

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



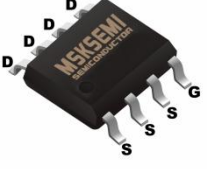
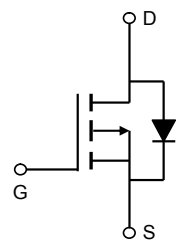

PLED

AO4409-MS

Product specification

Features

- $V_{DS} (V) = -30V$
- $I_D = -15A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 7.50m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 12m\Omega$ ($V_{GS} = -4.5V$)

PACKAGE OUTLINE	P-Channel MOSFET	Marking
 SOP-8		

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A=25^{\circ}C$	I_D	-15	A
	$T_A=70^{\circ}C$		-12.8	
Pulsed Drain Current		I_{DM}	-80	
Avalanche Current		I_{AS}, I_{AR}	30	
Avalanche energy	$L=0.1mH$	E_{AS}, E_{AR}	135	mJ
Power Dissipation	$T_A=25^{\circ}C$	P_D	3.1	W
	$T_A=70^{\circ}C$		2	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	R_{thJA}	40	$^{\circ}C/W$
	Steady-State		75	
Thermal Resistance.Junction- to-Lead		R_{thJL}	24	
Junction Temperature		T_J	150	$^{\circ}C$
Junction Storage Temperature Range		T_{stg}	-55 to 150	

Electrical Characteristics Ta = 25 °C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =-250 μA, V _{GS} =0V	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-5	μA
		V _{DS} =-30V, V _{GS} =0V, T _J =55°C			-25	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250 μA	-1.4		-2.7	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A			7.5	mΩ
		V _{GS} =-10V, I _D =-15A T _J =125°C			11.5	
		V _{GS} =-4.5V, I _D =-10A			12	
On state drain current	I _{D(ON)}	V _{GS} =-10V, V _{DS} =-5V	-80			A
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-15A	35	50		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-15V, f=1MHz		5270	6400	pF
Output Capacitance	C _{oss}			945		
Reverse Transfer Capacitance	C _{rss}			745		
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		2	3	Ω
Total Gate Charge (10V)	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-15A		100	120	nC
Total Gate Charge (4.5V)				51.5		
Gate Source Charge				14.5		
Gate Drain Charge				23		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-10V, V _{DS} =-15V, R _L =1Ω, R _{GEN} =3Ω		14		ns
Turn-On Rise Time	t _r			16.5		
Turn-Off DelayTime	t _{d(off)}			76.5		
Turn-Off Fall Time	t _f			37.5		
Body Diode Reverse Recovery Time	t _{rr}	I _F =-15A, dI/dt=100A/us		36.7	45	nC
Body Diode Reverse Recovery Charge	Q _{rr}			28		
Maximum Body-Diode Continuous Current	I _S				-5	A
Diode Forward Voltage	V _{SD}	I _S =-1A, V _{GS} =0V			-1	V

Note : The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

Typical Characteristics

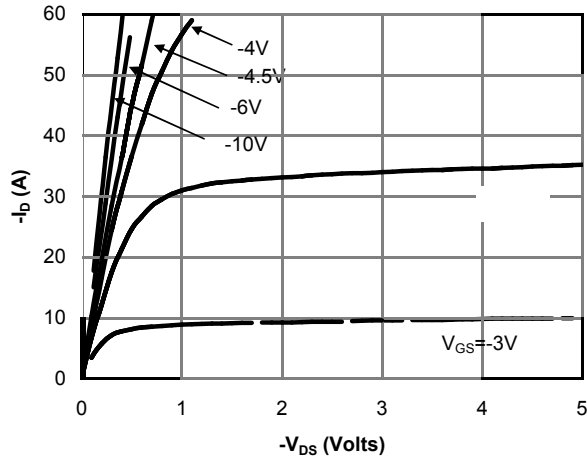


Fig 1: On-Region Characteristics (Note E)

