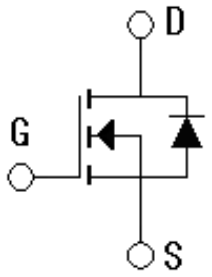
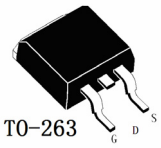
MC08N005

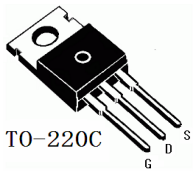
主要参数 MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	80V
Rdson-typ (@Vgs=10V)	4.5mΩ
Qg-typ	74.5nC

封装 Package







用途 APPLICATIONS

- 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

- Isolated DC/DC Converters in Telecom and Industrial
- Synchronous Rectification in DC/DC and AC/DC Converters

产品特性 FEATURES

- 低栅极电荷
- 低 Rdson
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

- Low gate charge
- Low Rdson
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

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		
MC08N005-C-B	MC08N005--C-BR	N/A	N/A	MC08N005	TO-220C
MC08N005-S-B	MC08N005--S-BR	MC08N005--S-A	MC08N005--S-AR	MC08N005	TO-263

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单位 Unit
		MC08N005	
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℃	120*	A
	I_D T=100℃	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	V
单脉冲雪崩能量（注 2） Single Pulsed Avalanche Energy（note 2）	E_{AS}	400	mJ
雪崩电流（注 1） Avalanche Current （note 1）	I_{AS}	40	A
耗散功率 Power Dissipation	P_D T_C=25℃ -Derate above 25℃	135	W
		1.07	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T_J，T_{STG}	-55～+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	℃

*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=250μA, 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℃	-	-	1	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=250μA	2	3	4	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10V ，　I_D=40A	-	4.5	5.5	mΩ
正向跨导 Forward Transconductance	g_{fs}	V_{DS} = 5V , I_D=50A （note 4）	-	90	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate resistance	R_g	V_{DS}=0V,V_{GS} =0V,f=1.0MH$_Z$	-	1.15	-	Ω
输入电容 Input capacitance	C_{iss}	V_{DS}=40V, V_{GS} =0V, f=1.0MH$_Z$	-	3950	-	pF
输出电容 Output capacitance	C_{oss}		-	665	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	44	-	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}=40V,V_{GS}=10V I_D=50A,R_G=3.0Ω,（note 3，4）	-	20.4	-	ns
上升时间 Turn-On rise time	t_r		-	81.4	-	ns
延迟时间 Turn-Off delay time	t_d(off)		-	45.0	-	ns
下降时间 Turn-Off Fall time	t_f		-	80.8	-	ns
栅极电荷总量 Total Gate Charge	Q_g	V_{DS} =50V , V_{GS}=10V I_D=40A（note 3，4）	-	74.6	-	nC
栅－源电荷 Gate-Source charge	Q_{gs}		-	20.0	-	nC
栅－漏电荷 Gate-Drain charge	Q_{gd}		-	24.0	-	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℃	-	-	120	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	T_C=25℃	-	-	480	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	T_J=25℃,V_{GS}=0V, I_{SD}=40A	-	0.9	1.3	V

热特性 THERMAL CHARACTERISTIC

项　　目 Parameter	符　号 Symbol	最大 Max MC08N005	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.66	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	48.18	℃/W

注释：

1：脉冲宽度由最高结温限制

2：I_{AS}=40A, V_{DD}=20V, VGS =10V,L=0.5mH, R_G=25Ω,起始结温 T_J=25℃

3：脉冲测试：脉冲宽度≤300μs,占空比≤2%

4：基本与工作温度无关

Notes:

1：Pulse width limited by maximum junction temperature

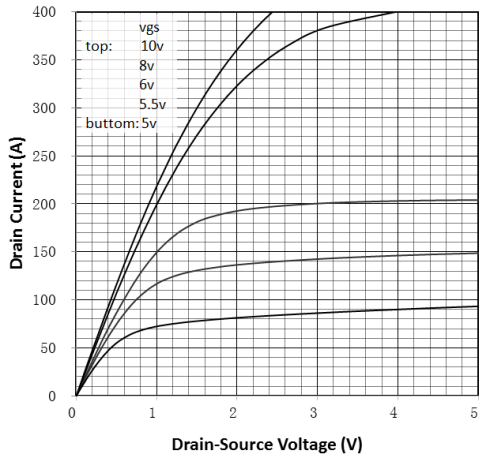
2： I_{AS}=40A, V_{DD}=20V, VGS =10V,L=0.5mH, R_G=25Ω ,Starting T_J=25℃

