

描述 / Descriptions

SOP-8 塑封封装 N 沟道 MOS 场效应管。N-Channel MOSFET in a SOP-8 Plastic Package.

特征 / Features

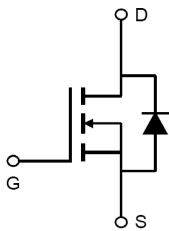
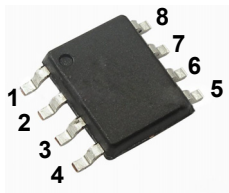
低导通电阻 $R_{DS(ON)}$, 低栅极电荷, 优化了快速转换特性, 符合 RoHS。

Low $R_{DS(ON)}$, Low Gate Charge, Optimized for fast-switching, RoHS .

用途 / Applications

DC/DC 和 AC/DC 转换器的同步整流, 隔离直流/直流转换器在电信和工业。。

Synchronous Rectification in DC/DC and AC/DC Converters, Isolated DC/DC Converters in Telecom and Industrial.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1:S PIN 2:S PIN 3 : S PIN 4 : G
PIN5、PIN 6、PIN 7、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°C)

参数 Parameter		符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _A =25℃	I _D	11.5	A
	T _A =70℃		9.0	A
Pulsed Drain Current ^C		I _{DM}	46	A
Avalanche Current ^C		I _{AS}	20	A
Avalanche energy L=0.1mH ^C		E _{AS}	20	mJ
VDS Spike	10 μ S	V _{SPIKE}	120	V
Power Dissipation ^B	T _A =25℃	P _D	3.1	W
	T _A =70℃		2.0	W
Maximum Junction-to-Ambient ^A t≤10S		R _{θJA}	40	℃/ W
Maximum Junction-to-Ambient ^{AD} Steady-State			75	℃/ W
Maximum Junction-to Lead Steady-State		R _{θJL}	24	℃/ W
Operating and Junction Temperature Range		T _j T _{stg}	-55~+150	℃

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}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$			1.0	μA
		$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $T_J=55^{\circ}\text{C}$			5.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=11.5\text{A}$		10	12	m Ω
		$V_{GS}=10\text{V}$ $I_D=11.5\text{A}$ $T_J=125^{\circ}\text{C}$			21	
		$V_{GS}=4.5\text{V}$ $I_D=9.5\text{A}$		13	15.5	
Forward Transconductance	g_{FS}	$V_{DS}=5.0\text{V}$ $I_D=11.5\text{A}$		45		S
Diode Forward Voltage	V_{SD}	$I_S=12\text{A}$ $V_{GS}=0\text{V}$		0.71	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				4.0	A

