## 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.

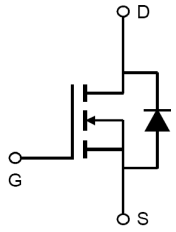
## 特征 / Features

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.

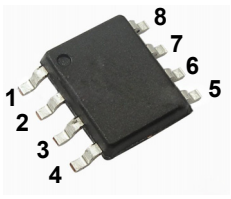
## 用途 / Applications

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。。
Synchronus 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℃)

| 参数 Parameter | | 符号 Symbol | 数值 Rating | 单位 Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_A$=25℃ | $I_D$ | 10 | A |
| | $T_A$=70℃ | | 8.0 | A |
| Pulsed Drain Current [C] | | $I_{DM}$ | 40 | A |
| Avalanche Current [C] | | $I_{AS}$ | 20 | A |
| Avalanche energy L=0.1mH [C] | | $E_{AS}$ | 20 | mJ |
| VDS Spike | 10μS | $V_{SPIKE}$ | 72 | 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 | | $R_{\theta JA}$ | 40 | ℃/ W |
| Maximum Junction-to-Ambient [AD] Steady-State | | | 75 | ℃/ W |
| Maximum Junction-to Lead Steady-State | | $R_{\theta JL}$ | 24 | ℃/ W |
| Operating and Junction Temperature Range | | $T_j$ $T_{stg}$ | -55～+150 | ℃ |

## 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 | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 60 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=60V $V_{GS}$=0V | | | 1.0 | μA |
| | | $V_{DS}$=60V $V_{GS}$=0V $T_J$=55℃ | | | 5.0 | μA |
| Gate-Body Leakage Current Forward | $I_{GSS}$ | $V_{GS}$=±20V $V_{DS}$=0V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ $I_D$=250μA | 1.0 | 1.8 | 2.5 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V $I_D$=10A | | 12 | 15 | mΩ |
| | | $V_{GS}$=10V $I_D$=10A $T_J$=125℃ | | 20.5 | 25 | |
| | | $V_{GS}$=4.5V $I_D$=9.0A | | 15 | 19 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=5.0V $I_D$=10A | | 35 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=10A $V_{GS}$=0V | | 0.72 | 1.2 | V |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | | | | 4.0 | A |

## 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 |
|---|---|---|---|---|---|---|
| Input Capacitance | $C_{iss}$ | $V_{DS}$=30V $V_{GS}$=0V f=1.0MHz | | 1340 | | pF |
| Output Capacitance | $C_{oss}$ | | | 123 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 10 | | |
| Gate resistance | $R_g$ | f=1.0MHz | 0.7 | 1.5 | 2.3 | Ω |
| Total Gate Charge(10V) | $Q_g$ | $V_{DD}$=10V $I_D$=10A $V_{DS}$=30V | | 21 | 30 | nC |
| Total Gate Charge(4.5V) | | | | 9.0 | 15 | |
| Gate-Source Charge | $Q_{gs}$ | | | 4.7 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.6 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}$=10V $V_{DS}$=30V $R_L$=3.0Ω $R_{GEN}$=3.0Ω | | 6.0 | | ns |
| Turn-On Rise Time | $t_r$ | | | 2.5 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 22 | | |
| Turn-Off Fall Time | $t_f$ | | | 2.5 | | |
| Body Diode Reverse Recovery Time | $t_{rr}$ | $I_F$=10A dI/dt=500A/μs | | 15.5 | | ns |
| Body Diode Reverse Recovery Charge | $Q_{rr}$ | | | 55.5 | | 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°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.

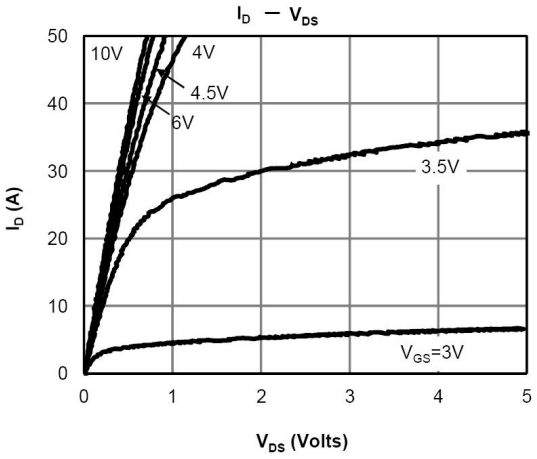
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial $T_J$=25°C.

