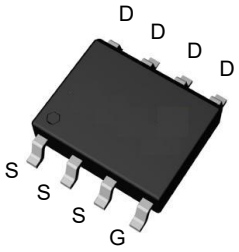
30V, 13A N-Channel Enhancement Mode MOSFET

Features

- V_{DS}= 30V, I_D= 13A
- $R_{DS(ON)}$≤ 9.5mΩ (7.5mΩ Typ.) @V_{GS}=10V
- $R_{DS(ON)}$≤ 14mΩ (11mΩ Typ.) @V_{GS}=4.5V
- Rugged and Reliable
- 100% UIS & R_g Tested
- Lead-Free, RoHS Compliant

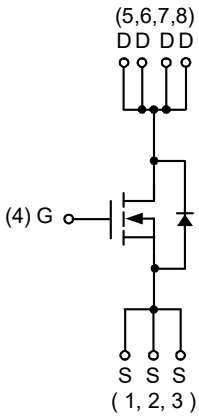
SOP-8



Applications

- Battery Protection
- Load Switch
- DC-DC Converters
- Power Management for Portable Equipment
- Switching Applications

Schematic Diagram (NMOS)



Mechanical Data

- SOP-8 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current	T_J=150°C	13	A
I_{DM}[1]	Pulsed Drain Current		39	
I_S	Diode Continuous Forward Current		13	A
T_{STG}, T_j	Storage Temperature Range		-55 to 150	℃
P_D	Power Dissipation	T_A=25°C	2.8	W
		T_A=70°C	1.8	
$R_{\theta JA}$[2]	Thermal Resistance-Junction to Ambient		62.5	

Note 1: Pulse width limited by maximum junction temperature.
Note 2: Surface mounted on 1in^2 pad area.

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
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	-	2	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$[3]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=13A	-	7.5	9.5	mΩ
		V_{GS}=4.5V, I_{DS}=10A	-	11	14	
Body Diode Characteristics						
V_{SD}[3]	Diode Forward Voltage	I_{SD}=2A, V_{GS}=0V	-	0.7	1.3	V
Dynamic Characteristics[4]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =25V, Frequency=1.0MHz	-	770	-	pF
C_{oss}	Output Capacitance		-	110	-	
C_{rss}	Reverse transfer capacitance		-	90	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=10V ,V_{DS}=15V R_G=6Ω, I_D=1A, R_L=15Ω	-	5	-	nS
t_r	Turn-on rise Time		-	3.5	-	
$t_{d(OFF)}$	Turn-off delay Time		-	19	-	
t_f	Turn-off rise Time		-	3.5	-	
Gate Charge Characteristics[4]						
Q_g	Total Gate Charge	V_{DS} =15V, V_{GS}=10V, I_{DS}=9A	-	11.6	-	nC
Q_{gs}	Gate-Source Charge		-	2.5	-	
Q_{gd}	Gate-Drain Charge		-	3.9	-	

Note 3: Pulse test; pulse width≤300μs, duty cycle≤2%.
Note 4: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics (T_A=25°C unless otherwise noted)

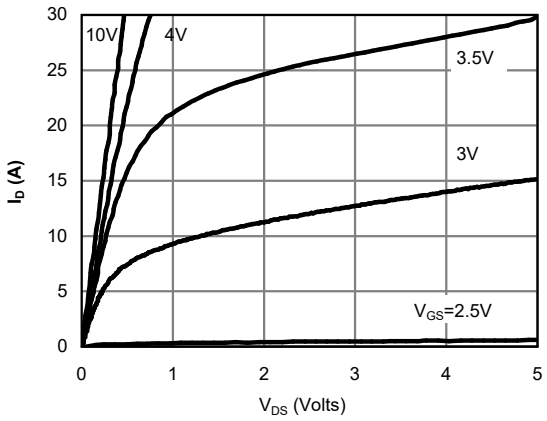


Fig 1: On-Region Characteristics (Note E)

