描述 / Descriptions

SOP-8 塑封封装 P 沟道 MOS 场效应管。
P-Channel Enhancement Mode Field Effect Transistor in a SOP-8 Plastic Package.

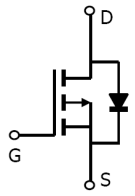
特征 / Features

$V_{DS\ (V)}$ = -40V
I_D = -6 A (V_{GS} = -10V)
$R_{DS(ON)}$ < 42mΩ (V_{GS} = -10V)
$R_{DS(ON)}$ < 63mΩ (V_{GS} = -4.5V)

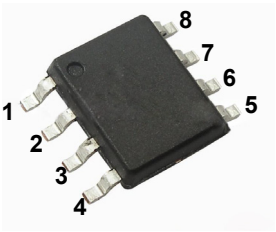
用途 / Applications

电池保护，负载开关。
Battery protection, Load Switch.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：S　PIN 2：S　PIN 3：S　PIN 4：G

PIN 5：D　PIN 6：D　PIN 7：D　PIN 8：D

放大及印章代码 / h_{FE} Classifications & Marking

见印章说明。See Marking Instructions.

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

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DSS}	-40	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D (T_a=25°C)	-6	A
Continuous Drain Current	I_D (T_a=70°C)	-5	A
Pulsed Drain Current[C]	I_{DM}	-40	A
Avalanche Current [C]	I_{AS}, I_{AR}	20	A
Avalanche energy L=0.1mH [C]	E_{AS}, E_{AR}	20	mJ
Power Dissipation [B]	P_D (T_a=25℃)	3.1	W
	P_D (T_a=70℃)	2	W
Junction and Storage Temperature Range	T_j ,T_{stg}	-55～150	℃

热特性 / Thermal Characteristics

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
Maximum Junction-to-Ambient [A]	$R_{\theta JA}$	t ≤ 10s		31	40	℃/W
Maximum Junction-to-Ambient [A D]				59	75	
Maximum Junction-to-Lead	$R_{\theta JL}$			16	24	℃/W

Note:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C , using≤10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initialT_J=25°C.

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

E. The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5%max.

F. These curves are based on the junction-to-ambient thermal impedence which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, ssuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

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

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	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40 V_{GS}=0V			-1.0	μA
		V_{DS}=-40 V_{GS}=0V T_J=55°C			-5.0	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V V_{GS}=±20			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-1.5	-2.0	-2.6	V
On state drain current	$I_{D(ON)}$	V_{GS}=-10V V_{DS}=-5V	40			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V I_D=-6A		35	42	mΩ
		V_{GS}=-10V I_D=-6A T_J=125°C		53	65	
		V_{GS}=-4.5V I_D=-5.0A		46.5	63	
Forward Transconductance	g_{FS}	V_{DS}=-5V I_D=-6A		17		S
Diode Forward Voltage	V_{SD}	I_S=-1A V_{GS}=0V		-0.76	-1.0	V
Maximum Body-Diode Continuous Current	I_S				-3.5	A
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=-10V V_{DS}=-20V I_D=-6A		17.3	22	nC
Total Gate Charge	$Q_{g(4.5V)}$			8.4	11	
Gate-Source Charge	Q_{gs}			3.2		
Gate-Drain Charge	Q_{gd}			4.3		
Gate Resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz	7.0	14	21	Ω
Input Capacitance	C_{iss}	V_{GS}=0V V_{DS}=-20V f=1MHz	750	940	1175	pF
Output Capacitance	C_{oss}			97		
Reverse Transfer Capacitance	C_{rss}			72		
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-10V V_{DS}=-20V R_L=3.35Ω R_{GEN}=3Ω		10.3		ns
Turn-on Rise Time	t_r			4.3		
Turn-off Delay Time	$t_{d(OFF)}$			39		
Turn-off Fall Time	t_f			46.5		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-6A dI/dt=100A/μs		17	24	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-6A dI/dt=100A/μs		11.5		nC

电参数曲线图 / Electrical Characteristic Curve

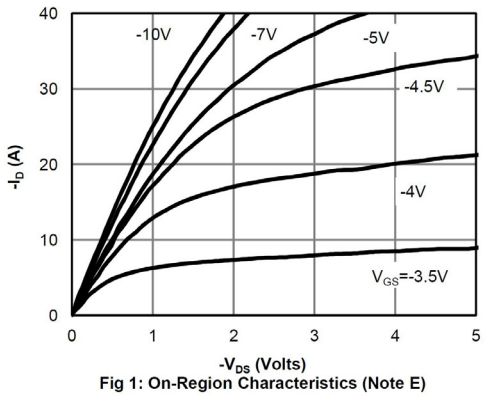


Fig 1: On-Region Characteristics (Note E)

