typ	Max	Unit
Reference Voltage	Vref	BRCO118SE- Adj	Vin-Vo=2V Tj=25°C Io=10mA	1.225	1.25	1.275	V
			10mA≤Io≤800mA 1.4V≤(Vin-Vo)≤10V	1.225	1.25	1.275	
Output Voltage	Vo	BRCO118SE-1.2	Vin=3.2V Tj=25°C Io=10mA	1.176	1.2	1.224	V
			10mA≤Io≤800mA, 3V≤Vin≤8V	1.176	1.2	1.224	
		BRCO118SE-1.8	Vin=3.8V Tj=25°C Io=10mA	1.764	1.8	1.836	V
			0≤Io≤800mA, 3.3V≤Vin≤8V	1.764	1.8	1.836	
		BRCO118SE-2.5	Vin=4.5V Tj=25°C Io=10mA	2.45	2.5	2.55	V
			0≤Io≤800mA, 3.9V≤Vin≤10V	2.45	2.5	2.55	
		BRCO118SE-3.3	Vin=5.3V Tj=25°C Io=10mA	3.234	3.3	3.366	V
			0≤Io≤800mA, 4.75V≤Vin≤10V	3.234	3.3	3.366	
		BRCO118SE-5.0	Vin=7V Tj=25°C Io=10mA	4.9	5	5.1	V
			0≤Io≤800mA, 6.5V≤Vin≤15V	4.9	5	5.1	

