



MC80N10A

主要参数 MAIN CHARACTERISTICS

| | |
|-------------------------------------|---------------|
| I_D | 65A |
| V_{DSS} | 100V |
| $R_{dson-max}$ (@ $V_{gs}=10V$) | 7.5m Ω |
| Q_g-typ | 53.5nC |

用途

- 电信与工业领域隔离 DC/DC 转换
- 同步整流领域 DC/DC 与 AC/DC 转换

产品特性

- 低栅极电荷
- 低 R_{dson}
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

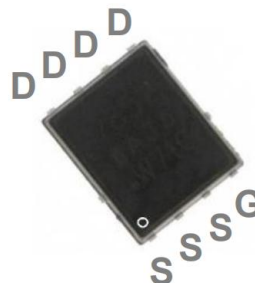
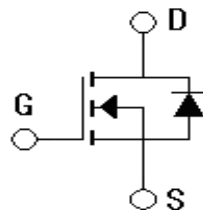
APPLICATIONS

- Isolated DC/DC Converters in Telecom and Industrial
- Synchronous Rectification in DC/DC and AC/DC Converters

FEATURES

- Low gate charge
- Low R_{dson}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

封装 Package



订货信息 ORDER MESSAGE

| 订货型号 Order codes | | | | 印 记 Marking | 封 装 Package |
|-----------------------|----------------------------|-----------------------|----------------------------|----------------|----------------|
| 有卤-条管 Halogen-Tube | 无卤-条管 Halogen-Free-Tube | 有卤-编带 Halogen-Reel | 无卤-编带 Halogen-Free-Reel | | |
| N/A | N/A | N/A | MC80N10A-AA-AR | MC80N10A | PDFN5*6 |



绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^\circ\text{C}$)

| 项 目 Parameter | 符 号 Symbol | 数 值 Value | 单 位 Unit |
|--|---|--------------|---------------------|
| | | MC80N10A | |
| 最高漏极-源极直流电压 Drain-Source Voltage | V_{DSS} | 100 | V |
| 连续漏极电流 Drain Current -continuous | I_D $T=25^\circ\text{C}$ | 65* | A |
| | I_D $T=100^\circ\text{C}$ | 41.1* | A |
| 最大脉冲漏极电流 (注1) Drain Current - pulse (note 1) | I_{DM} | 260* | A |
| 最高栅源电压 Gate-Source Voltage | V_{GSS} | +20/-12 | V |
| 单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2) | E_{AS} | 231 | mJ |
| 雪崩电流 (注1) Avalanche Current (note 1) | I_{AS} | 68 | A |
| 耗散功率 Power Dissipation | P_D $T_c=25^\circ\text{C}$ -Derate above 25°C | 69 | W |
| | | 0.55 | W/ $^\circ\text{C}$ |
| 最高结温及存储温度 Operating and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^\circ\text{C}$ |
| 引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes | T_L | 300 | $^\circ\text{C}$ |

*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature





电特性 ELECTRICAL CHARACTERISTICS

| 项 目 Parameter | 符 号 Symbol | 测试条件 Tests conditions | 最小 Min | 典型 Typ | 最大 Max | 单 位 Units |
|---|---------------|---|-----------|-----------|-----------|--------------|
| 关态特性 Off –Characteristics | | | | | | |
| 漏—源击穿电压 Drain-Source Voltage | BV_{DSS} | $I_D=250\mu A, V_{GS}=0V$ | 100 | - | - | V |
| 零栅压下漏极漏电流 Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=100V, V_{GS}=0V,$ $T_C=25^\circ C$ | - | - | 1 | μA |
| | | $V_{DS}=80V, V_{GS}=0V,$ $T_C=125^\circ C$ | - | - | 100 | μA |
| 正向栅极体漏电流 Gate-body leakage current, forward | I_{GSSF} | $V_{DS}=0V, V_{GS}=20V$ | - | - | 100 | nA |
| 反向栅极体漏电流 Gate-body leakage current, reverse | I_{GSSR} | $V_{DS}=0V, V_{GS}=-12V$ | - | - | -100 | nA |
| 通态特性 On-Characteristics | | | | | | |
| 阈值电压 Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D=250\mu A$ | 1.2 | 1.7 | 2.5 | V |
| 静态导通电阻 Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=18A$ | - | 6.2 | 7.5 | m Ω |
| | | $V_{GS}=4.5V, I_D=10A$ | - | 8.8 | 11.5 | m Ω |
| 正向跨导 Forward Transconductance | g_{fs} | $V_{DS} = 10V, I_D=3A$ (note 4) | - | 15 | - | S |
| 动态特性 Dynamic Characteristics | | | | | | |
| 输入电容 Input capacitance | C_{iss} | $V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$ | - | 3200 | 6400 | pF |
| 输出电容 Output capacitance | C_{oss} | | - | 873 | 1740 | pF |
| 反向传输电容 Reverse transfer capacitance | C_{rss} | | - | 87 | 174 | pF |
| Rg Gate resistance | Ω | $V_{GS}=0V$ $V_{DS}=0V,$ $F=1MHz$ | | 1.25 | | Ω |



