



MP6N120

主要参数 MAIN CHARACTERISTICS

I_D	6A
V_{DSS}	1200 V
$R_{dson} (V_{gs}=10V)$ -MAX	2.55 Ω
Q_g -Typ	38.22 nC

用途

- 高频开关电源.
- 电子镇流器
- UPS

APPLICATIONS

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS

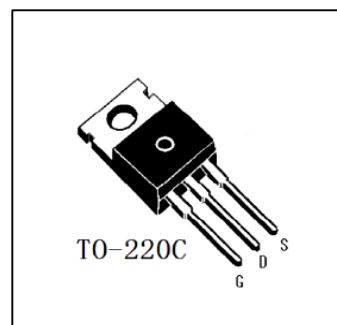
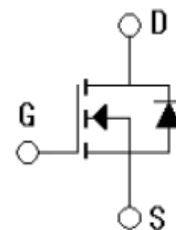
产品特性

- 平面 MOS
- 低栅极电荷
- 低 C_{rss} (典型值 7.0pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

FEATURES

- Planar MOS
- Low gate charge
- Low C_{rss} (typical 7.0pF)
- 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				耿利红 李天喆 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		
MP6N120-C-B	MP6N120-C-BR	N/A	N/A	MP6N120	TO-220C



绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MP6N120	
最高漏极-源极直流电压 Drain-Source Voltage	V _{DSS}	1200	V
连续漏极电流 Drain Current -continuous	I _D T=25℃ T=100℃	6	A
		3.6	A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I _{DM}	24	A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±30	V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	E _{AS}	180	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I _{AR}	6	A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	E _{AR}	42	mJ
二极管反向恢复最大电压变化速率 (注 3) Peak Diode Recovery dv/dt (note 3)	dv/dt	5.0	V/ns
耗散功率(Tc=25℃) Power Dissipation	P _D Tc =25℃ -Derate above 25 °C	301	W
		2.4	W/°C
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-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
关态特性 Off –Characteristics						
漏-源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	1200	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$BV_{DSS}/\Delta T_J$	$I_D=250\mu A$, referenced to 25°C	-	9.6	-	V/°C
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=1200V, V_{GS}=0V, T_C=25^\circ C$	-	-	10	μA
		$V_{DS}=960V, T_C=125^\circ C$	-	-	100	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.0A$	-	2.15	2.55	Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=6A$ (note 4)	-	12.8	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	1766	2649	pF
输出电容 Output capacitance	C_{oss}		-	136	204	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	7.0	10.5	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} =600V, I _d =6A, V _{gs} =10V, R _G =25Ω (note 4, 5)	-	33.4	50.1	ns
上升时间 Turn-On rise time	t_r		-	41.4	62.1	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	87.2	130.8	ns
下降时间 Turn-Off Fall time	t_f		-	40	60	ns
栅极电荷总量 Total Gate Charge	Q _g	V _{ds} =960V, V _{gs} =10V, I _d =6A (note 4, 5)	-	38.22	57.33	nC
栅-源电荷 Gate-Source charge	Q _{gs}		-	11.34	17.01	nC
栅-漏电荷 Gate-Drain charge	Q _{gd}		-	14.19	21.29	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	-	-	6	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}	-	-	24	A
正向压降 Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =6.0A	-	-	1.5	V
反向恢复时间 Reverse recovery time	t _{rr}	V _{GS} =0V, I _S =6.0A di/dt=100A/μs (note 4)	-	594	-	ns
反向恢复电荷 Reverse recovery charge	Q _{rr}		-	5094	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单位 Unit
		MP6N120	
结到管壳的热阻 Thermal Resistance, Junction to Case	R _{th(j-c)}	0.346	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	R _{th(j-A)}	62.5	°C/W

注释:

- 1: 脉冲宽度由最高结温限制
- 2: L=10mH, I_{AS}=6A, V_{DD}=100V, R_G=25 Ω, 起始结温 T_J=25°C
- 3: I_{SD}≤6A, di/dt≤200A/μs, V_{DD}≤BVDSS, 起始结温 T_J=25°C
- 4: 脉冲测试: 脉冲宽度≤300μs, 占空比≤2%
- 5: 基本与工作温度无关

