

Features

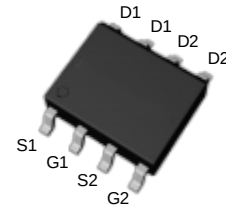
- **N Channel**
30V/10A,
 $R_{DS(ON)} = 21m\Omega$ (typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 25m\Omega$ (typ.) @ $V_{GS} = 4.5V$
- **P Channel**
-30V/-8A,
 $R_{DS(ON)} = 26m\Omega$ (typ.) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 36m\Omega$ (typ.) @ $V_{GS} = -4.5V$
- 100% UIS Tested
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

Note : The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.

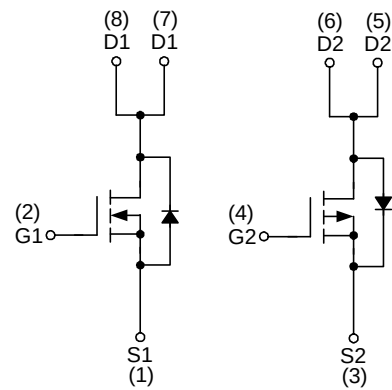
Applications

- Synchronous Rectification.
- Motor Control.
- High Current, High Speed Switching.

Pin Description



Top View of SOP-8



N-Channel MOSFET

P-Channel MOSFET

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

Symbol	Parameter		N Channel	P Channel	Unit	
Common Ratings						
V _{DSS}	Drain-Source Voltage		30	-30	V	
V _{GSS}	Gate-Source Voltage		±20	±20	V	
T _J	Maximum Junction Temperature		150		°C	
T _{STG}	Storage Temperature Range		-55 to 150		°C	
I _S	Diode Continuous Forward Current		10	-8	A	
I _{DP} ^a	Pulse Drain Current Tested	V _{GS} =10V(N),V _{GS} =-10V(P)	30	-24	A	
I _D	Continuous Drain Current		T _A =25°C	10	-8	A
			T _A =70°C	7.5	-6	
P _D ^b	Maximum Power Dissipation	T _A =25°C	2.08	2.08	W	
		T _A =70°C	1.33	1.33		
R _{θJL}	Thermal Resistance-Junction to Lead	Steady State	50	50	°C/W	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	60	60	°C/W	
		Steady State	100	100		
I _{AS} ^d	Avalanche Current, Single pulse	L=0.5mH	7.2	11	A	
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.5mH	13	30	mJ	

Note a : Pulse width limited by max. junction temperature.

Note b : $t < 10\text{sec}$.

Note c : $R_{\theta JA}$ steady state $t=999\text{s}$. $R_{\theta JA}$ is measured with the device mounted on 1in^2 , FR-4 board with 2oz. Copper.

Note d : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

N Channel Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	N Channel			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.6	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =8A	-	21	25	mΩ
		V _{GS} =4.5V, I _{DS} =5A	-	25	30	
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{DS} =8A, dI _{SD} /dt=100A/μs	-	12	-	ns
Q _{rr}	Reverse Recovery Charge		-	3.5	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1.8	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	408	-	pF
C _{oss}	Output Capacitance		-	72	-	
C _{rss}	Reverse Transfer Capacitance		-	40	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	5.2	-	ns
t _r	Turn-on Rise Time		-	8.6	-	
t _{d(OFF)}	Turn-off Delay Time		-	13.5	-	
t _f	Turn-off Fall Time		-	3.4	-	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =8A	-	8.3	12	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =8A	-	3.9	6	
Q _{gth}	Threshold Gate Charge		-	0.73	-	
Q _{gs}	Gate-Source Charge		-	1.6	-	
Q _{gd}	Gate-Drain Charge		-	1.4	-	

Note e : Pulse test ; pulse width≤300μs, duty cycle≤2%.

Note f : Guaranteed by design, not subject to production testing.