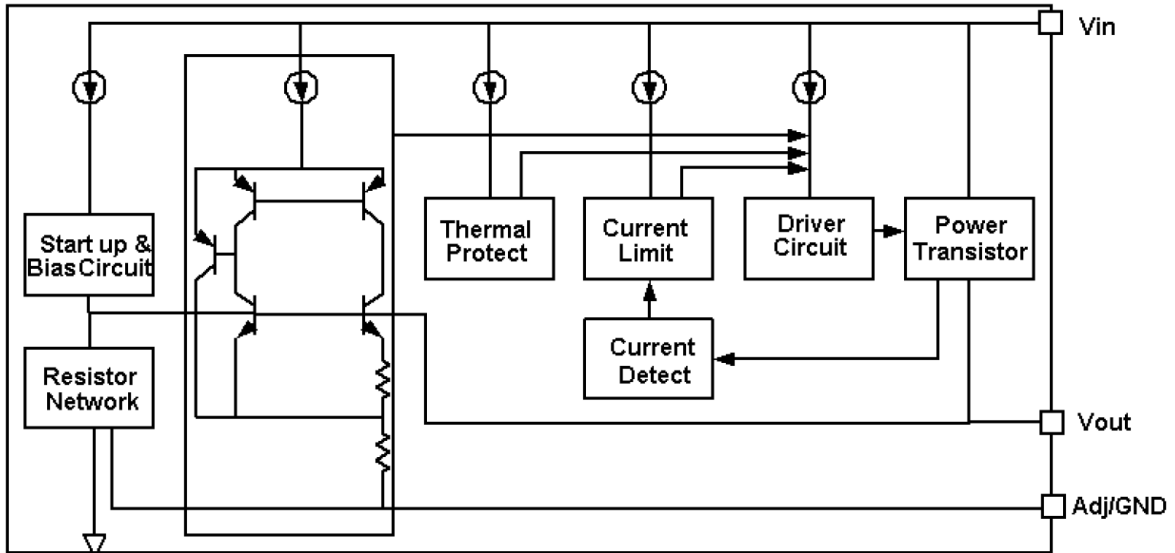
电性能参数 / Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Type	Test Conditions	Min	Typ	Max	Unit
Load Regulation	ΔV_o	BRCO118SE -Adj	$V_{in}-V_o=3V$ $10mA \leq I_o \leq 800mA$			30	mV
		BRCO118SE -1.2	$V_{in}=3V$ $10mA \leq I_o \leq 800mA$			30	mV
		BRCO118SE -1.8	$V_{in}=3.3V$ $0mA \leq I_o \leq 800mA$			30	mV
		BRCO118SE -2.5	$V_{in}=3.9V$ $0mA \leq I_o \leq 800mA$			30	mV
		BRCO118SE -3.3	$V_{in}=4.75V$ $0mA \leq I_o \leq 800mA$			30	mV
		BRCO118SE -5.0	$V_{in}=6.5V$ $0mA \leq I_o \leq 800mA$			30	mV
Line Regulation	ΔV_o	BRCO118SE -Adj	$I_o=10mA$ $1.5V \leq (V_{in}-V_o) \leq 13.75V$			23	mV
		BRCO118SE -1.2	$3V \leq V_{in} \leq 8.0V$ $I_o=0mA$			18	
		BRCO118SE -1.8	$3.3V \leq V_{in} \leq 8.0V$ $I_o=0mA$			31	
		BRCO118SE -2.5	$3.9V \leq V_{in} \leq 10V$ $I_o=0mA$			40	
		BRCO118SE -3.3	$4.75V \leq V_{in} \leq 15V$ $I_o=0mA$			48	
		BRCO118SE -5.0	$6.5V \leq V_{in} \leq 15V$ $I_o=0mA$			55	
Operating Input Voltage	V_{in}	BRCO118SE -Adj	$I_o=100mA$			15	V
		BRCO118SE -1.2				10	
		BRCO118SE -1.8				10	
		BRCO118SE -2.5				15	
		BRCO118SE -3.3				15	
		BRCO118SE -5.0				15	
Adjustment Pin Current	I_{adj}	BRCO118SE -Adj	$V_{in} \leq 15V$		60	120	uA
Adjustment Pin Current Change	ΔI_{adj}		$1.4V \leq V_{in}-V_o \leq 10V,$ $0mA \leq I_o \leq 800mA$		1	5	
Quiescent Current	I_d	BRCO118SE -1.2	$V_{in} \leq 8V$		5	10	mA
		BRCO118SE -1.8	$V_{in} \leq 8V$				
		BRCO118SE -2.5	$V_{in} \leq 10V$				
		BRCO118SE -3.3	$V_{in} \leq 15V$				
		BRCO118SE -5.0					
Output Current	I_o	BRCO118SE Adj	$V_{in}-V_o=5V$ $T_j=25^\circ C$	600	800	1000	mA
		BRCO118SE -1.2					
		BRCO118SE -1.8					
		BRCO118SE -2.5					

电性能参数 / Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Type	Test Conditions	Min	Typ	Max	Unit
Output Current	Io	BRCO118SE -3.3	Vin-Vo=5V Tj=25°C	600	800	1000	mA
		BRCO118SE -5.0					
Output Noise	eN	BRCO118SE -Adj	10Hz≤B≤10KHz Tj=25°C		0.003		%
		BRCO118SE -1.2			100	uV	
		BRCO118SE -1.8					
		BRCO118SE -2.5					
		BRCO118SE -3.3					
		BRCO118SE -5.0					
Supply Voltage Rejection	SVR	BRCO118SE -Adj	Io=40mA f=120Hz Tj=25°C Vin-Vo=3V Vripple=1Vpp	60	75		dB
		BRCO118SE -1.2					
		BRCO118SE -1.8					
		BRCO118SE -2.5					
		BRCO118SE -3.3					
		BRCO118SE -5.0					
Dropout Voltage	Vd	BRCO118SE -Adj	Io=100mA Io=500mA Io=800mA		1.00	1.10	V
		BRCO118SE -1.2			1.05	1.15	
		BRCO118SE -1.8			1.10	1.20	
		BRCO118SE -2.5					
		BRCO118SE -3.3					
		BRCO118SE -5.0					
Thermal Regulation		BRCO118SE -Adj	Ta=25°C 30ms Pulse		0.01	0.1	%W
		BRCO118SE -1.2					
		BRCO118SE -1.8					
		BRCO118SE -2.5					
		BRCO118SE -3.3					
		BRCO118SE -5.0					

