MQ0E09P

-40V/-9A P-Channel MOSFET

Features

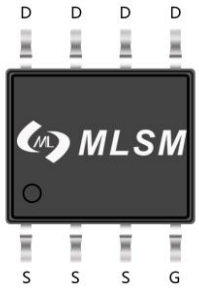
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Product Summary

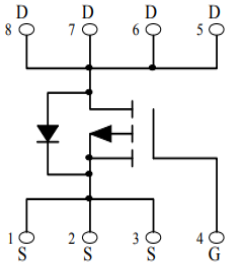
V_{DS}	$R_{DS(ON)}$ TYP	I_D
-40V	21mΩ@-10V	-9A
	28mΩ@-4.5V	

Application

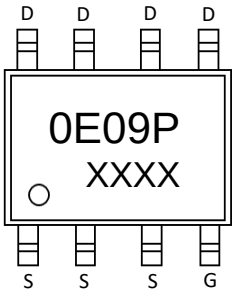
- PWM applications
- Power management
- Load switch



SOP-8 top view



Schematic diagram



Marking and pin assignment

0E09P: Device code
XXXX : Code

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		-40	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	-9	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-45	A
I_D	Continuous Drain Current	Tc=25°C	-9	A
P_D	Maximum Power Dissipation	Tc=25°C	6.6	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		75	°C/W

Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MQ0E09P	SOP-8	0E09P	3,000	6,000	42,000	13"reel

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V，I_D=-250μA	-40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-40V，V_{GS}=0V	--	--	-1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V，V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}，I_D=-250μA	-1.0	-1.8	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V，I_D=-9A	--	21	30	mΩ
		V_{GS}=-4.5V，I_D=-5A	--	28	40	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-20V，V_{GS}=0V， f=1MHz	--	1450	--	pF
C_{OSS}	Output Capacitance		--	180	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	150	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=-20V，I_D=-9A，V_{GS}=-10V	--	24	--	nC
Q_{gs}	Gate Source Charge		--	3.5	--	nC
Q_{gd}	Gate Drain Charge		--	6	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-20V，I_D=-9A，V_{GS}=-10V，R_G=3.0Ω	--	8	--	nS
t_r	Turn-on Rise Time		--	7	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	nS
t_f	Turn-Off Fall Time		--	9	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=-9A	--	--	-1.2	V