3：Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%

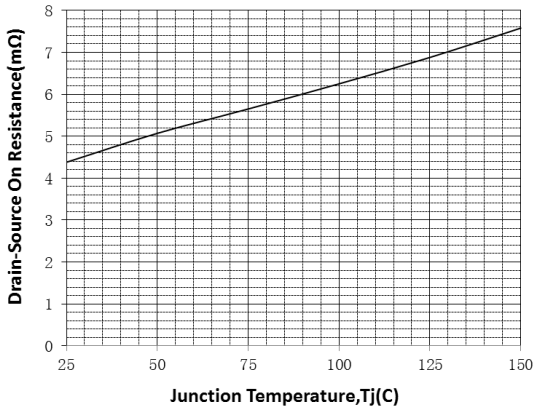
4：Essentially independent of operating temperature

特征曲线 ELECTRICAL CHARACTERISTICS (curves), T_J = 25ºC

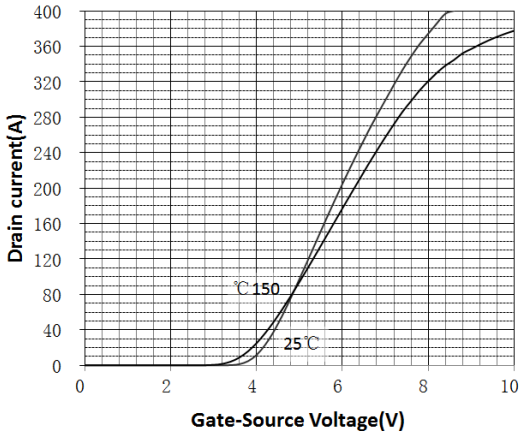
On-Region Characteristics



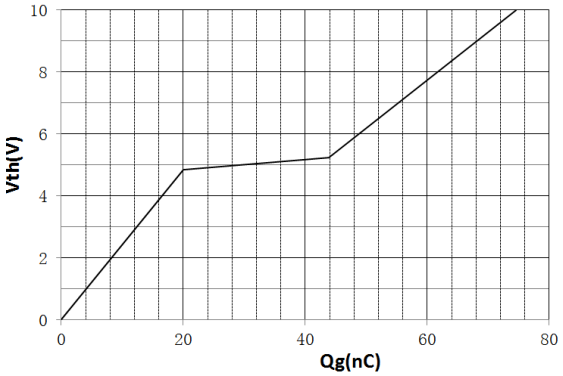
RDSON vs.Tj



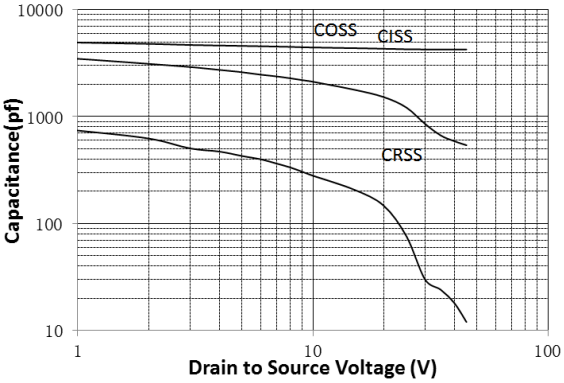
Transfer Characteristics



