



# MC80N10B

## 主要参数 MAIN CHARACTERISTICS

$I_D$	80.0A
$V_{DSS}$	100V
$R_{dson-max}$ (@ $V_{gs}=10V$ )	9.2m $\Omega$
$Q_g-typ$	39.7nC

### 用途

- LED 应用
- 负载开关

- 同步整流领域 DC/DC 与 AC/DC 转换

### 产品特性

- 沟槽功率 MOSFET 技术
- 低  $R_{DS(ON)}$
- 低栅极电荷
- 开关速度快

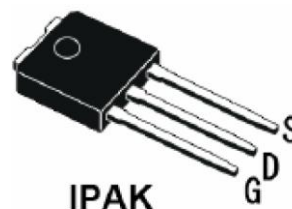
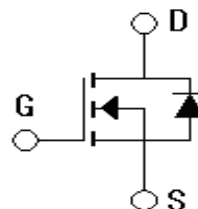
### APPLICATIONS

- LED applications
- Load Switch
- Synchronous Rectification in DC/DC and AC/DC Converters

### FEATURES

- Trench Power MOSFET Technology
- Low  $R_{DS(ON)}$
- Low gate charge
- Fast-switching

## 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		
MC80N10B-V-B	MC80N10B-V-BR	N/A	N/A	MC80N10B	IPAK





## 绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MC80N10B	
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°C	80*	A
	$I_D$ T=100°C	50*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	$I_{DM}$	200*	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)	$E_{AS}$	211	mJ
雪崩电流 (注1) Avalanche Current (note 1)	$I_{AS}$	65	A
耗散功率 Power Dissipation	$P_D$ T <sub>C</sub> =25°C -Derate above 25°C	125	W
		1.66	W/°C
最高结温及存储温度 Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~+150	°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
<b>关态特性 Off –Characteristics</b>						
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	$\mu A$
		$V_{DS}=80V, V_{GS}=0V,$ $T_C=125^\circ C$	-	-	10	$\mu A$
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	$I_{GSSR}$	$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	nA
<b>通态特性 On-Characteristics</b>						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=15A$	-	7.6	9.2	m $\Omega$
		$V_{GS}=4.5V, I_D=8A$	-	10.8	15	m $\Omega$
正向跨导 Forward Transconductance	$g_{fs}$	$V_{DS} = 10V, I_D=3A$ (note 4)	-	11	-	S
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	$C_{iss}$	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	2500	4000	pF
输出电容 Output capacitance	$C_{oss}$		-	690	1000	pF
反向传输电容 Reverse transfer capacitance	$C_{rss}$		-	120	180	pF
栅电阻 Gate resistance	Rg	$V_{DS}$ open, $V_{GS}=0V, f=1.0MHz$		1.60		$\Omega$





## 电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics					
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=50V, I_D=1A, R_G=6\Omega$ (note 3, 4)	-	14.6	30 ns
上升时间 Turn-On rise time	$t_r$		-	21.5	44 ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	54	108 ns
下降时间 Turn-Off Fall time	$t_f$		-	84.3	168 ns
栅极电荷总量 Total Gate Charge	$Q_g$	$V_{DS}=80V,$ $I_D=8.5A$ $V_{GS}=10V$ (note 3, 4)	-	39.7	80 nC
栅-源电荷 Gate-Source charge	$Q_{gs}$		-	5.4	10 nC
栅-漏电荷 Gate-Drain charge	$Q_{gd}$		-	11.2	22 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	$I_S$	$T_C=25^\circ\text{C}$	-	-	50 A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	$T_C=25^\circ\text{C}$	-	-	100 A
正向压降 Drain-Source Diode Forward Voltage	$V_{SD}$	$T_J=25^\circ\text{C}, V_{GS}=0V, I_S=25A$	-	-	1.0 V

