

**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**

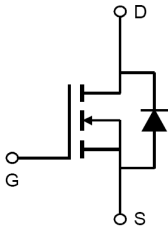
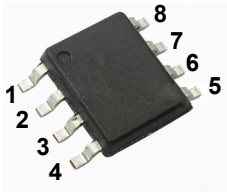
低导通电阻  $R_{DS(ON)}$ ，低栅极电荷，优化了快速转换特性，符合 RoHS。

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		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	11.5	A
	$T_A=70^\circ\text{C}$		9.0	A
Pulsed Drain Current <sup>C</sup>		$I_{DM}$	46	A
Avalanche Current <sup>C</sup>		$I_{AS}$	20	A
Avalanche energy L=0.1mH <sup>C</sup>		$E_{AS}$	20	mJ
VDS Spike	10 $\mu$ S	$V_{SPIKE}$	120	V
Power Dissipation <sup>B</sup>	$T_A=25^\circ\text{C}$	$P_D$	3.1	W
	$T_A=70^\circ\text{C}$		2.0	W
Maximum Junction-to-Ambient <sup>A</sup> $t \leq 10\text{S}$		$R_{\theta JA}$	40	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>AD</sup> Steady-State			75	$^\circ\text{C/W}$
Maximum Junction-to Lead Steady-State		$R_{\theta JL}$	24	$^\circ\text{C/W}$
Operating and Junction Temperature Range		$T_j$ $T_{stg}$	-55~+150	$^\circ\text{C}$

**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	$\mu\text{A}$
		$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			5.0	$\mu\text{A}$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			$\pm 100$	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 $\Omega$
		$V_{GS}=10\text{V}$ $I_D=11.5\text{A}$ $T_J=125^\circ\text{C}$			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

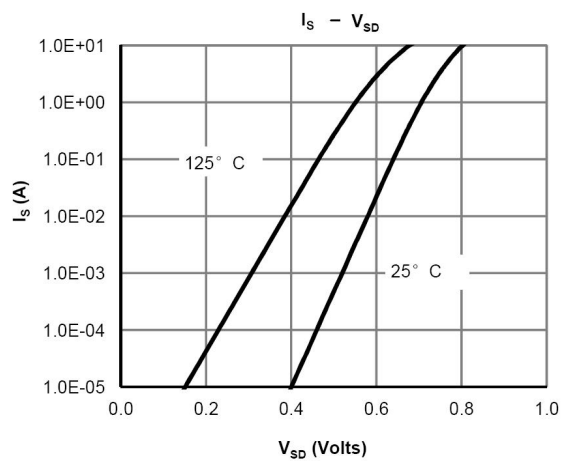
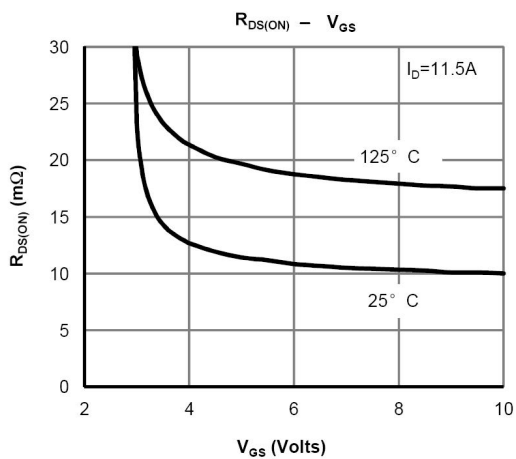
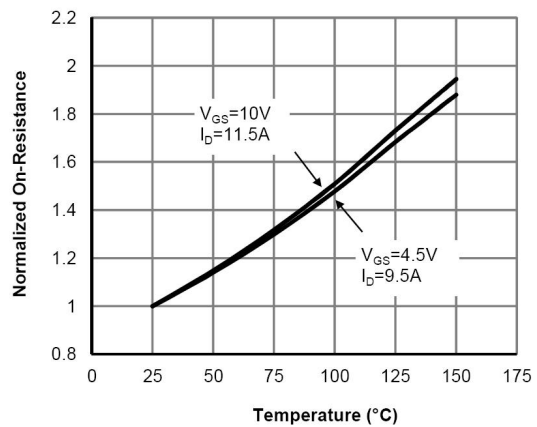
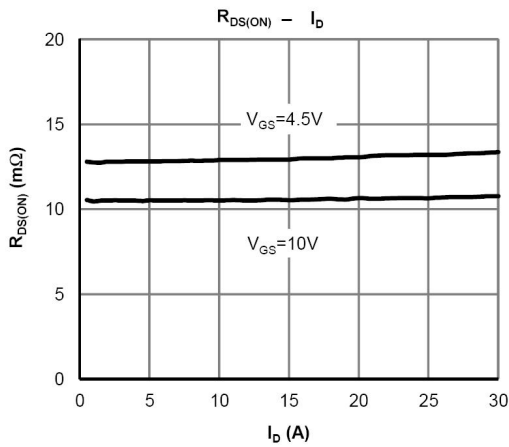
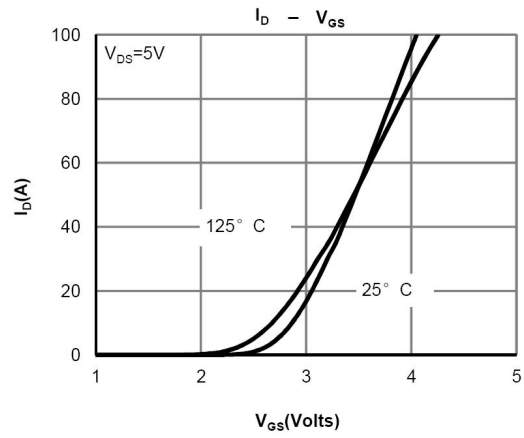
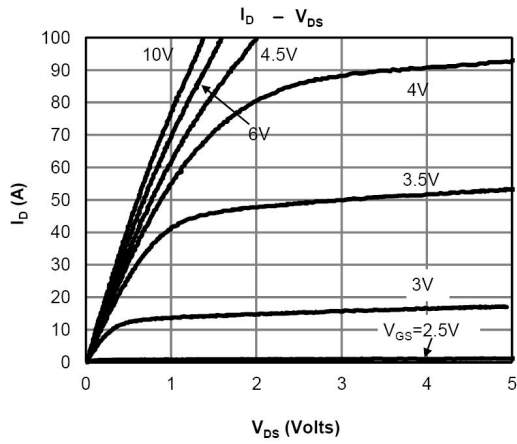
## 电性能参数 / Electrical Characteristics(Ta=25°C)

