

MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

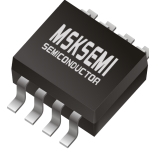


GDT

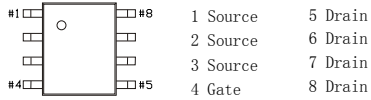


PLED

Product data sheet

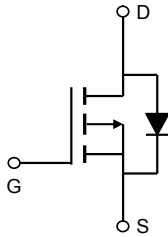


SOP-8



■ Features

- $V_{DS} (V) = -30V$
- $I_D = -15 A (V_{GS} = -10V)$
- $R_{DS(ON)} < 7.5m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 12m\Omega (V_{GS} = -4.5V)$



Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current	I_D	$T_A = 25^\circ C$	-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	P_D	$T_A = 25^\circ C$	3.1	W
		$T_A = 70^\circ C$	2	
Thermal Resistance.Junction- to-Ambient	R_{thJA}	$t \leq 10s$	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 μ A, 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 μ A	-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			Q _{gs}		14.5		
Gate Drain Charge			Q _{gd}		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, d _i /d _t =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

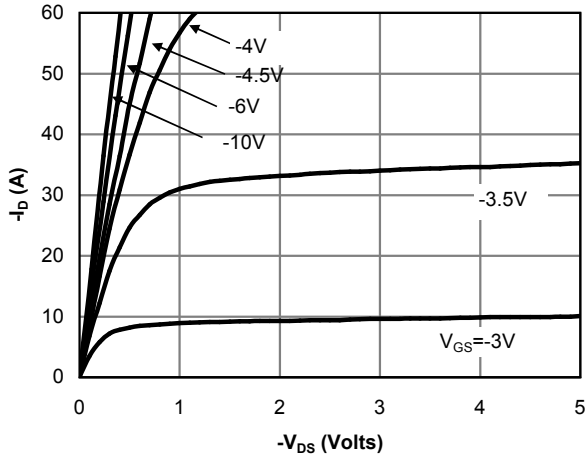


Fig 1: On-Region Characteristics (Note E)

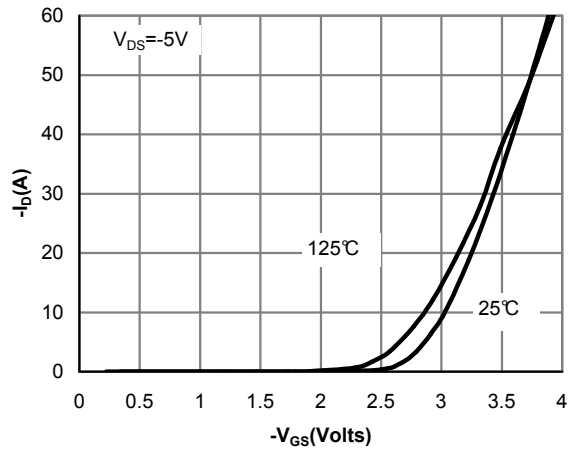


Figure 2: Transfer Characteristics (Note E)

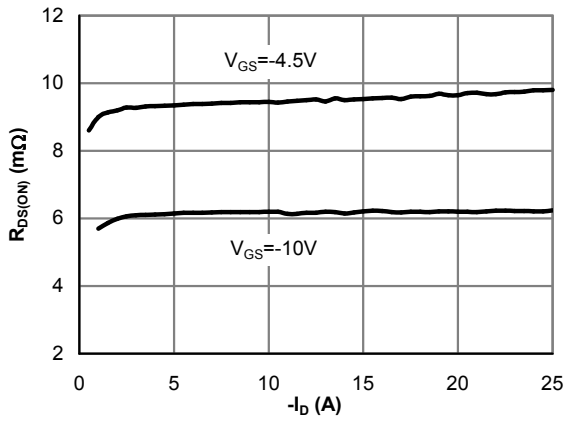


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

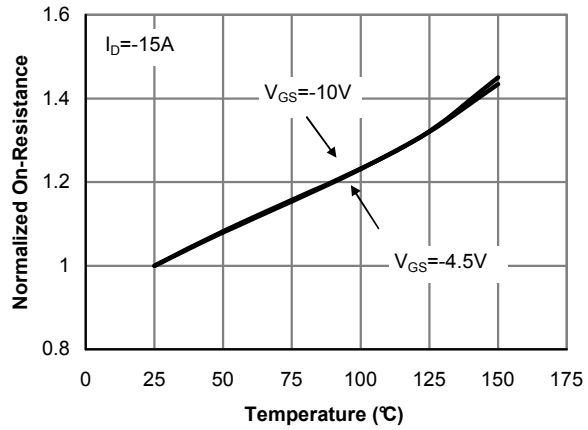


Figure 4: On-Resistance vs. Junction Temperature (Note E)

