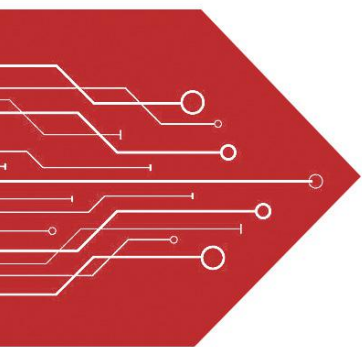


MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

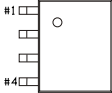
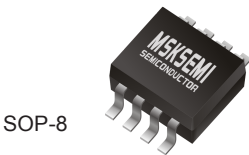


GDT

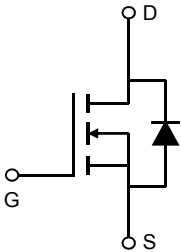


PLED

Product data sheet



1 Source 5 Drain
2 Source 6 Drain
3 Source 7 Drain
4 Gate 8 Drain



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 μ A, V _{GS} =0V	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μ A
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = \pm 20V			\pm 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μ A	1.5		2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =12A			12	m Ω
		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 =1.25 Ω , R _{GEN} =3 Ω		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/ μ s	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 μ s pulses, duty cycle 0.5% max.

Typical Characteristics

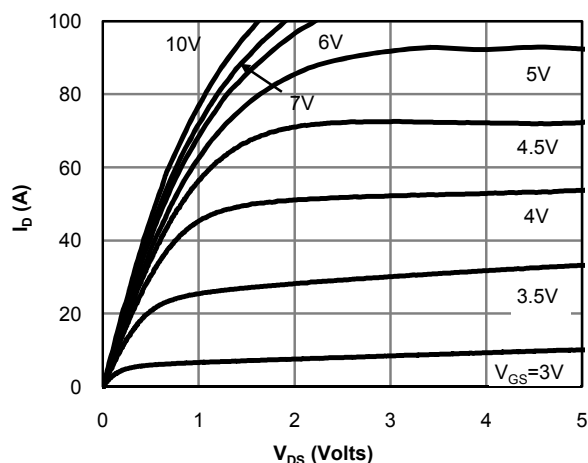


Fig 1: On-Region Characteristics (Note E)

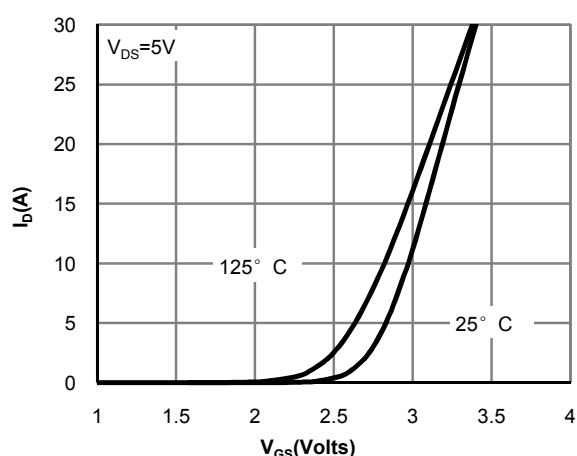


Figure 2: Transfer Characteristics (Note E)

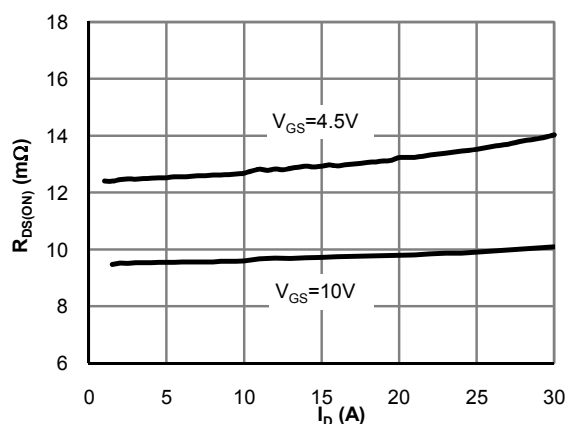


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

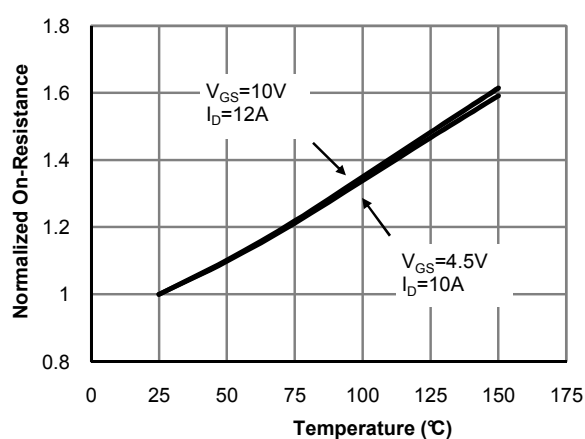


Figure 4: On-Resistance vs. Junction Temperature (Note E)