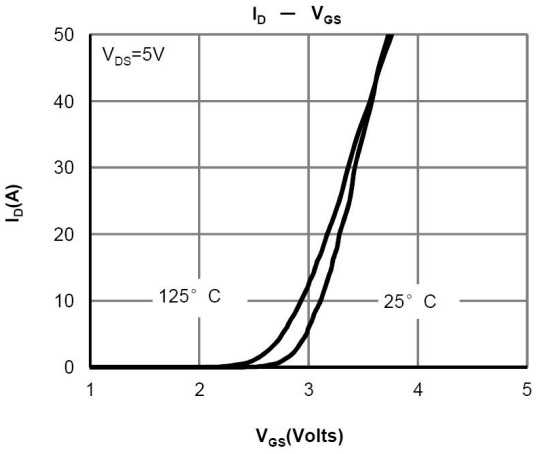
D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

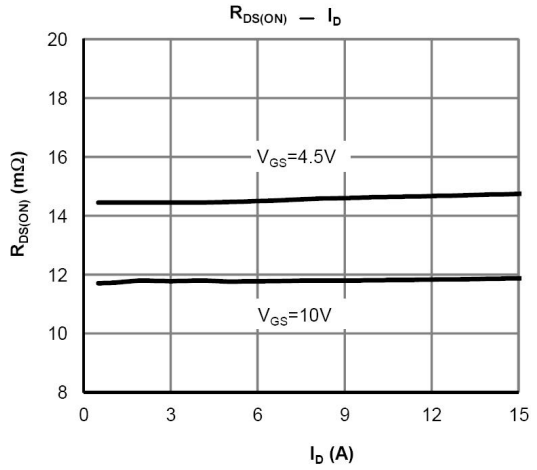
E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

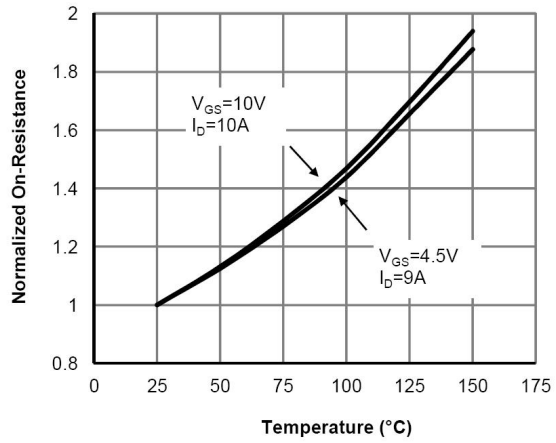
F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

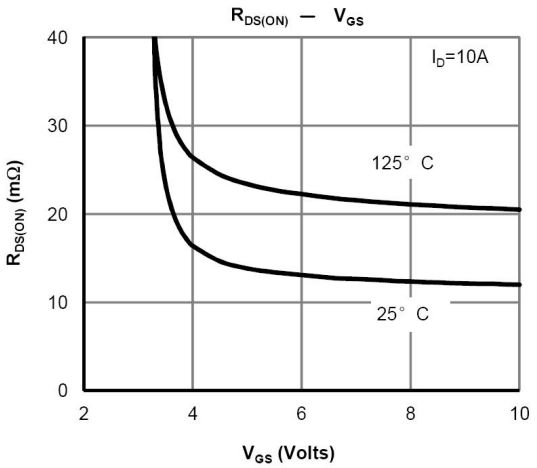
## 电参数曲线图 / Electrical Characteristic Curve

