



MC150N10AA

主要参数 MAIN CHARACTERISTICS

I_D	145A
V_{DSS}	100V
$R_{dson-max}$ (@ $V_{gs}=10V$)	4.6m Ω
Q_g-typ	88nC

用途

- 电信与工业领域隔离 DC/DC 转换
- 同步整流领域
- 汽车应用
- 不间断电源

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

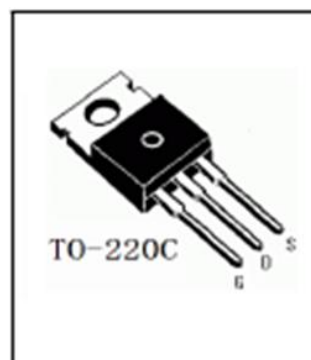
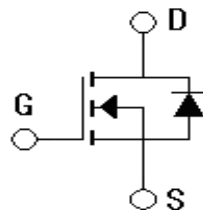
APPLICATIONS

- Isolated DC/DC Converters in Telecom and Industrial
- Synchronous Rectification
- Automotive
- UPS

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		
MC150N10AA-C-B	MC150N10AA-C-BR	N/A	N/A	MC150N10AA	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
		MC150N10AA	
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℃	145*	A
	I_D T=100℃	91*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	580*	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	+20/-12V	V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2)	E_{AS}	605	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	110	A
耗散功率 Power Dissipation	P_D T _C =25℃ -Derate above 25℃	208	W
		1.66	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}	$I_D=250\mu A, V_{GS}=0V$	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	3.8	4.6	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=20A$ (note 4)	-	20	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=50V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	5100	1020 0	pF
输出电容 Output capacitance	C_{oss}		-	1045	2090	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	35	70	pF
Rg Gate resistance	Ω	$V_{GS}=0V,$ V_{DS} open, F=1MHz		2.0		Ω





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=50V, I_D=1A, R_G=3.3\Omega$ $V_{GS}=10V$ (note 3, 4)	-	20.6	42	ns
上升时间 Turn-On rise time	t_r		-	19.8	40	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	66	132	ns
下降时间 Turn-Off Fall time	t_f		-	117	234	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=50V,$ $I_D=10A$ $V_{GS}=10V$ (note 3, 4)	-	88	175	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	18.5	37	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	28.3	56	nC
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings						
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ\text{C}, V_{GS}=0V,$ $I_S=50A$	-	0.86	1.2	V
正向连续电流 Diode continuous forward current	I_S	$V_G=V_D=0V, \text{force current}$			145	A
正向脉冲电流 Diode pulse current	I_{SM}				290	A
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=10V$ $I_S=10A$	-	71.1	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$dI_F/dt=100A/\mu s$ (note 3) $T_J=25^\circ\text{C}$	-	165	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单位 Unit
		MC150N10AA	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.60	$^\circ\text{C/W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	$^\circ\text{C/W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $V_{DD}=25V, L=0.1mH, R_G=25\Omega, I_{AS}=110A$ 起始结温 $T_J=25^\circ\text{C}$
- 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:

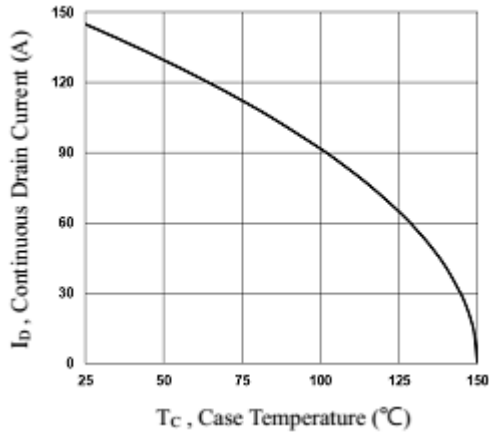
- 1: Pulse width limited by maximum junction temperature
- 2: $V_{DD}=25V, L=0.1mH, R_G=25\Omega, I_{AS}=110A$ Starting $T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



