



MC100N10A

主要参数 MAIN CHARACTERISTICS

I_D	70A
V_{DSS}	100V
$R_{dson-max}$ (@ $V_{gs}=10V$)	6.5m Ω
Q_g-typ	58.2nC

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

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

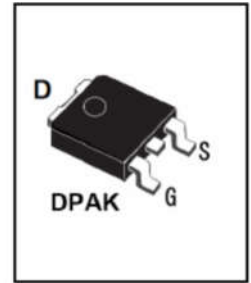
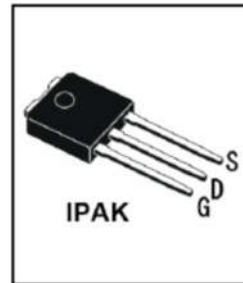
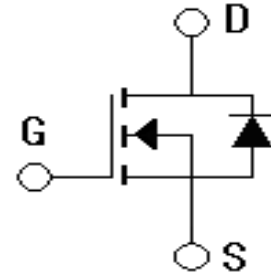
APPLICATIONS

- Isolated DC/DC Converters in Telecom and Industrial
- 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		
MC100N10A-R-B	MC100N10A-R-BR	MC100N10A-R-A	MC100N10A-R-AR	MC100N10A	DPAK
MC100N10A-I-B	MC100N10A-I-BR	N/A	N/A	MC100N10A	IPAK



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
		MC100N10A	
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 $T=25^\circ\text{C}$	70*	A
	I_D $T=100^\circ\text{C}$	56*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	280*	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}	320	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	80	A
耗散功率 Power Dissipation	P_D $T_c=25^\circ\text{C}$ -Derate above 25°C	60	W
		0.48	W/ $^\circ\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

*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
		$V_{DS}=80V, V_{GS}=0V, T_C=85^\circ C$	-	-	10	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	1.8	2.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=20A$	-	5.5	6.5	m Ω
		$V_{GS} = 5V, I_D=10A$	-	7	9	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=5A$ (note 4)	-	8	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	4570	9100	pF
输出电容 Output capacitance	C_{oss}		-	1180	2300	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	49	98	pF
栅电阻 Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$		2	4	Ω



**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=50V, V_{GS}=10V$ $I_D=1A, R_G=6\Omega$ (note 3, 4)	-	24	48	ns
上升时间 Turn-On rise time	t_r		-	19.8	39	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	46	92	ns
下降时间 Turn-Off Fall time	t_f		-	26	52	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=80V,$ $I_D=10A$ $V_{GS}=10V$ (note 3, 4)	-	58.2	100	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	9.2	18	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	20.8	30	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	$T_C=25^\circ\text{C}$	-	-	70	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ\text{C}$	-	-	280	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ\text{C}, V_{GS}=0V, I_S=20A$	-	-	1.0	V

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MC100N10A	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	2.07	$^\circ\text{C/W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	94.74	$^\circ\text{C/W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=80A, V_{DD}=25V, V_{GS}=10V, L=0.1mH,$
 $R_G=25\Omega, \text{起始结温 } T_J=25^\circ\text{C}$
- 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:

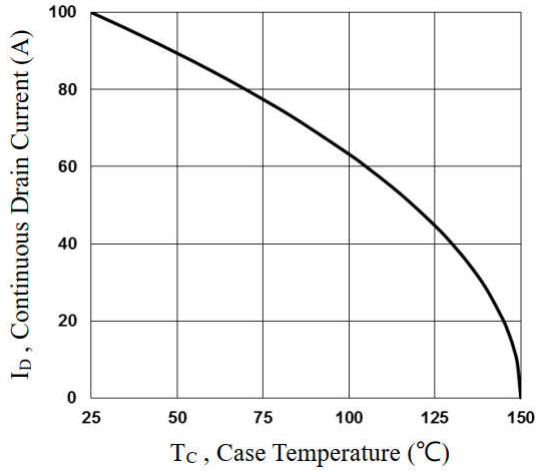
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=80A, V_{DD}=25V, V_{GS}=10V, L=0.1mH,$
 $R_G=25\Omega, \text{Starting } T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



