



MC10N007

主要参数 MAIN CHARACTERISTICS

I_D	95A
V_{DSS}	100V
$R_{dson-max}$ (@ $V_{gs}=10V$)	9m Ω
Q_g-typ	54nC

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

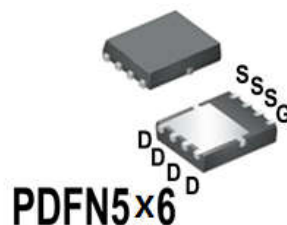
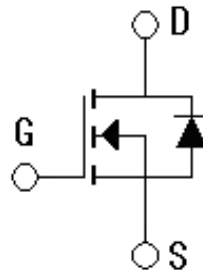
APPLICATIONS

- 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	MC10N007-AA-AR	MC10N007	PDFN5x6

绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^\circ\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MC10N007	
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 $T=25^\circ\text{C}$	95*	A
	I_D $T=100^\circ\text{C}$	60*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	380	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 $T_c=25^\circ\text{C}$ -Derate above 25°C	116	W
		0.93	W/ $^\circ\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	$^\circ\text{C}$

*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}	$V_{DS}=100V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	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}	$V_{DS}=0V, V_{GS}=-20V$	-	-	-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	3	4	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=50A$	-	7	9	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 5V, I_D=50A$ (note 4)	-	73	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate resistance	R_g	$f=1.0MHz, open\ drain$	-	2.4	-	Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=50V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	3927	-	pF
输出电容 Output capacitance	C_{oss}		-	470	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	19	-	pF

**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics					
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=50V, V_{GS}=10V$ $I_D=50A, R_G=3.0\Omega$, (note 3, 4)	-	16	- ns
上升时间 Turn-On rise time	t_r		-	34	- ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	36	- ns
下降时间 Turn-Off Fall time	t_f		-	13	- ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V$	-	54	- nC
栅-源电荷 Gate-Source charge	Q_{gs}	$I_D=50A$ (note 3, 4)	-	25	- nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	7	- 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	$T_C=25^\circ\text{C}$	-	-	95 A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ\text{C}$	-	-	380 A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ\text{C}, V_{GS}=0V, I_{SD}=50A$	-	0.9	1.3 V
反向恢复时间 Reverse recovery time	T_{rr}	$V_{GS}=0V, I_S=50A$		63	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$dI_F/dt=100A/\mu\text{s}$ (note 4)		160	nc

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MC10N007	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.997	$^\circ\text{C}/\text{W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	42.73	$^\circ\text{C}/\text{W}$

注释:

1: 脉冲宽度由最高结温限制

2: $I_{AS}=40A, V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$, 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:

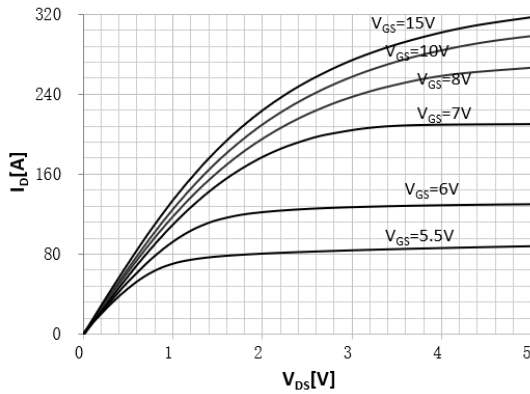
1: Pulse width limited by maximum junction temperature

2: $I_{AS}=40A, V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$ 3: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

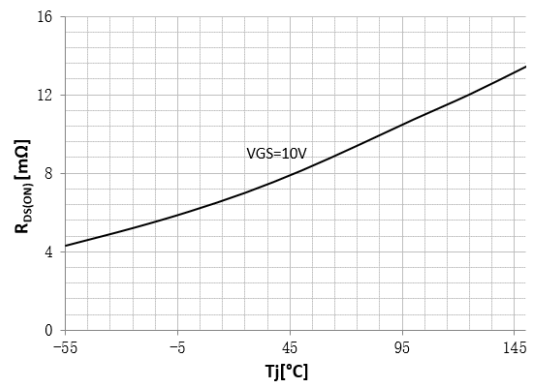
4: Essentially independent of operating temperature