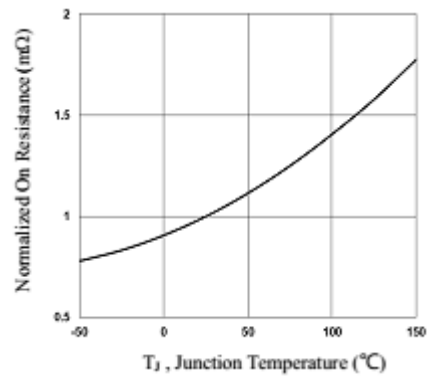


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

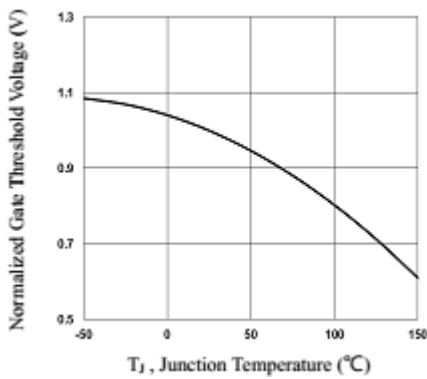
Continuous Drain Current vs Tc



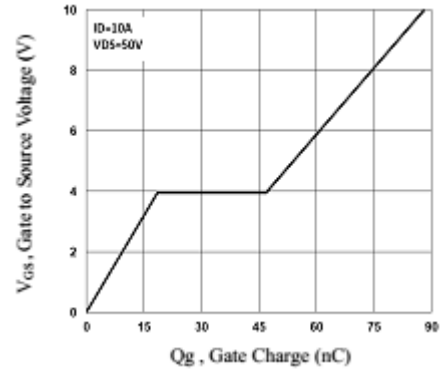
Normalized Rdson vs. Tj



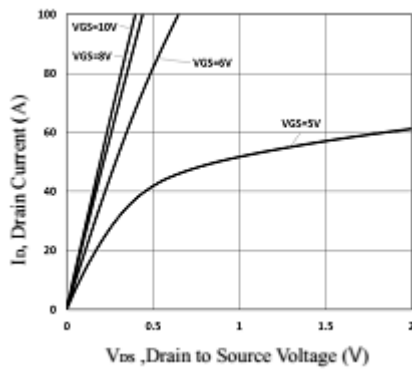
Normalized Vth vs. Tj



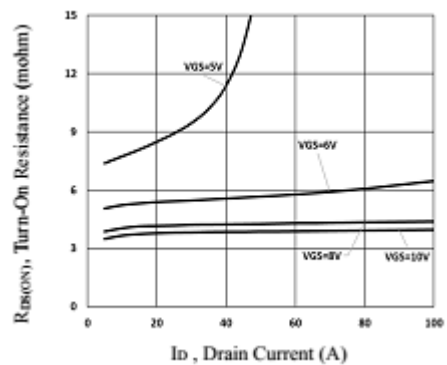
Gate Charge Characteristics



On-Region Characteristics



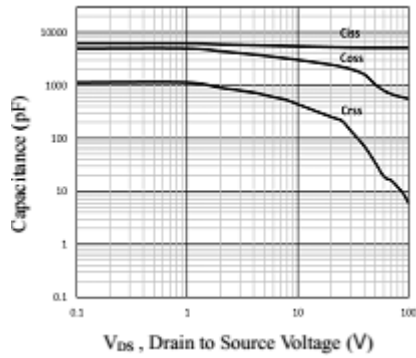
Turn-on Resistance vs. ID



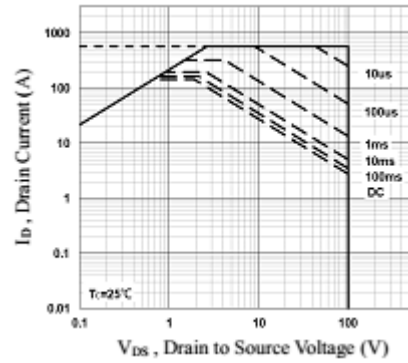


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

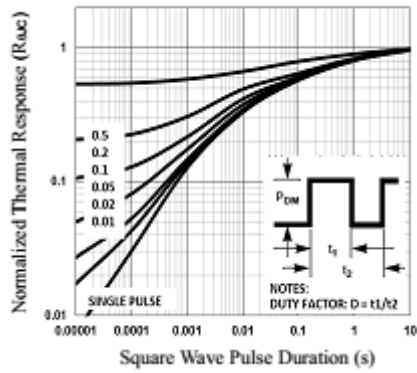
Capacitance Characteristics



Safe Operating Area



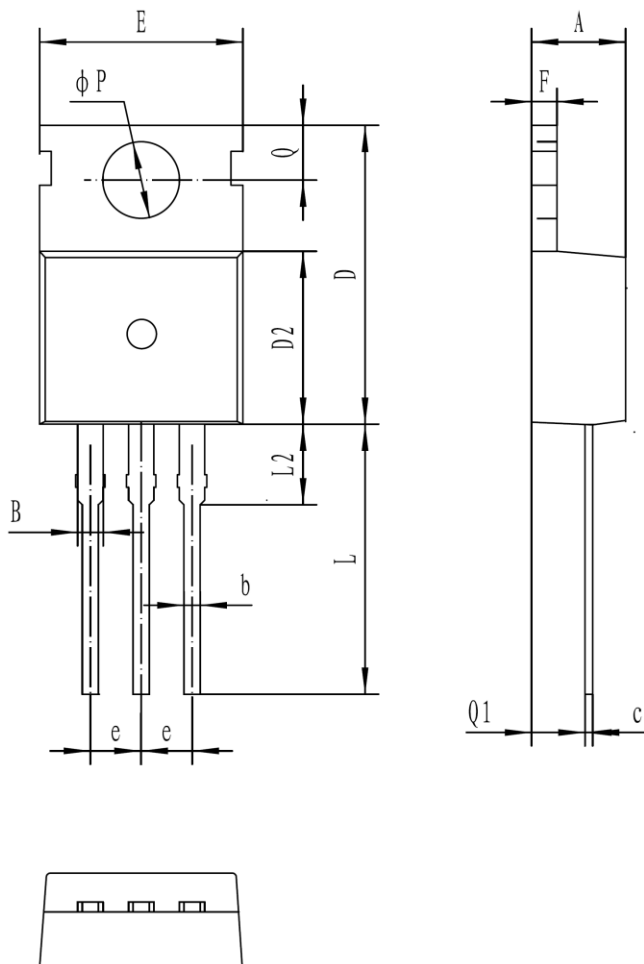
Transient Thermal Response Curve





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





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- 4.本说明书如有版本变更不另外告知

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