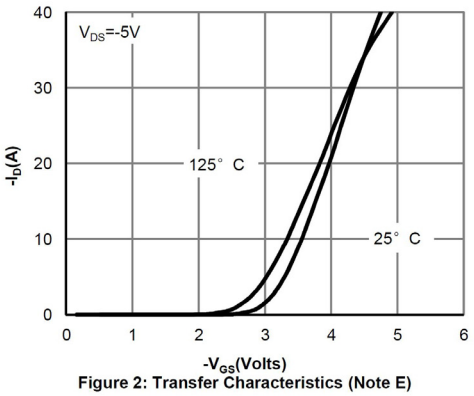


Figure 2: Transfer Characteristics (Note E)

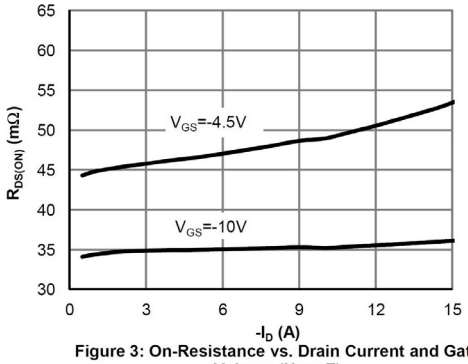


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

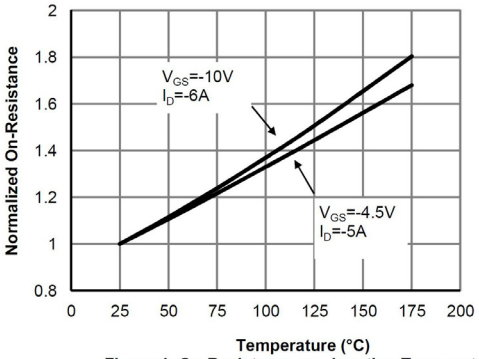


Figure 4: On-Resistance vs. Junction Temperature (Note E)

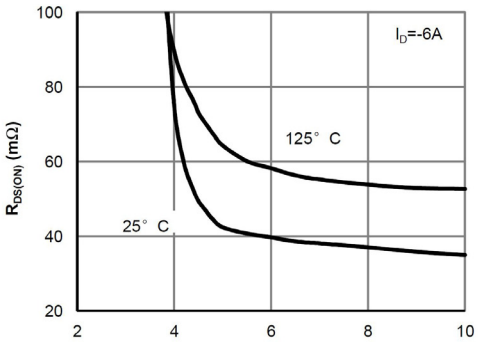


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

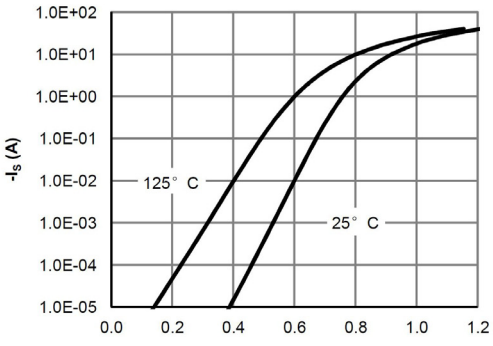


Figure 6: Body-Diode Characteristics (Note E)

