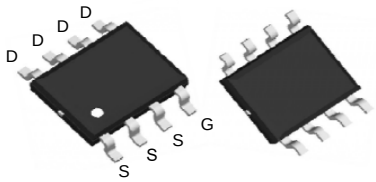
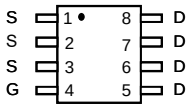
Features

- -30V, -12A
  $R_{DS(ON)}$ < 14.0mΩ @ V_{GS} = -10V
  $R_{DS(ON)}$ < 22.5mΩ @ V_{GS} = -4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

SOP-8

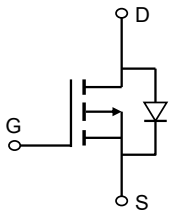


Top View



Applications

- Load Switch
- PWM Application
- Power Management



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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		-30	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A = 25°C	-12	A
		T_A = 100°C	-7.6	
I_{DM}	Pulsed Drain Current (1)		-48	A
E_{AS}	Single Pulsed Avalanche Energy (2)		64	mJ
P_D	Power Dissipation	T_A = 25°C	1.5	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)		82	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	℃

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = -250μA, V_{GS} = 0V	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.6	-2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = -10V, I_D = -12A	-	9	14.0	mΩ
		V_{GS} = -4.5V, I_D = -8A	-	14.6	22.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	-	2504	-	pF
C_{oss}	Output Capacitance		-	248	-	pF
C_{rss}	Reverse Transfer Capacitance		-	224	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to -10V V_{DS} = -15V, I_D = -5A	-	41	-	nC
Q_{gs}	Gate Source Charge		-	7	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	10	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = -10V, V_{DD} = -15V I_D= -5A, R_{GEN} = 3Ω	-	6	-	ns
t_r	Turn-On Rise Time		-	2	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	90	-	ns
t_f	Turn-Off Fall Time		-	52	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-48	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -10A	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time	I_F = -5A, di/dt = 100A/us	-	15	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	6	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2.EAS condition: Starting T_J=25C, V_{DD}=-15V, V_G=-10V, R_G=25ohm, L=0.5mH, I_{AS}=-16A