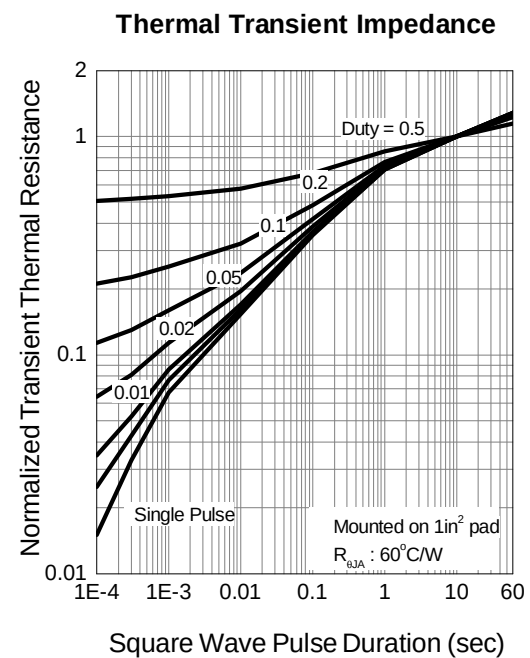
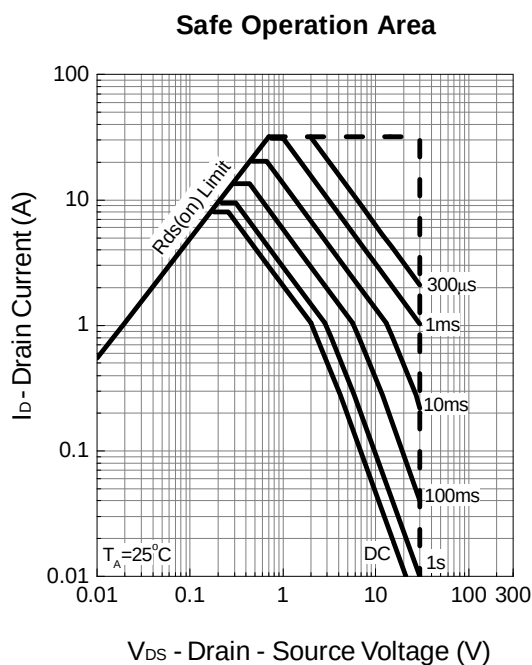
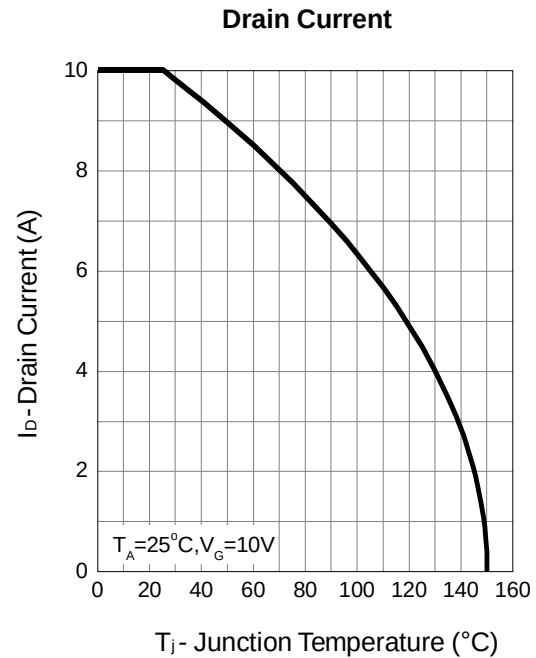
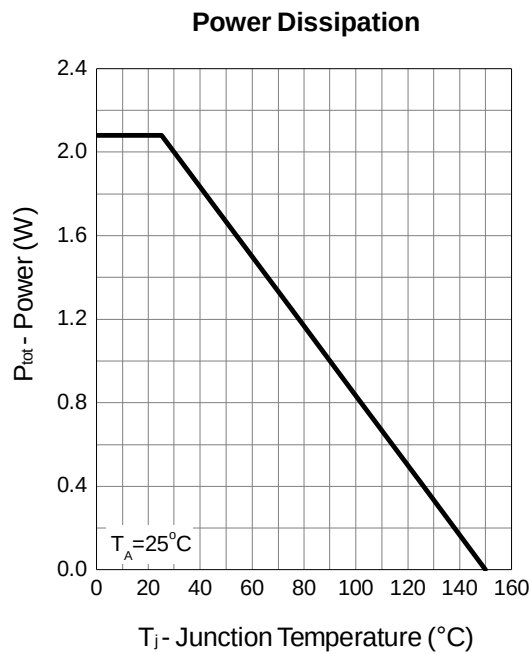
P Channel Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	P Channel			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	mA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.0	-1.5	-2.3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-7A	-	26	30	mΩ
		V _{GS} =-4.5V, I _{DS} =-4A	-	36	41	
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.75	-1	V
t _{rr}	Reverse Recovery Time	I _{DS} =-7A, dI _{SD} /dt=100A/μs	-	14	-	ns
Q _{rr}	Reverse Recovery Charge		-	7	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	12	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	750	-	pF
C _{oss}	Output Capacitance		-	142	-	
C _{rss}	Reverse Transfer Capacitance		-	102	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	9	-	ns
t _r	Turn-on Rise Time		-	11	-	
t _{d(OFF)}	Turn-off Delay Time		-	55	-	
t _f	Turn-off Fall Time		-	34	-	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-7A	-	17	-	nC
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V, I _{DS} =-7A	-	8	-	
Q _{gth}	Threshold Gate Charge		-	1	-	
Q _{gs}	Gate-Source Charge		-	2	-	
Q _{gd}	Gate-Drain Charge		-	4	-	

