



MC120N08AA

主要参数 MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	80V
$R_{dson-max}$ (@ $V_{gs}=10V$)	4.4m Ω
Q_g-typ	95.5nC

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

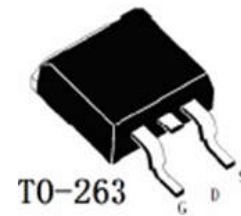
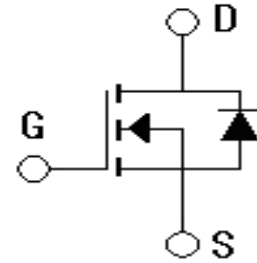
APPLICATIONS

- 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		
MC120N08AA-S-B	MC120N08AA-S-BR	MC120N08AA-S-A	MC120N08AA-S-AR	MC120N08AA	T0-263





绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MC120N08AA	
最高漏极-源极直流电压 Drain-Source Voltage	V _{DSS}	80	V
连续漏极电流 Drain Current -continuous	I _D T=25°C	120*	A
	I _D T=100°C	96*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I _{DM}	480*	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}	451	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I _{AS}	95	A
耗散功率 Power Dissipation	P _D T _C =25°C -Derate above 25°C	208	W
		1.6	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}	$I_D=250\mu A, V_{GS}=0V$	80	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=64V, V_{GS}=0V, T_C=85^\circ C$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D=20A$	-	3.7	4.4	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=5A$ (note 4)	-	15	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$	-	1.5	-	Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	5510	-	pF
输出电容 Output capacitance	C_{oss}		-	970	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	35	-	pF





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=40V, I_D=1A, R_G=6.0\Omega,$ $V_{GS}=10V$ (note 3, 4)	-	22	-	ns
上升时间 Turn-On rise time	t_r		-	15	-	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	40	-	ns
下降时间 Turn-Off Fall time	t_f		-	19	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=40V,$ $I_D=10A$ $V_{GS}=10V$ (note 3, 4)	-	95.5	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	23.5	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	32	-	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	$T_C=25^\circ\text{C}$	-	-	120	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ\text{C}$	-	-	220	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ\text{C}, V_{GS}=0V, I_S=1A$	-	-	1.0	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=10A, T_J=25^\circ\text{C}$ $di_f/dt=100A/\mu\text{s}$ (note 3)	-	55	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	162	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单位 Unit
		MC120N08AA	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.6	$^\circ\text{C}/\text{W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	$^\circ\text{C}/\text{W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=95A, V_{DD}=25V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, 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:

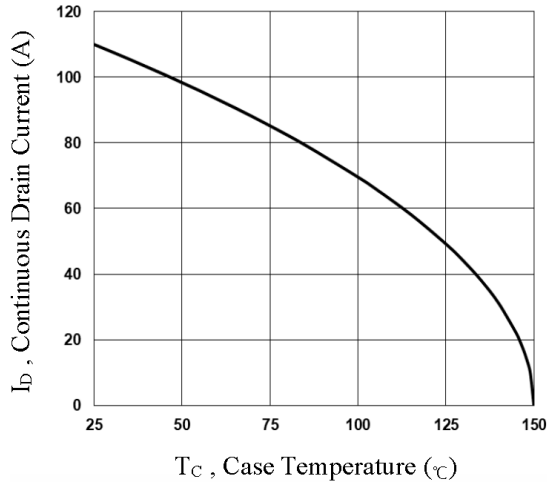
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=95A, V_{DD}=25V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