**电特性 ELECTRICAL CHARACTERISTICS**

| 开关特性 Switching Characteristics | | | | | | |
|---|--------------|---|---|------|-----|----|
| 延迟时间 Turn-On delay time | $t_{d(on)}$ | $V_{DD}=50V, I_D=10A, V_{GS}=10V$ $R_G=6.0\Omega$ (note 3, 4) | - | 14.6 | 30 | ns |
| 上升时间 Turn-On rise time | t_r | | - | 32.8 | 125 | ns |
| 延迟时间 Turn-Off delay time | $t_{d(off)}$ | | - | 62.2 | 125 | ns |
| 下降时间 Turn-Off Fall time | t_f | | - | 28.4 | 56 | ns |
| 栅极电荷总量 Total Gate Charge | Q_g | $V_{DS}=80V,$ $I_D=10A$ $V_{GS}=10V$ (note 3, 4) | - | 53.5 | 80 | nC |
| 栅-源电荷 Gate-Source charge | Q_{gs} | | - | 7.5 | 12 | nC |
| 栅-漏电荷 Gate-Drain charge | Q_{gd} | | - | 13.3 | 20 | nC |
| 漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| 正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current | I_S | $T_C=25^\circ C$ | - | - | 65 | A |
| 正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current | I_{SM} | $T_C=25^\circ C$ | - | - | 130 | A |
| 正向压降 Drain-Source Diode Forward Voltage | V_{SD} | $T_J=25^\circ C, V_{GS}=0V,$ $I_S=30A$ | - | - | 1.0 | V |
| 反向恢复时间 Reverse recovery time | t_{rr} | $I_S=20A$ $dI_F/dt=100A/\mu s$ (note 3) | - | 30 | - | ns |
| 反向恢复电荷 Reverse recovery charge | Q_{rr} | | - | 60 | - | nC |

热特性 THERMAL CHARACTERISTIC

| 项 目 Parameter | 符 号 Symbol | 最大 Max | 单位 Unit |
|--|---------------|-----------|--------------|
| | | MC80N10A | |
| 结到管壳的热阻 Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | 2.0 | $^\circ C/W$ |
| 结到环境的热阻 Thermal Resistance, Junction to Ambient | $R_{th(j-A)}$ | 65 | $^\circ C/W$ |

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=68A, V_{DD}=50V, R_G=25\Omega, L=0.1mH$ 起始结温
 $T_J=25^\circ C$
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 1\%$
- 4: 基本与工作温度无关

Notes:

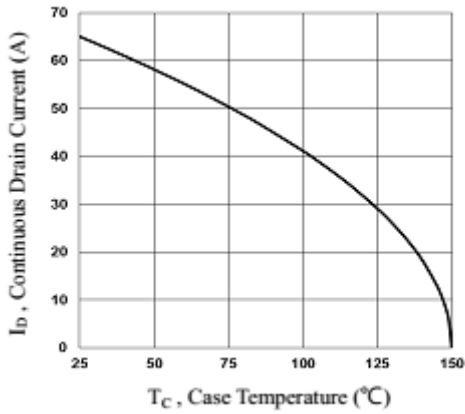
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=68A, V_{DD}=50V, R_G=25\Omega, L=0.1mH$ Starting
 $T_J=25^\circ C$
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$
- 4: Essentially independent of operating temperature



