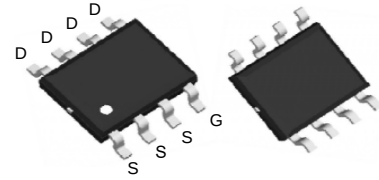


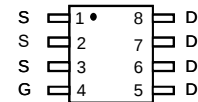
Features

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

SOP-8

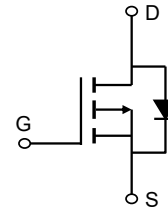


Top View



Applications

- Load Switch
- PWM Application
- Power Management



Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ 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	$T_A = 25^\circ\text{C}$	-12	A
		$T_A = 100^\circ\text{C}$	-7.6	
I_{DM}	Pulsed Drain Current ⁽¹⁾		-48	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾		64	mJ
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	1.5	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁽³⁾		82	$^\circ\text{C/W}$
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	$^\circ\text{C}$

Electrical Characteristics ($T_J = 25^\circ\text{C}$ 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	-	10.5	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 $T_J = 25^\circ\text{C}$, $V_{DD} = -15\text{V}$, $V_G = -10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = -16\text{A}$
 3. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
 4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

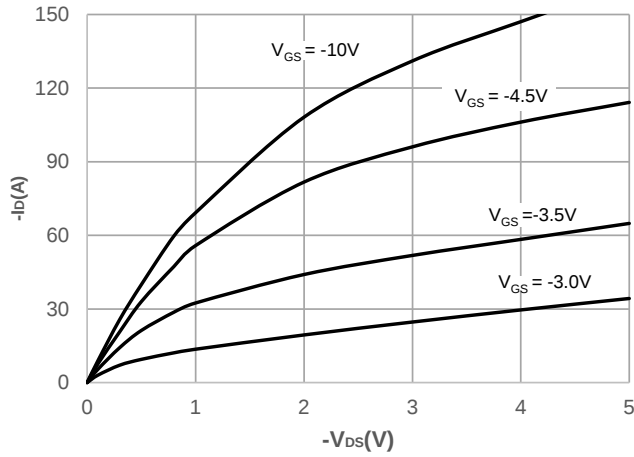


Figure 2: Typical Transfer Characteristics

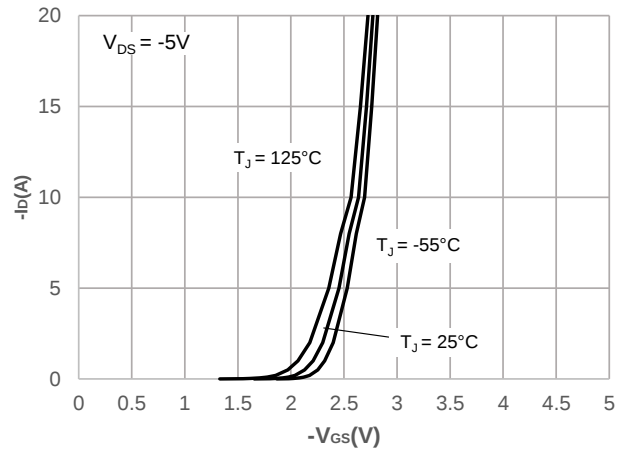


Figure 3: On-resistance vs. Drain Current

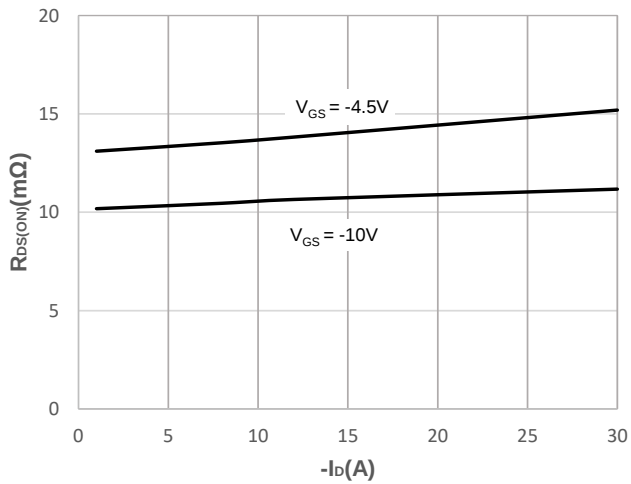


Figure 4: Body Diode Characteristics

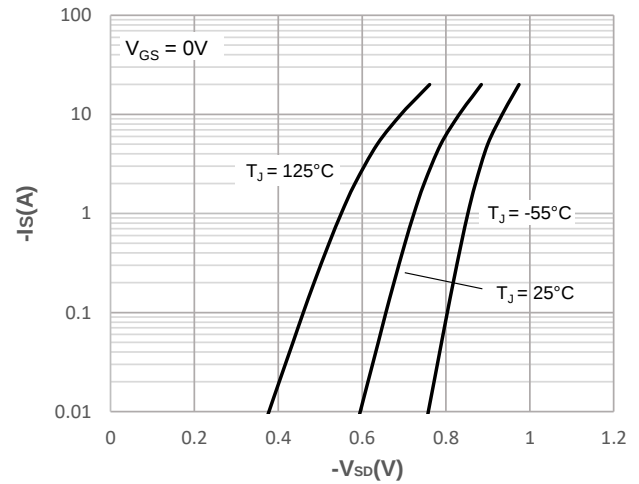


Figure 5: Gate Charge Characteristics

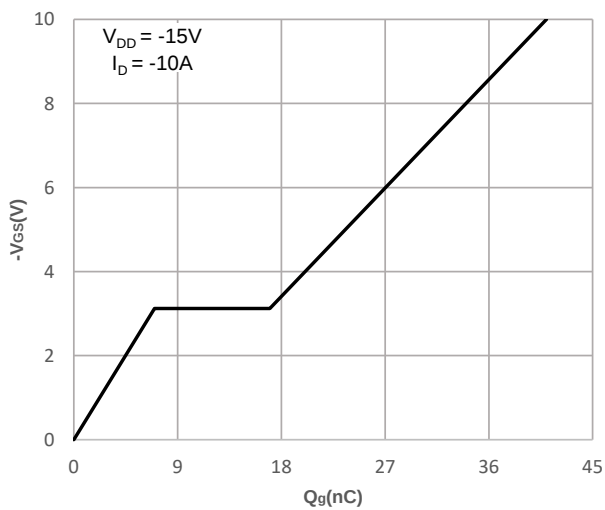
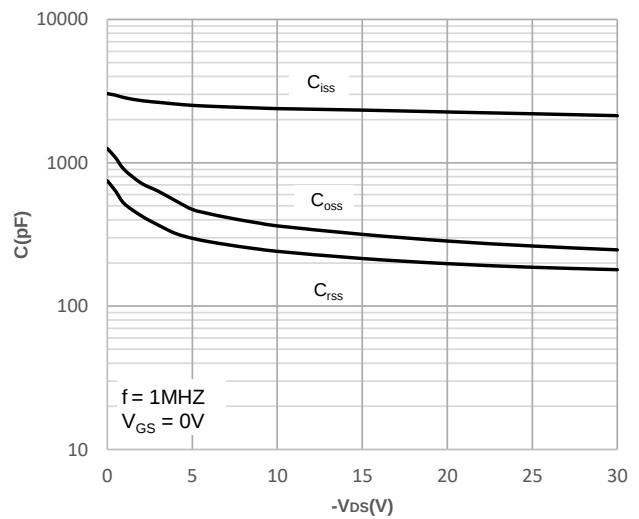