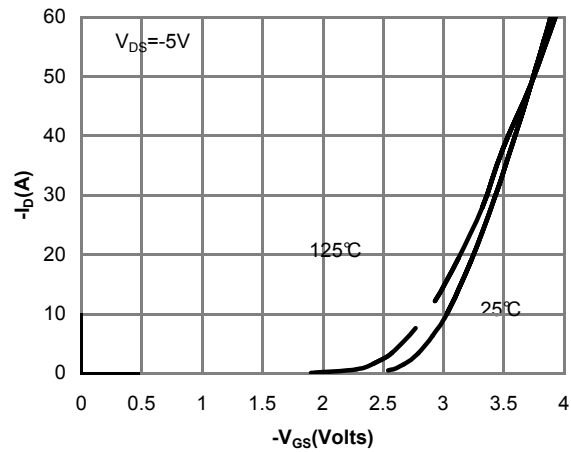


Figure 2: Transfer Characteristics (Note E)

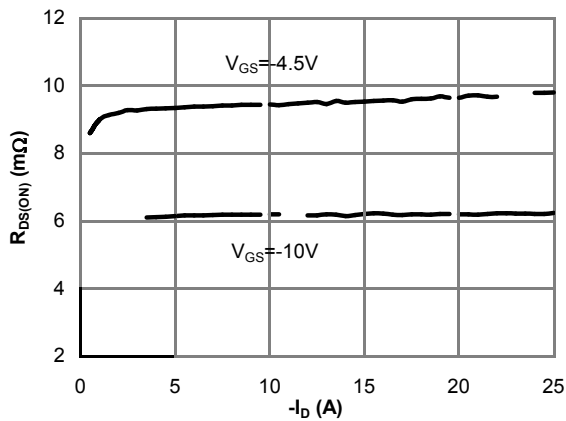


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

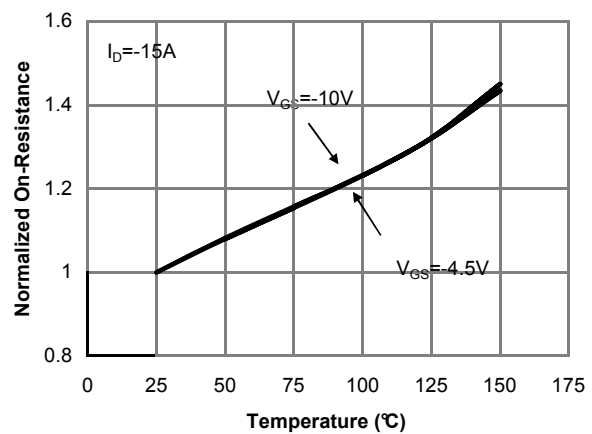


Figure 4: On-Resistance vs. Junction Temperature (Note E)