Typical Operating Characteristics

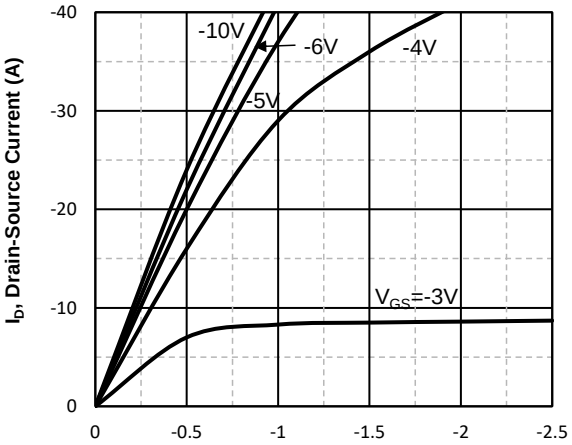


Fig1. Typical Output Characteristics

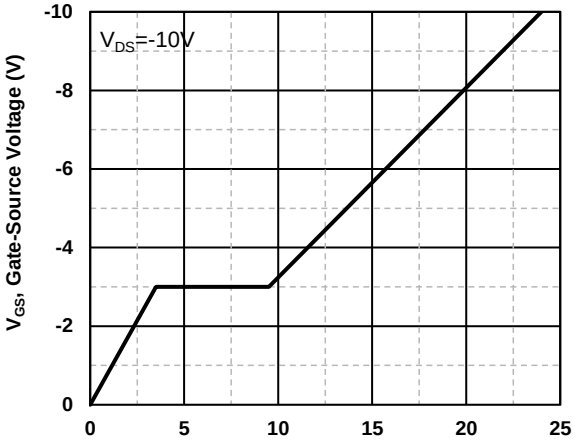


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

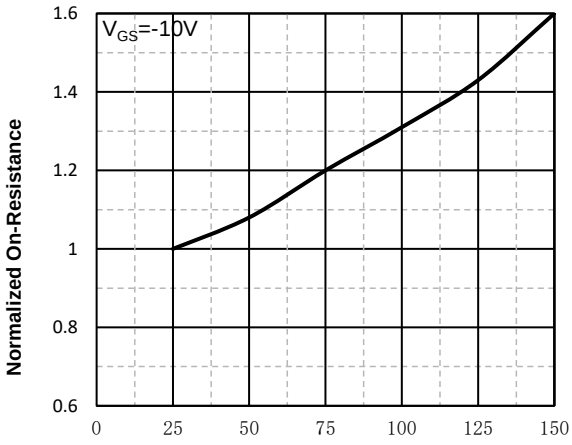


Fig3. Normalized On-Resistance Vs. Temperature

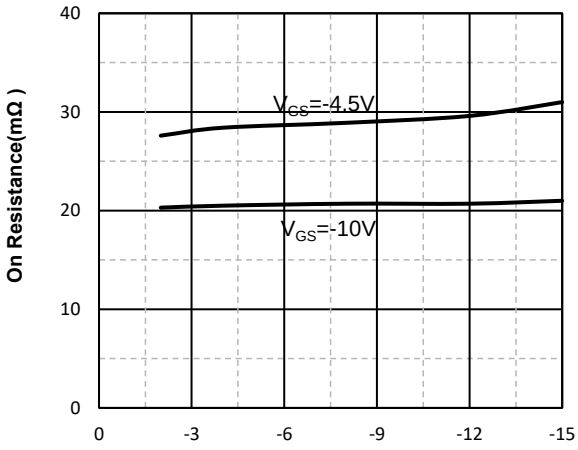


Fig4. On Resistance Vs. Drain-Source Current

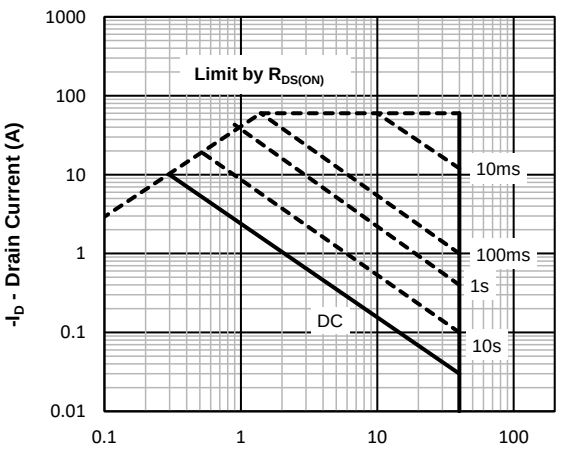


Fig5. Maximum Safe Operating Area