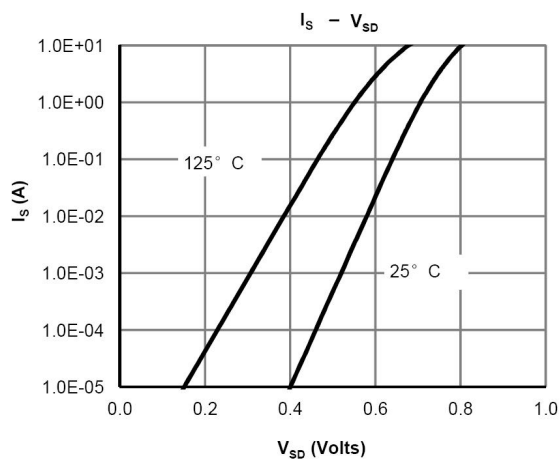
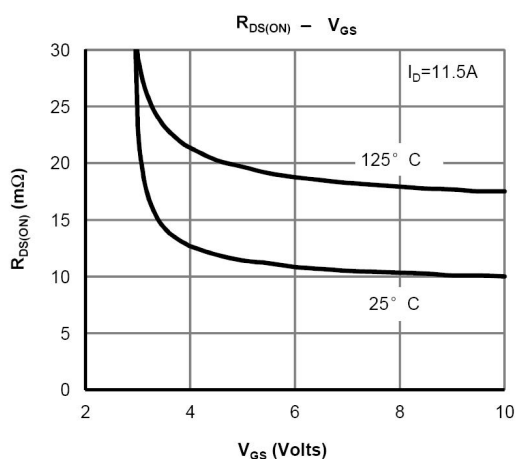
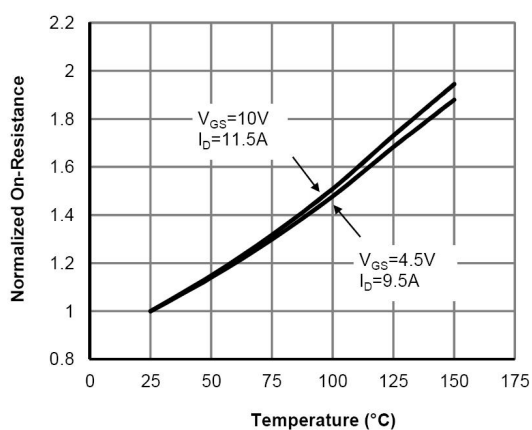
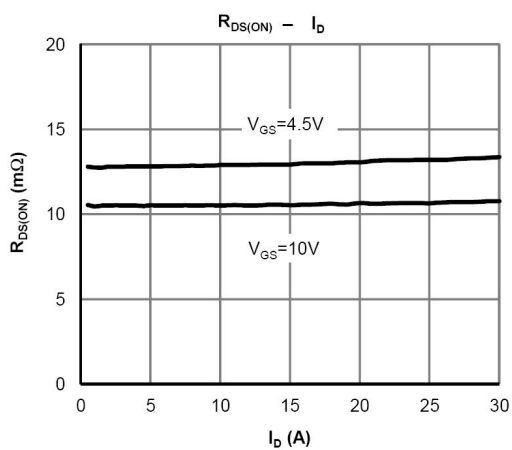
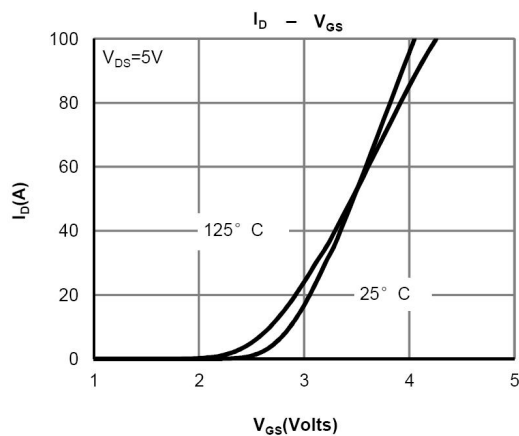
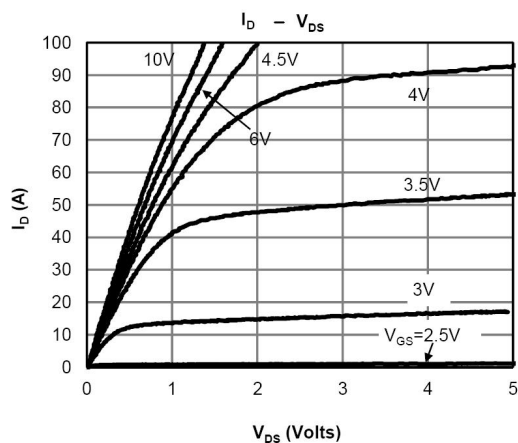
电性能参数 / Electrical Characteristics(Ta=25°C)

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
Input Capacitance	C_{iss}	$V_{DS}=50V$ $V_{GS}=0V$ $f=1.0MHz$		2420		pF
Output Capacitance	C_{oss}			170		
Reverse Transfer Capacitance	C_{rss}			11		
Gate resistance	R_g	$f=1.0MHz$	0.20	0.55	0.90	Ω
Total Gate Charge(10V)	Q_g	$V_{DD}=10V$ $I_D=11.5A$ $V_{DS}=50V$		33	50	nC
Total Gate Charge(4.5V)				15	25	
Gate-Source Charge	Q_{gs}			7.0		
Gate-Drain Charge	Q_{gd}			4.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V$ $V_{DS}=50V$ $R_L=4.35\Omega$ $R_{GEN}=3.0\Omega$		8.0		ns
Turn-On Rise Time	t_r			3.0		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	t_f			4.0		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=11.5A$ $di/dt=500A/\mu s$		25		ns
Body Diode Reverse Recovery Charge	Q_{rr}			110		nC