结构图 / Block Diagram



详细说明 / Detailed Description

BRCO118SE is a series of dual channel low-dropout regulator that delivers a maximum current of 1A for each individual output. Typical dropout voltage at 1A load current is 1.3V. Each individual output voltage can be set independently as fixed voltage (i.e. 1.2V, 1.8V, 2.5V, 3.3V, 5V) or adjustable output which can provide an output voltage ranges from 1.25 to 12V with two external resistors. The output accuracy of each channel is set within 2% by trimming.

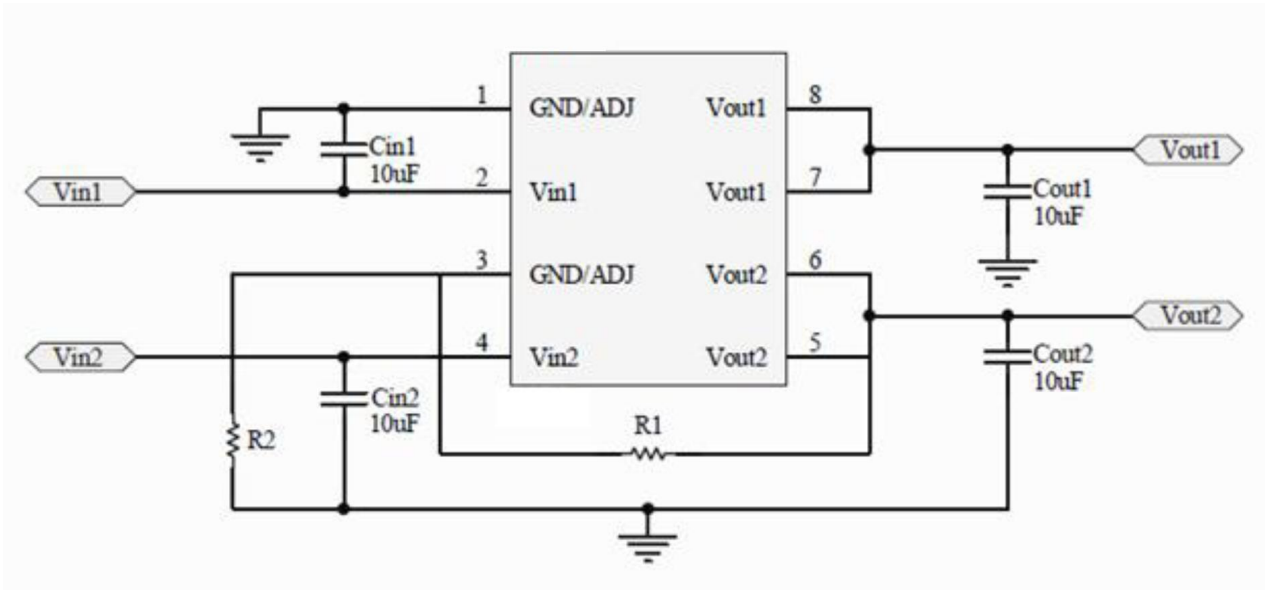
The device has build-in modules including start-up circuit, bias circuit, bandgap, thermal shutdown, current limit, power transistors and driver circuit. Thermal shut down and current limit functions ensure reliability of device and power system.

The bandgap module provides stable reference voltage whose temperature coefficient is compensated by careful design considerations. The temperature coefficient is under 100 ppm/°C. The accuracy of output voltage is guaranteed by trimming technique.

Package input/output pin configuration can be customized on demand (i.e both output can share one input to save one input capacitor and corresponding PCB real estate).

BRCO118SE is available in lead (Pb)-free ESOP-8 package.

