

BRCS4800SCQ

Rev.A Jun.-2023

描述 / Descriptions

SOP-8 塑封封装 N 沟道 MOS 场效应管。

N-Channel Enhancement Mode Field Effect Transistor in a SOP-8 Plastic Package.

特征 / Features

$V_{DS}(V)=30V$ $I_D=6.9A$

$R_{DS(ON)} < 32m\Omega (V_{GS}=10V)$

$R_{DS(ON)} < 36m\Omega (V_{GS}=4.5V)$

$R_{DS(ON)} < 52m\Omega (V_{GS}=2.5V)$

符合 AEC-Q101 标准高可靠性要求，无卤产品。

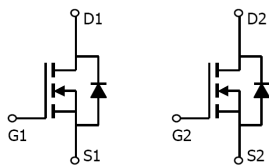
Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

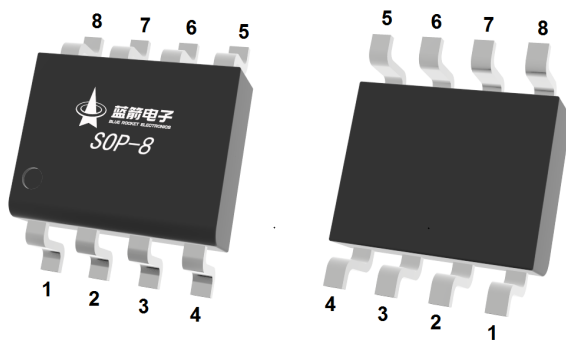
用于电源管理，便携式设备和电池供电系统。适用于作负载开关或脉宽调制应用，满足汽车应用的严格要求。

Power Management in Notebook computer, Portable Equipment and Battery powered systems and this device is suitable for use as a load switch or in PWM applications, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1 : S2 PIN 2 : G2 PIN 3 : S1 PIN 4 : G1

PIN 5 : D1 PIN 6 : D1 PIN 7 : D2 PIN 8 : D2

印章代码 / Marking

见印章说明 See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25°C)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ^A	$I_D (T_a=25^\circ\text{C})$	6.9	A
	$I_D (T_a=70^\circ\text{C})$	5.8	A
Pulsed Drain Current ^B	I_{DM}	40	A
Power Dissipation for Single Operation ^A	$P_D (T_a=25^\circ\text{C})$	2.0	W
	$P_D (T_a=70^\circ\text{C})$	1.44	W
Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	°C
Thermal Resistance-Junction to Ambient ^A	$R_{\theta JA} (t \leq 10s)$	62.5	°C/W
	$R_{\theta JA}$	110	°C/W
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	40	°C/W

Note:

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any a given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