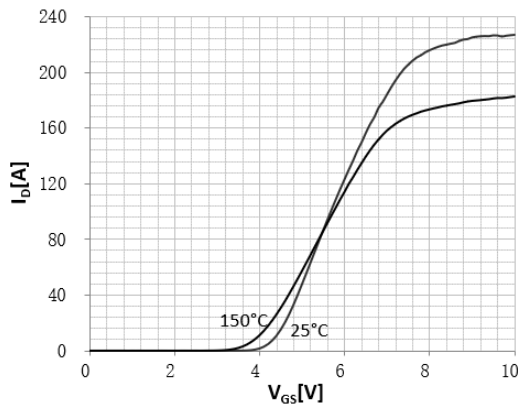
On-Region Characteristics



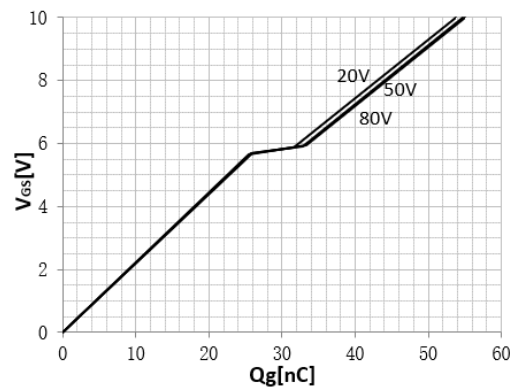
$R_{DS(on)}$ vs. T_J



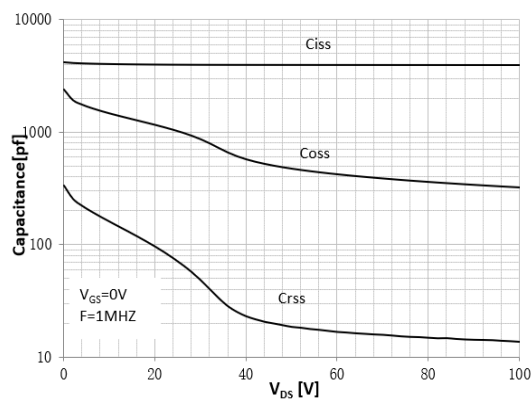
Transfer Characteristics



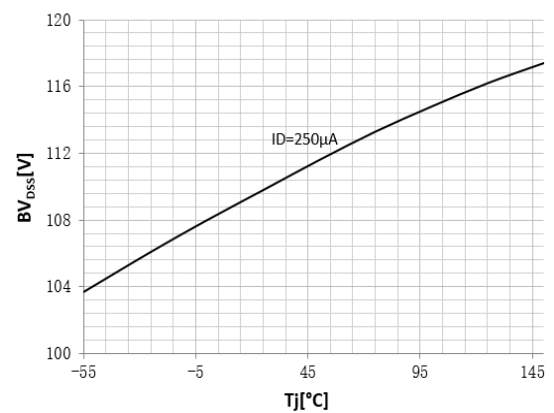
Gate Charge Characteristics



Capacitance Characteristics

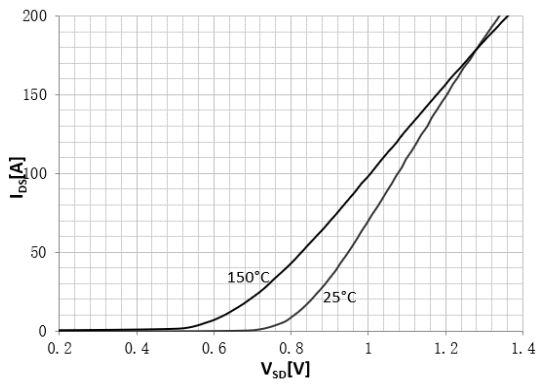


Breakdown Voltage Variation vs T_J

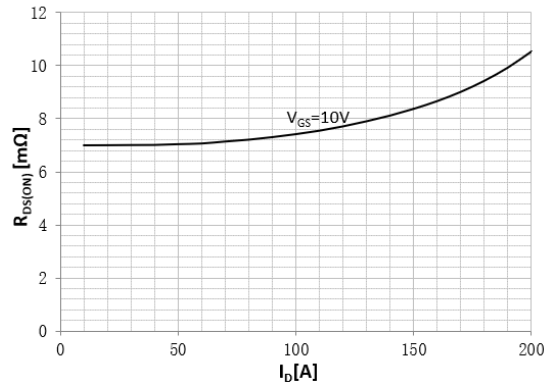




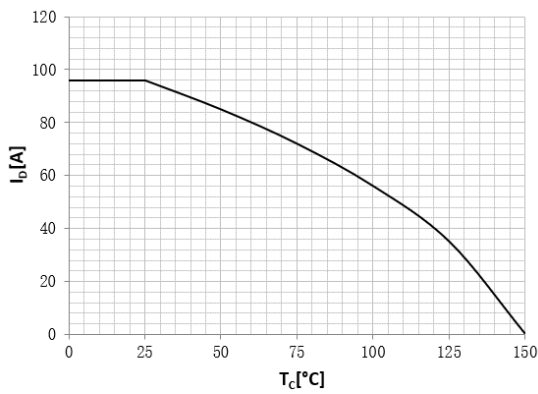
Body Diode Forward Voltage Variation vs. Source Current and Temperature



