



MC09N06A

主要参数 MAIN CHARACTERISTICS

I_D	7.4A
V_{DSS}	65V
$R_{dson-max}$ (@ $V_{gs}=10V$)	16m Ω
Q_g-typ	10.9nC

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

- 沟槽功率 MOSFET 技术
- 低 $R_{DS(ON)}$
- 低栅极电荷
- 开关速度快

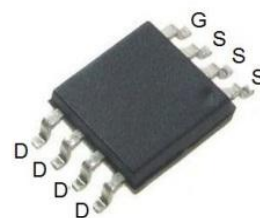
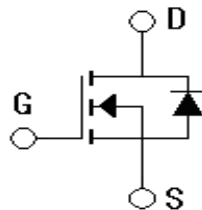
APPLICATIONS

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

FEATURES

- Trench Power MOSFET Technology
- LOW $R_{DS(ON)}$
- Low gate charge
- Fast-switching

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	MC09N06A-L-AR	MC09N06A	SOP-8





绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MC09N06A	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	65	V
连续漏极电流 Drain Current -continuous	I_D T=25°C	7.4*	A
	I_D T=100°C	3.0*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	29.6*	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}	9.1	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	13.5	A
耗散功率 Power Dissipation	P_D T _C =25°C -Derate above 25°C	1.47	W
		0.01	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}	$I_D=250\mu A, V_{GS}=0V$	65	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=48V, V_{GS}=0V, T_C=85^\circ C$	-	-	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}	$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=3A$	-	13	16	m Ω
		$V_{GS} = 4.5V, I_D=2A$	-	23	30	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=3A$ (note 4)	-	5	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=30V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	653	1300	pF
输出电容 Output capacitance	C_{oss}		-	192	380	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	27	60	pF
栅电阻 Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$		0.3		Ω





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=30V, I_D=1A, R_G=3.3\Omega$ (note 3, 4)	-	8	16	ns
上升时间 Turn-On rise time	t_r		-	12	24	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	25	50	ns
下降时间 Turn-Off Fall time	t_f		-	18	36	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=30V,$ $I_D=3A$ $V_{GS}=10V$ (note 3, 4)	-	10.9	22	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	1.5	3	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	4.4	9	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	$T_C=25^\circ\text{C}$	-	-	7.4	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ\text{C}$	-	-	14.8	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}	$I_S=5A$ $dI_F/dt=100A/\mu s$ (note 3)	-	33.7	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	23.7	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MC09N06A	
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	85	$^\circ\text{C}/\text{W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=13.5A, V_{DD}=50V, V_{GS}=10V, L=0.1mH,$
 $R_G=25\Omega,$ 起始结温 $T_J=25^\circ\text{C}$
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu s,$ 占空比 $\leq 2\%$
- 4: 基本与工作温度无关

Notes:

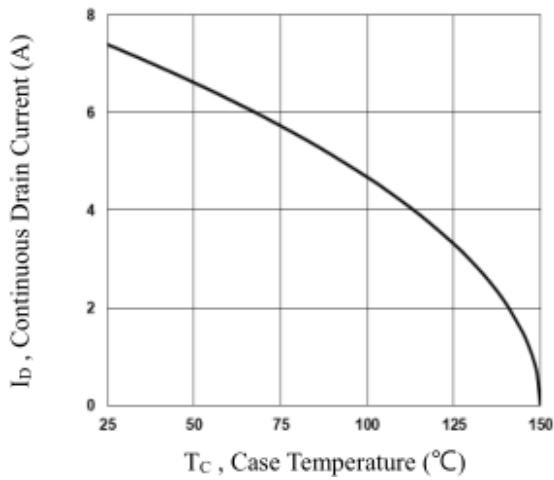
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=13.5A, V_{DD}=50V, V_{GS}=10V, L=0.1mH,$
 $R_G=25\Omega,$ Starting $T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu s,$ Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