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	$\Omega$
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

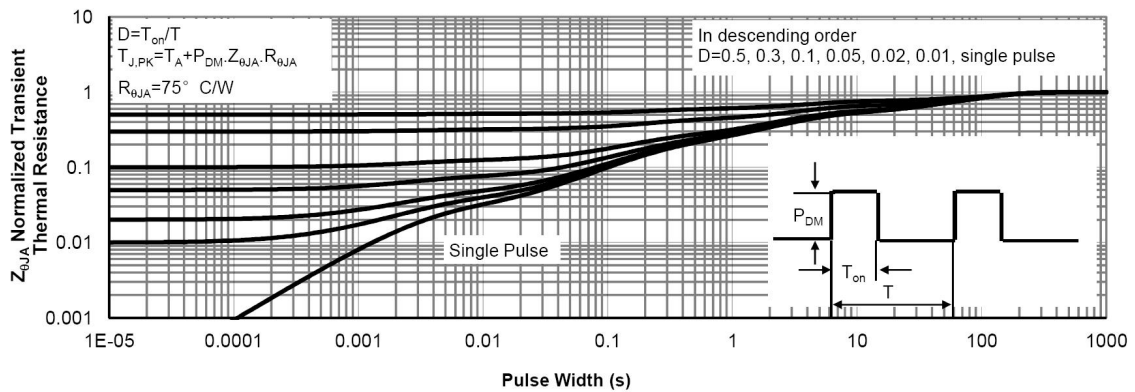
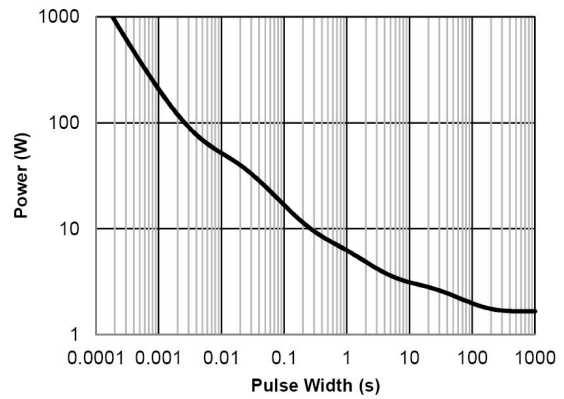
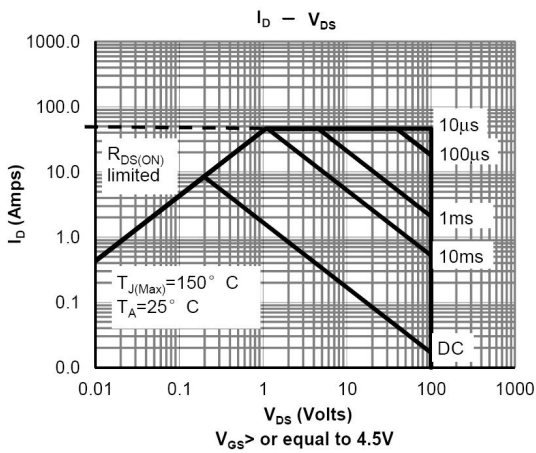
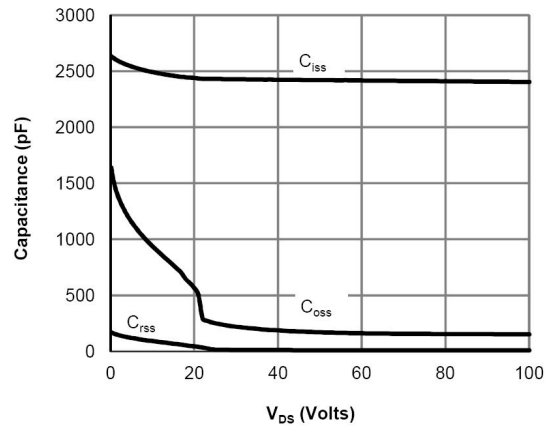
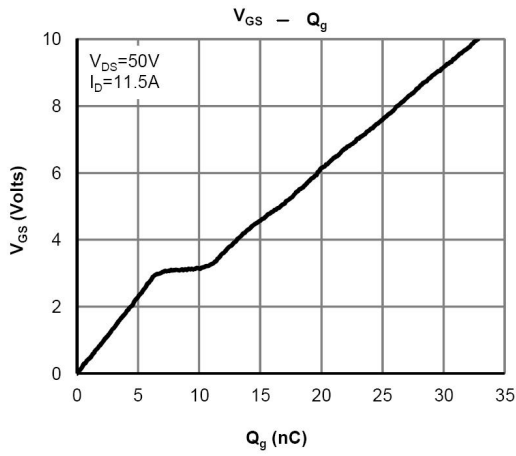
## Notes:

- 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

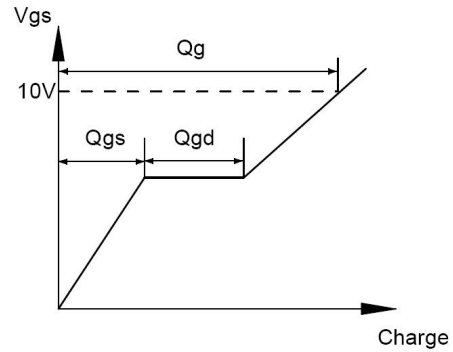
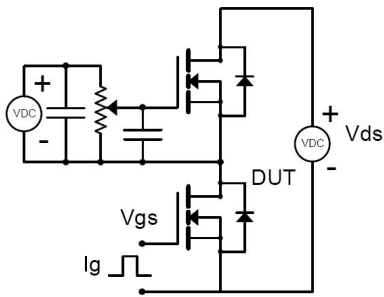


**电参数曲线图 / Electrical Characteristic Curve**

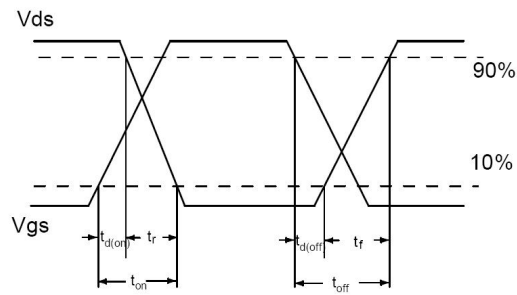
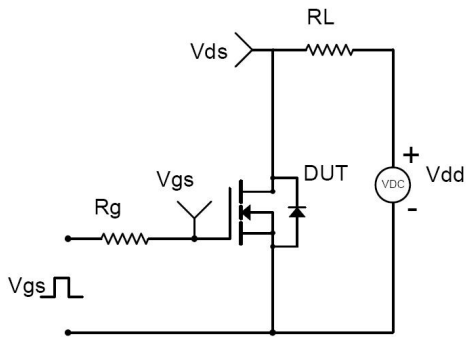