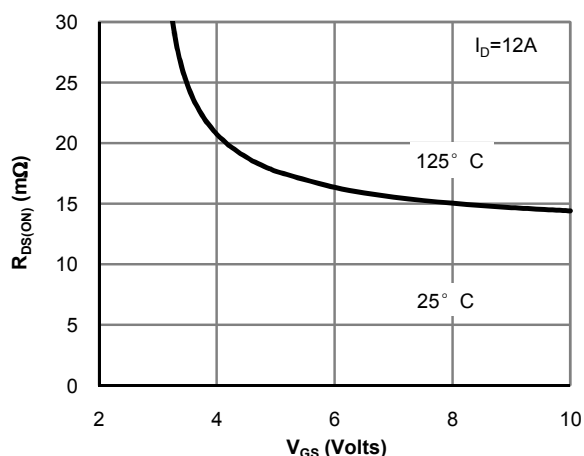


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

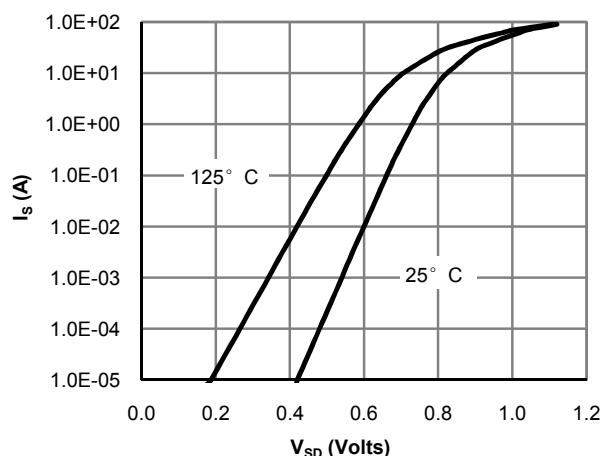


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

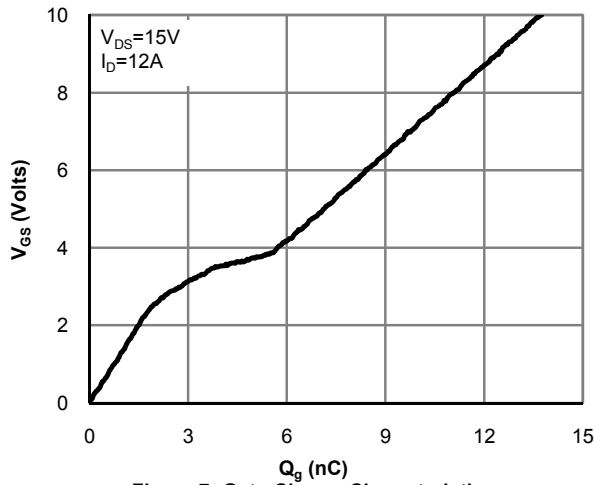


Figure 7: Gate-Charge Characteristics

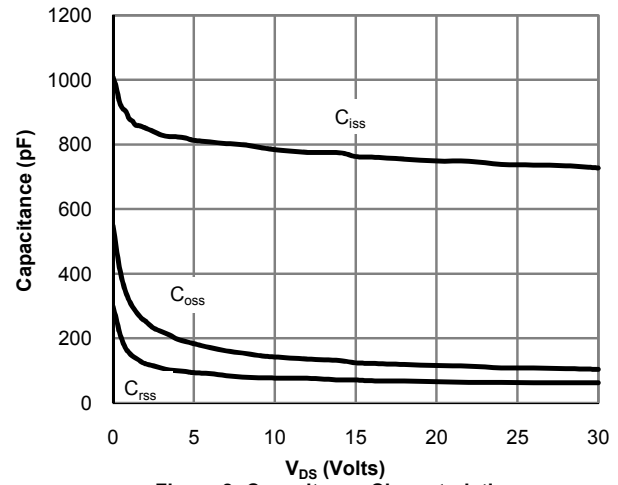


Figure 8: Capacitance Characteristics

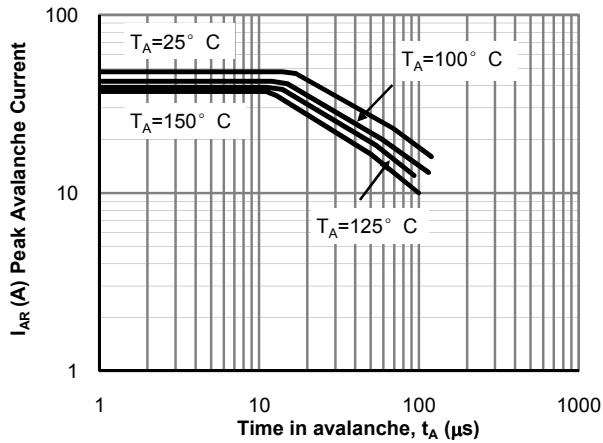


Figure 9: Single Pulse Avalanche capability (Note C)