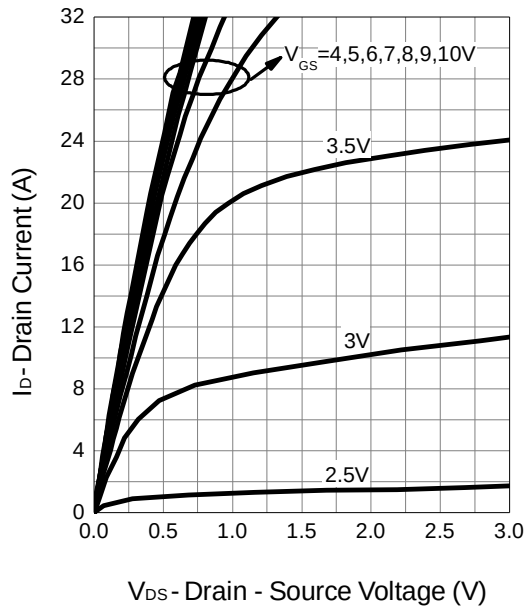
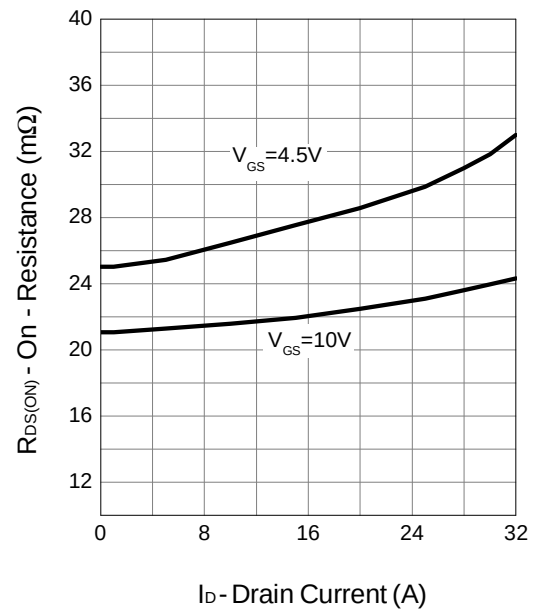
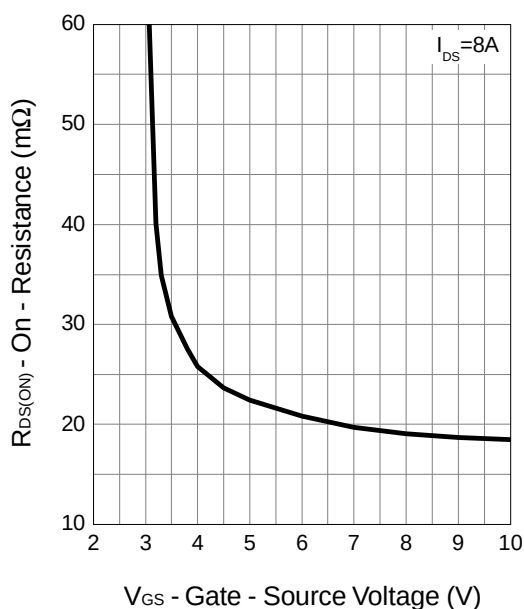
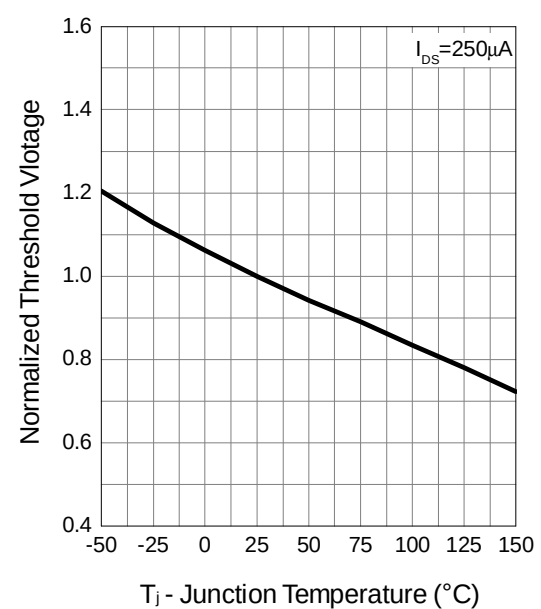
Note e : Pulse test; pulse width≤300μs, duty cycle≤2%.

Note f : Guaranteed by design, not subject to production testing.

N Channel Typical Operating Characteristics

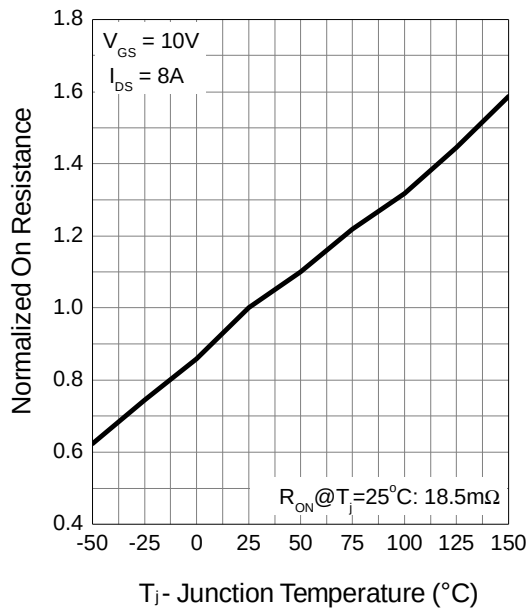


N Channel Typical Operating Characteristics (Cont.)