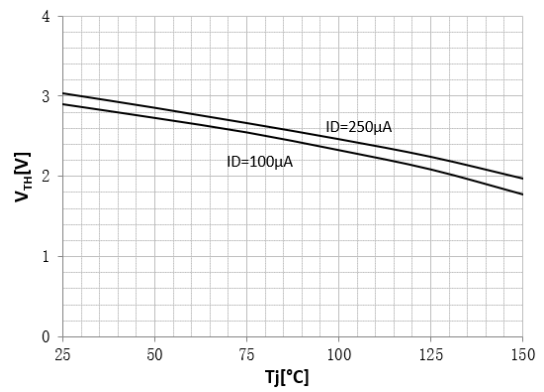
On-Resistance Variaton vs. Drain Current and Gate Voltage



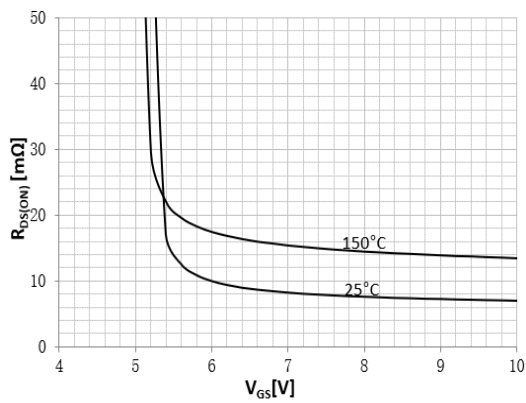
Drain Current Dissipation vs Tc



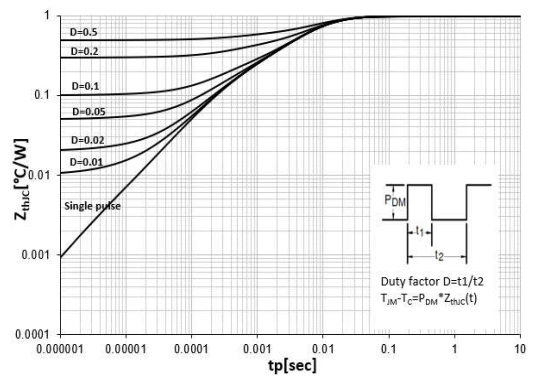
Gate Threshold Voltage Variation vs Tj



Drain-Source on resistance

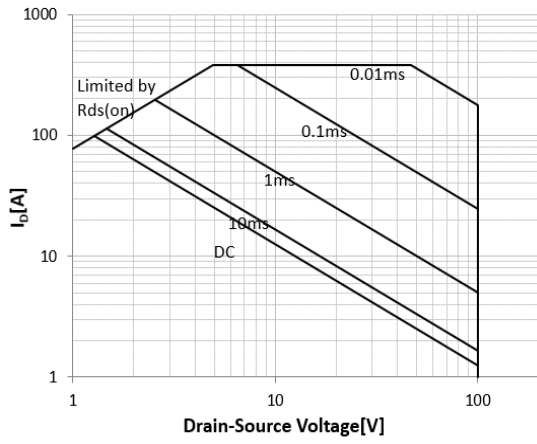


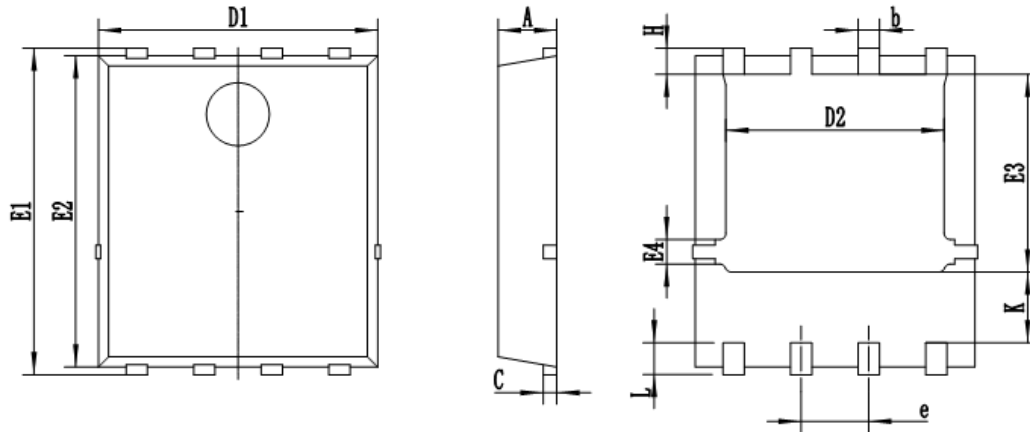
Transient Thermal Impedance





Maximum Safe Operation





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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