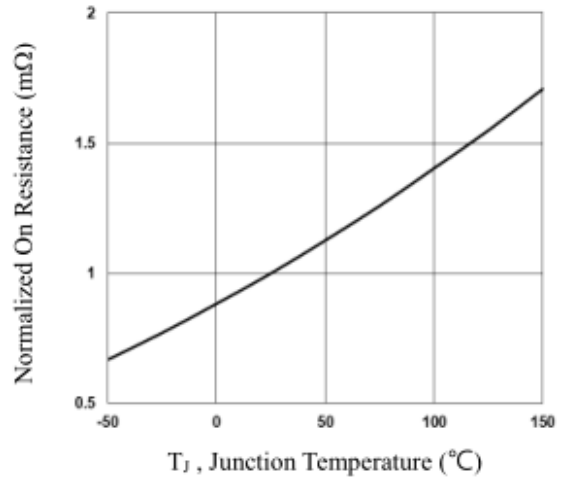


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

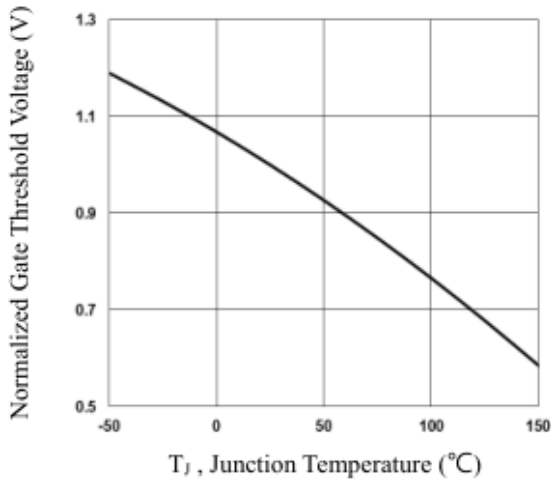
Continuous Drain Current vs. T_C



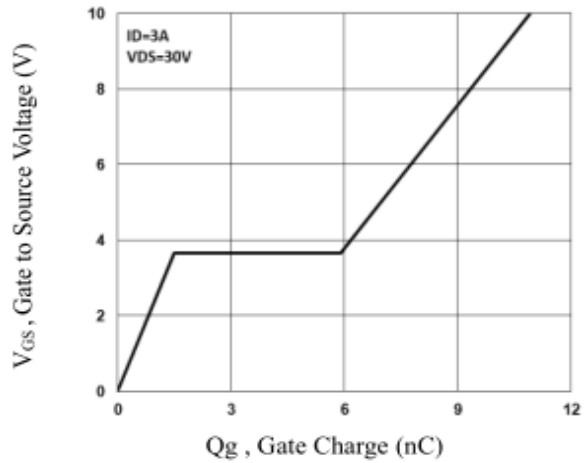
Normalized $R_{DS(ON)}$ vs. T_J



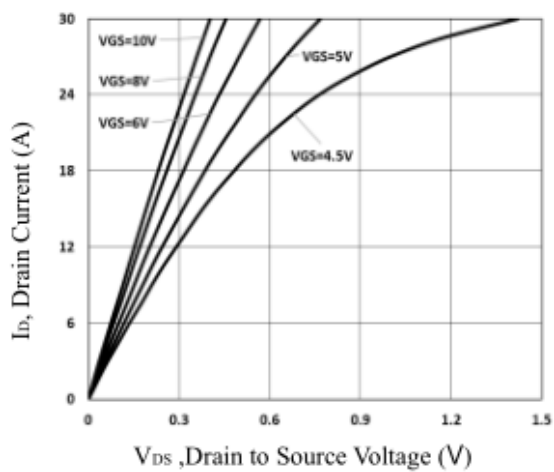
Normalized V_{th} vs. T_J



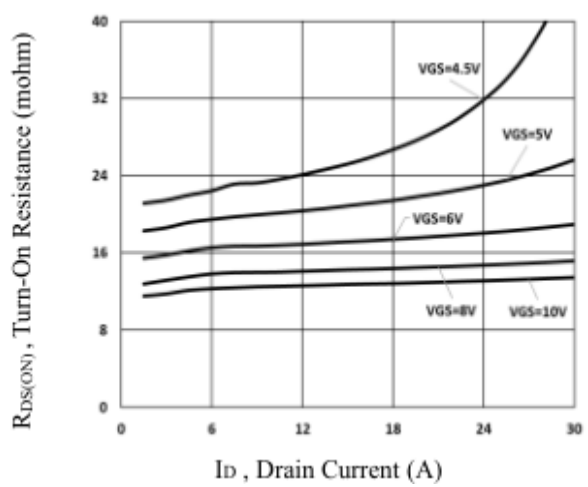
Gate Charge Characteristics



Typical Output Characteristics



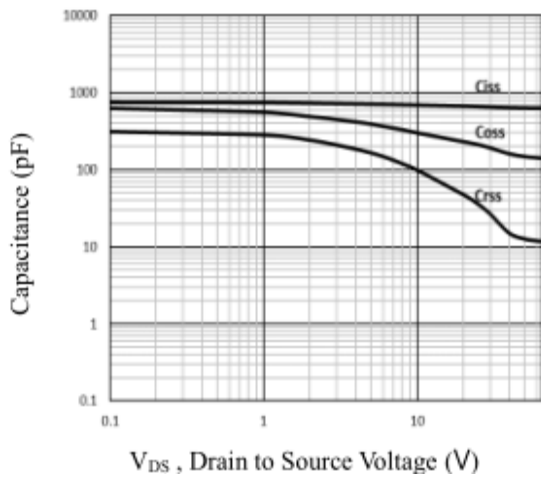
Turn-On Resistance vs. I_D



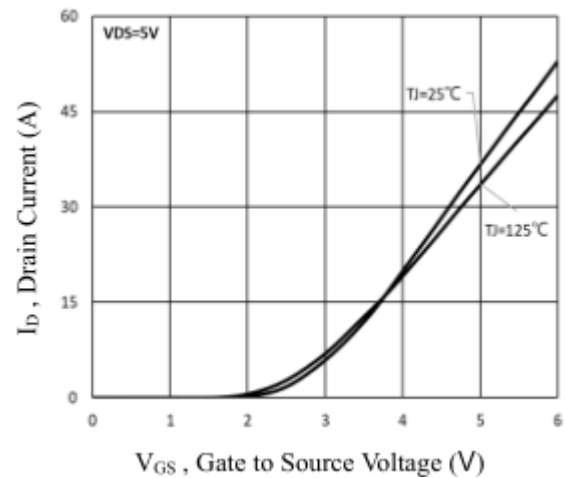


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

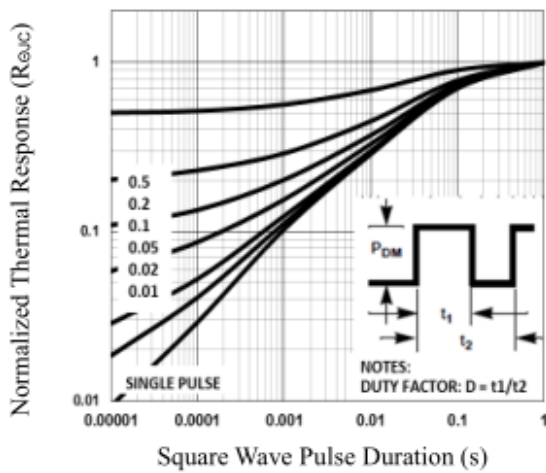
Capacitance Characteristics



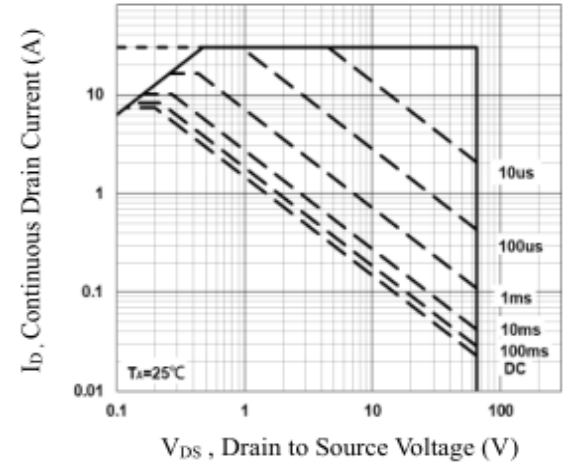
Transfer Characteristics



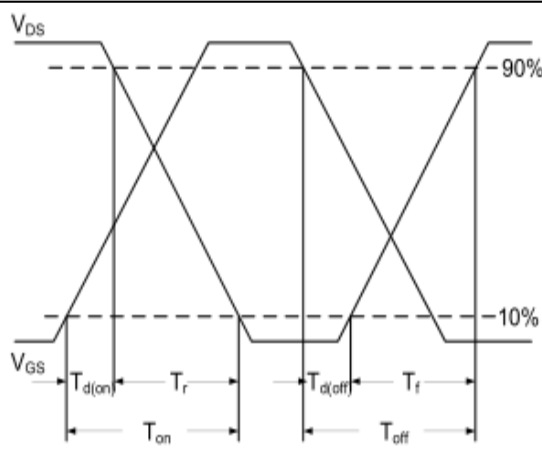
Normalized Transient Impedance



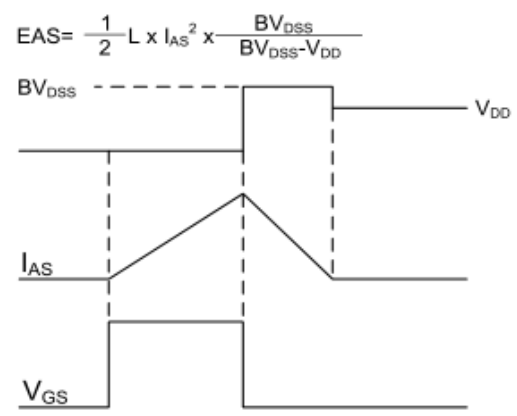
Maximum Safe Operation



Switching Time Waveform



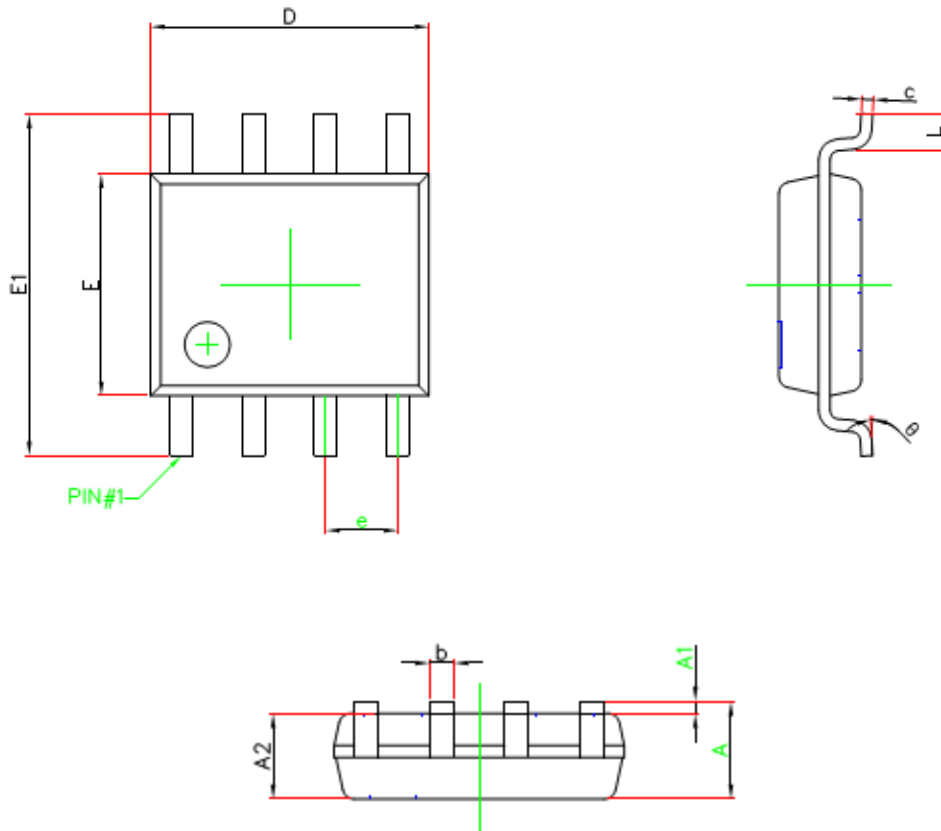
EAS Waveform





SOP8

单位 Unit: mm



SYMBOL	MM	
	MIN	MAX
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.800	5.200
E	3.800	4.200
E1	5.800	6.200
e	1.27 (TYP)	
L	0.400	1.270
θ	0°	8°



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