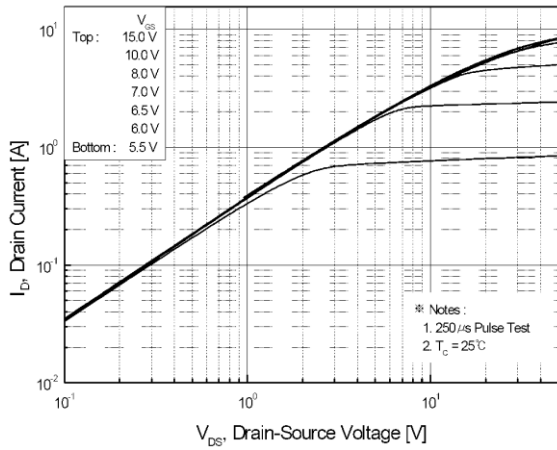
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: L=10mH, I_{AS}=6A, V_{DD}=100V, R_G=25 Ω, Starting T_J=25°C
- 3: I_{SD}≤6A, di/dt≤200A/μs, V_{DD}≤BVDSS, Starting T_J=25°C
- 4: Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%
- 5: Essentially independent of operating temperature

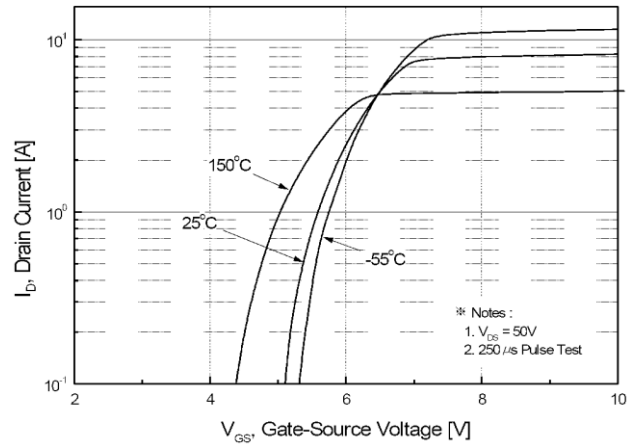


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

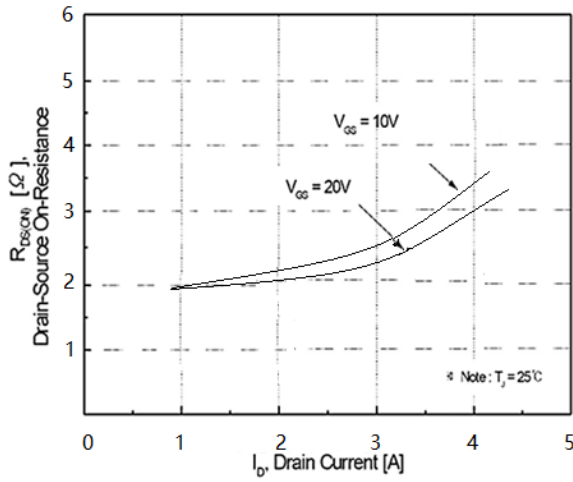
On-Region Characteristics



