

MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

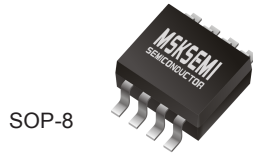


GDT

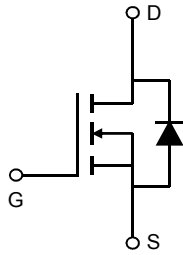


PLED

Product data sheet



SOP-8



Features

- $V_{DS} (V) = 30V$
- $I_D = 12 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 12.0m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 15.5m\Omega (V_{GS} = 4.5V)$

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	$T_A=25^\circ C$	I_D	12	A
	$T_A=70^\circ C$		10	
Pulsed Drain Current		I_{DM}	100	
Avalanche Current		I_{AS}	22	
Avalanche energy	$L=0.1mH$	E_{AS}	24	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	$^\circ C$
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			1	μA	
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			5		
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 =250μA	1.5		2.5	V	
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =12A			12	mΩ	
		V _{GS} =10V, I _D =12A T _J =125°C			17		
		V _{GS} =4.5V, I _D =10A			15.5		
On State Drain Current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	100			A	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =12A		45		S	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz	610		910	pF	
Output Capacitance	C _{oss}		88		160		
Reverse Transfer Capacitance	C _{rss}		40		100		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	0.8		2.4	Ω	
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =12A	11		17	nC	
Total Gate Charge (4.5V)			5		8		
Gate Source Charge			Q _{gs}	1.9			2.9
Gate Drain Charge			Q _{gd}	1.8			4.2
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =1.25Ω, R _{GEN} =3Ω		4.4		ns	
Turn-On Rise Time	t _r			9			
Turn-Off DelayTime	t _{d(off)}			17			
Turn-Off Fall Time	t _f			6			
Body Diode Reverse Recovery Time	t _{rr}	I _F = 12A, di/dt= 500A/us	5.6		8	nC	
Body Diode Reverse Recovery Charge	Q _{rr}		6.4		9.6		
Maximum Body-Diode Continuous Current	I _S				4	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

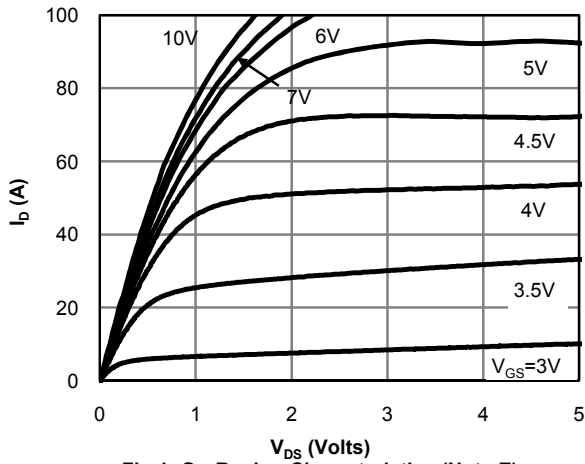


Fig 1: On-Region Characteristics (Note E)

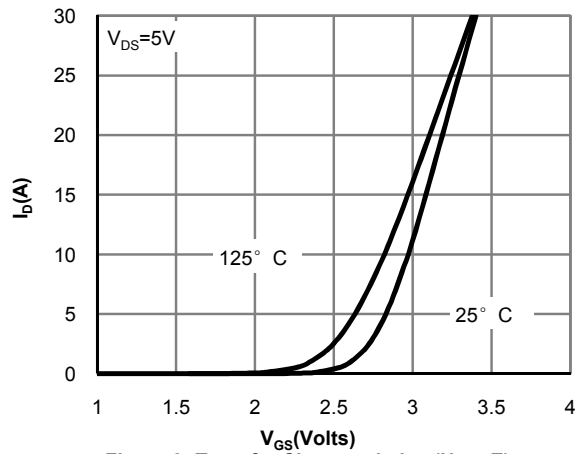


Figure 2: Transfer Characteristics (Note E)