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MC80N10B	
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	90	$^\circ\text{C}/\text{W}$
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-C)}$	1.0	$^\circ\text{C}/\text{W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2:  $I_{AS}=65A, V_{DD}=50V, V_{GS}=10V, L=0.1mH,$   
 $R_G=25\Omega, \text{起始结温 } T_J=25^\circ\text{C}$
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu\text{s}$ , 占空比 $\leq 2\%$
- 4: 基本与工作温度无关

Notes:

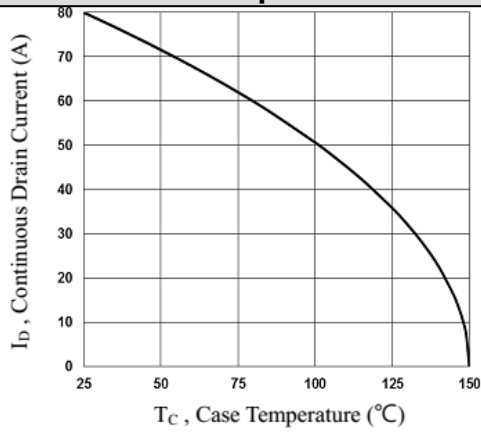
- 1: Pulse width limited by maximum junction temperature
- 2:  $I_{AS}=65A, V_{DD}=50V, V_{GS}=10V, L=0.1mH,$   
 $R_G=25\Omega, \text{Starting } T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$
- 4: Essentially independent of operating temperature



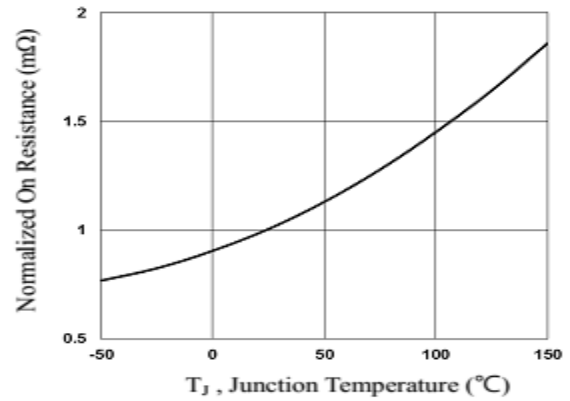


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

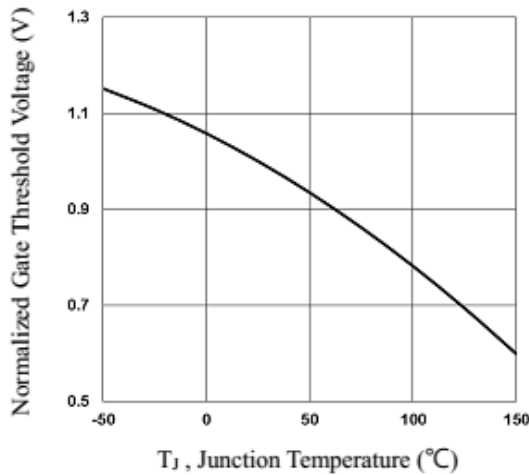
Continuous Drain Current vs. Temperature