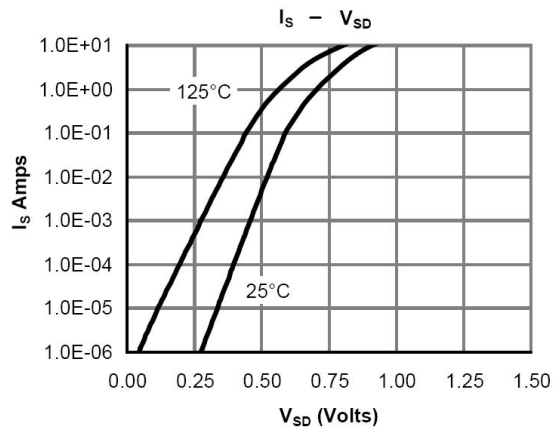
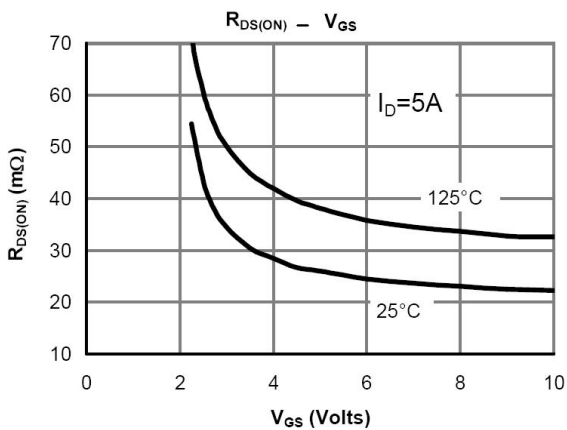
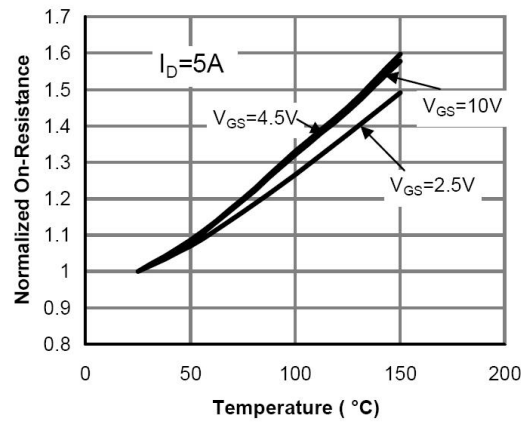
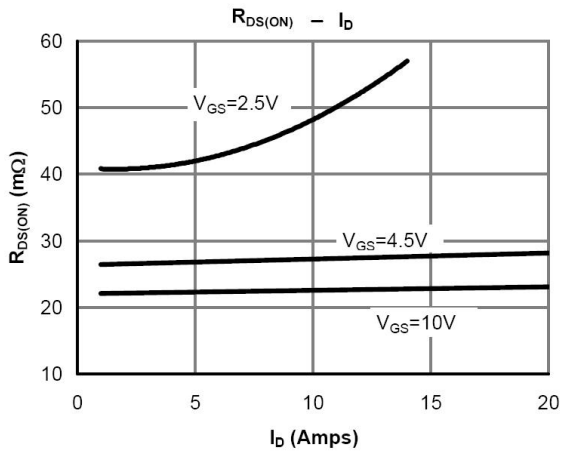
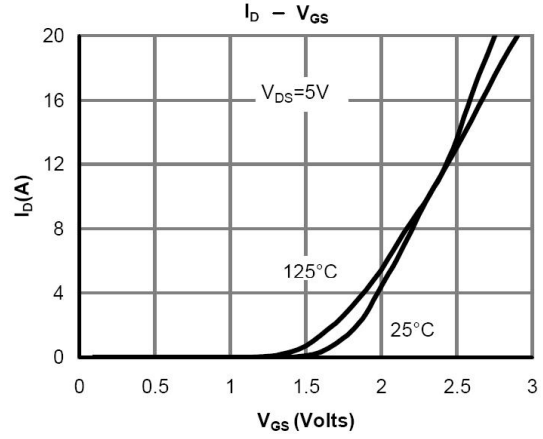
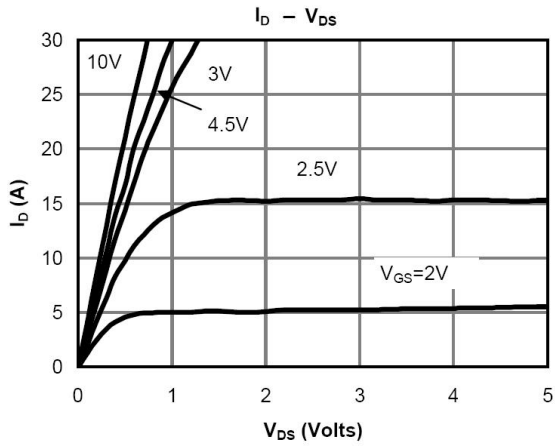
D. The static characteristics in Figures 1 to 6 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The SOA curve provides a single pulse rating.