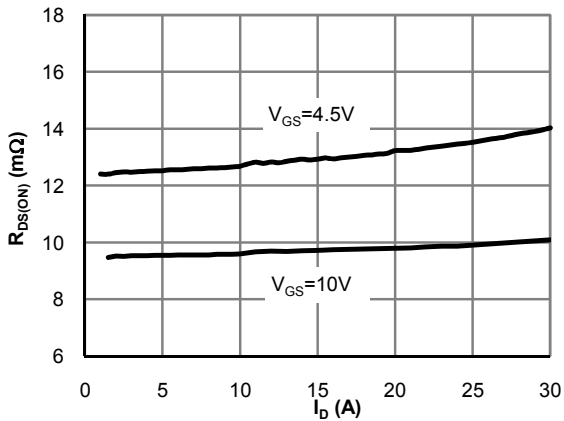


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

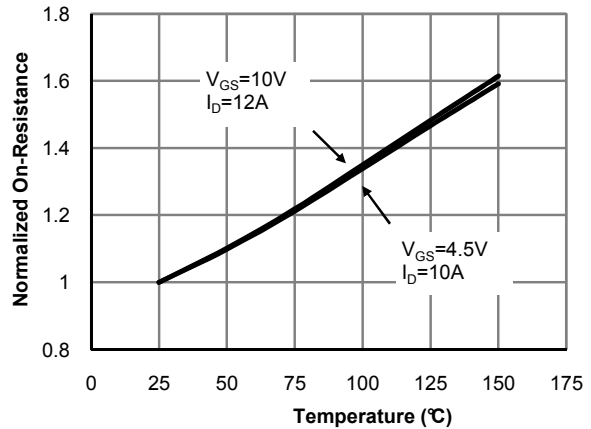


Figure 4: On-Resistance vs. Junction Temperature (Note E)