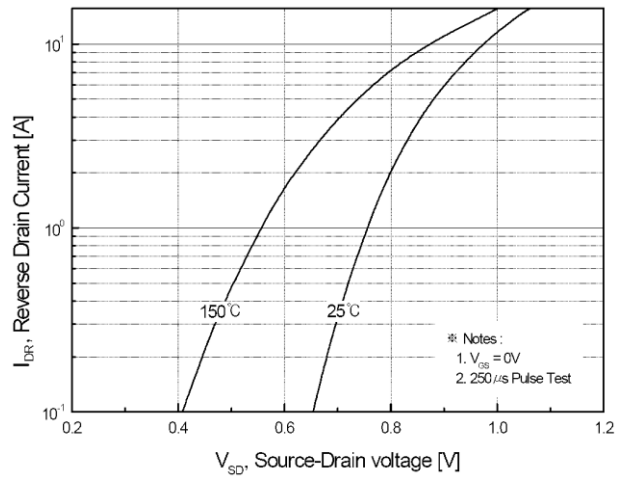
Transfer Characteristics



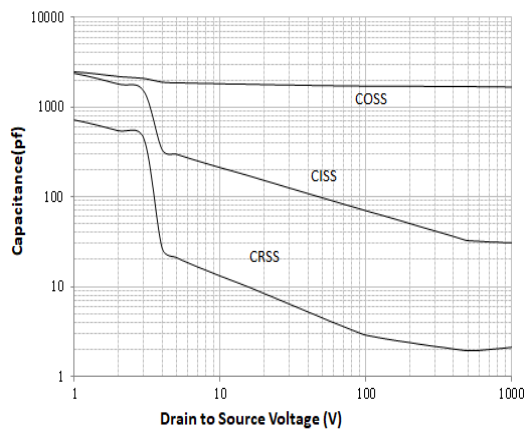
On-Resistance Variation vs. Id



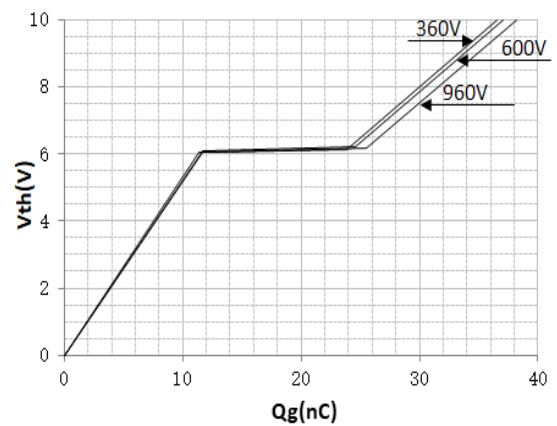
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



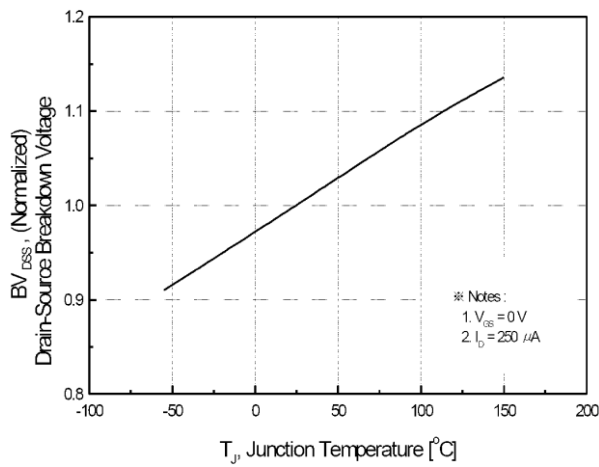
Gate charge vs. Vth



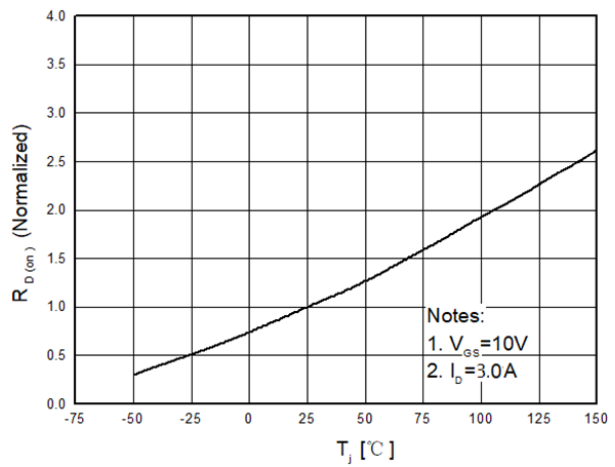


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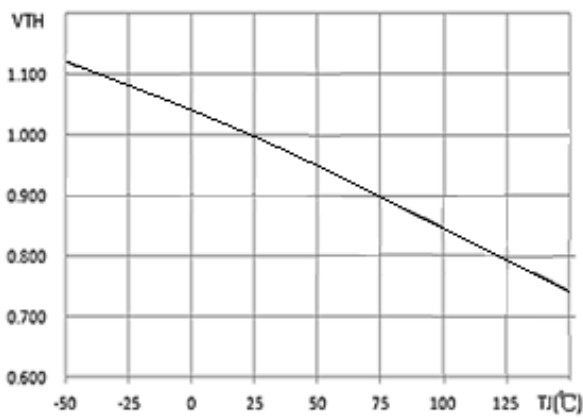
Breakdown Voltage Variation vs. Temperature



