



MC70N10A

主要参数 MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	100V
$R_{dson-max}$ (@ $V_{gs}=10V$)	13.5m Ω
Q_g-typ	27.8nC

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

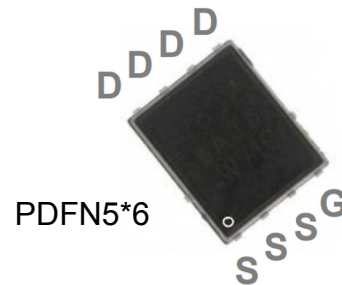
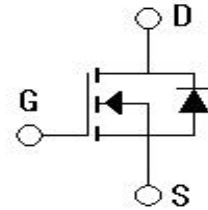
APPLICATIONS

- 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	MC70N10A-AA-AR	MC70N10A	PDFN5*6





绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MC70N10A	
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	50*	A
	I _D T=100°C	40*	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}	115	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I _{AS}	48	A
耗散功率 Power Dissipation	P _D T _C =25°C -Derate above 25°C	62.5	W
		0.5	W/°C
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150	°C
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T _L	300	°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
		$V_{DS}=80V, V_{GS}=0V,$ $T_C=125^\circ C$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=20A$	-	11.4	13.5	m Ω
		$V_{GS} = 4.5V, I_D=15A$	-	15.6	20	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=3A$ (note 4)	-	12	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$	-	1.14	-	Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=50V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	1640	-	pF
输出电容 Output capacitance	C_{oss}		-	240	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	4	-	pF



**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=50V, I_D=1A, R_G=6.0\Omega,$ $V_{GS}=10V$ (note 3, 4)	-	14.2	-	ns
上升时间 Turn-On rise time	t_r		-	20.8	-	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	42	-	ns
下降时间 Turn-Off Fall time	t_f		-	30	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=50V,$ $I_D=10A$ $V_{GS}=10V$ (note 3, 4)	-	27.8	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	3.5	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	8.8	-	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	$T_C=25^\circ C$	-	-	50	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ C$	-	-	200	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, V_{GS}=0V, I_S=1A$	-	-	1.0	V
反向恢复时间 Reverse recovery time	t_{rr}	$I_S=10A, T_J=25^\circ C$ $dI_F/dt=100A/\mu s$ (note 3)	-	43.5	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	59.6	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MC70N10A	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	2	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	75	$^\circ C/W$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=48A, V_{DD}=50V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, 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 $\leq 2\%$
- 4: 基本与工作温度无关

Notes:

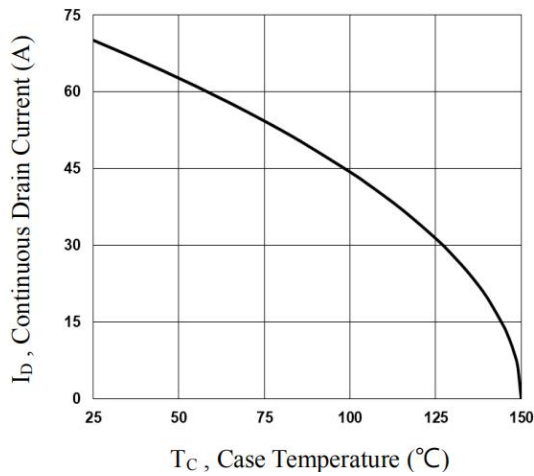
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=48A, V_{DD}=50V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, Starting $T_J=25^\circ C$
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