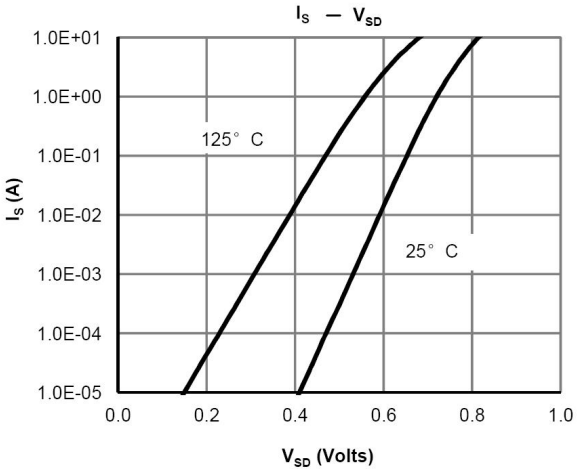


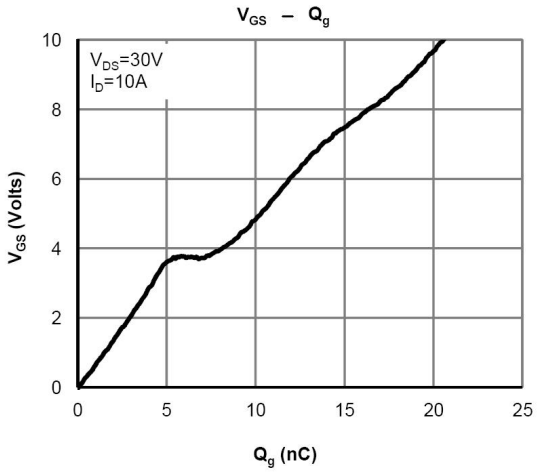



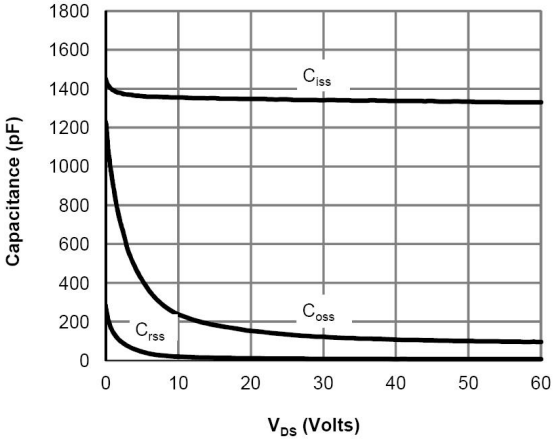



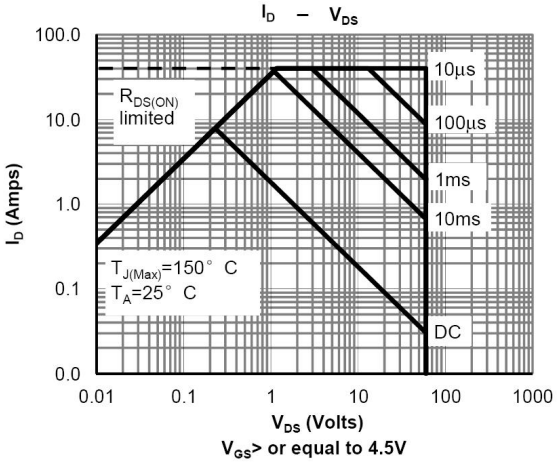



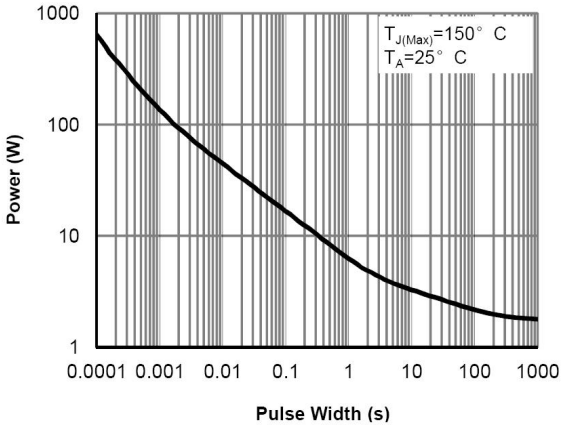



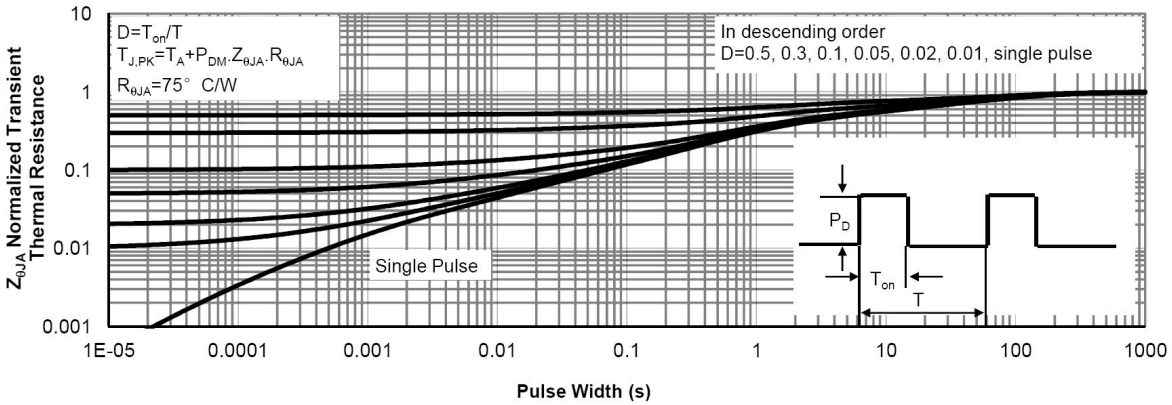
## 电参数曲线图 / Electrical Characteristic Curve