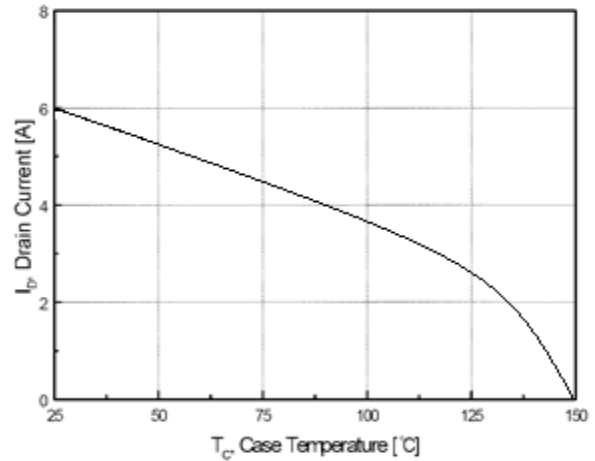
On-Resistance Variation vs. Temperature



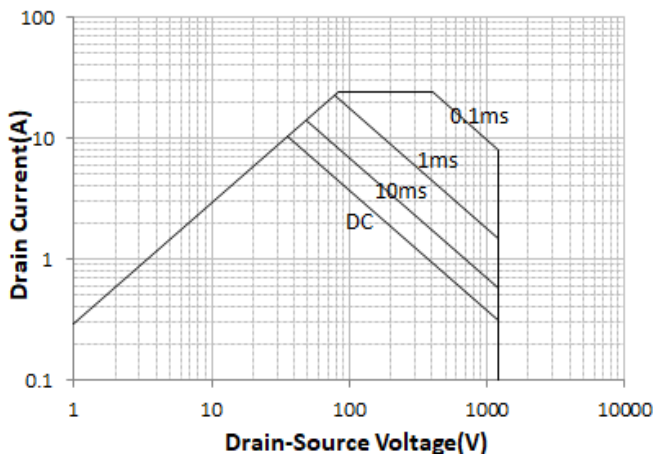
Normalized VTH vs. temperature



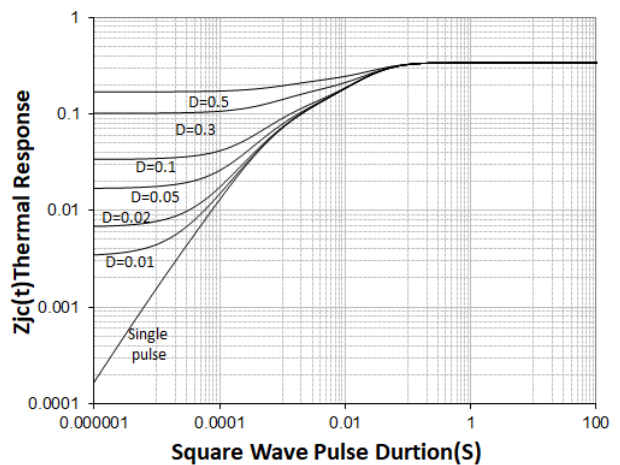
Maximum Drain Current vs. Case Temperature



Maximum Safe Operating Area

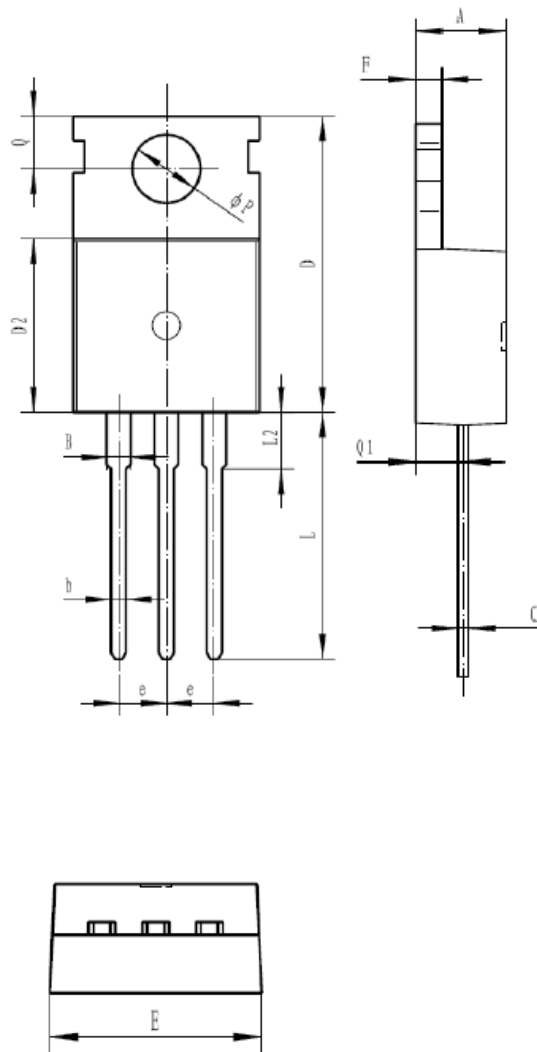


Thermal impedance





TO-220C



符号 symbol	MIN	MAX
A	4.30	4.70
B	1.22	1.40
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80



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

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