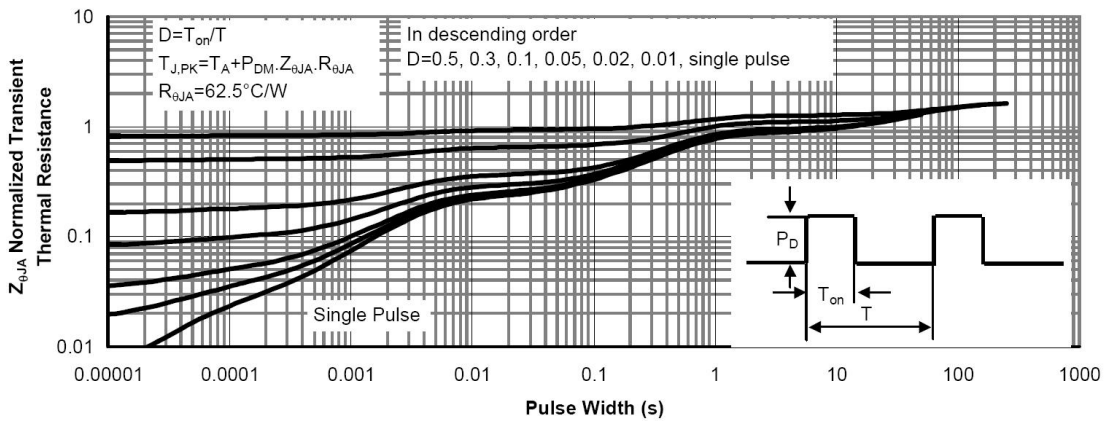
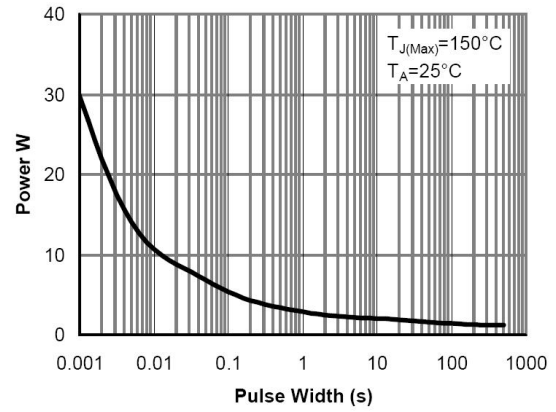
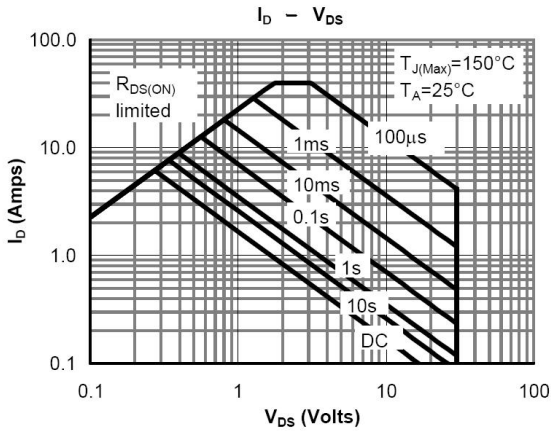
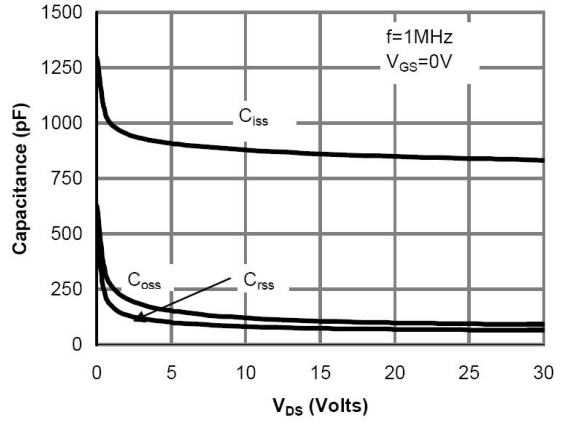
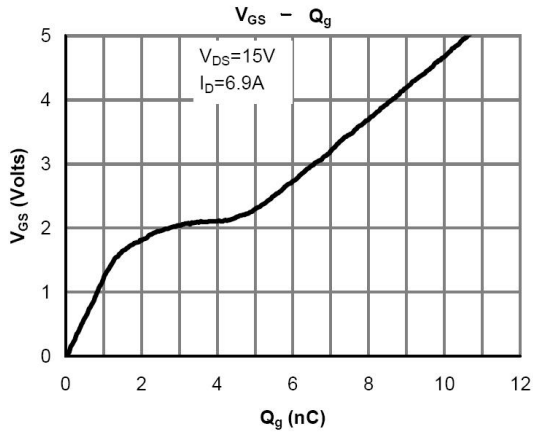
电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA V _{GS} =0V	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V V _{GS} =0V			1.0	μA
		V _{DS} =24V V _{GS} =0V T _J =55°C			5.0	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V V _{GS} =±12V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250μA	0.7	1.1	1.4	V
On state drain current	I _{D(ON)}	V _{GS} =4.5V V _{DS} =5.0V	6.9			A
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V I _D =6.9A		24	32	mΩ
		V _{GS} =10V I _D =6.9A T _J =125°C		32.3	38	
		V _{GS} =4.5V I _D =6.0A		27	36	
		V _{GS} =2.5V I _D =5.0A		40	52	
Forward Transconductance	g _{FS}	V _{DS} =5.0V I _D =5.0A	10	15		S
Diode Forward Voltage	V _{SD}	I _S =1.0A		0.77	1.0	V
Maximum Body-Diode Continuous Current	I _S				3.0	A
Total Gate Charge	Q _g	V _{GS} =4.5V V _{DS} =15V I _D =6.9A		9.6		nC
Gate-Source Charge	Q _{gs}			1.65		
Gate-Drain Charge	Q _{gd}			3.0		
Gate Resistance	R _g	V _{GS} =0V V _{DS} =0V f=1MHz		1.24		Ω
Input Capacitance	C _{iss}	V _{GS} =0V V _{DS} =15V f=1MHz		858		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			80		
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V V _{DS} =15V R _L =2.2Ω R _{GEN} =6.0Ω		5.7		ns
Turn-on Rise Time	t _r			13		
Turn-off Delay Time	t _{d(OFF)}			37		
Turn-off Fall Time	t _f			4.2		
Body Diode Reverse Recovery Time	t _{rr}	I _F =5.0A dI/dt=100A/μs		15.5		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =5.0A dI/dt=100A/μs		7.9		nC