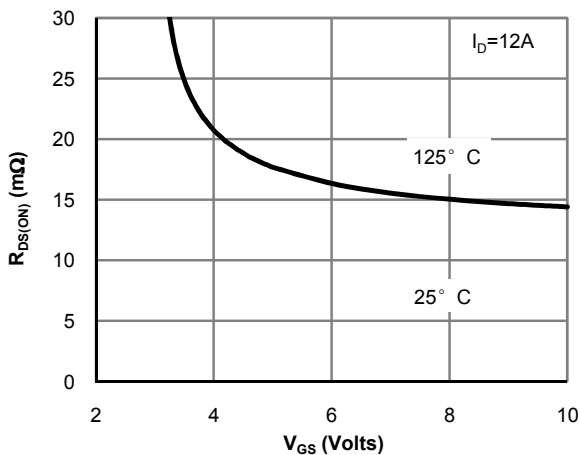


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

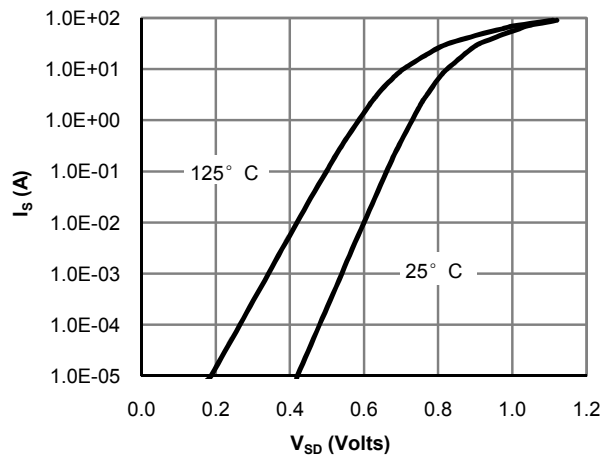


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

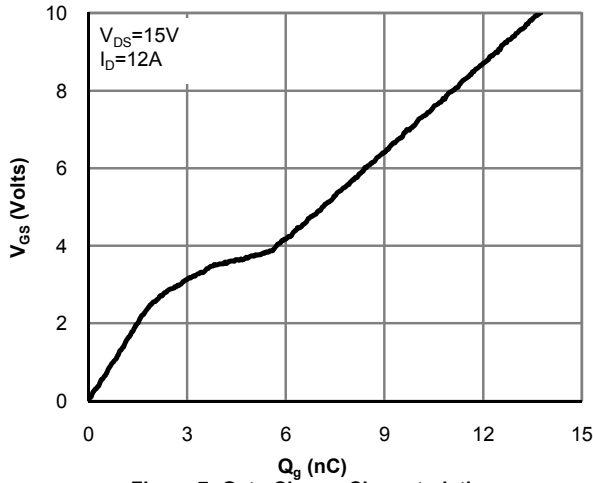


Figure 7: Gate-Charge Characteristics

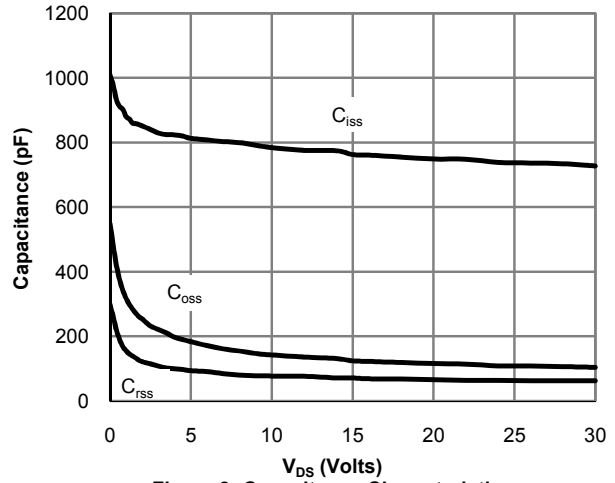


Figure 8: Capacitance Characteristics

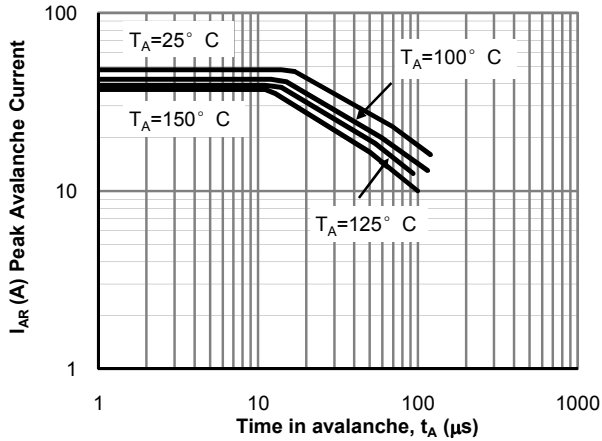


Figure 9: Single Pulse Avalanche capability (Note C)