3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

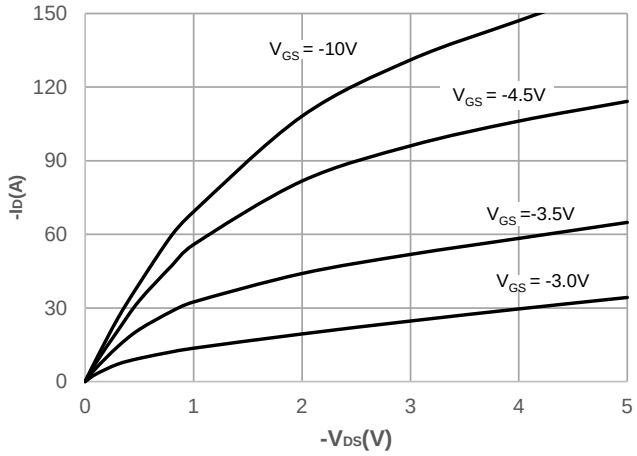


Figure 2: Typical Transfer Characteristics

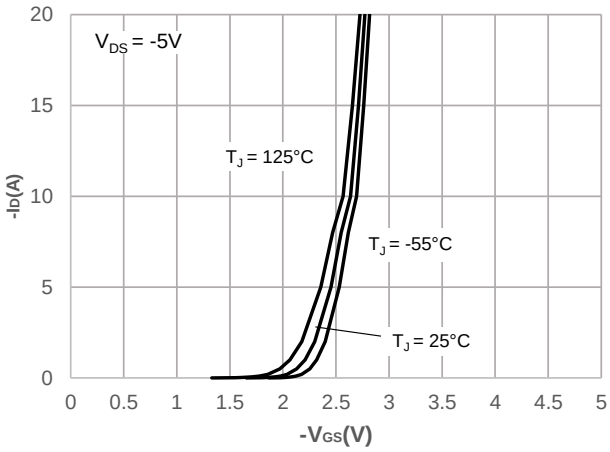


Figure 3: On-resistance vs. Drain Current

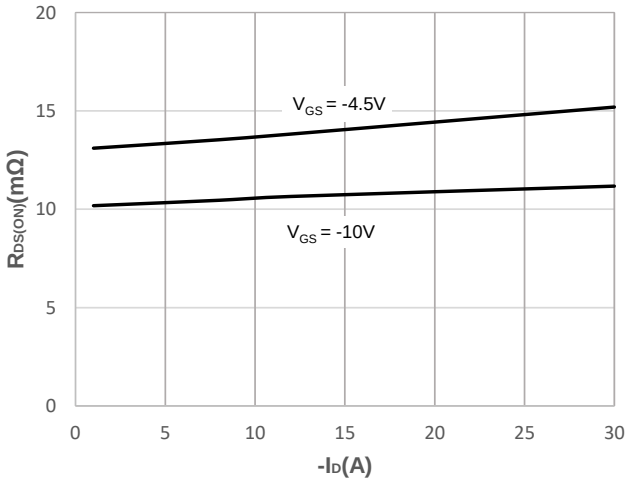


Figure 4: Body Diode Characteristics

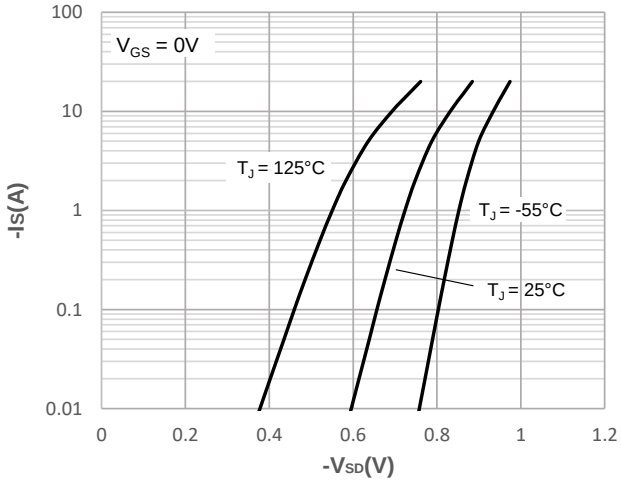


Figure 5: Gate Charge Characteristics

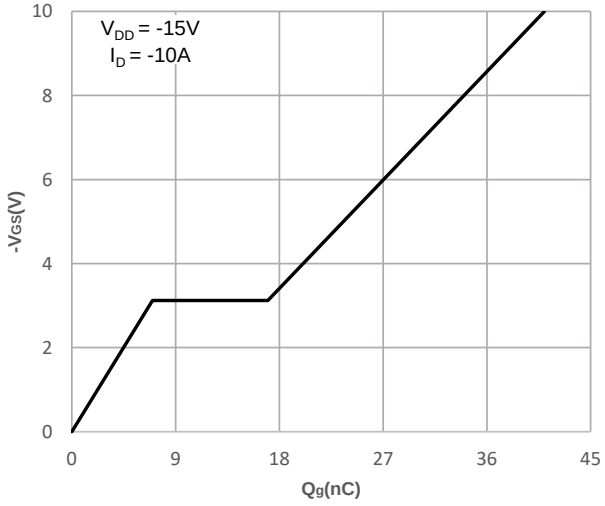
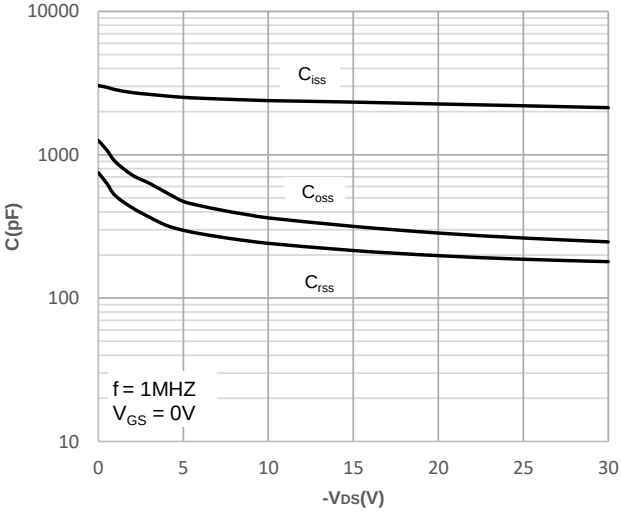