电参数曲线图 / Electrical Characteristic Curve



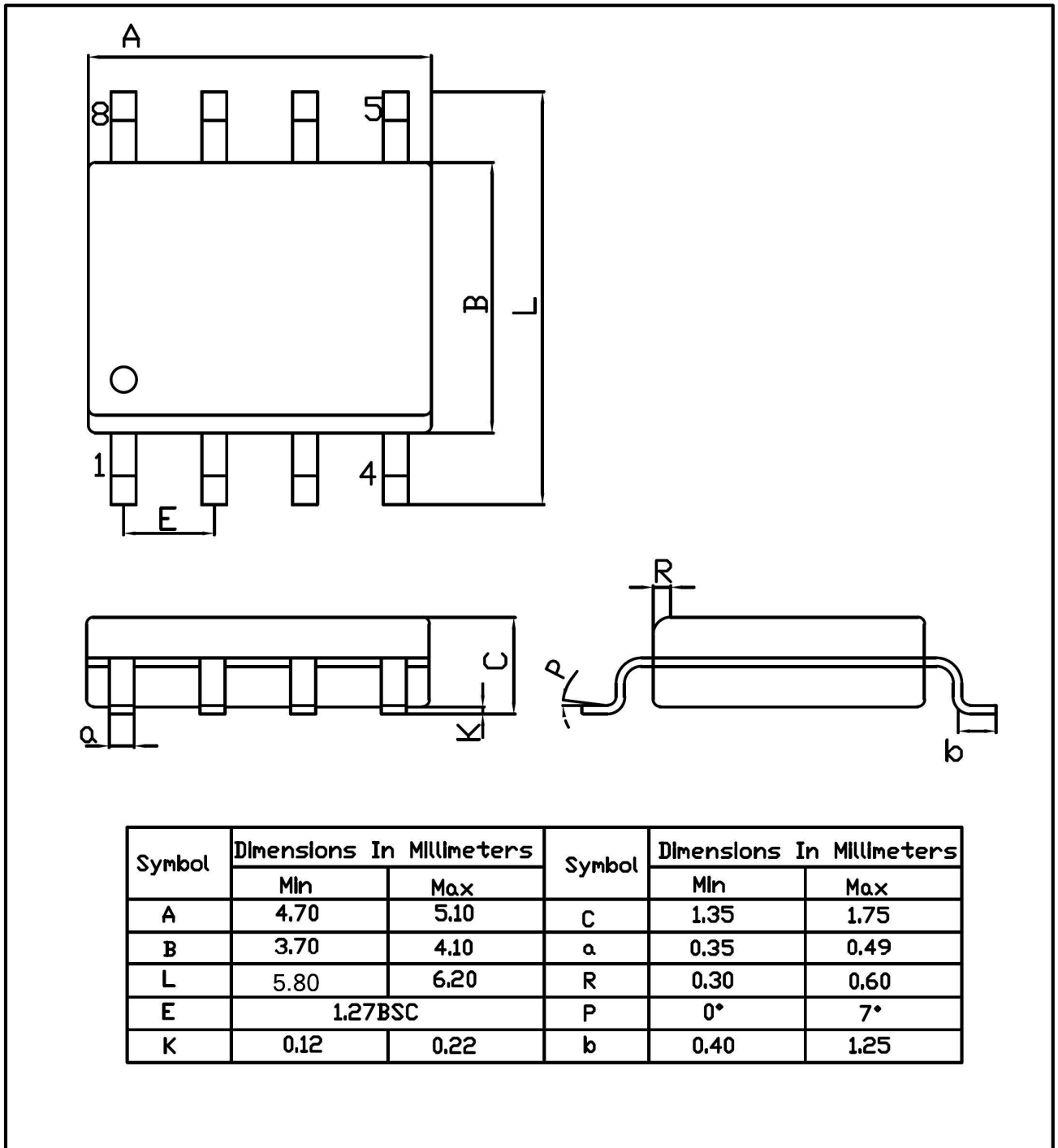
电参数曲线图 / Electrical Characteristic Curve