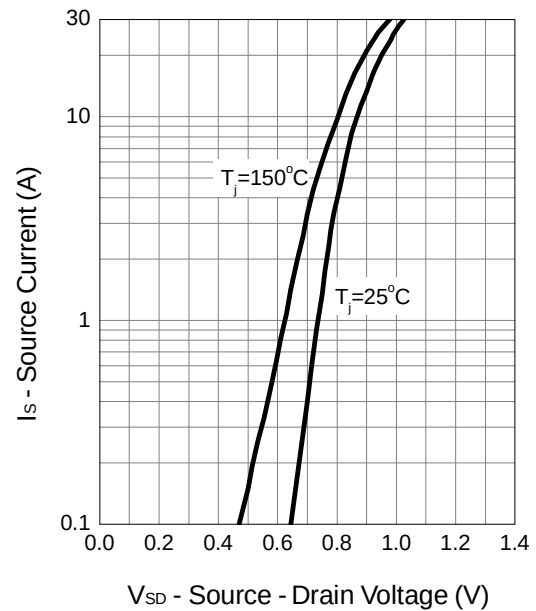
Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


N Channel Typical Operating Characteristics (Cont.)

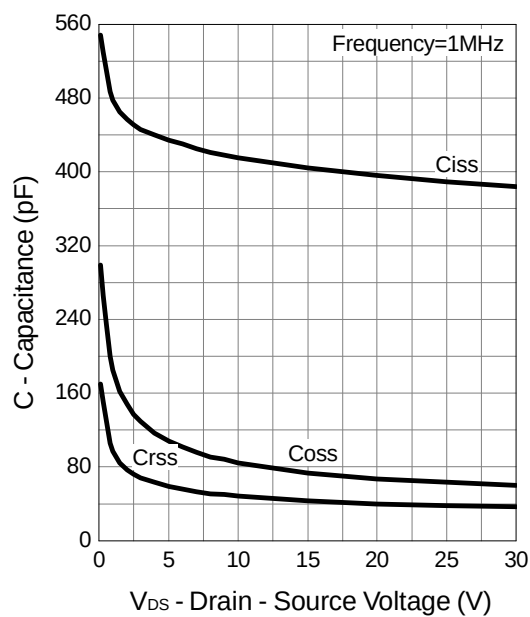
Drain-Source On Resistance