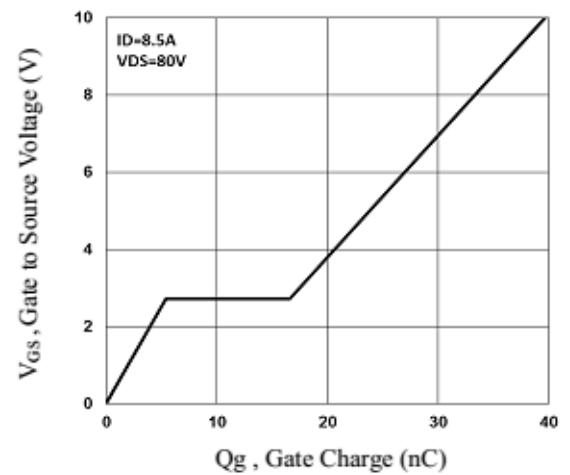
On-Resistance Variation vs. Temperature



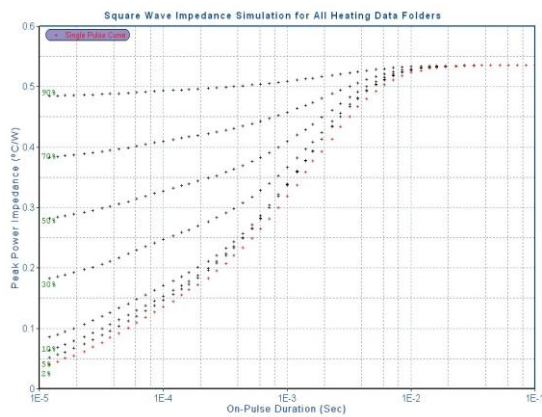
Gate threshold Variation vs. Temperature



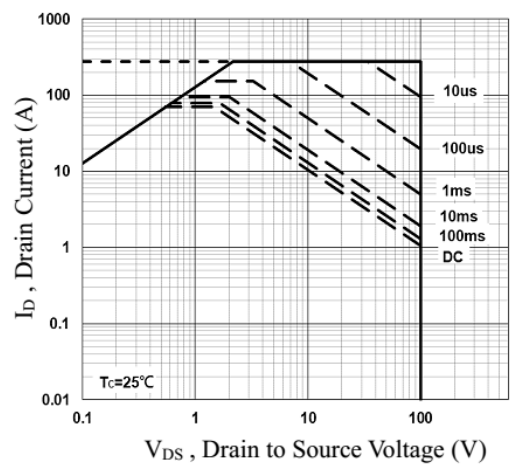
Gate Charge Characteristics



Transient Thermal Curve Response Curve



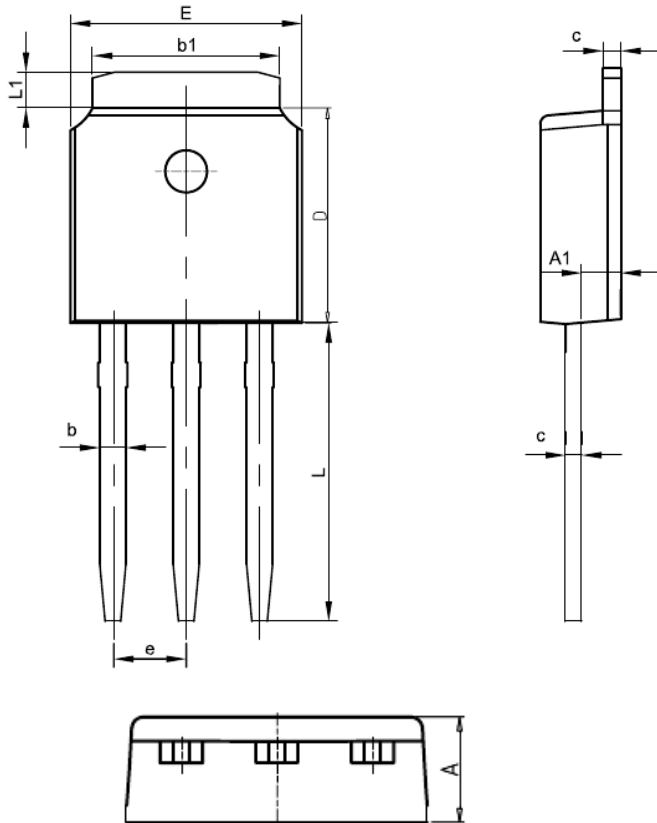
Maximum Safe Operation





IPAK

单位 Unit: mm



SYMBOL	MM	
	MIN	MAX
A	2.1	2.5
A1	0.87	1.27
b	0.63	0.93
b1	5.13	5.53
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
L	9.10	9.70
e	2.286BSC	
L1	0.82	1.22



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