**测试电路和波形 / Test Circuit & Waveform**

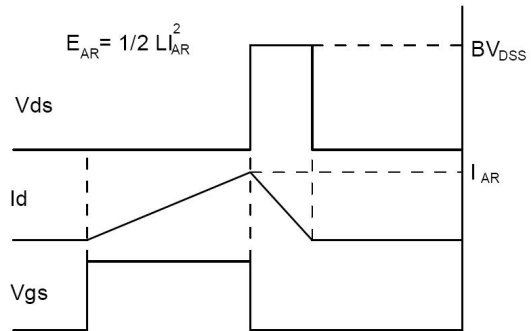
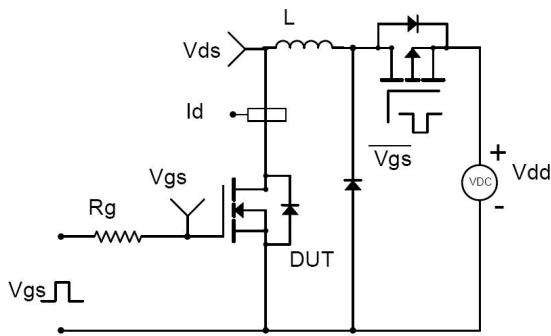
Gate Charge Test Circuit & Waveform



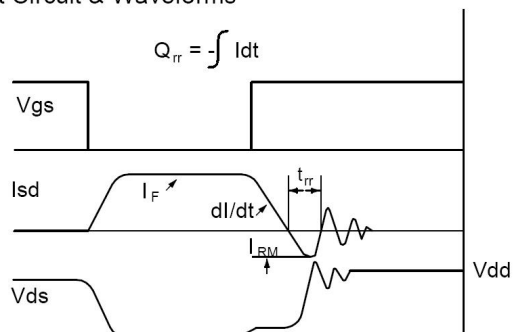
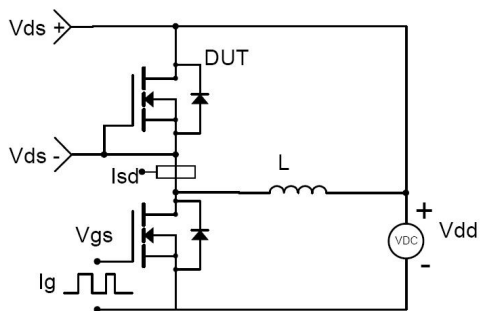
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