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

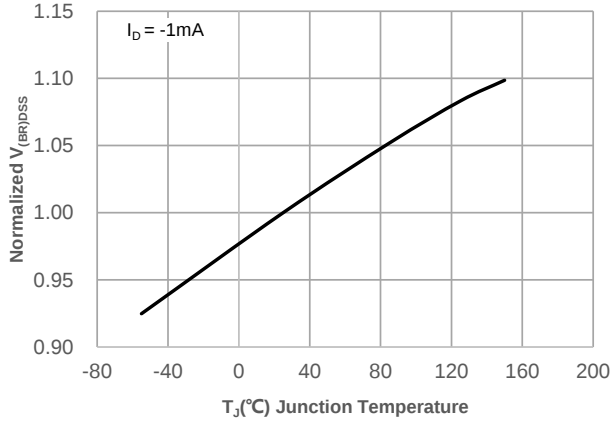


Figure 8: Normalized on Resistance vs. Junction Temperature

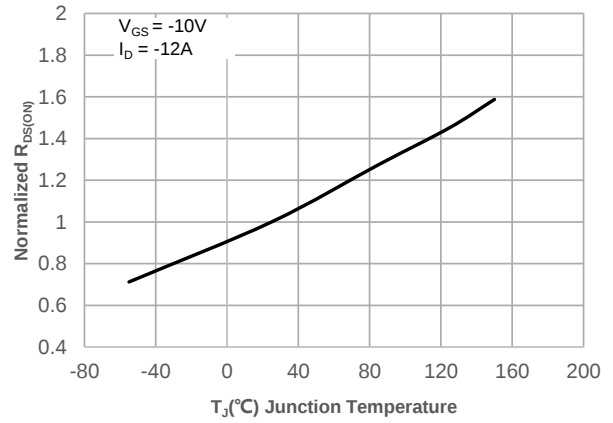


Figure 9: Maximum Safe Operating Area

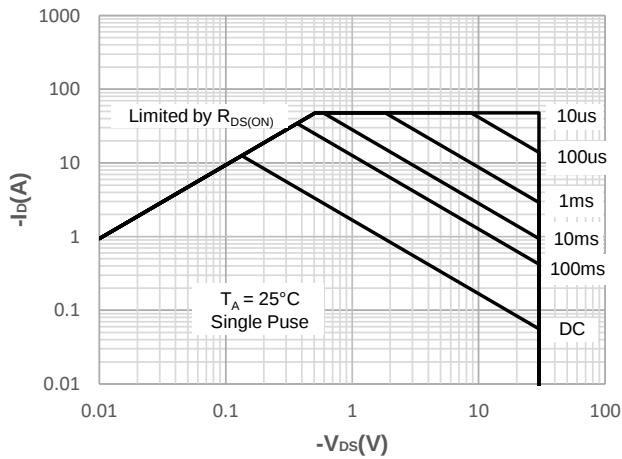


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

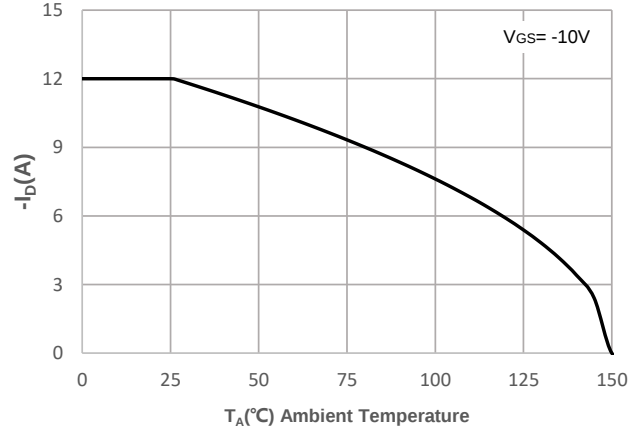