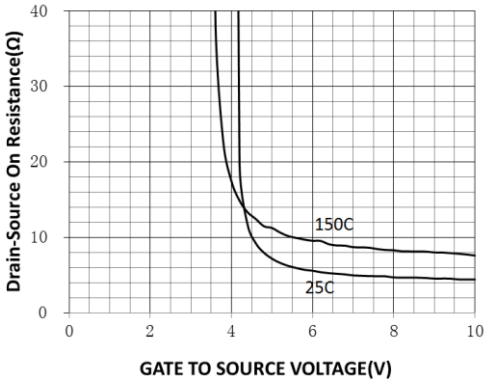
Gate Charge Characteristics



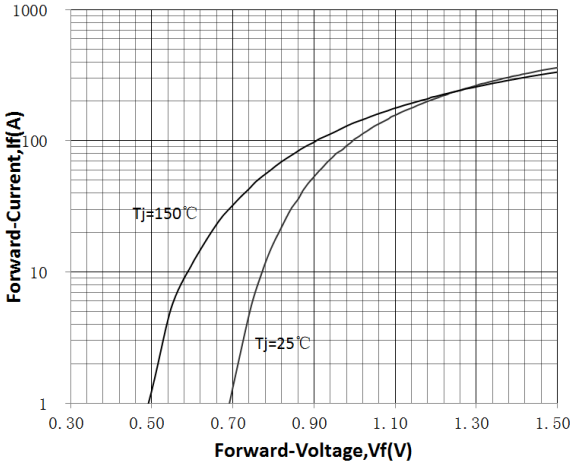
Capacitance Characteristics



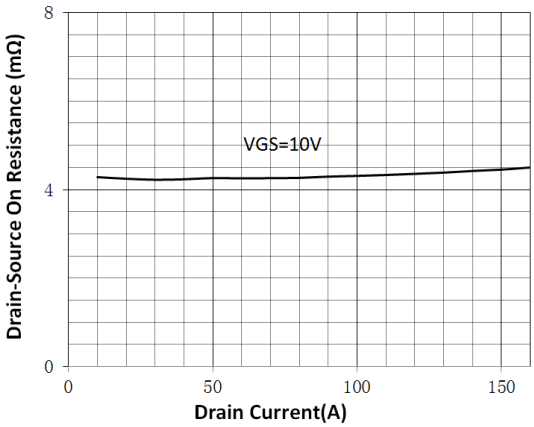
Drain-Source on resistance



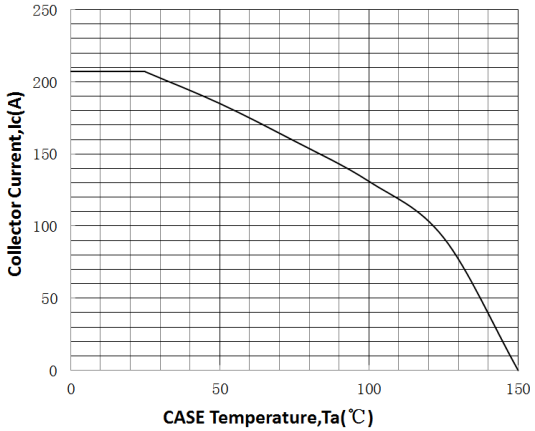
Body Diode Forward Voltage Variation vs. Source Current and Temperature



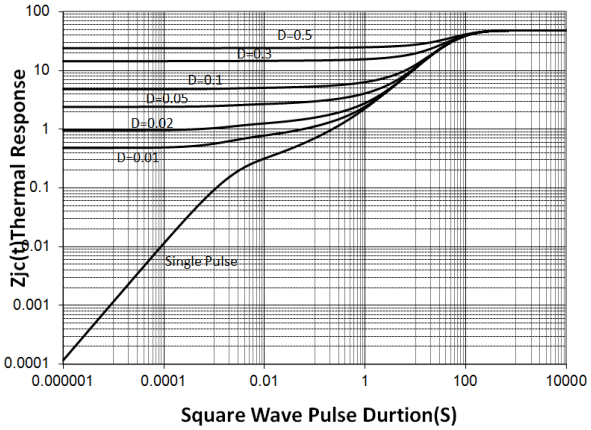
On-Resistance Variaton vs. Drain Current and Gate Voltage