电参数曲线图 / Electrical Characteristic Curve

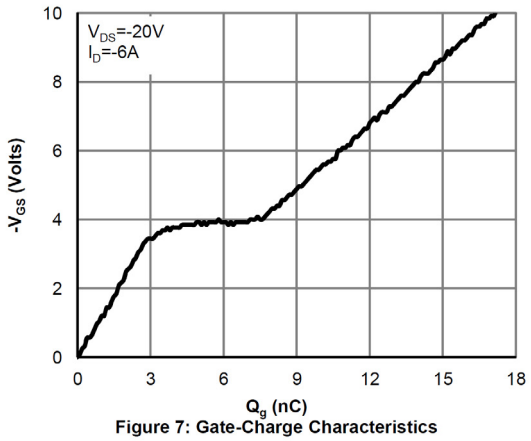


Figure 7: Gate-Charge Characteristics

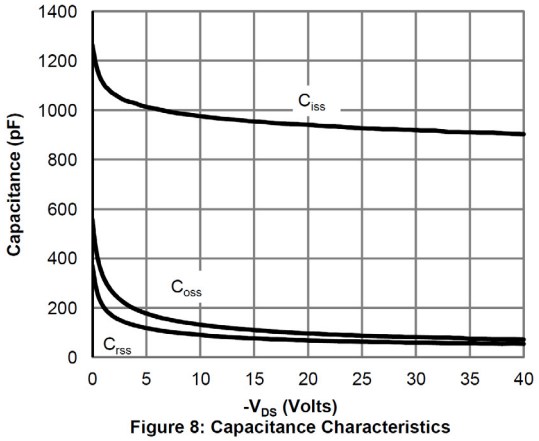


Figure 8: Capacitance Characteristics

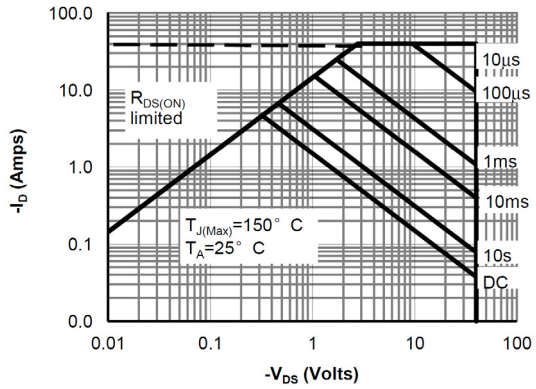


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

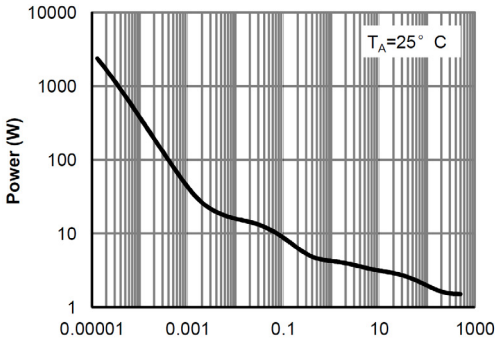


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

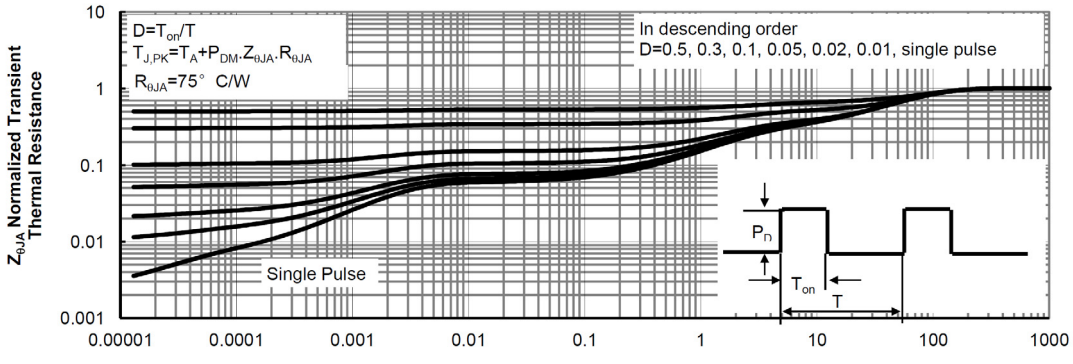
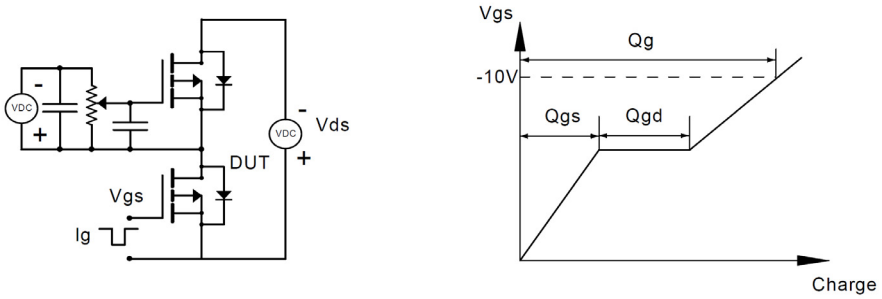