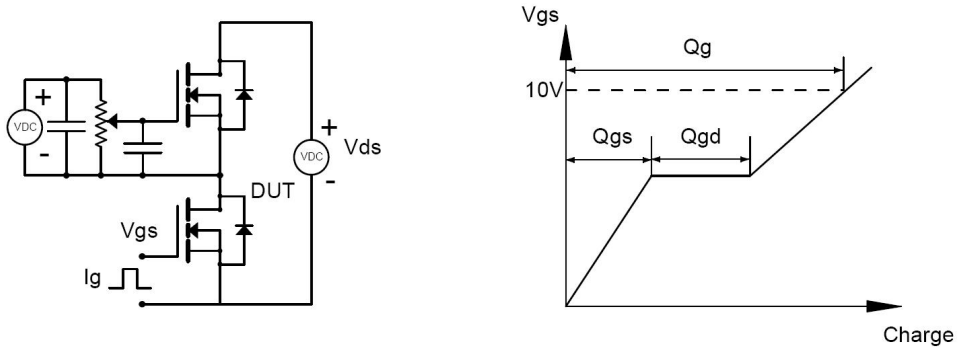



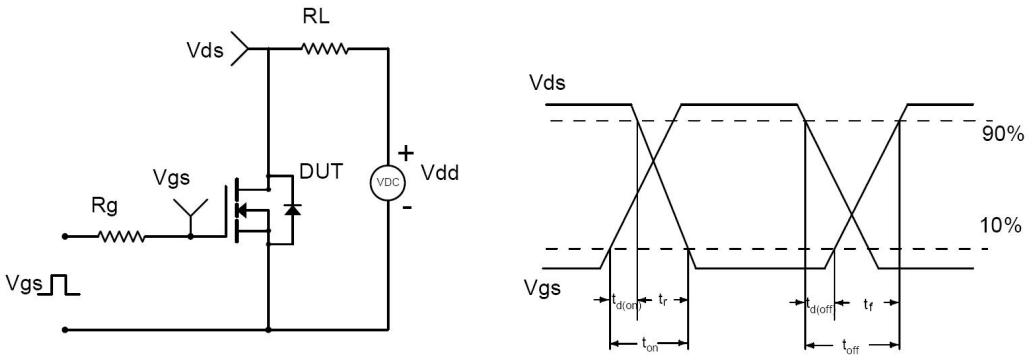



## 测试电路和波形 / Test Circuit & Waveform

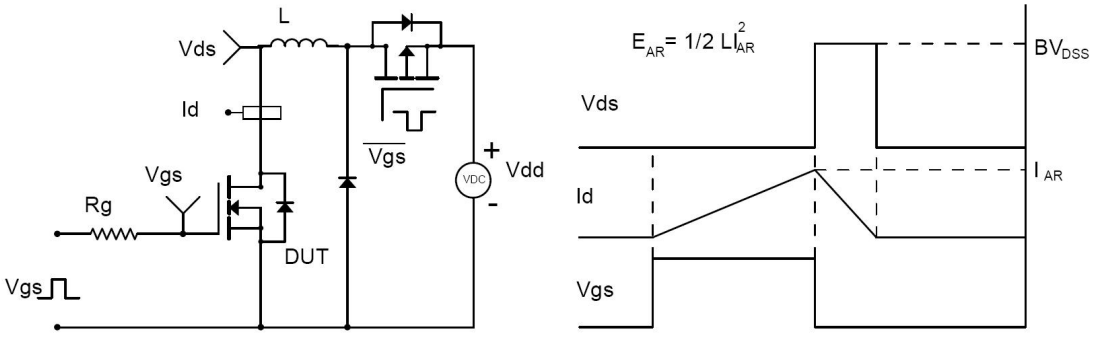
Gate Charge Test Circuit & Waveform



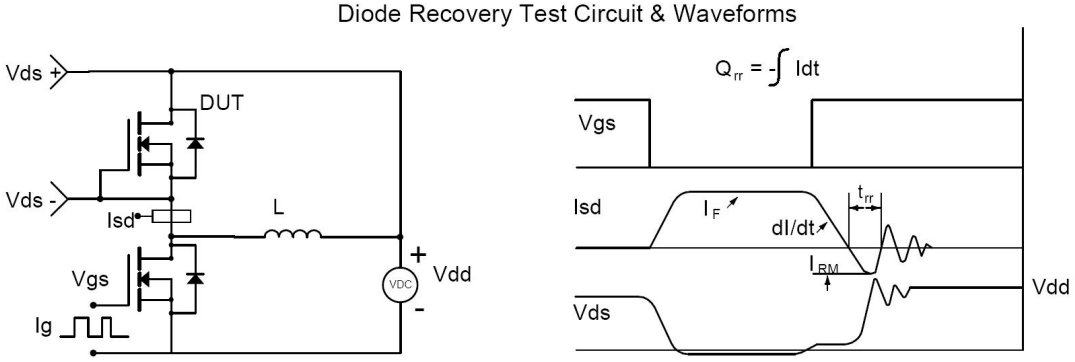

Resistive Switching Test Circuit & Waveforms




Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

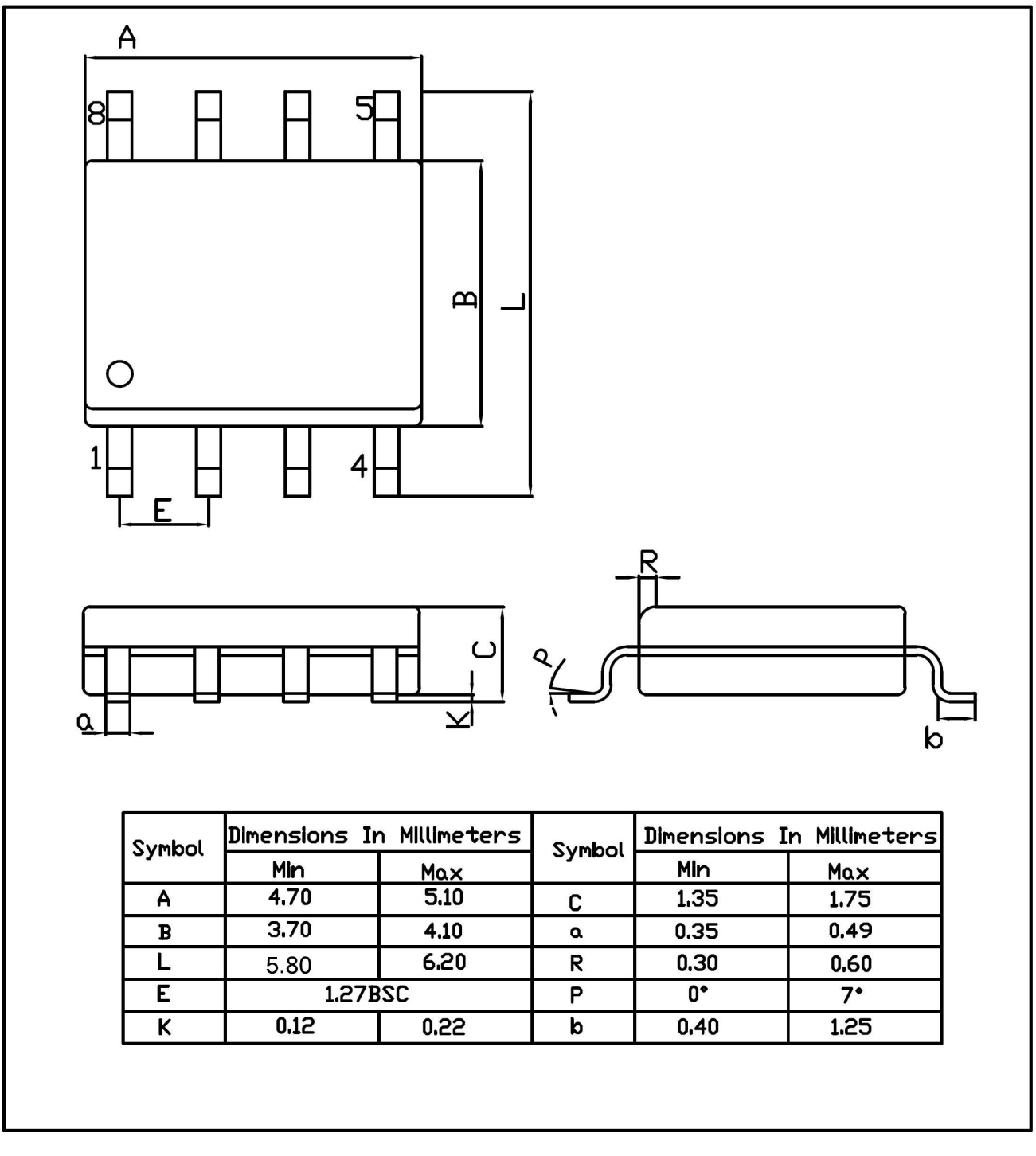



Diode Recovery Test Circuit & Waveforms



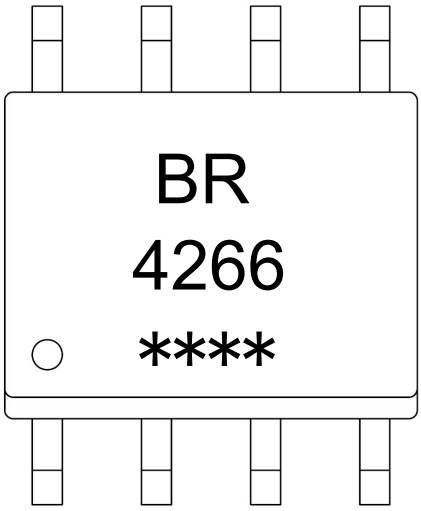
## 外形尺寸图 / Package Dimensions

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



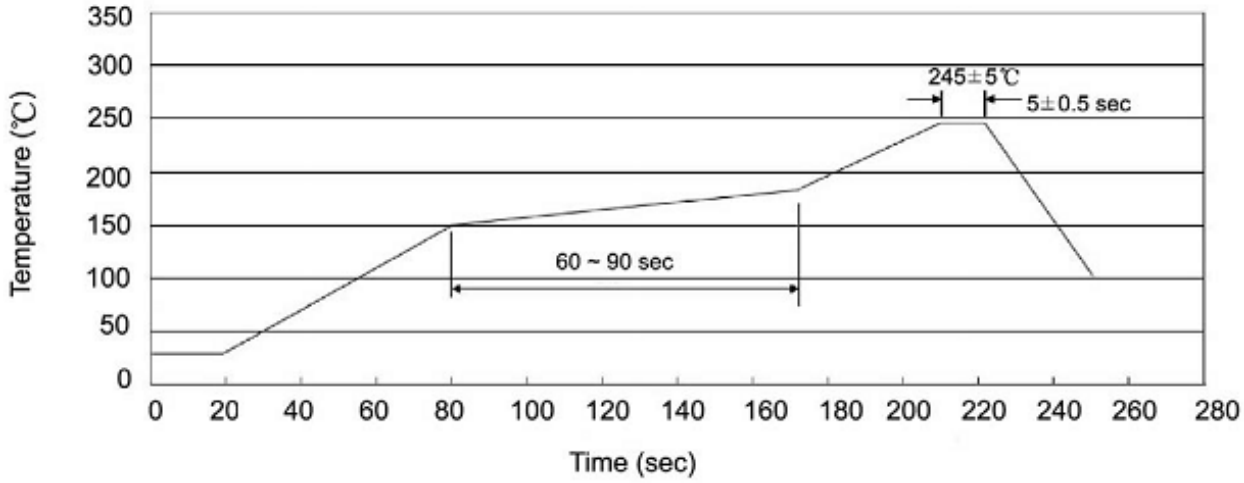

说明：

| | |
|---|---|
| BR： | 为公司代码 |
| 4266： | 为型号代码 |
| ****： | 为生产批号代码，随生产批号变化 |

Note:

| | |
|---|---|
| BR: | Company Code. |
| 4266： | 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/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

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