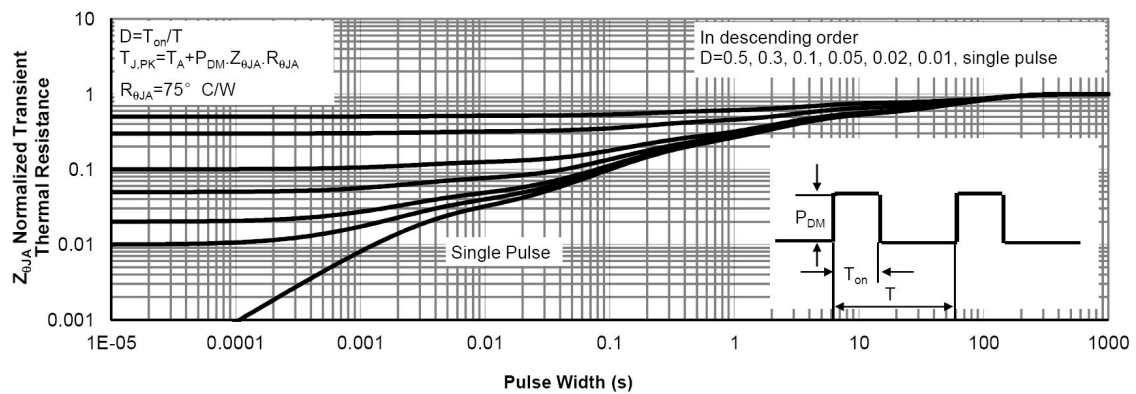
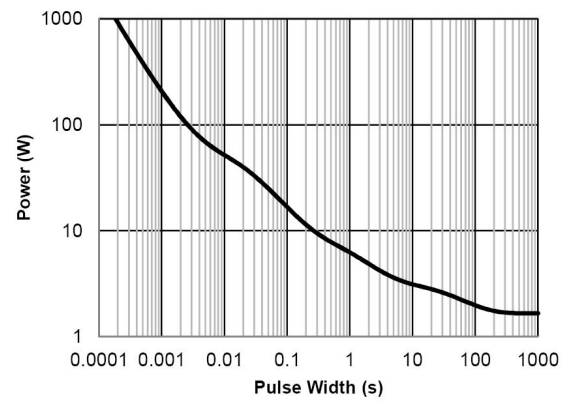
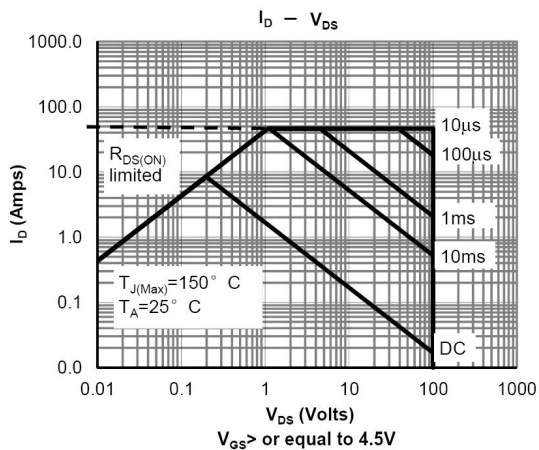
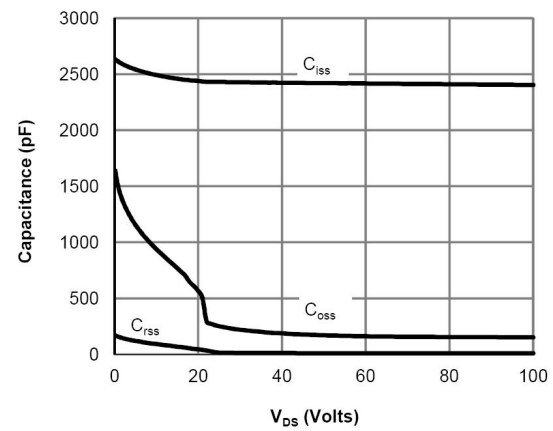
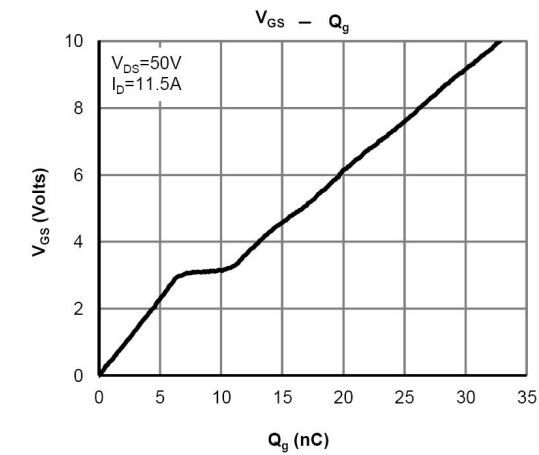
Notes:

- 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 $T_A=25^\circ C$. The value in any given application depends on the user's specific board design.
- B. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ C$, using $\leq 10s$ junction-to-ambient thermal resistance.
- C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ C$.
- D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.
- E. The static characteristics in Figures 1 to 6 are obtained using $<300\mu s$ pulses, duty cycle 0.5% max.
- F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}=150^\circ C$. The SOA curve provides a single pulse rating.

电参数曲线图 / Electrical Characteristic Curve

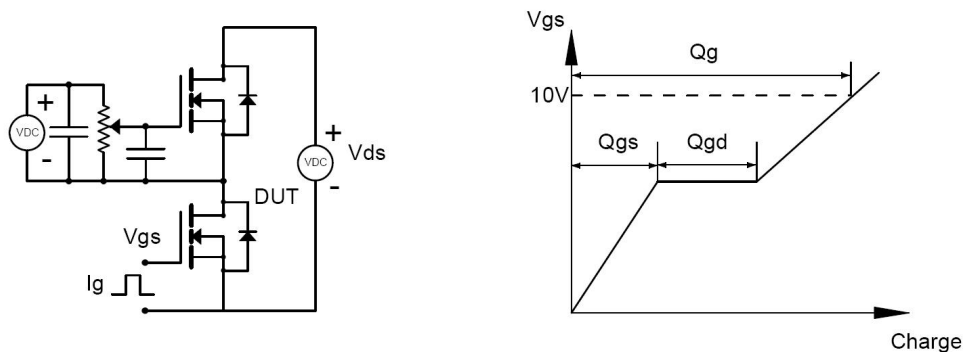


电参数曲线图 / Electrical Characteristic Curve

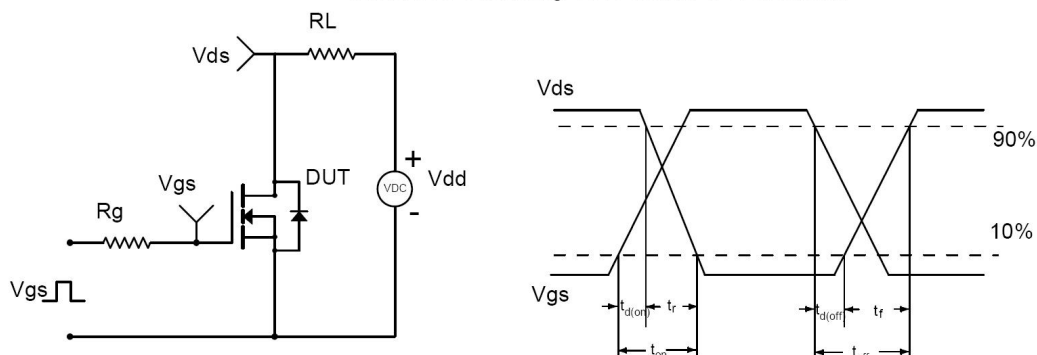


测试电路和波形 / Test Circuit & Waveform

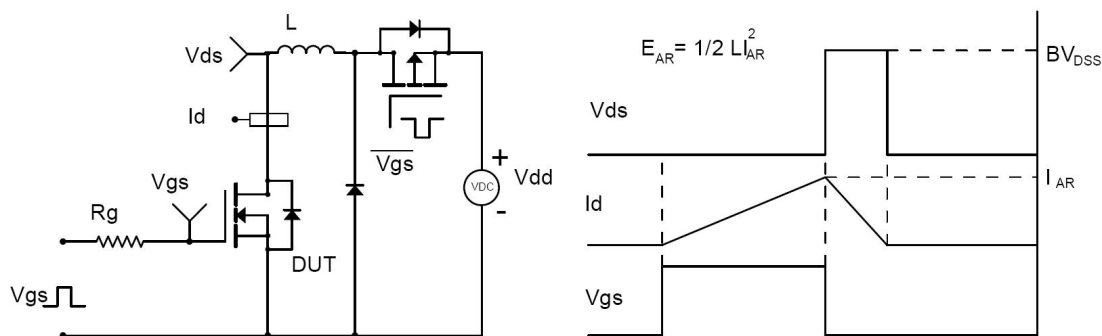
Gate Charge Test Circuit & Waveform



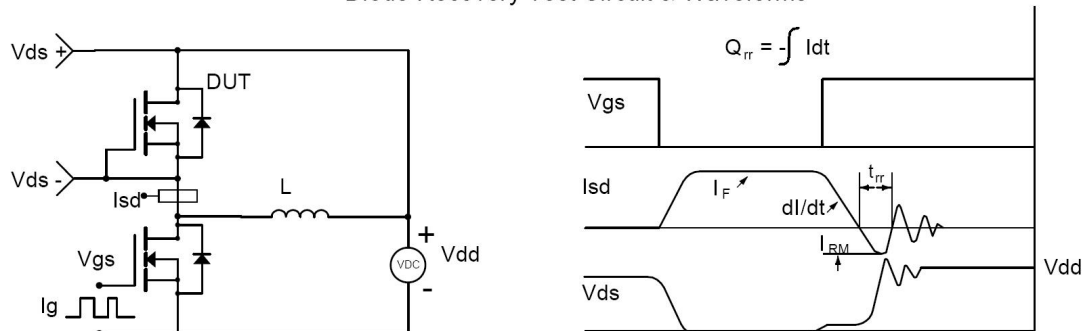
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