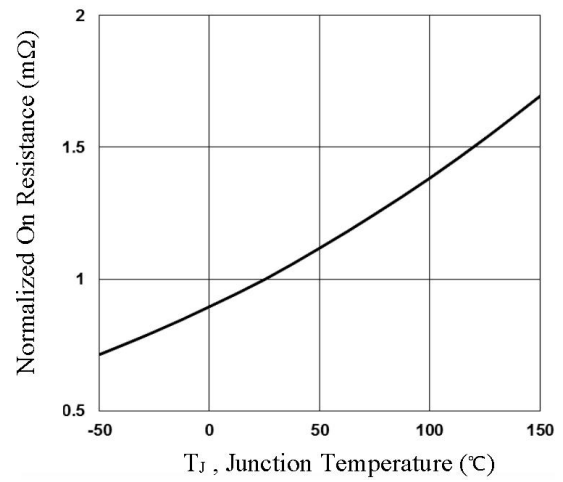


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

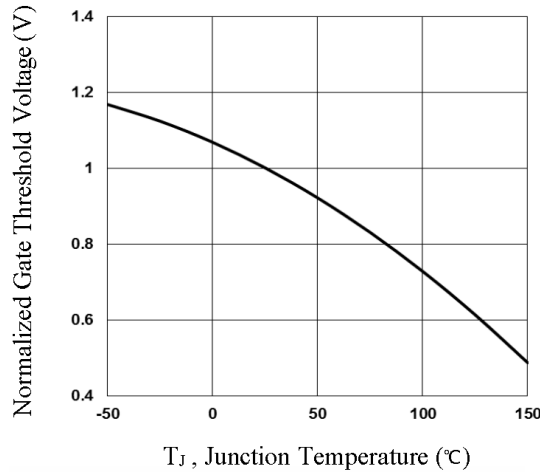
Drain Current Variation vs. Temperature



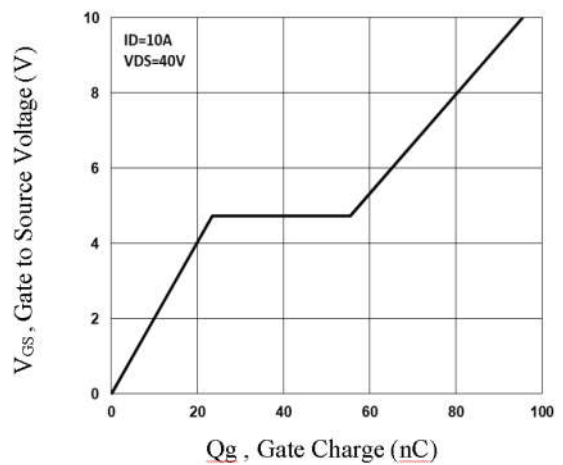
On-Resistance Variation vs. Temperature



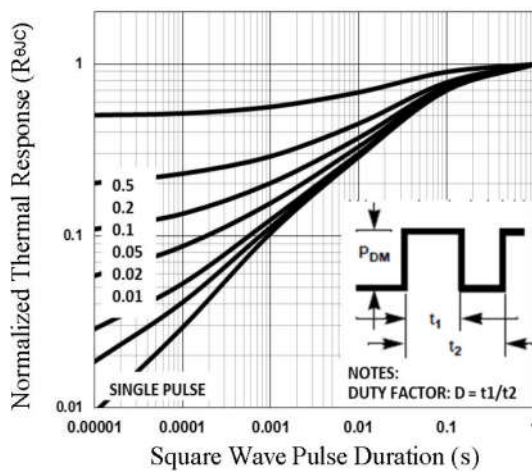
Gate Threshold Voltage Variation vs. Temperature



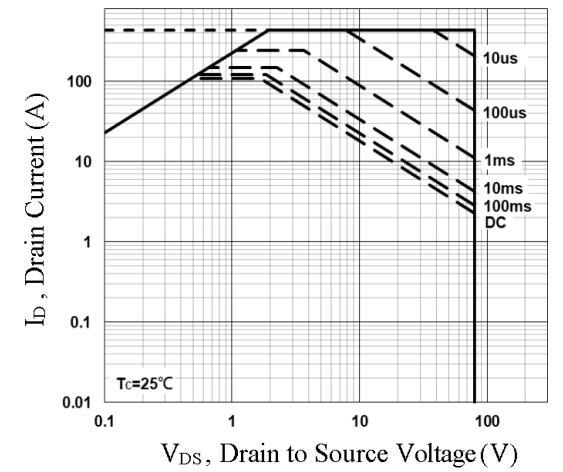
Gate Charge Characteristics



Transient Thermal Response Curve For MC120N08AA



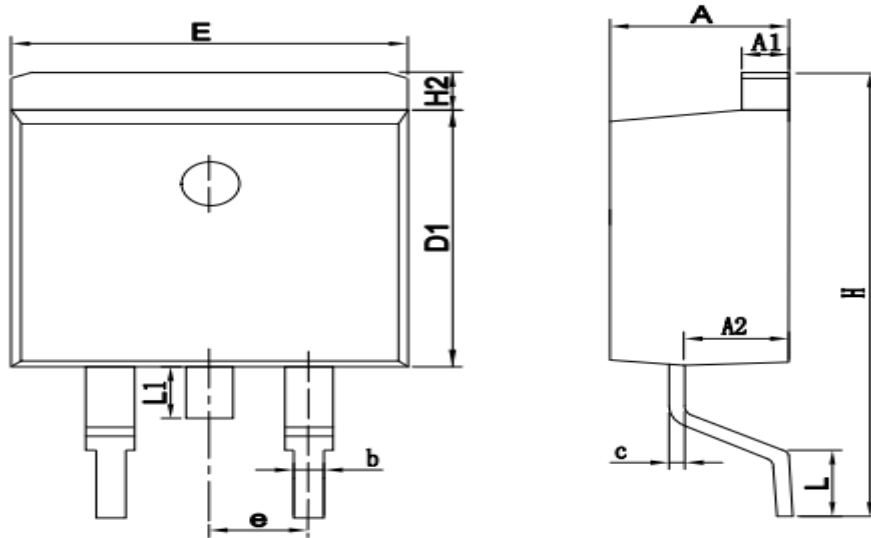
Maximum Safe Operation Area For MC120N08AA



外形尺寸 PACKAGE MECHANICAL DATA

TO-263

单位 Unit: mm



SYMBOL	MM	
	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70

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- 4.本说明书如有版本变更不另外告知

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3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
4. Jilin Sino-microelectronics co., Ltd reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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