典型应用 / Typical Application



BRCO118SE has both fixed voltage version (1.2V, 1.8V, 2.5V, 3.3V, 5V) and adjustable voltage version. The input and output capacitors of each channel can be either tantalum, electrolytic or ceramic capacitor.

Figure Picture shows both fixed voltage and adjustable voltage application schematic. Channel 1 (designated as pin 1\2\7\8) is a typical application of fixed voltage. Channel 2 (designated as pin 3\4\5\6) is the schematic of adjustable version application. The adjustable version provides a 1.25V reference voltage with regard to its ADJ pin (shown as PIN 5\6 as its output and PIN3 as its adjustable pin in Fig.3). The output voltage of adjustable version follows the equation:

$$V_{out} = 1.25 \times (1 + R_2/R_1) + I_{Adj} \times R_2.$$

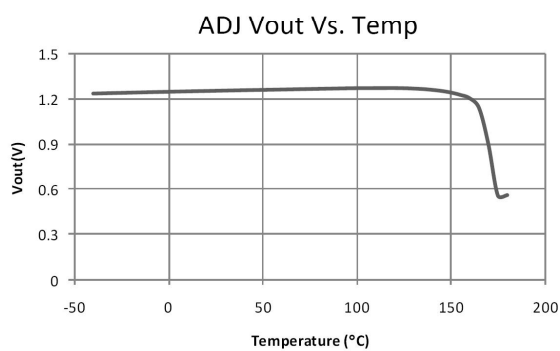
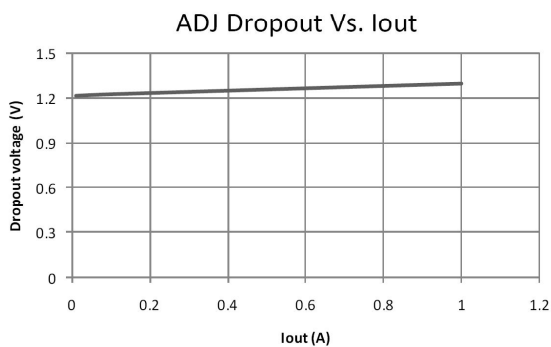
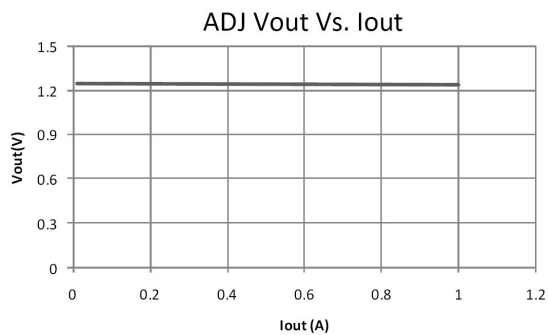
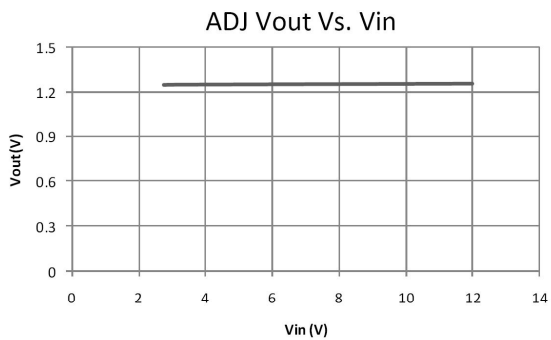
We can ignore I_{Adj} because I_{Adj} (about 50uA) is much less than the current of R1 (in the order of several milliamps).