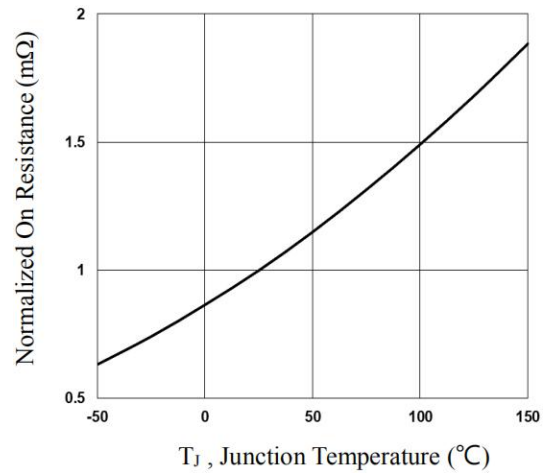


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

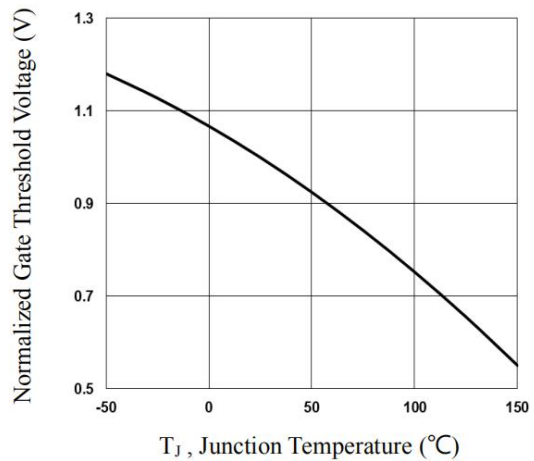
Drain Current Variation vs. Temperature



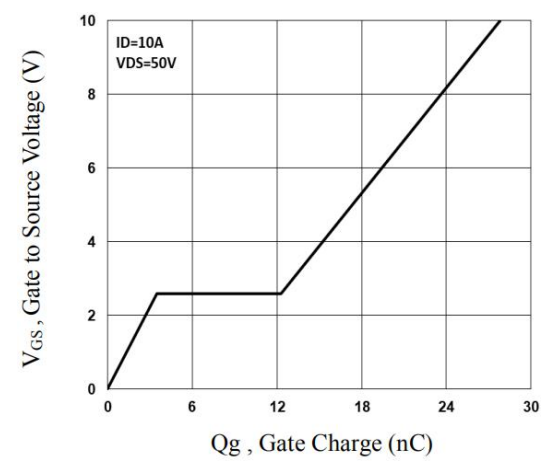
On-Resistance Variation vs. Temperature



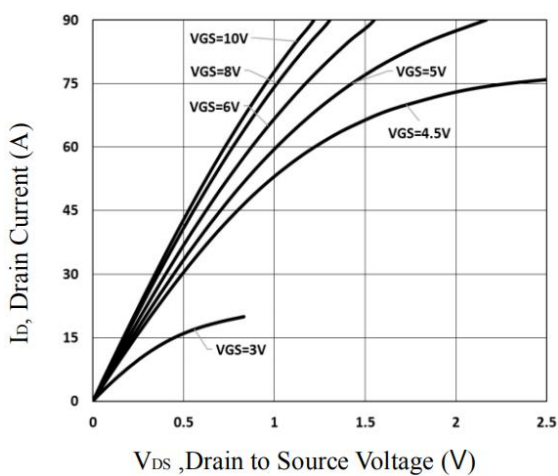
Gate Threshold Voltage Variation vs. Temperature