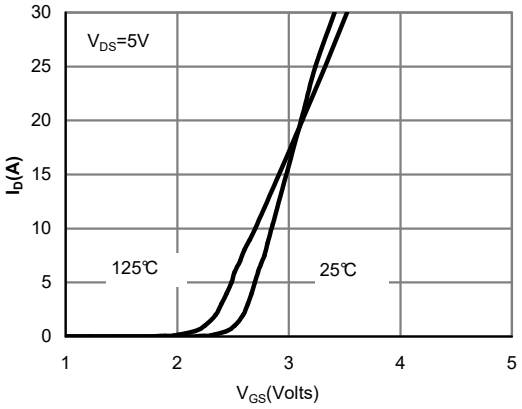


Figure 2: Transfer Characteristics (Note E)

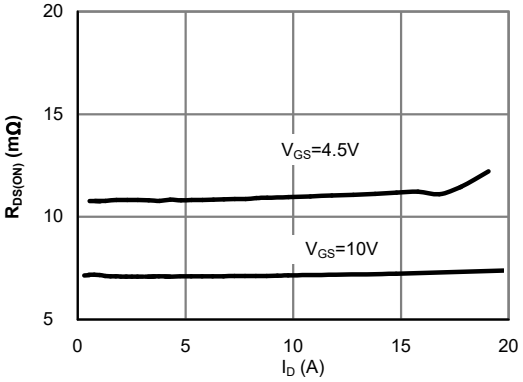


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

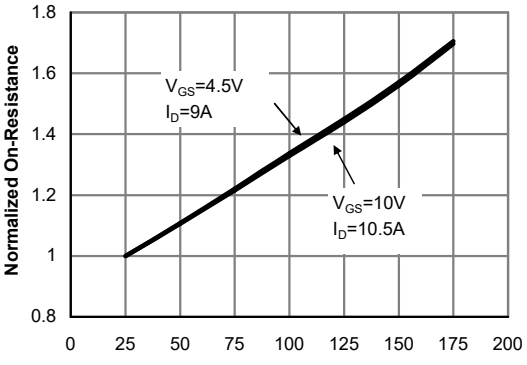


Figure 4: On-Resistance vs. Junction Temperature (Note E)

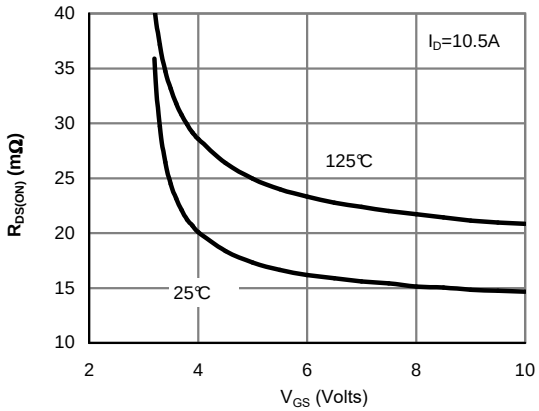


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

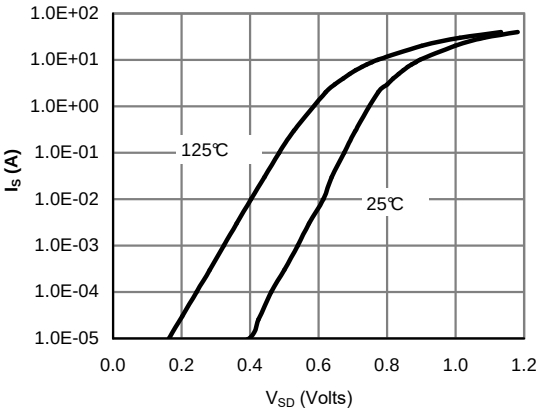


Figure 6: Body-Diode Characteristics (Note E)