- 1) To meet the minimum load current (>10mA) requirement, R1 is recommended to be 125ohm or lower.
- 2) Using a bypass capacitor (C_{ADJ}) between the ADJ pin and ground can improve ripple rejection. This bypass capacitor prevents ripple from being amplified as the output voltage is increased. The impedance of C_{ADJ} should be less than R1 to prevent ripple from being amplified. As R1 is normally in the range of 100Ω~500Ω, the value of C_{ADJ} should satisfy this equation: $1/(2\pi \times \text{ripple} \times C_{ADJ}) < R1$. Thermal consideration has to be taken account into to ensure proper function of the device. Power dissipation of BRCO118SE can be calculated as

$$\text{Power Dissipation} = (V_{in1} - V_{out1}) \times I_{out1} + (V_{in2} - V_{out2}) \times I_{out2}$$

For proper function and safe operation of the device, power dissipation is recommended to be limited within 2W.

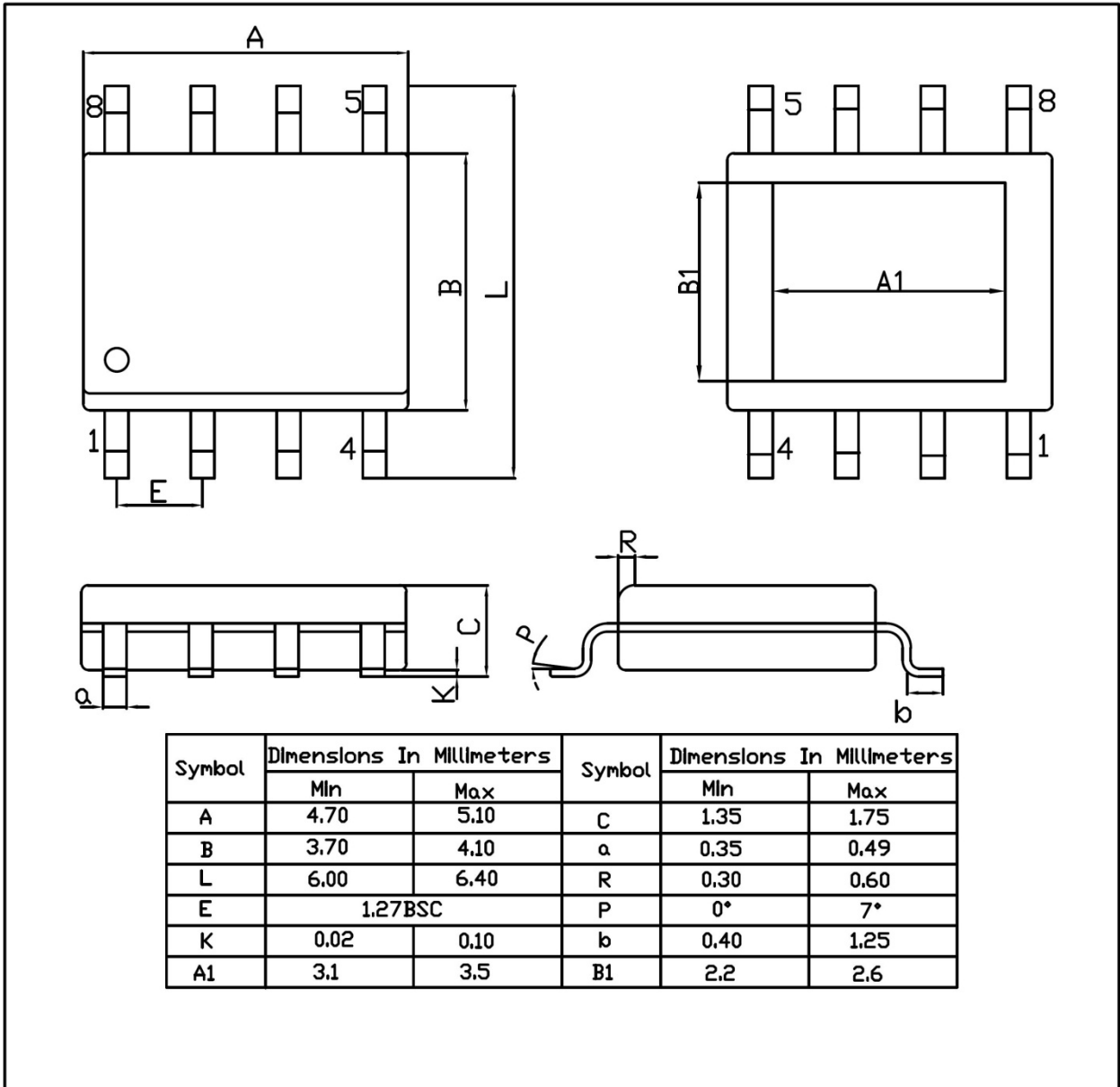
曲线图 / Curve chart



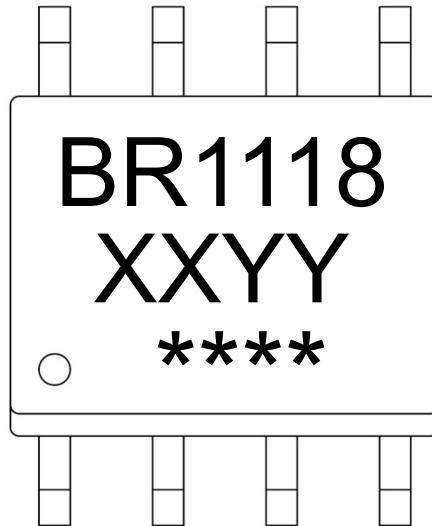
外形尺寸图 / Package Dimensions

ESOP-8

Unit:mm



印章说明 / Marking Instructions



说明：

BR: 公司代码

1118: 为型号代码

XX: 通道 1 输出电压(12,18,25,33,50,AD 分别表示 1.2V , 1.8V , 2.5V , 3.3V , 5.0V , ADJ)

YY: 通道 2 输出电压(12,18,25,33,50,AD 分别表示 1.2V , 1.8V , 2.5V , 3.3V , 5.0V , ADJ)

****: 为生产批号代码，随生产批号变化。

Note:

BR: Company Code.

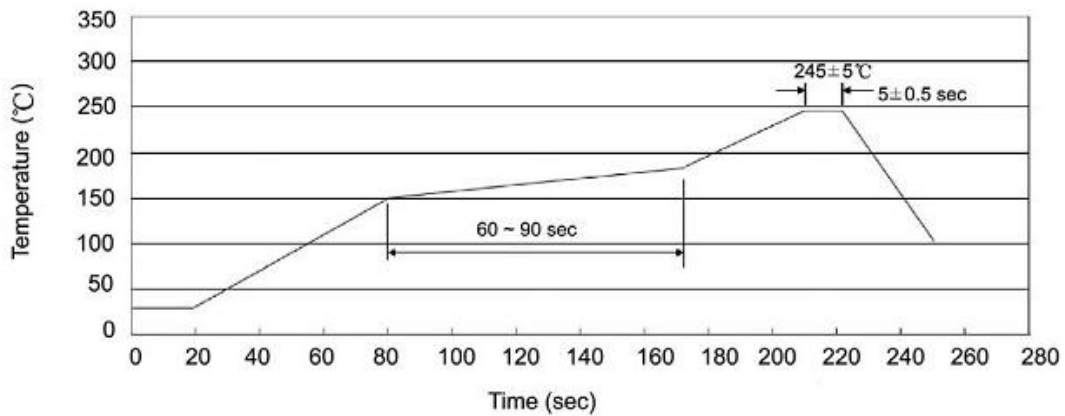
1118 Product Type.

XX: Vo1 Output Voltage(12,18,25,33,50,AD represent 1.2V , 1.8V , 2.5V , 3.3V , 5.0V , ADJ)

YY: Vo2 Output Voltage(12,18,25,33,50,AD represent 1.2V , 1.8V , 2.5V , 3.3V , 5.0V , ADJ)

****: Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 150 ~ 180°C，时间 60 ~ 90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
ESOP-8	4,000	2	8,000	5	40,000	13" ×16	360×360×50	385×257×392

使用说明 / Notices