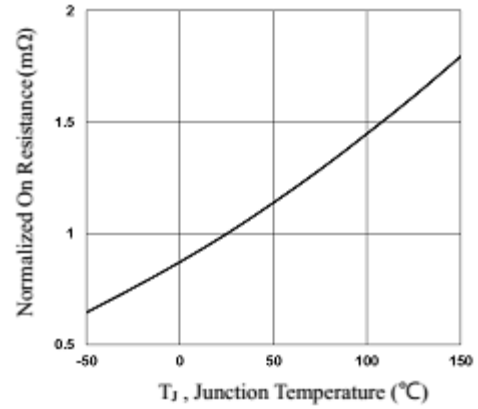


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

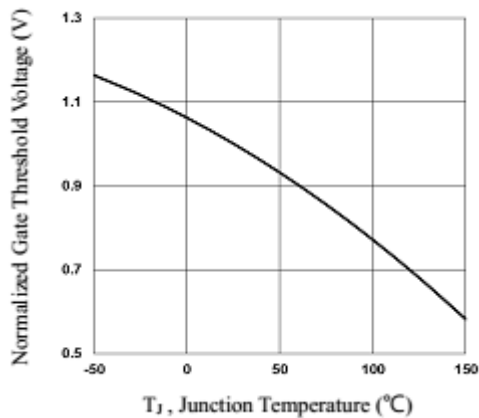
Continuous Drain Current vs. T_C



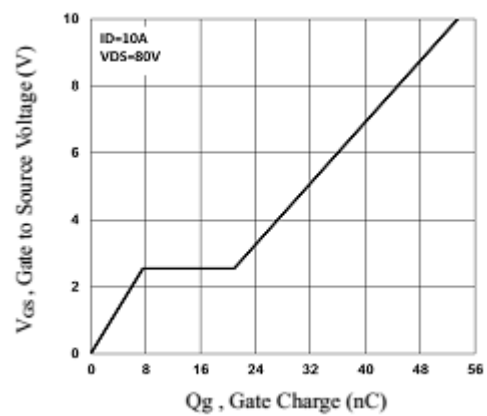
Normalized $R_{DS(on)}$ vs. T_J



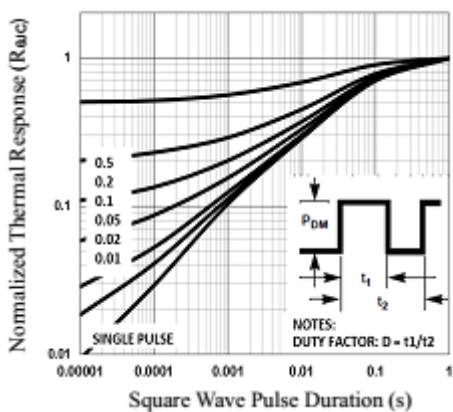
Normalized V_{th} vs. T_J



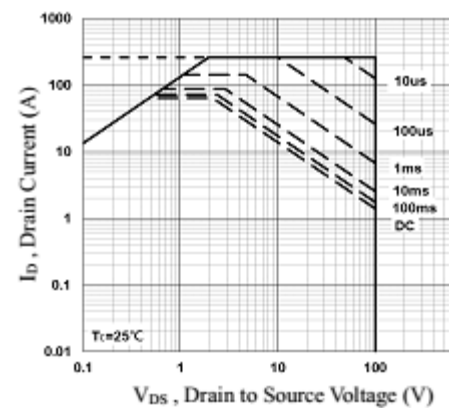
Gate Charge Characteristics



Normalized Transient Impedance



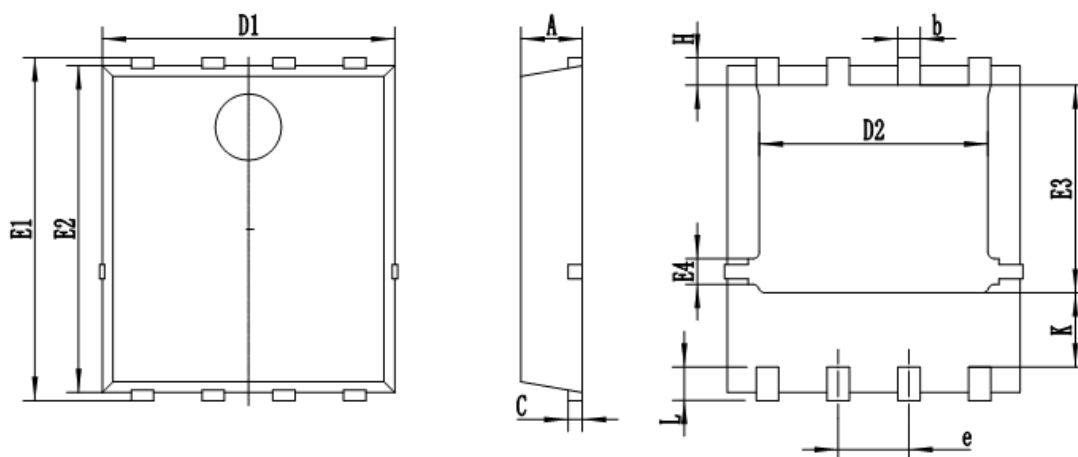
Maximum Safe Operation Area



外形尺寸 PACKAGE MECHANICAL DATA

PDFN5*6

单位 Unit: mm



| SYMBOL | mm | |
|--------|----------|------|
| | MIN | MAX |
| A | 0.95 | 1.25 |
| C | 0.1 | 0.4 |
| b | 0.25 | 0.55 |
| D1 | 4.9 | 5.5 |
| D2 | 3.75 | 4.3 |
| e | 1.27 BSC | |
| E1 | 5.9 | 6.4 |
| E2 | 5.6 | 6.1 |
| E3 | 3.47 | 3.97 |
| E4 | 0.31 | 0.61 |
| L | 0.25 | 0.75 |
| H | 0.35 | 0.65 |
| K | 1.13 | 1.53 |

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