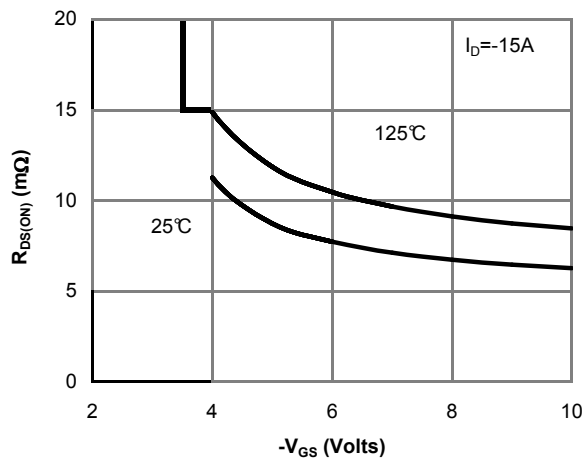


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

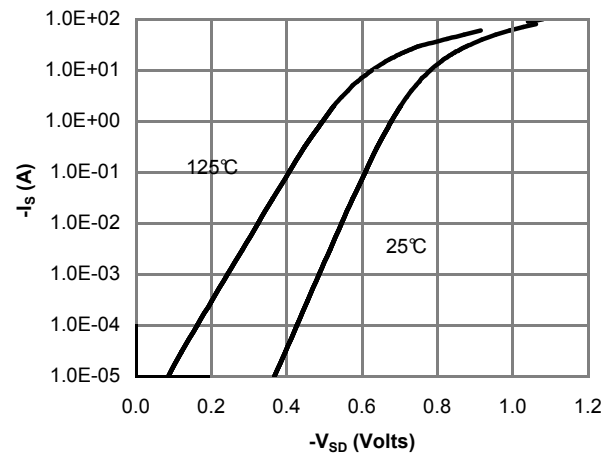
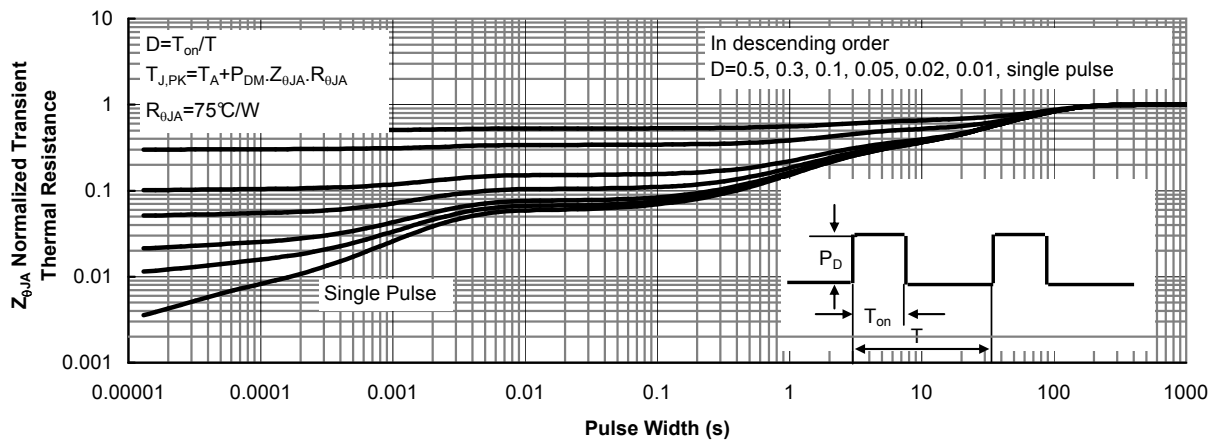
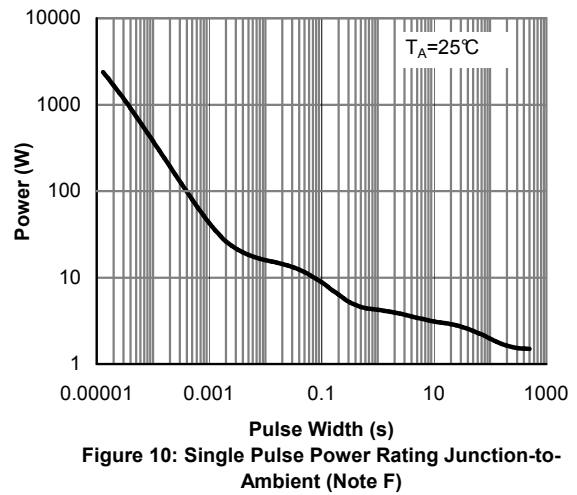
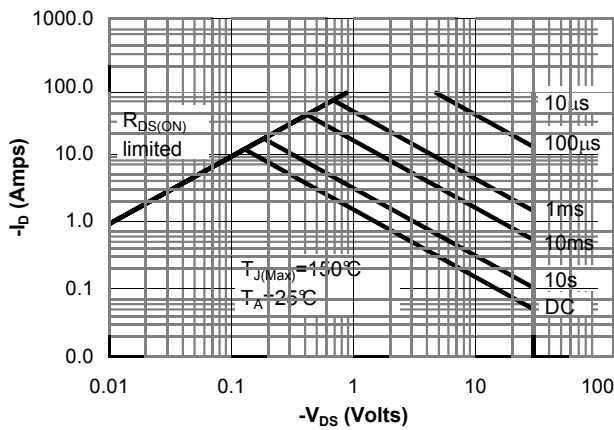
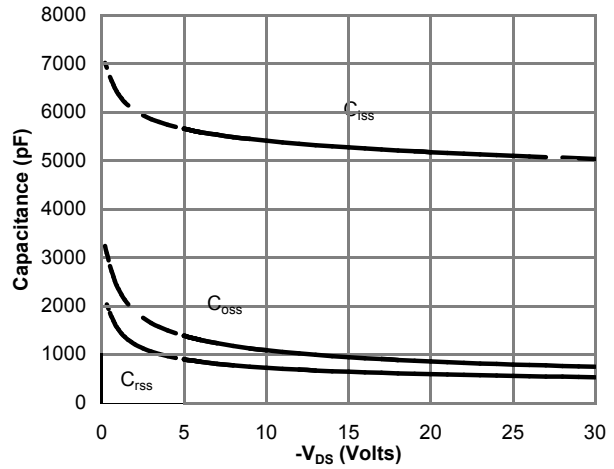