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

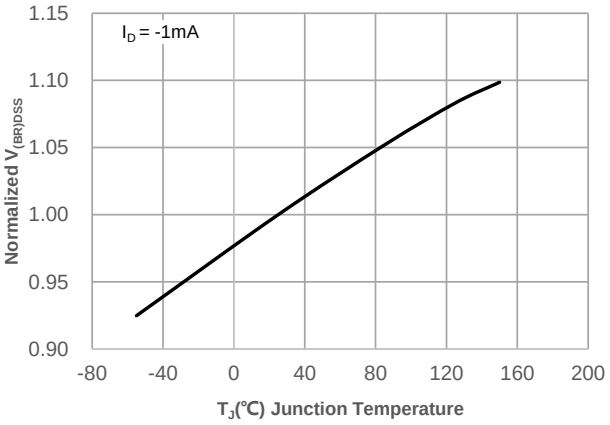


Figure 8: Normalized on Resistance vs. Junction Temperature

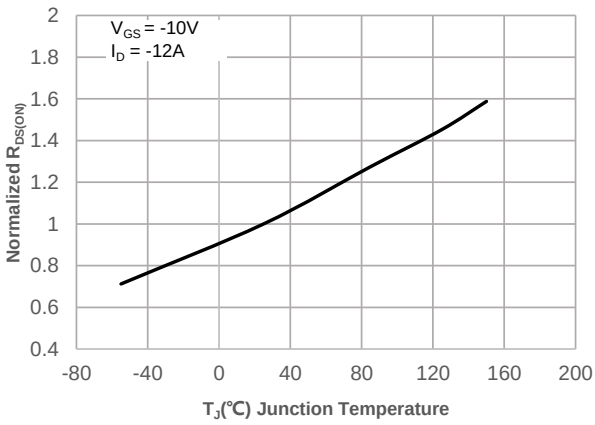


Figure 9: Maximum Safe Operating Area

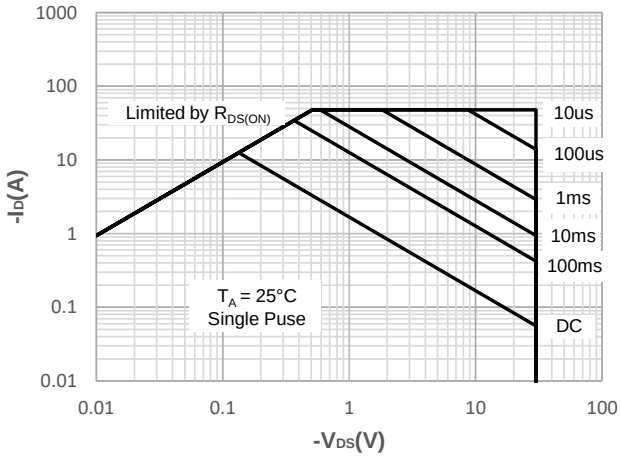


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

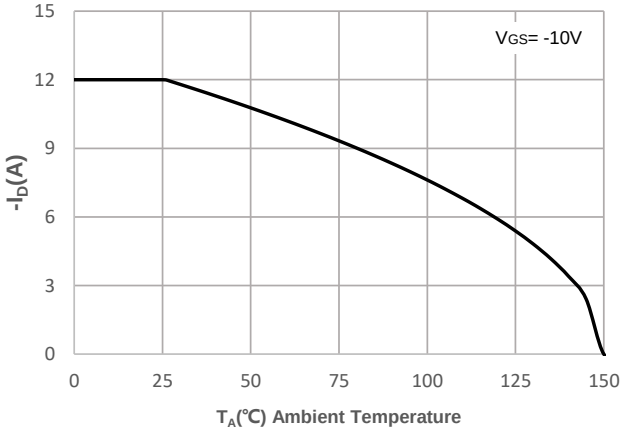


Figure 11: Normalized Maximum Transient Thermal Impedance

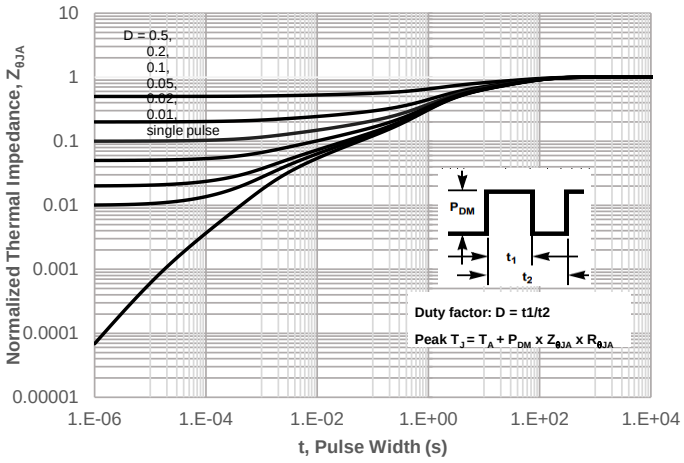
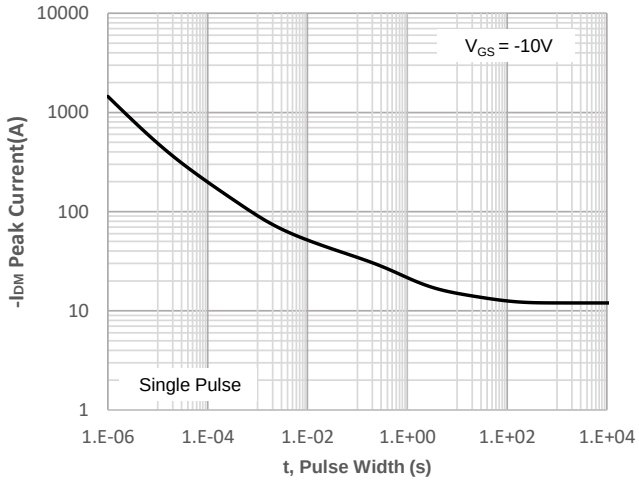