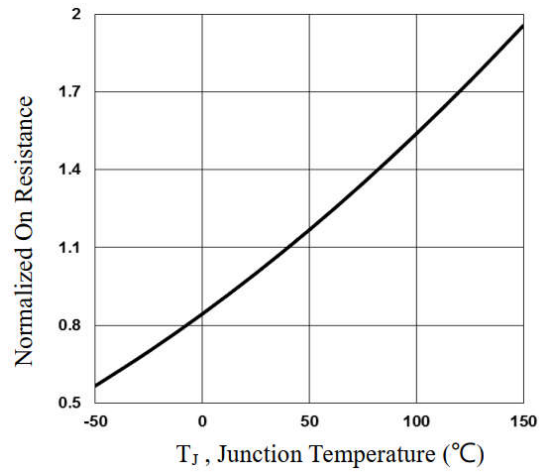


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

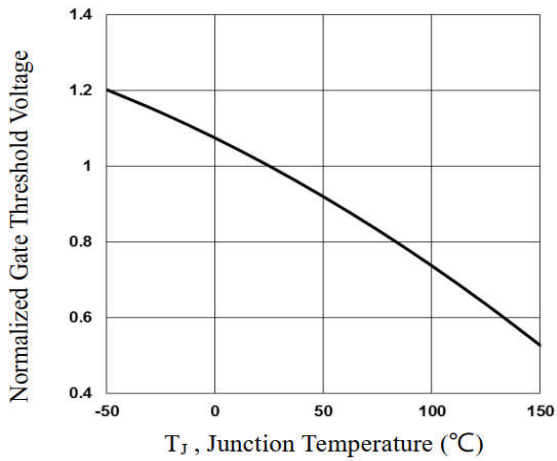
Continuous Drain Current vs.Tj



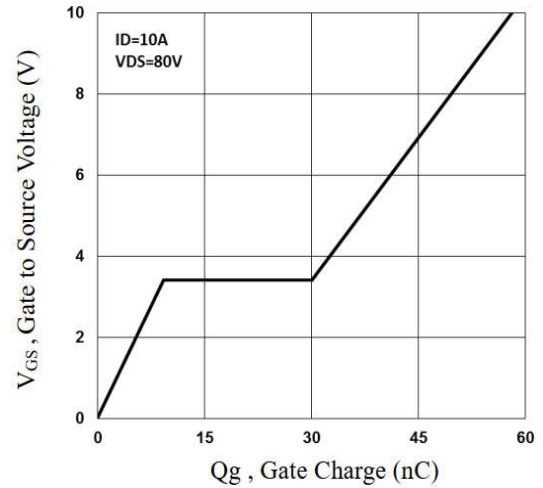
Normalized RDSON vs.Tj



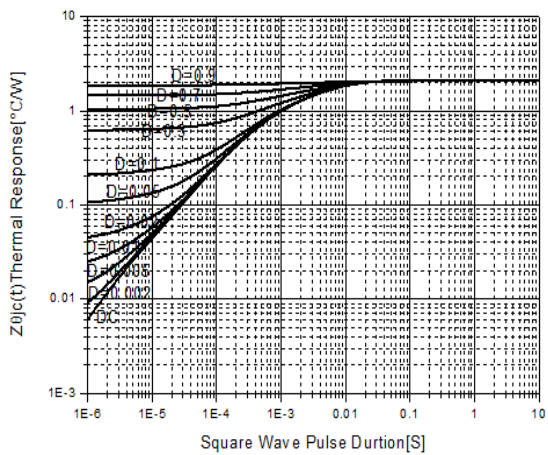
Normalized Vth vs.Tj



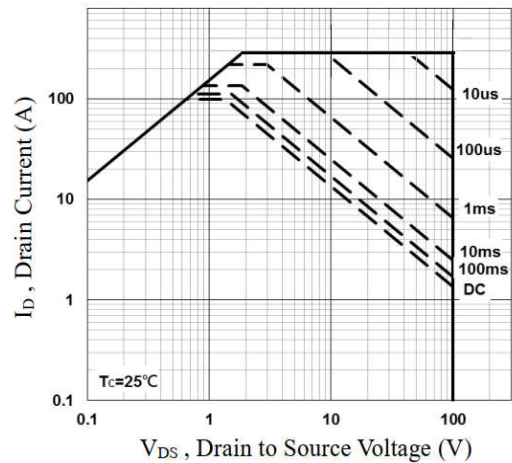
Gate Charge Characteristics



Transient Thermal Response Curve



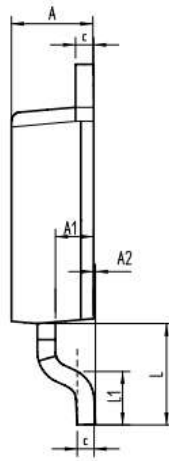
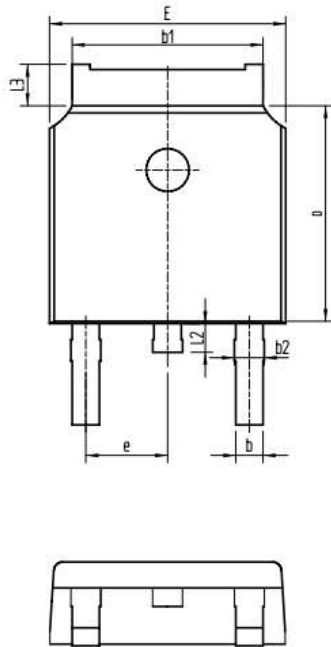
Safe Operating Area





DPAK

单位 Unit: mm



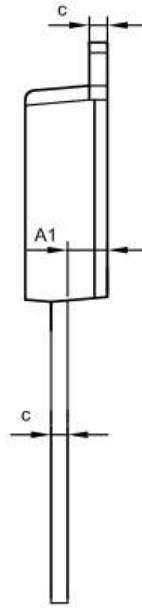
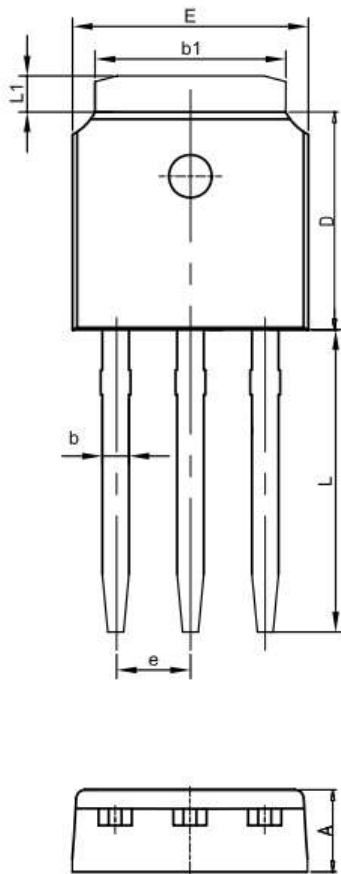
SYMBOL	mm	
	MIN	MAX
A	2.16	2.41
A1	0.97	1.17
A2	0.00	0.15
b	0.63	0.93
b1	5.13	5.53
b2	0.66	0.96
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
e	2.286BSC	
L	2.50	3.30
L1	1.20	1.80
L2	0.60	1.00
L3	0.85	1.30





IPAK

MC100N10A



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



**注意事项**

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联系方式**吉林华微电子股份有限公司**

公司地址：吉林省吉林市深圳街 99 号

邮编：132013

总机：86-432-64678411

传真：86-432-64665812

网址：www.hwdz.com.cn

市场营销部

地址：吉林省吉林市深圳街 99 号

邮编：132013

电话：86-432-64675588

64675688

64678411

传真：86-432-64671533

CONTACT**JILIN SINO-MICROELECTRONICS CO., LTD.**

ADD: No.99 Shenzhen Street, Jilin City, Jilin Province, China.

Post Code: 132013

Tel: 86-432-64678411

Fax: 86-432-64665812

Web Site: www.hwdz.com.cn

MARKET DEPARTMENT

ADD: No.99 Shenzhen Street, Jilin City, Jilin Province, China.

Post Code: 132013

Tel: 86-432-64675588

64675688

64678411

Fax: 86-432-64671533