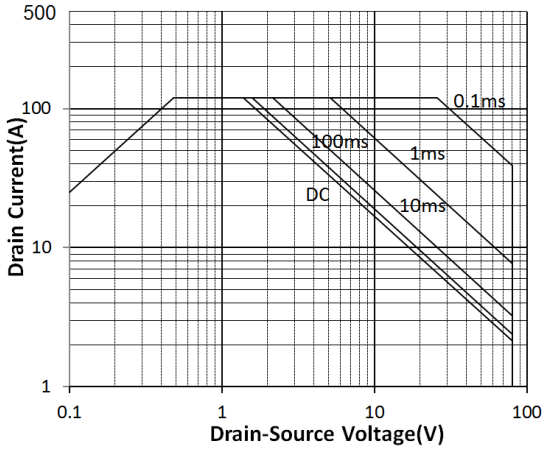
Drain Current Dissipation vs Ta



Transient Thermal Impedance



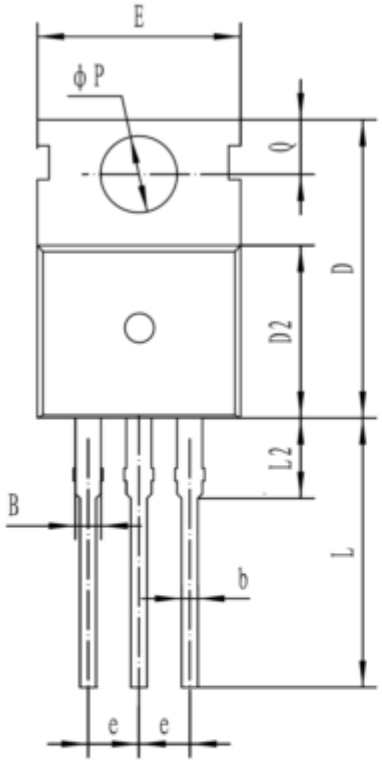
Maximum Safe Operation

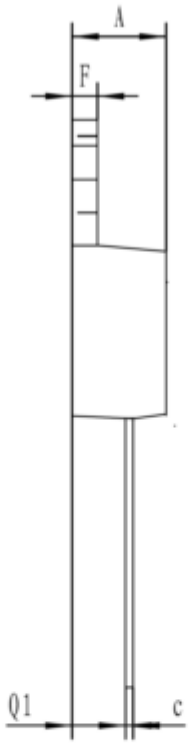


外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit：mm



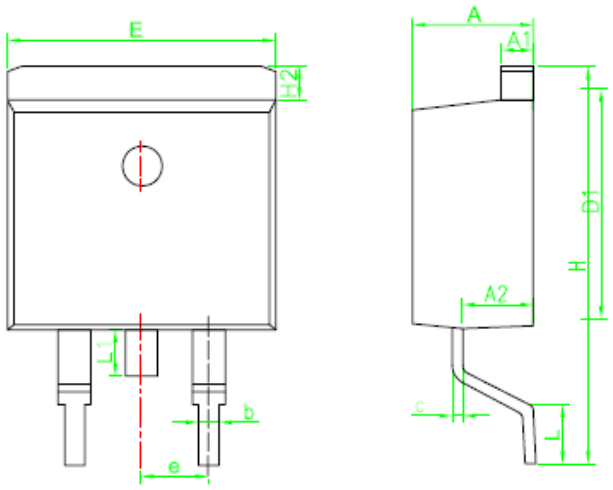


符号 symbol	MIN	MAX
A	4.30	4.70
B	1.10	1.40
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80

外形尺寸 PACKAGE MECHANICAL DATA

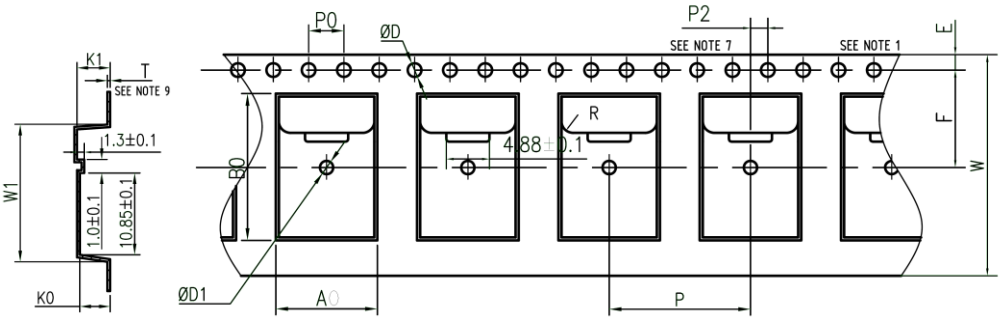
TO-263

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

编带 REEL



NOTES

1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLEANCE 0.2mm;
   任意10个传输孔间距累积误差0.2mm;
2. MATERIAL: BLACK CONDUCTIVE POLYSTYRENE;
   材料：黑色防静电聚苯乙烯;
3. DEMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIEED);
   除非特别标注，尺寸单位为毫米;
4. K0 MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE ON THE CARRIER;
   K0是从凹槽底部上表面到载带顶面的测量尺寸;
5. A0 AND B0 MEASURED ON A PLANE 0.30mm ABOVE THE BOTTOM OF THE POCKET;
   从凹槽底部上方测量A0和B0的平面度是0.30mm;
6. SURFACE RESISTIVITY IS BETWEEN 1×10E6 TO 1×10E10 OHMS/SQUARE;
   表面阻抗1X10e6~1X10e10Ω/□;
7. Allowable Camber to be 1 mm/100 mm
   载带100mm以内，弯曲度不可超过1mm。

外观	尺寸
P0	4.0±0.1
P2	2.0±0.1
P	16.0±0.1
T	0.35±0.05
K0	4.85±0.1
B0	16.3±0.1

外观		尺寸
W		24.0 ±0.3
A0		10.8±0.2
E		1.75±0.1
F		11.5±0.1
D		1.55±0.05
D1		1.5±0.1
W1	规格1	16.9±0.1
	规格2	17.2±0.1

注意事项

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2.购买时请认清公司商标，如有疑问请与公司本部联系。

3.在电路设计时请不要超过器件的绝对最大额定值，否则会影响整机的可靠性。

4.本说明书如有版本变更不另外告知

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2. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
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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