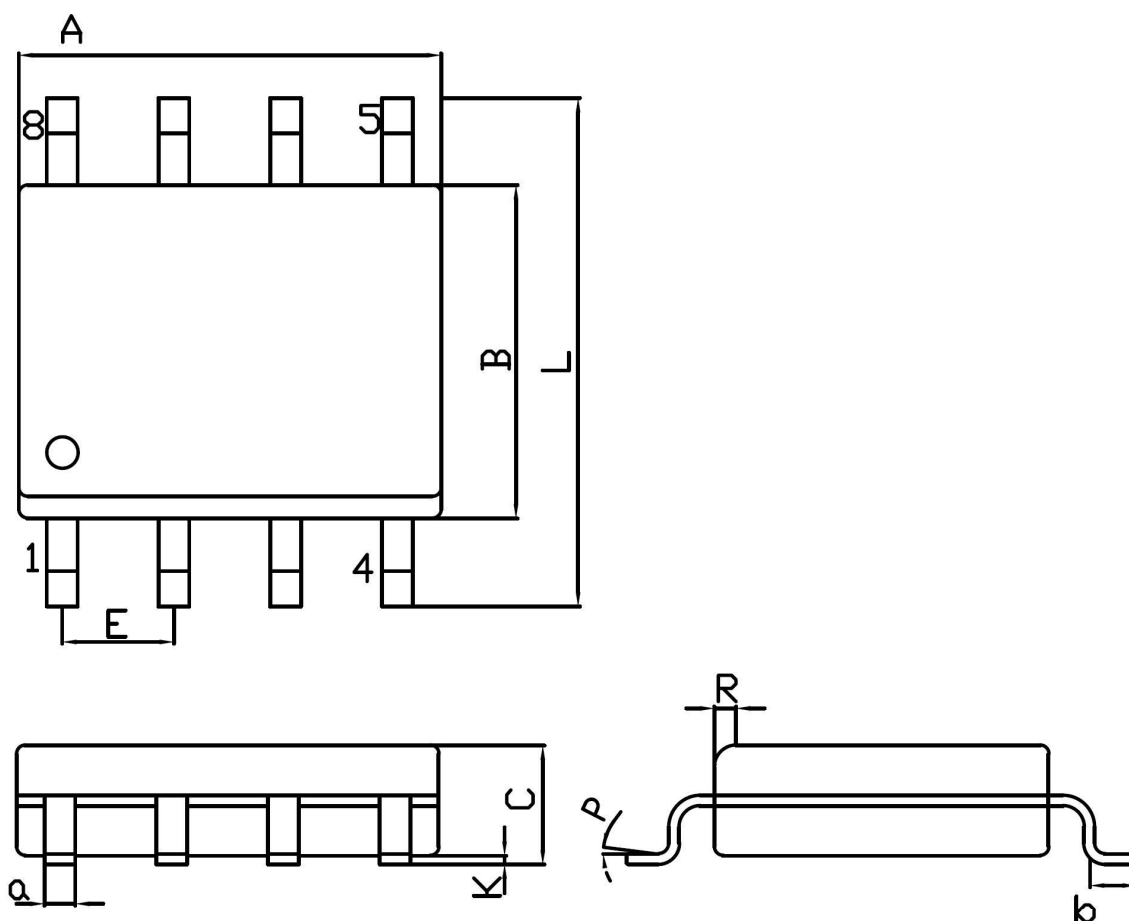
Diode Recovery Test Circuit & Waveforms



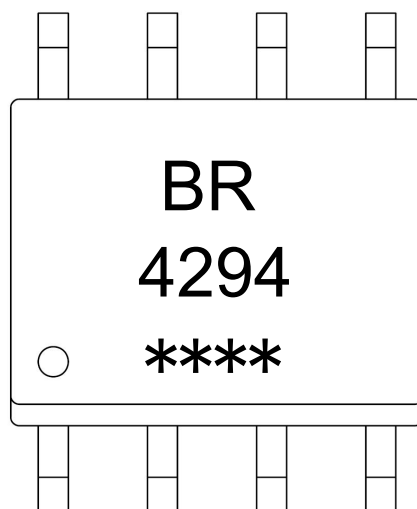
外形尺寸图 / Package Dimensions

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	a	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

4294： 为型号代码

****： 为生产批号代码，随生产批号变化

Note:

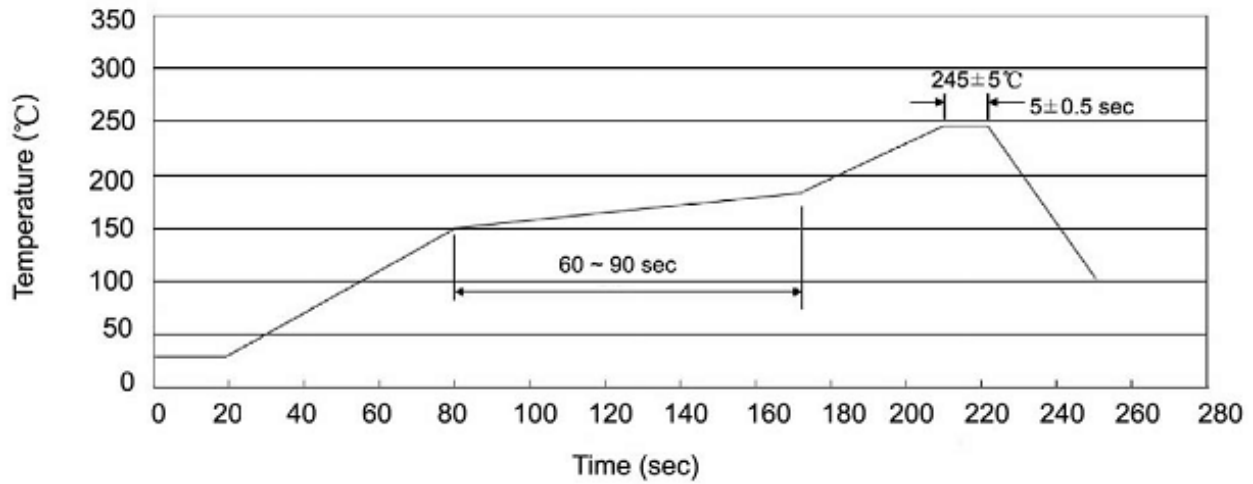
BR: Company Code.

4294： 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°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
SOP/ESOP-8	4,000	2	8,000	6	48,000	13" ×12	360×360×50	380×335×366

使用说明 / Notices