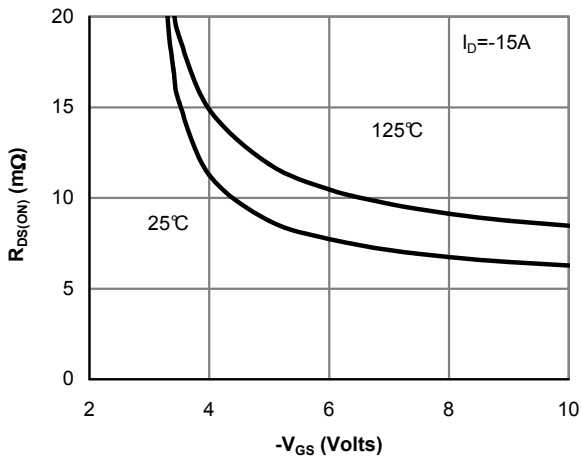


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

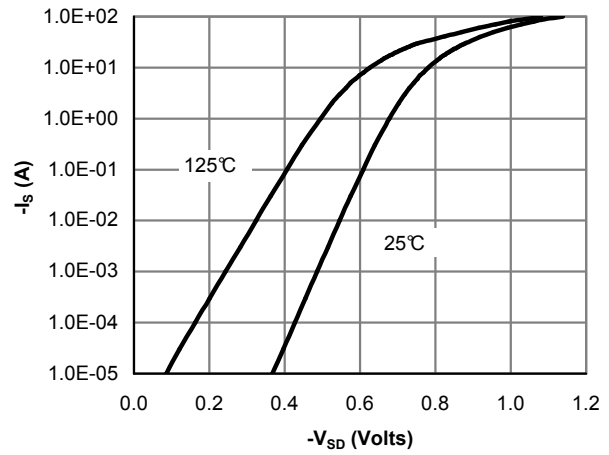


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

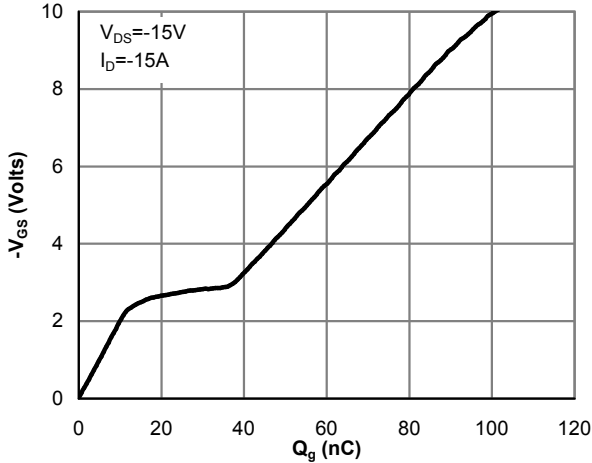


Figure 7: Gate-Charge Characteristics

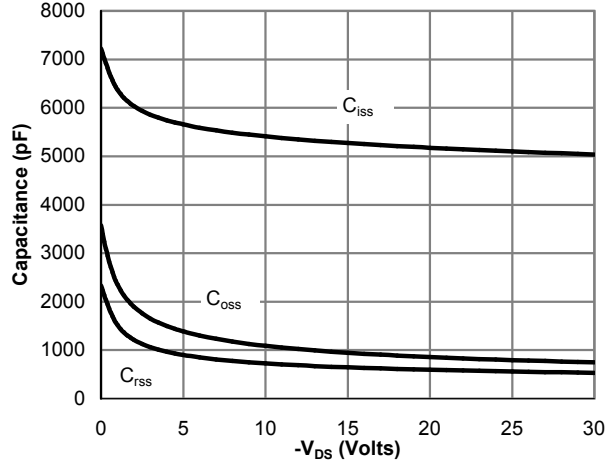


Figure 8: Capacitance Characteristics

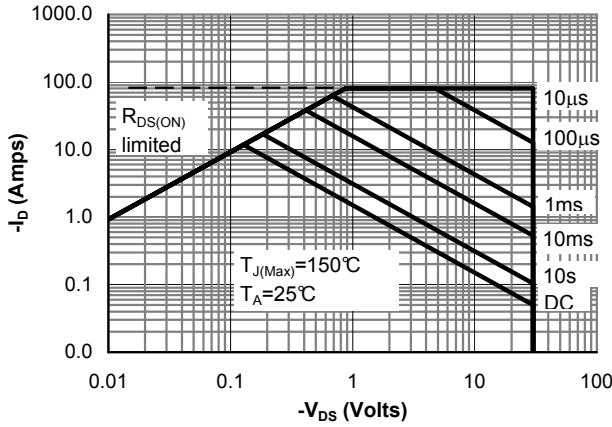


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