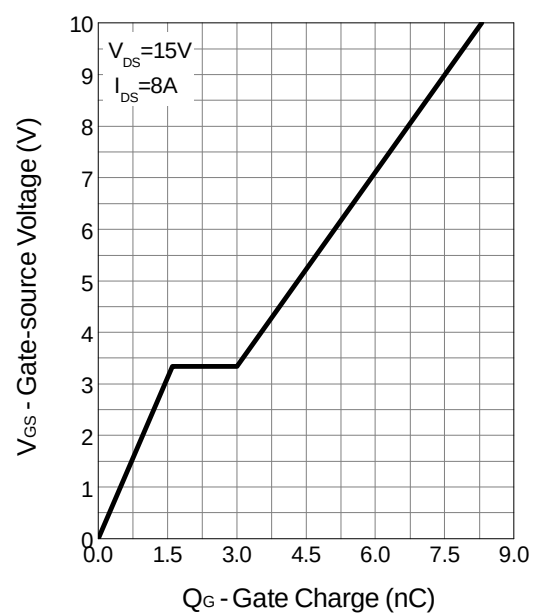
Source-Drain Diode Forward



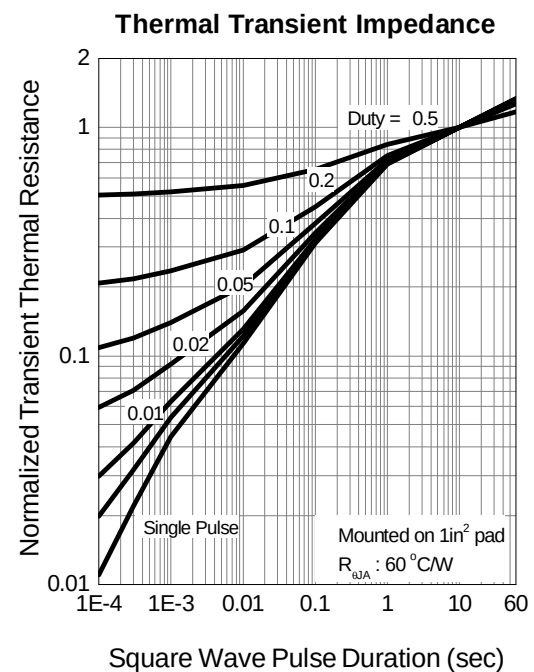
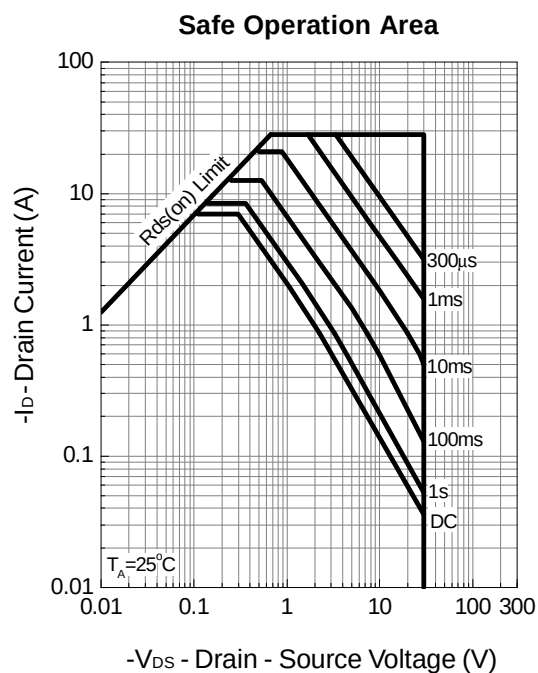
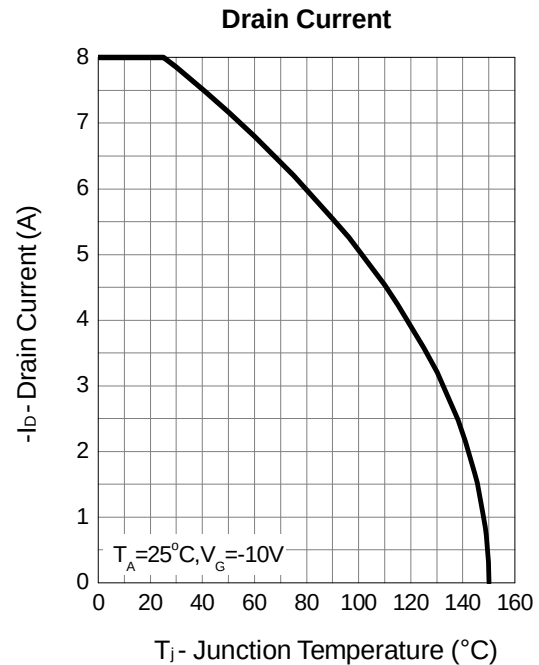
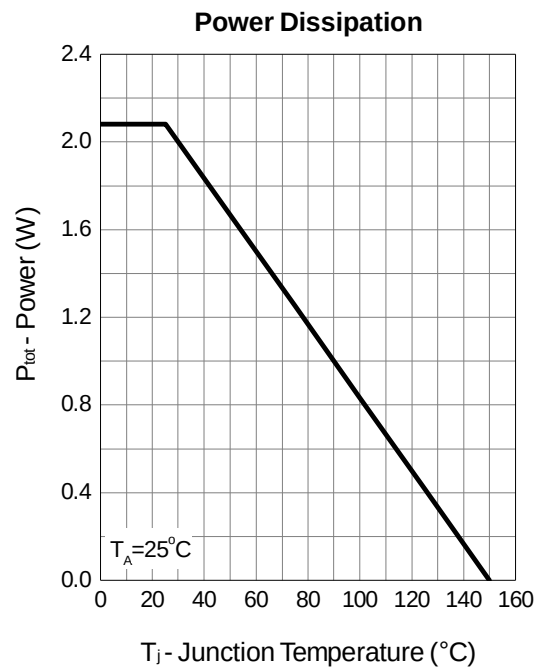
Capacitance