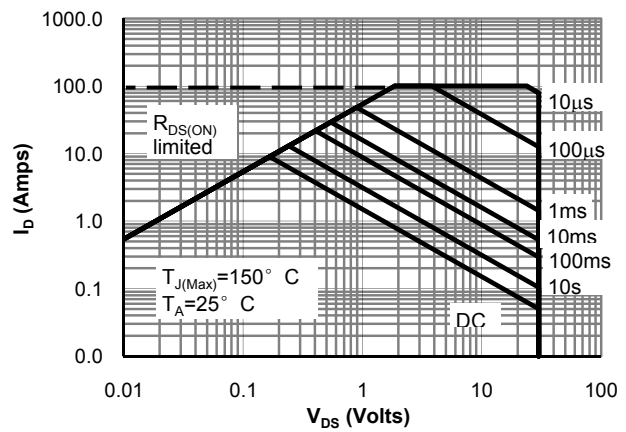


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

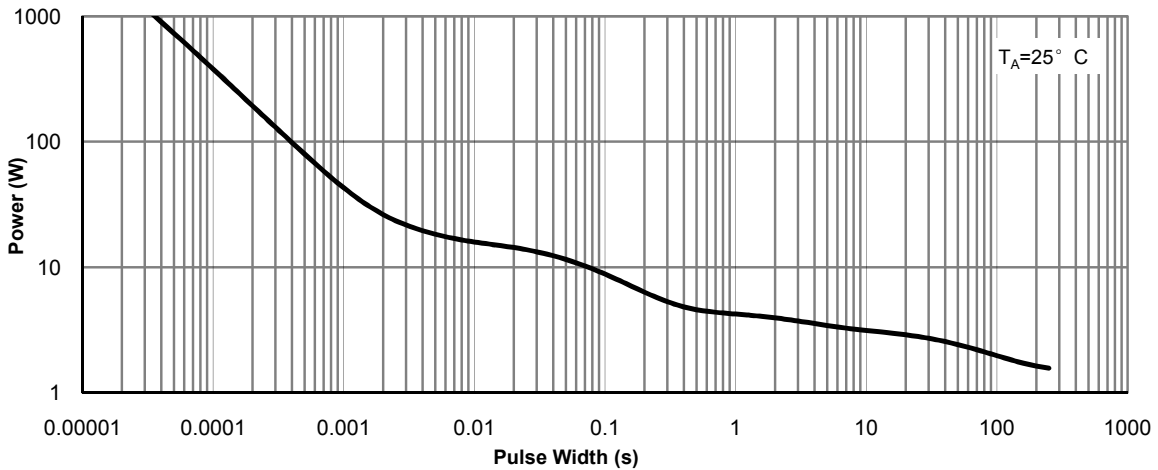
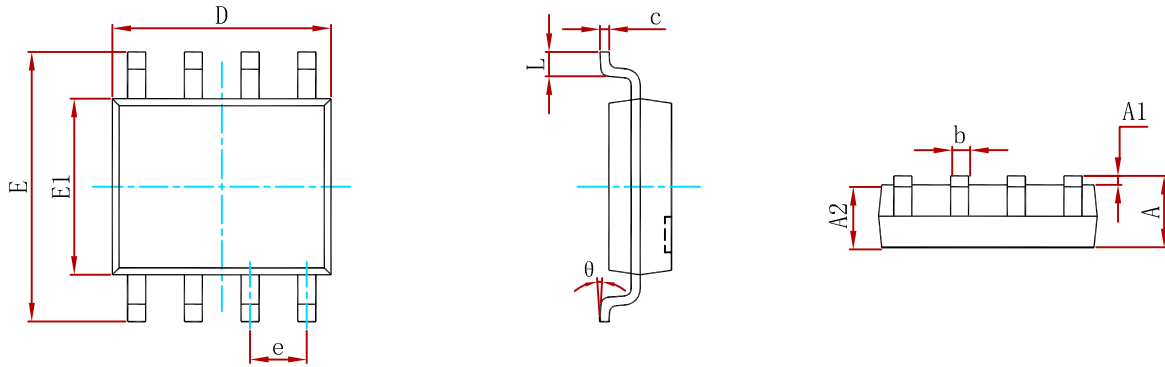


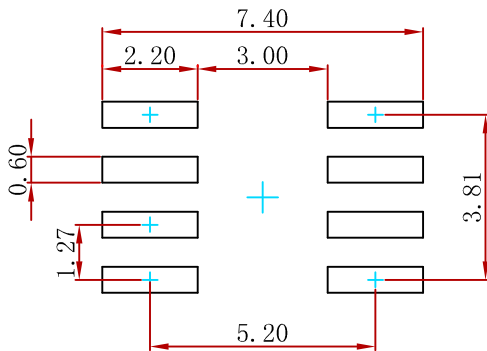
Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

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
AO4406-MS	SOP-8	3000

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