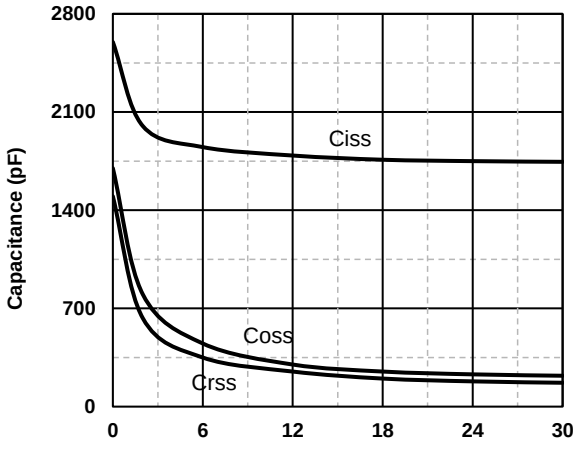
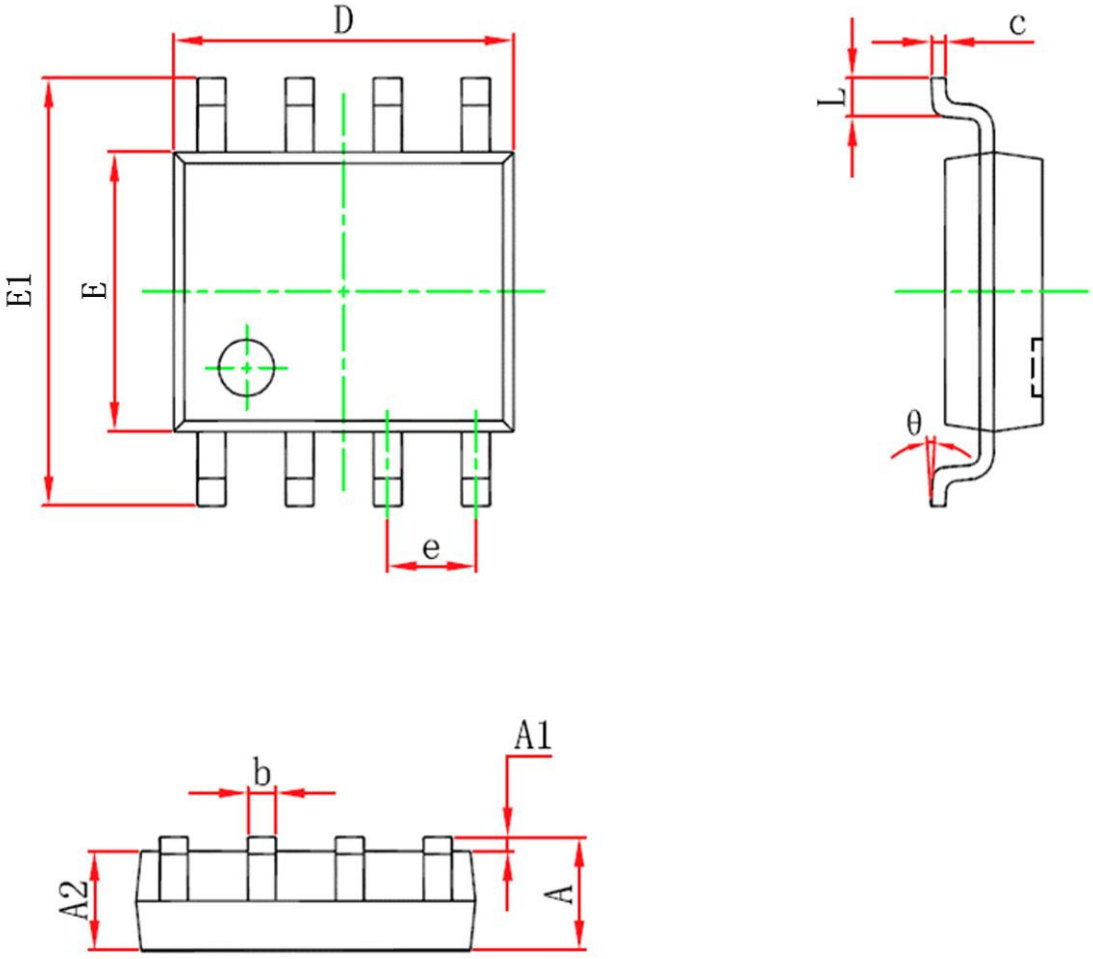


Fig6 Typical Capacitance Vs.Drain-Source Voltage

SOP-8 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.057	0.068
A1	0.100	0.250	0.003	0.009
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.012	0.020
c	0.170	0.250	0.006	0.009
D	4.700	5.100	0.185	0.200
e	1.270(BSC)		0.050(BSC)	
E	3.800	4.000	0.149	0.157
E1	5.800	6.200	0.228	0.244
L	0.400	1.270	0.015	0.050
θ	0°	8°	0°	8°