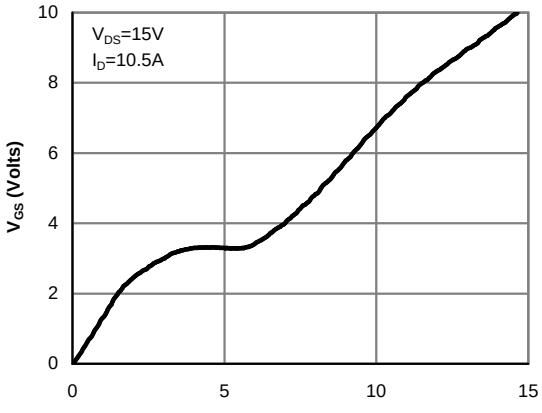


Figure 7: Gate-Charge Characteristics

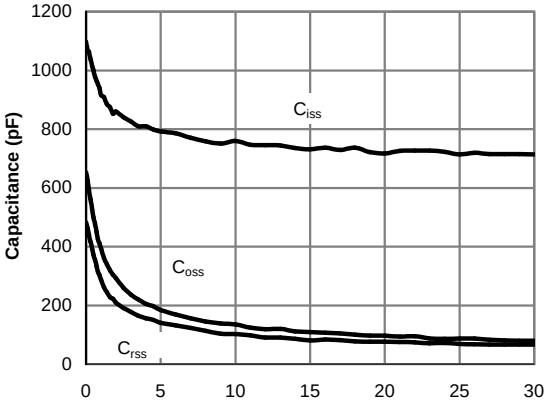


Figure 8: Capacitance Characteristics

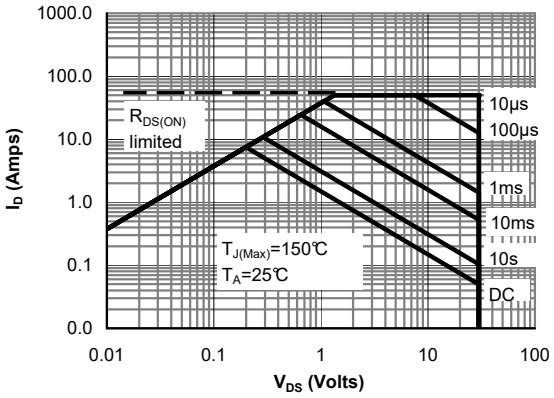


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

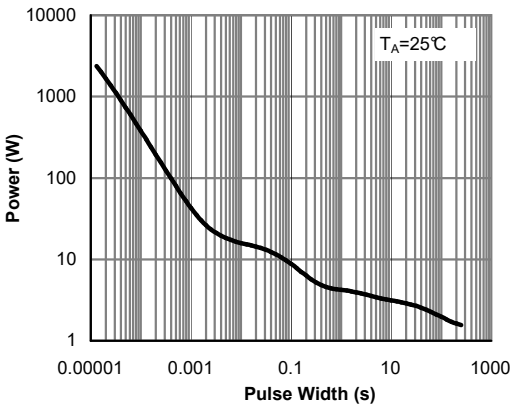


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