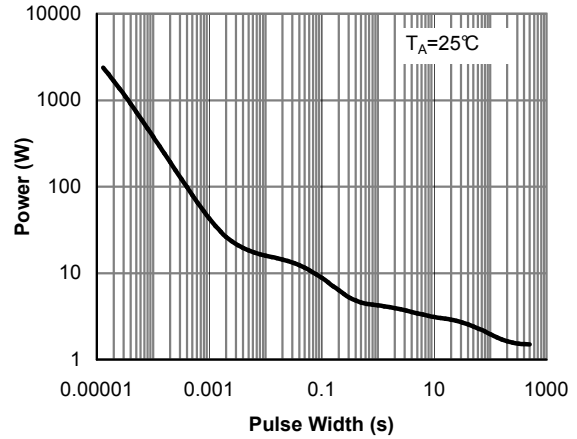


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

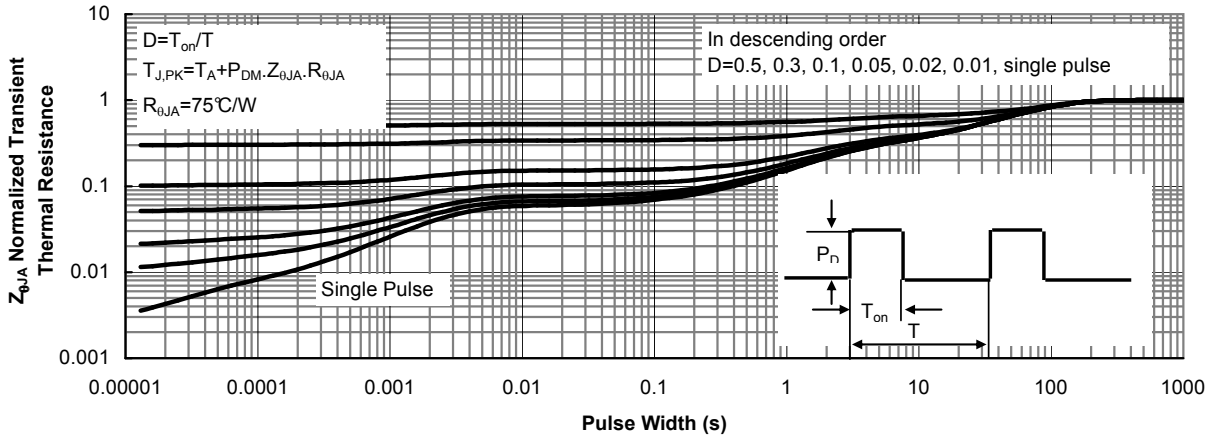
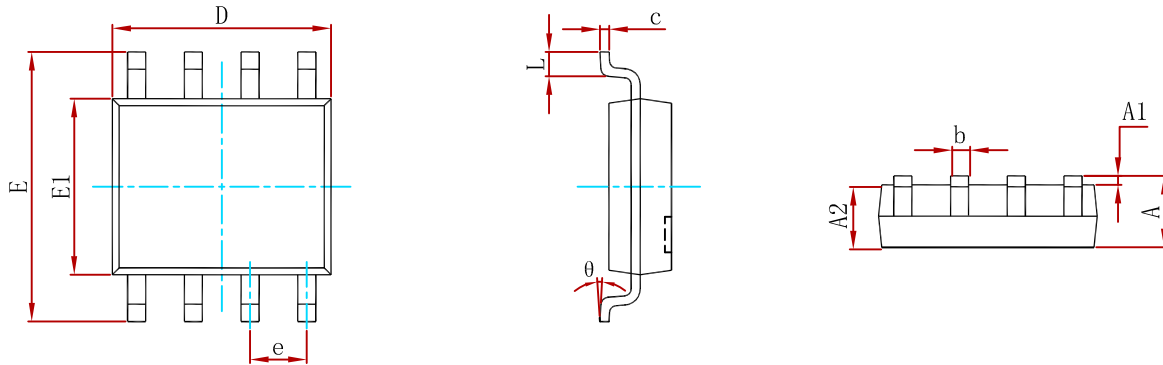


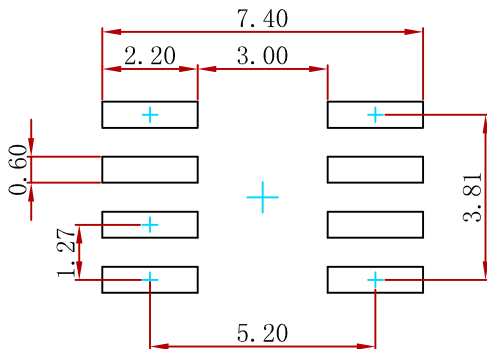
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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: ± 0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

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

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