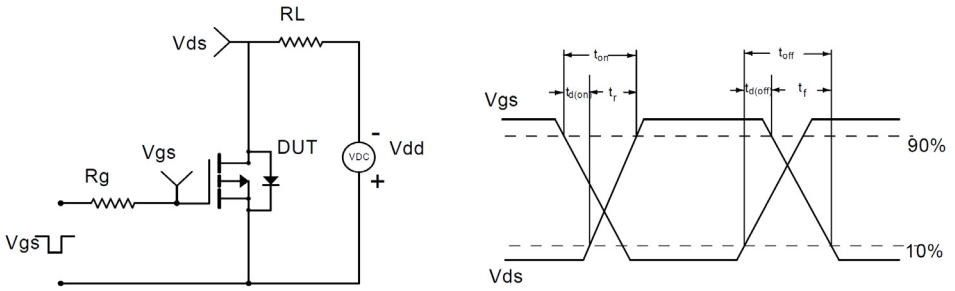
Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

测试电路和波形 / Test Circuit & Waveform

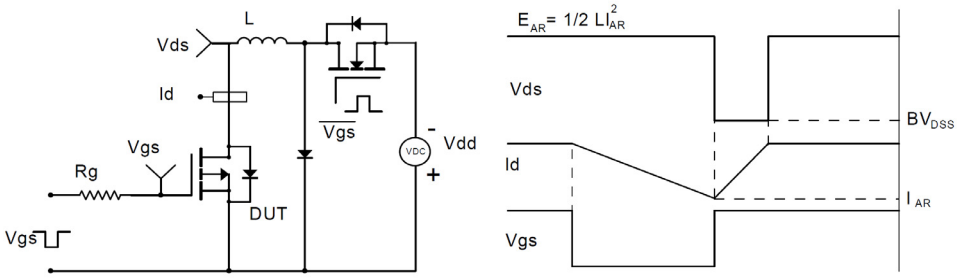
Gate Charge Test Circuit & Waveform



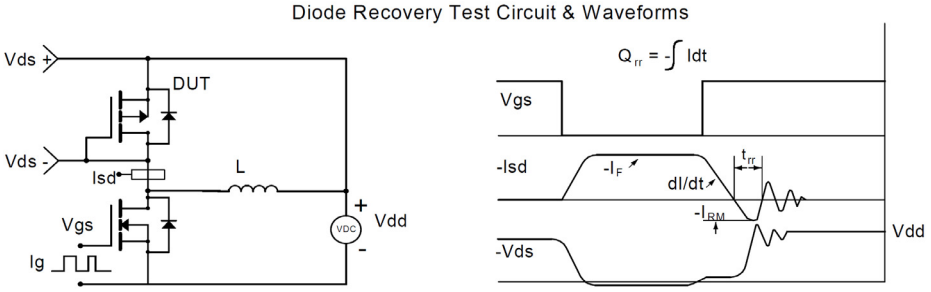
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