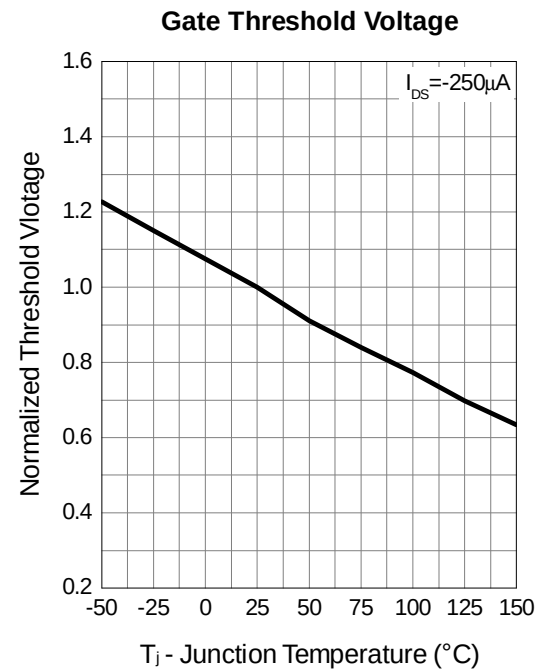
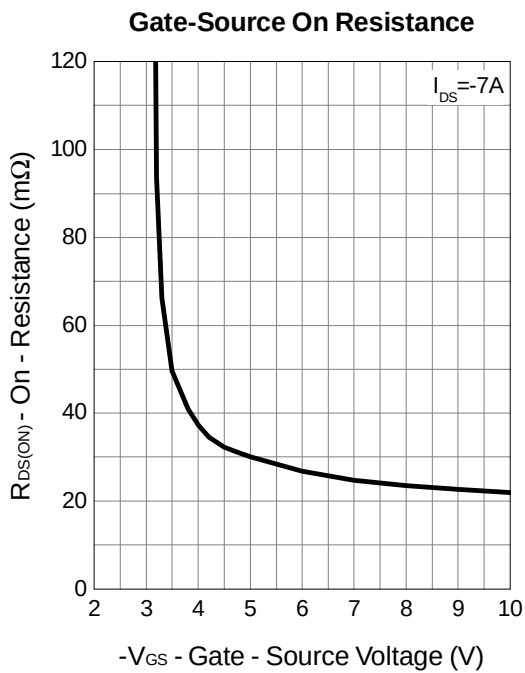
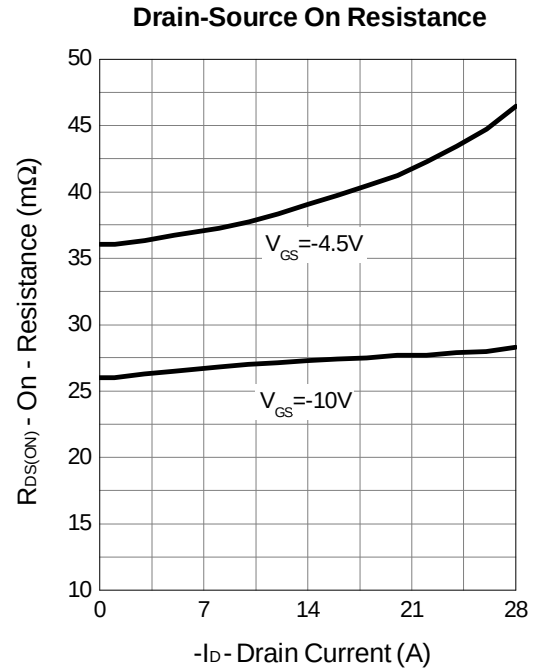
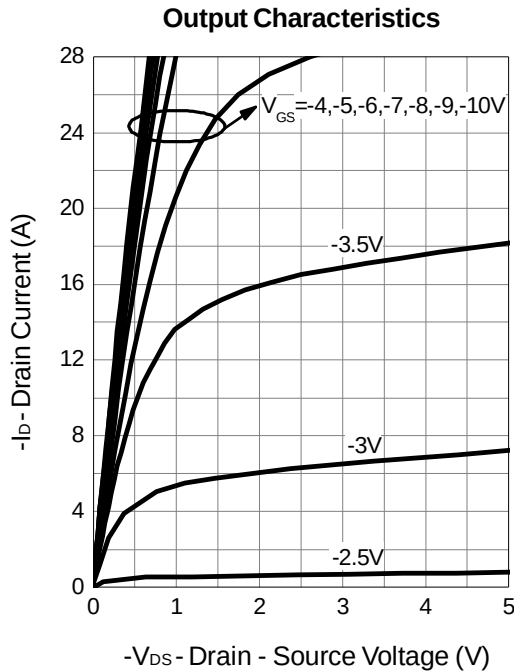
Gate Charge