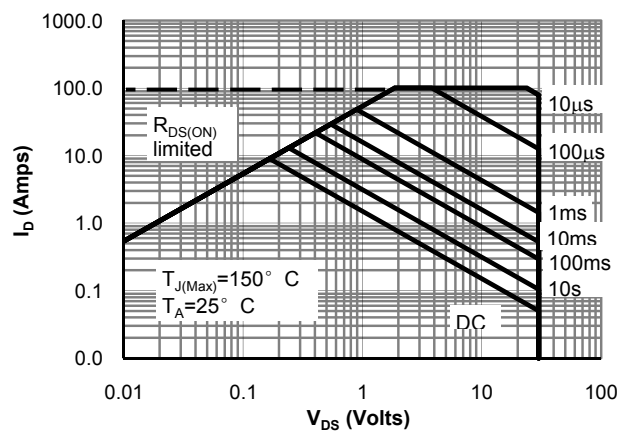


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

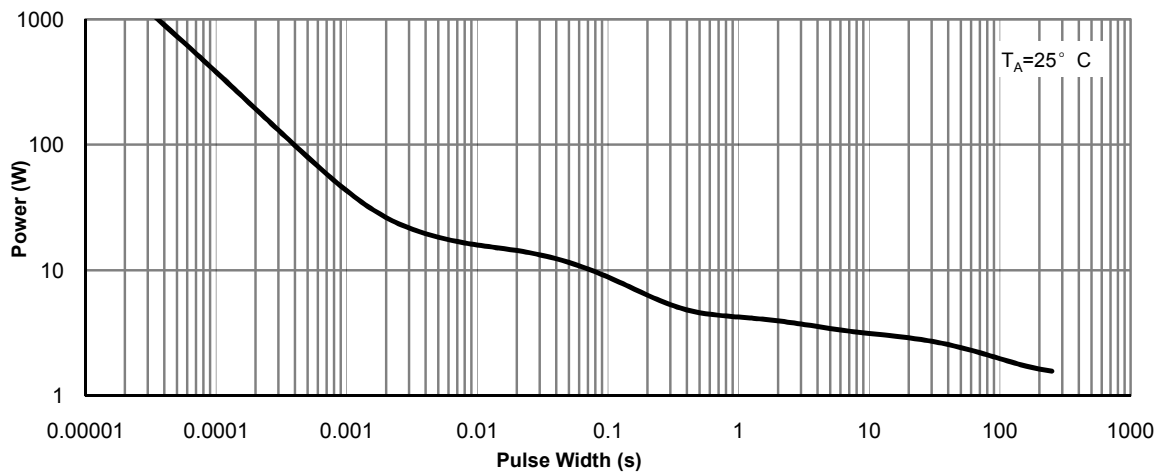
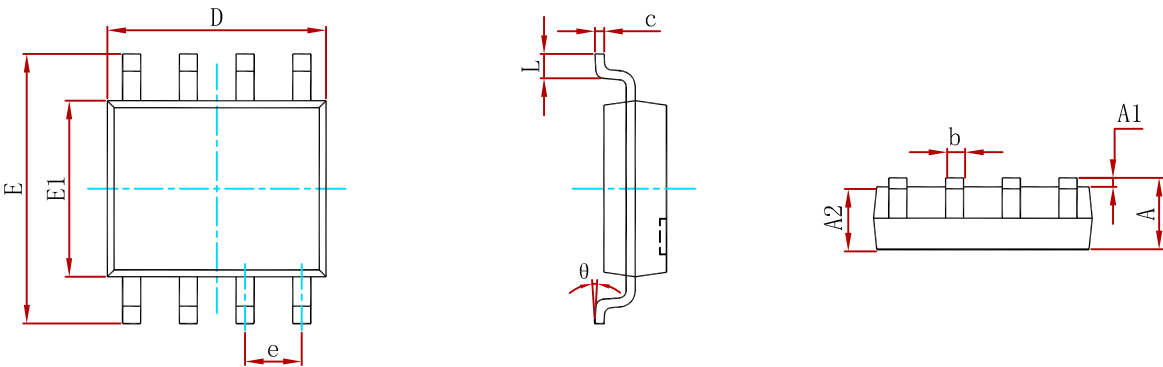


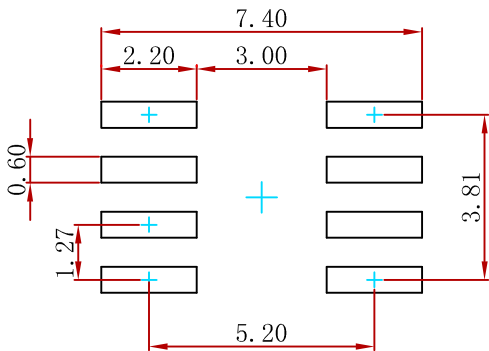
Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

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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