Figure 12: Peak Current Capacity



Test Circuit

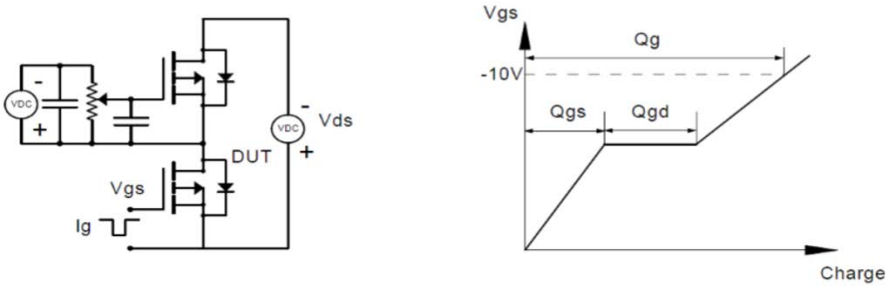


Figure 1: Gate Charge Test Circuit & Waveform

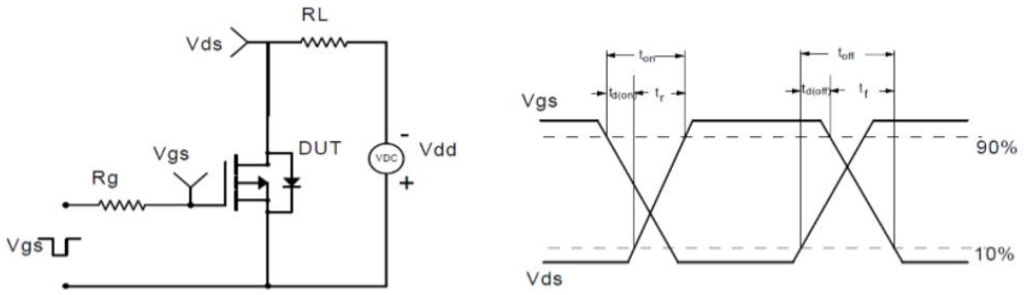


Figure 2: Resistive Switching Test Circuit & Waveform

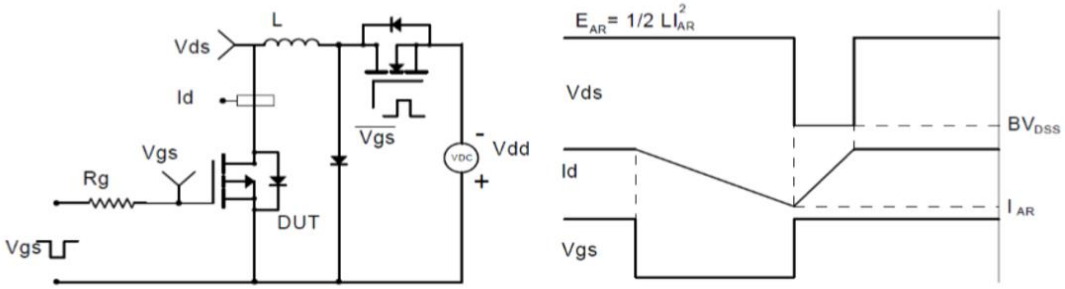


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

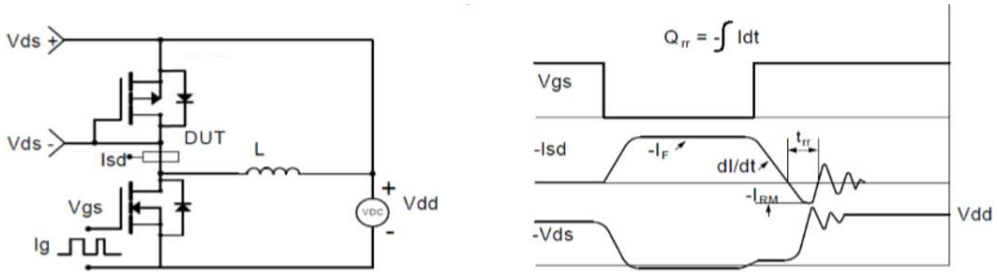
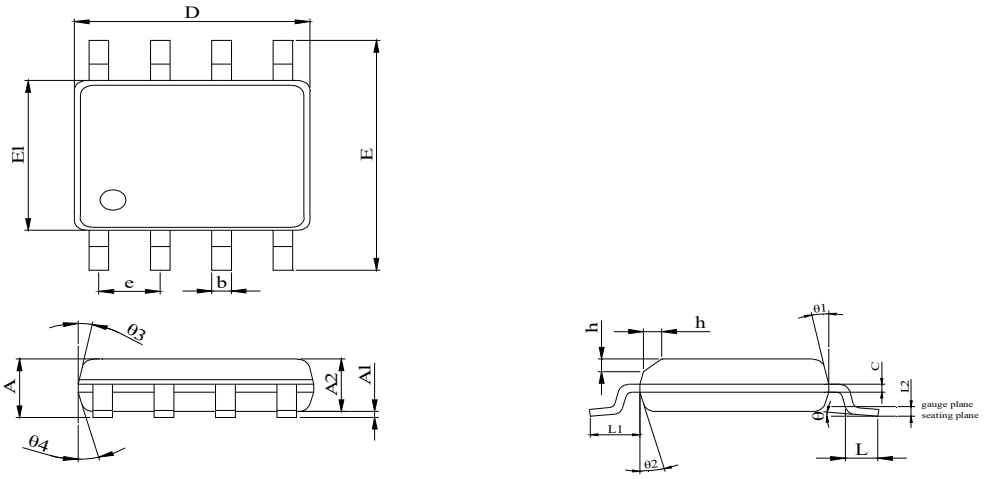


Figure 4: Diode Recovery Test Circuit & Waveform

SOP-8L Package Information

Package Outline



DIM	MILLIMETER		
	MIN.	NOM.	MAX.
A	1.35	1.50	1.65
A1	0.05	0.10	0.15
A2	1.35	1.40	1.50
b	0.38	--	0.50
c	0.17	--	0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27(BSC)		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25 BSC		
h	0.30	0.40	0.50
θ	0°	--	8°
θ_1	10°	12°	14°
θ_2	8°	10°	12°
θ_3	10°	12°	14°
θ_4	8°	10°	12°

Recommend Soldering Footprint

Recommended Soldering Footprint