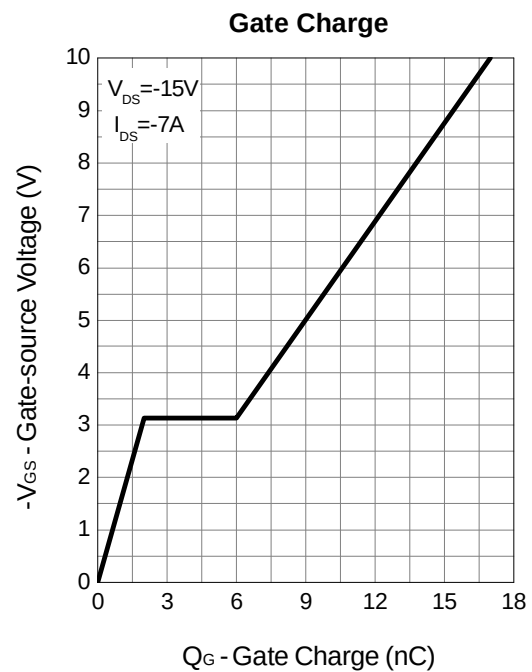
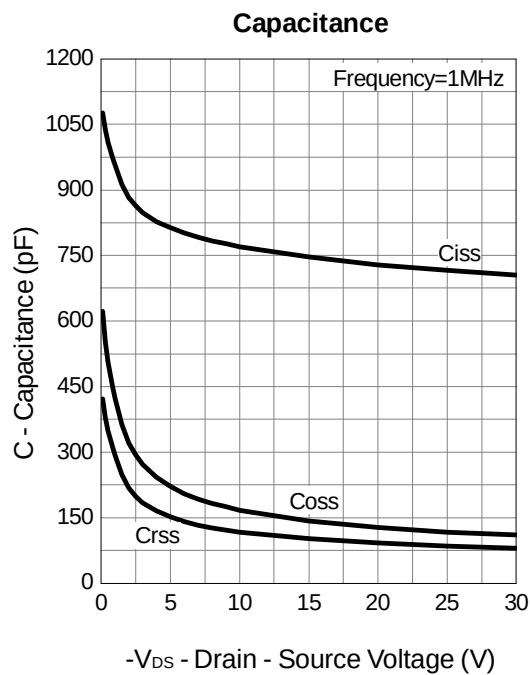
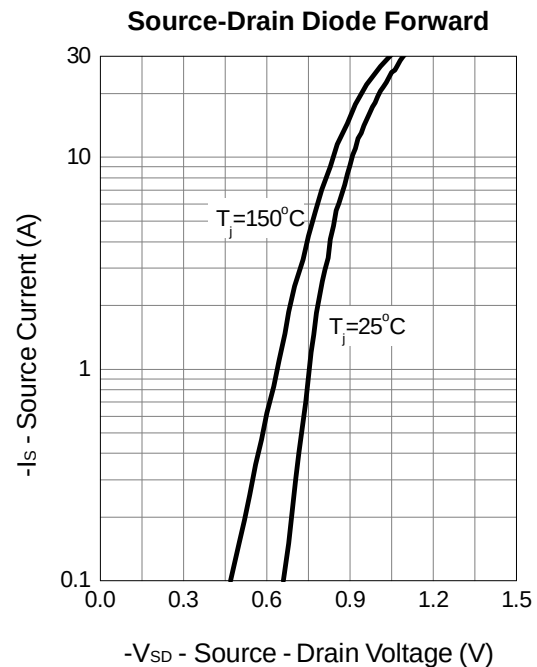
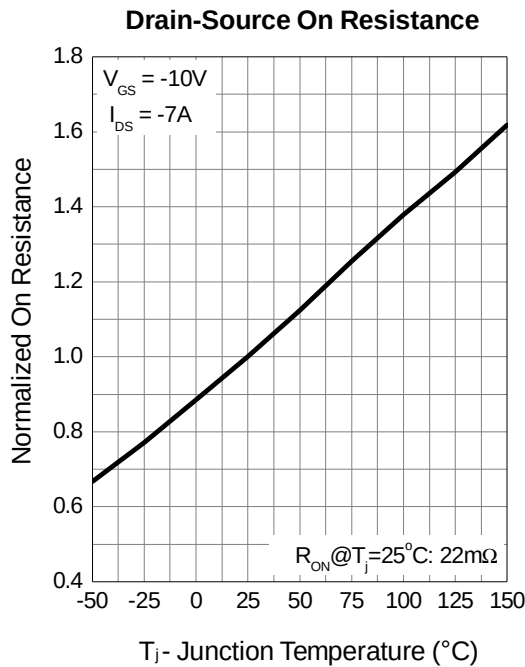
P Channel Typical Operating Characteristics



P Channel Typical Operating Characteristics (Cont.)

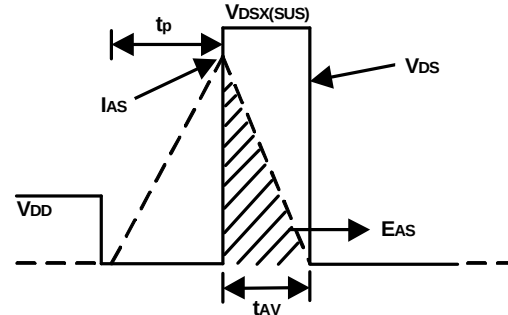
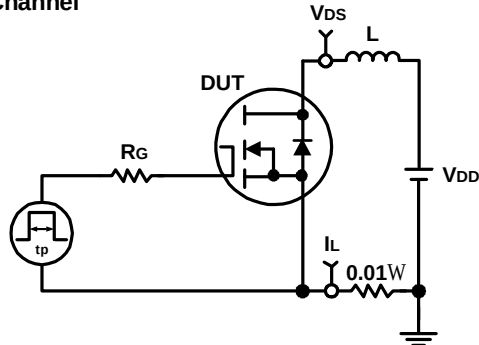


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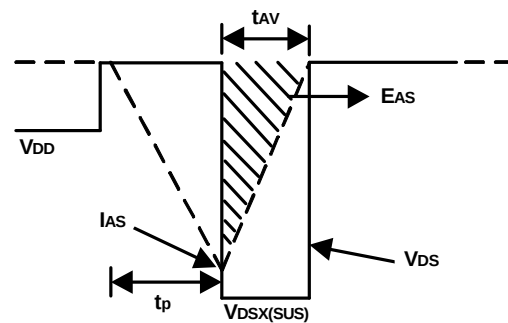
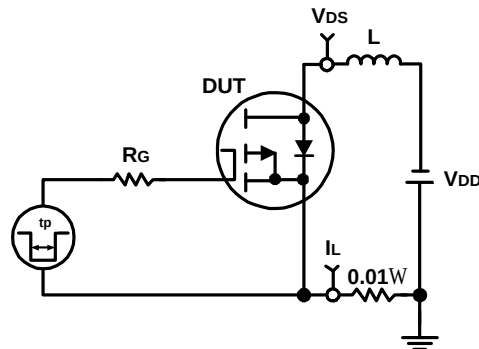