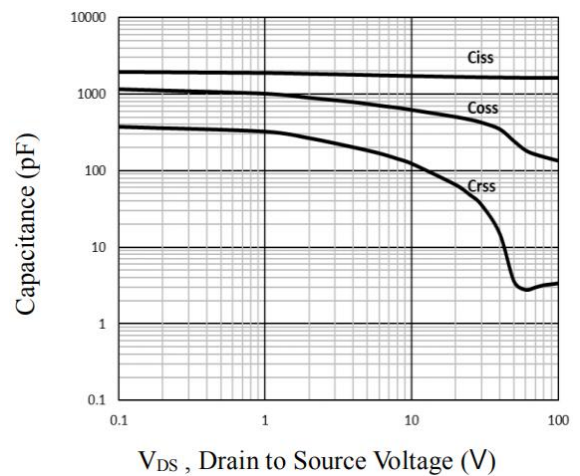
Gate Charge Characteristics



On-Region Characteristics



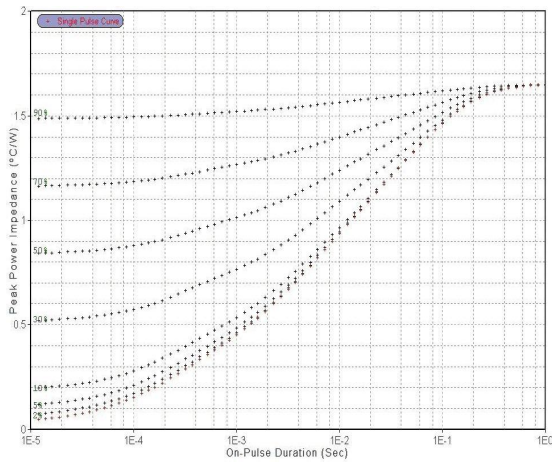
Capacitance Characteristics



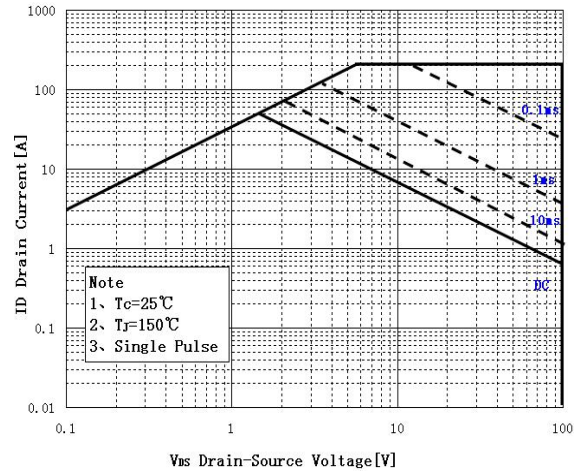


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Transient Thermal Response Curve



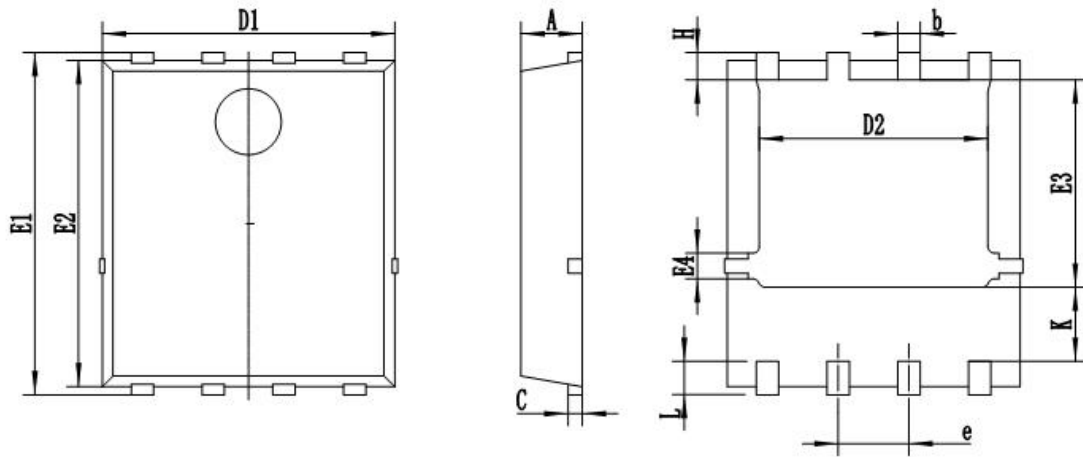
Maximum Safe Operation Area





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



**注意事项**

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- 4.本说明书如有版本变更不另外告知

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