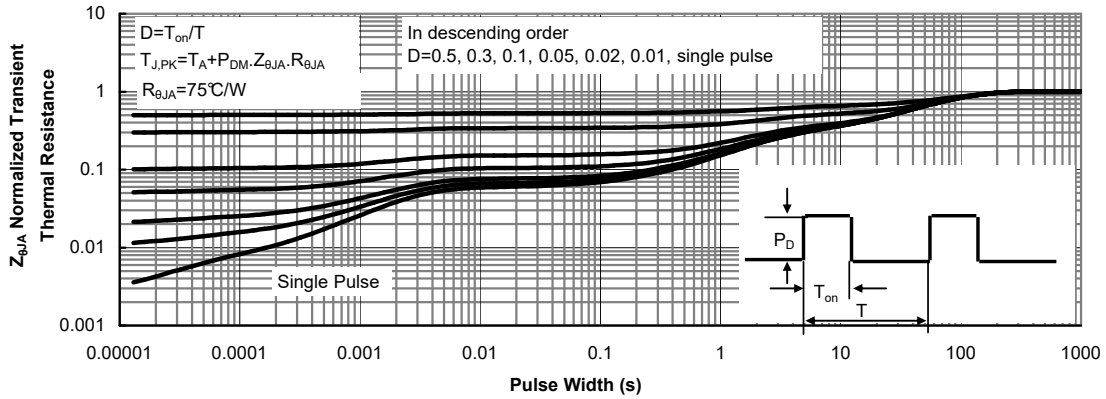
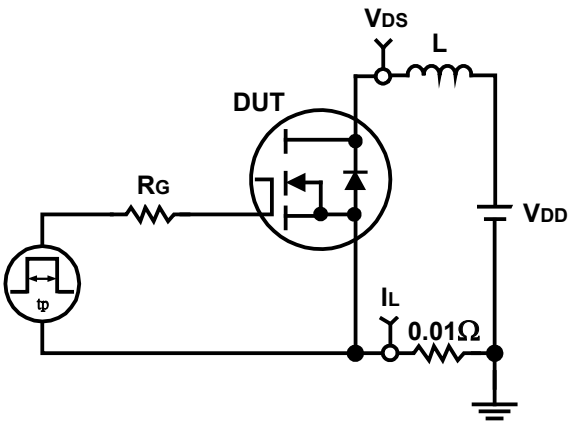
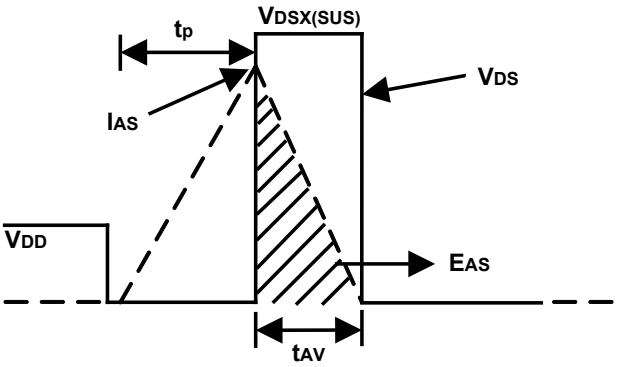


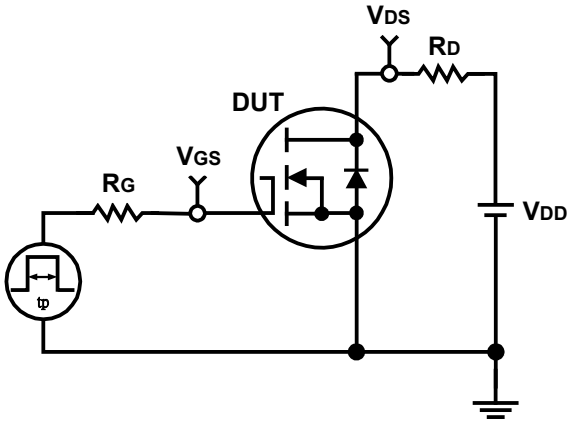
Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

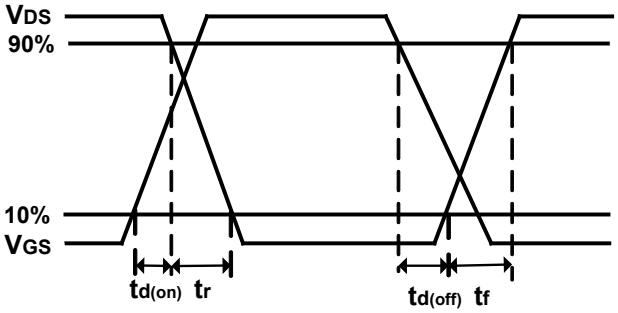
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





Package Outline Dimensions (SOP-8)