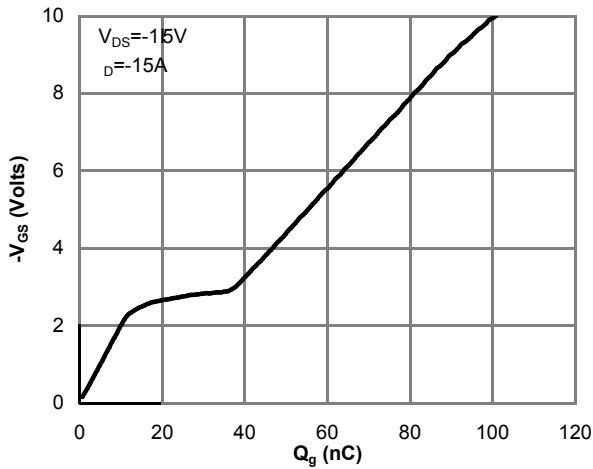
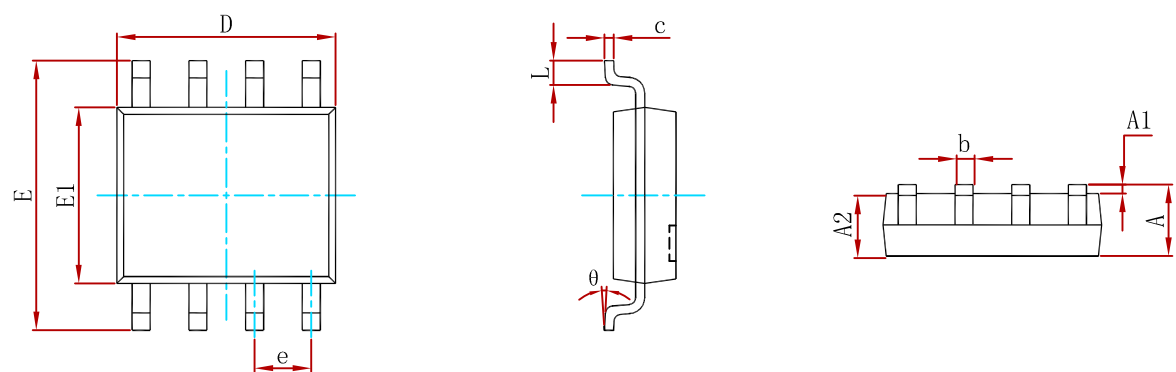


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

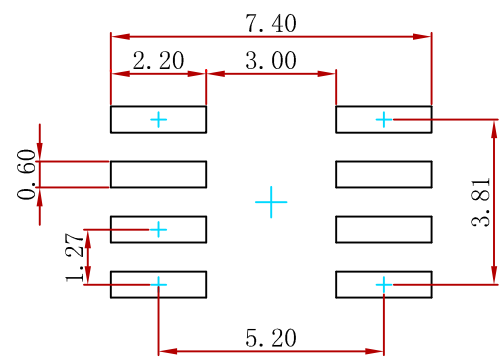


PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
AO4409-MS	SOP-8	3000

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