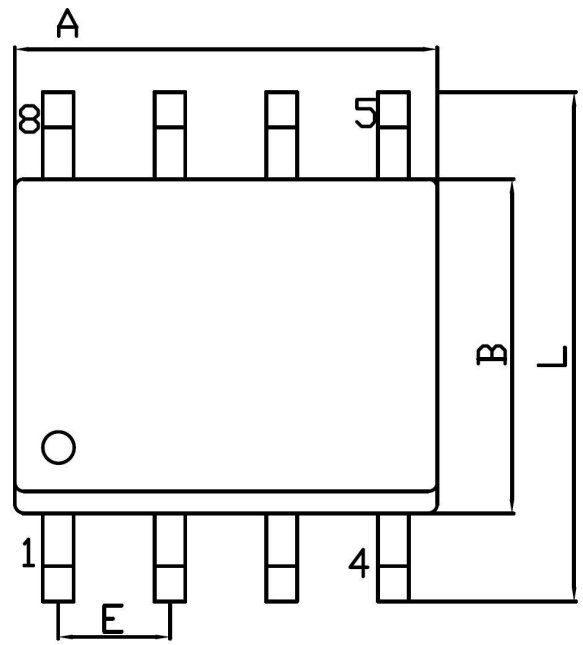


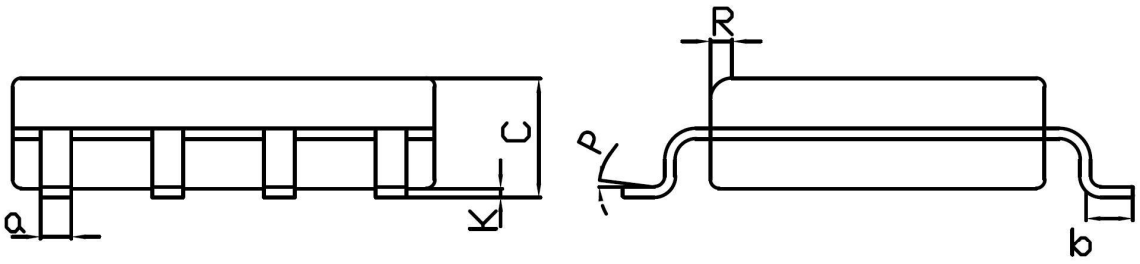
Diode Recovery Test Circuit & Waveforms



外形尺寸图 / Package Dimensions

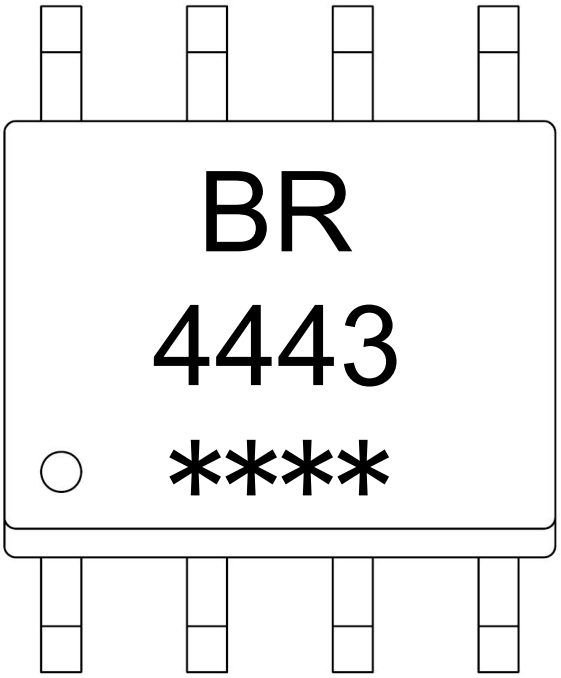
SOP-8 Unit:mm





Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	α	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25

印章说明 / Marking Instructions



说明：

BR： 为公司代码

4443： 为型号代码

****： 为生产批号代码，随生产批号变化。

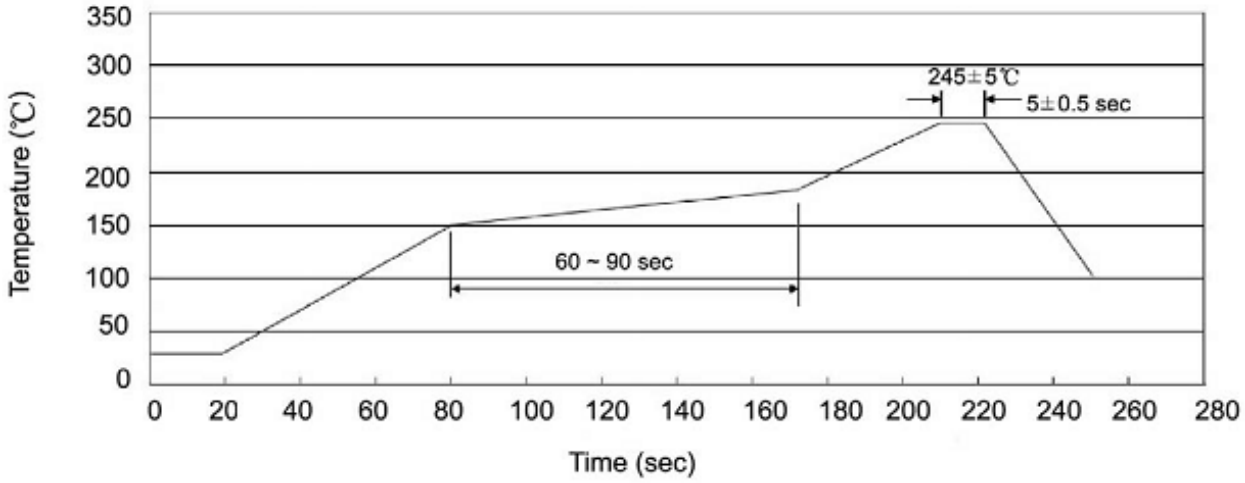
Note:

BR: Company Code.

4443: 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 150～180℃，时间 60～90sec;

2、峰值温度 245±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:150~180℃, Time:60~90sec.

2.Peak Temp.:245±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

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

温度：260±5℃ 时间：10±1 sec. Temp.:260±5℃ 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/盒	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

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