Avalanche Test Circuit and Waveforms

N Channel

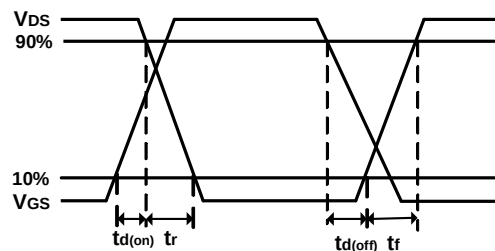
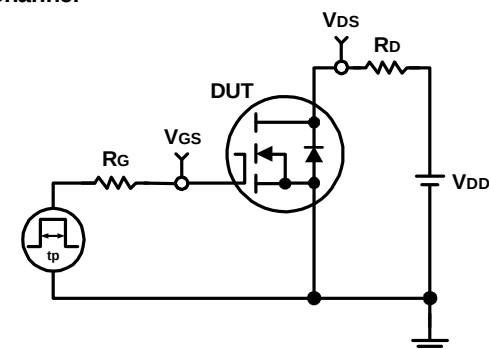


P Channel

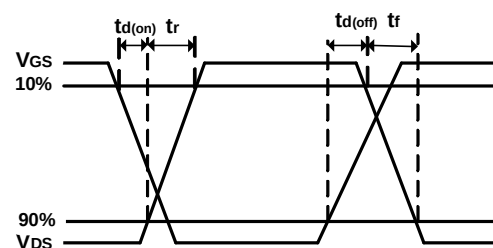
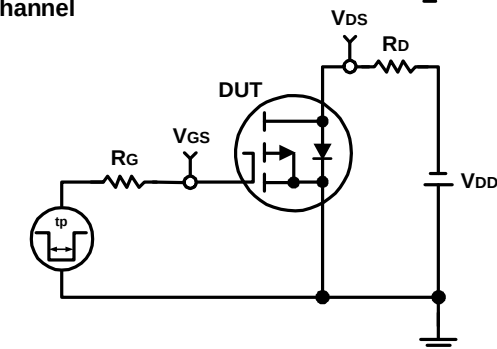


Switching Time Test Circuit and Waveforms

N Channel

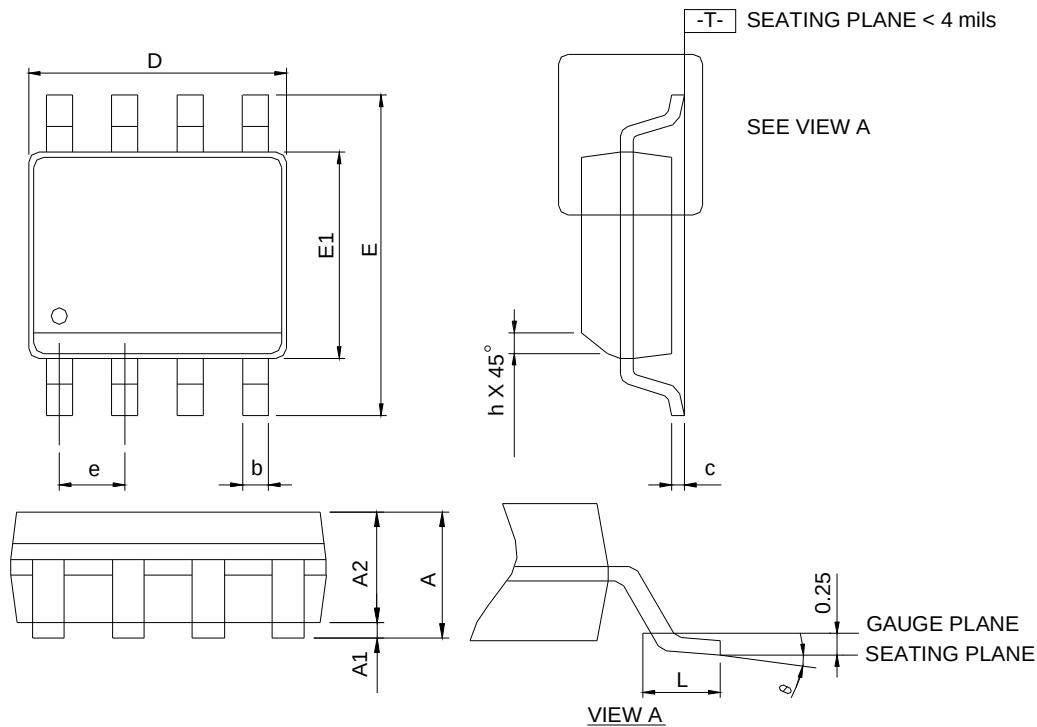


P Channel



Package Information

SOP-8



DIMENSIONS	SOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.75	-	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	-	0.049	-
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

Note: 1. Follow JEDEC MS-012 AA.

2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side.

3. Dimension "E" does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN