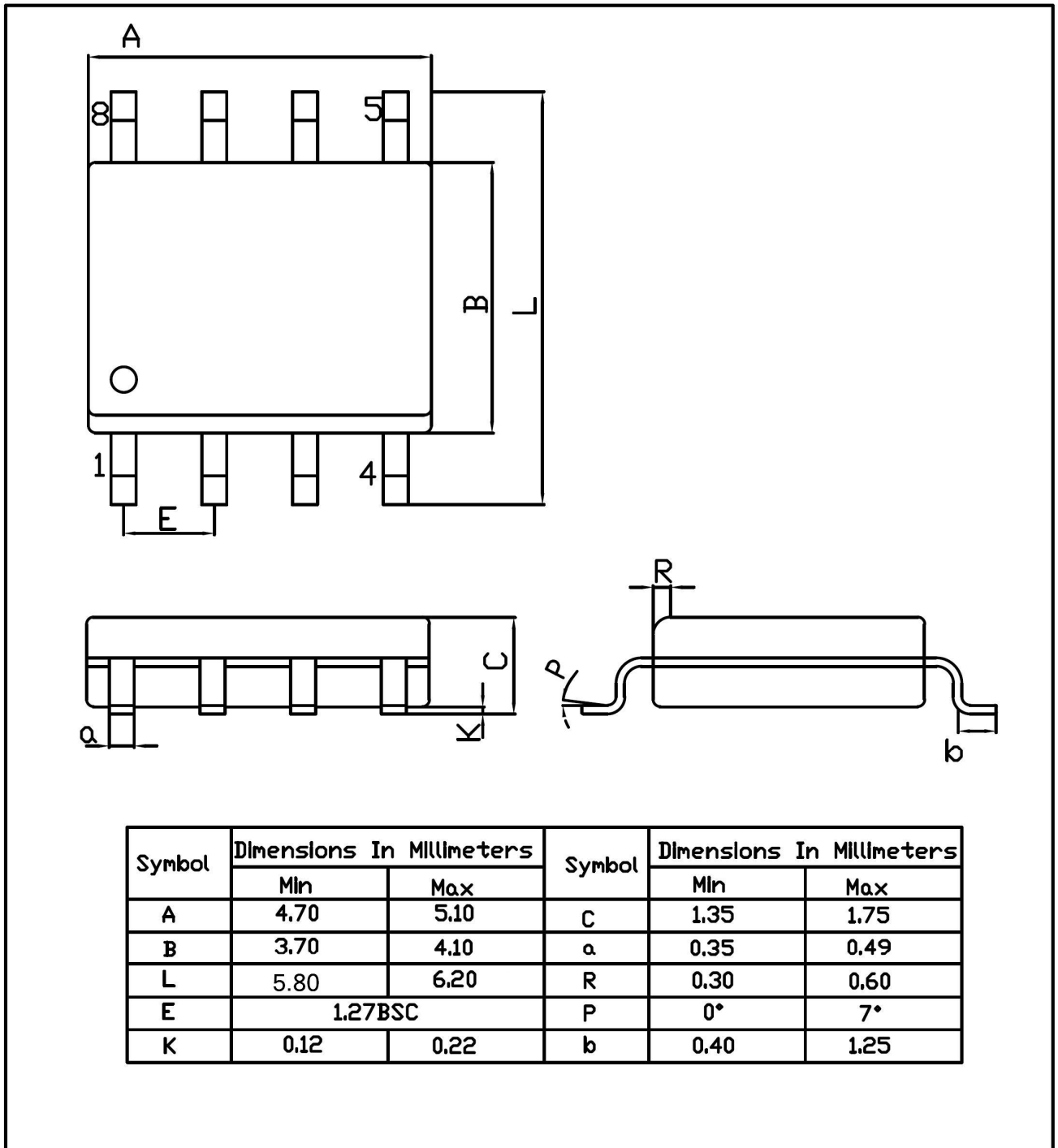
Diode Recovery Test Circuit & Waveforms



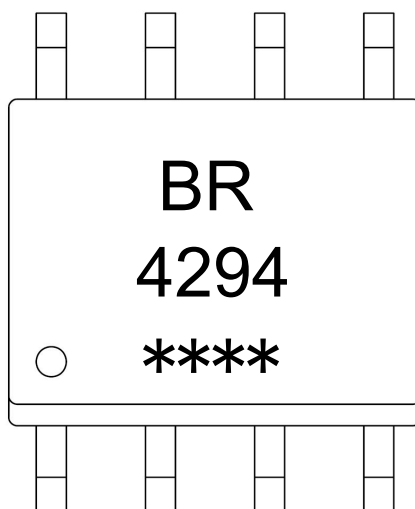
外形尺寸图 / Package Dimensions

SOP-8

Unit:mm



**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

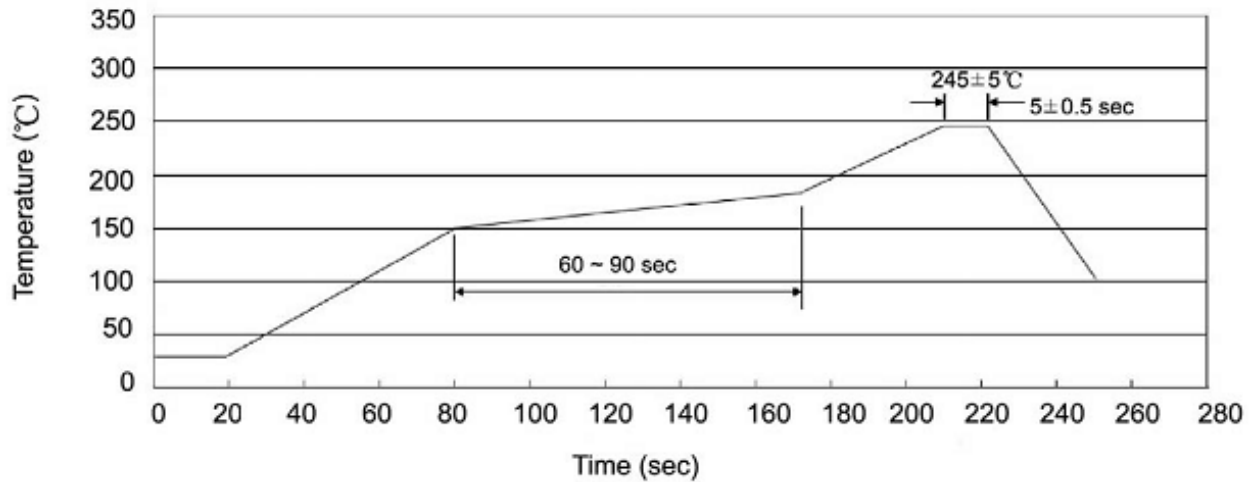
Note:

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 <sup>3</sup> )		
	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**