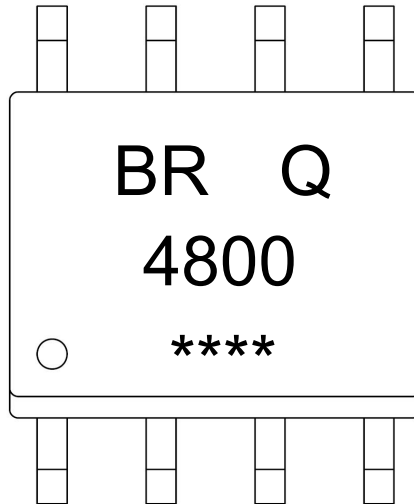
外形尺寸图 / Package Dimensions

SOP-8

Unit:mm



印章说明 / Marking Instructions



说明：

BR： 为公司代码

Q： 为汽车无卤产品标识

4800： 为型号代码

****： 为生产批号代码，随生产批号变化

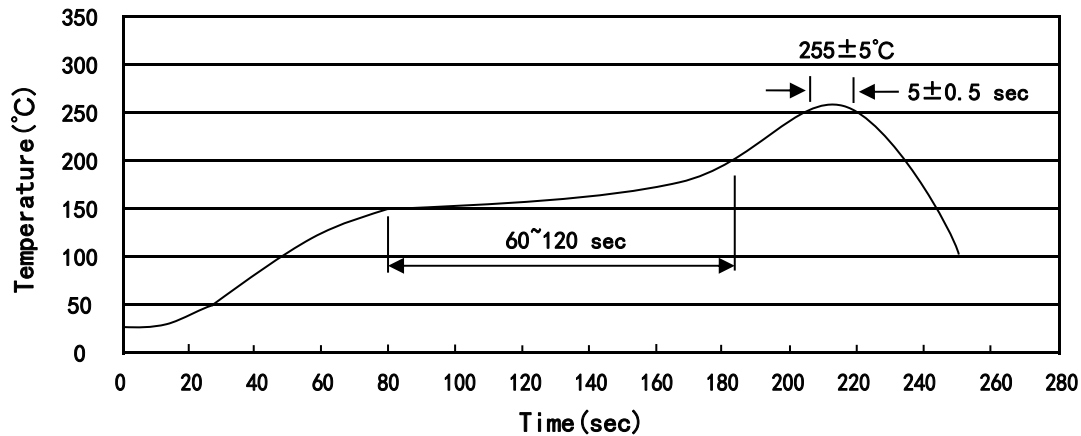
Note:

BR: Company Code

Q: Automobile halogen-free product Code

4800: Product Type

****: 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 150~200°C，时间 60~120sec;
- 2、峰值温度 255±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:150~200°C, Time:60~120sec.
- 2.Peak Temp.:255±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
SOP/ESOP-8	4,000	2	8,000	6	48,000	13" ×12	360×360×50	380×335×366

使用说明 / Notices