Figure 11: Normalized Maximum Transient Thermal Impedance

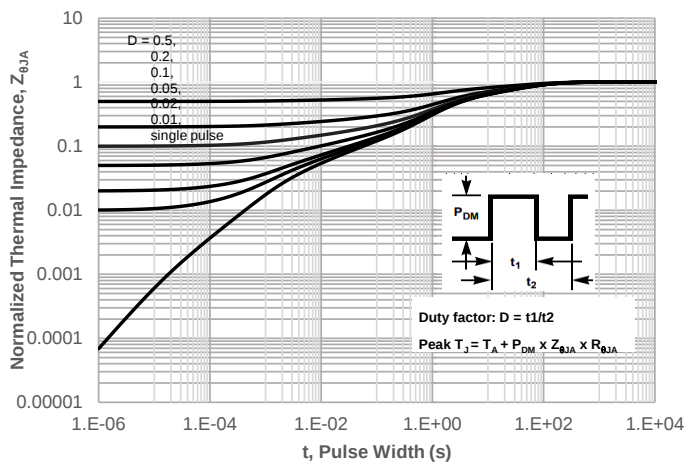
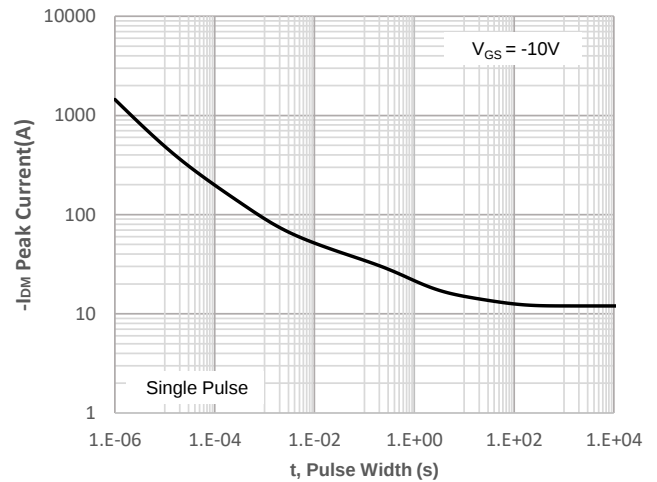


Figure 12: Peak Current Capacity



Test Circuit

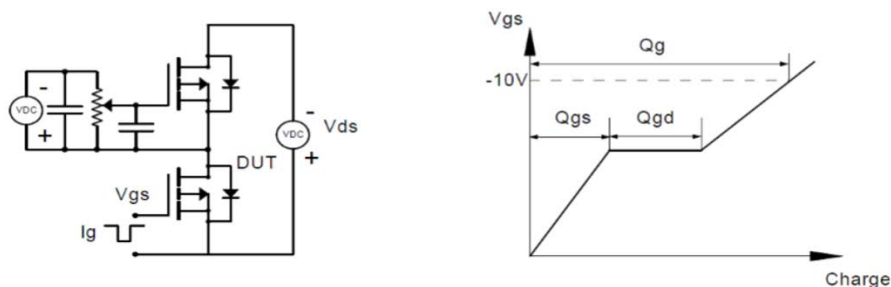


Figure 1: Gate Charge Test Circuit & Waveform

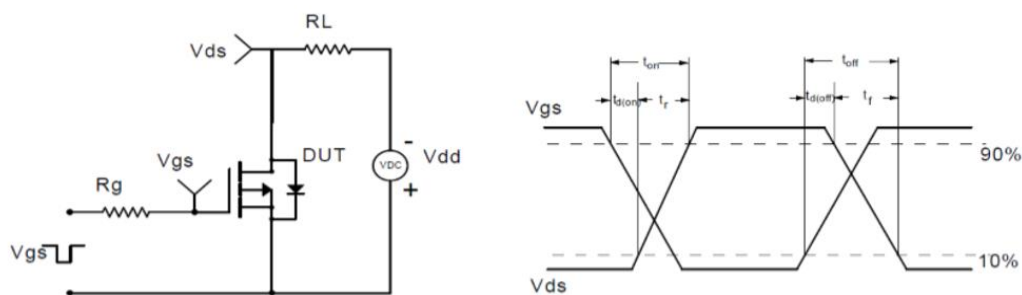


Figure 2: Resistive Switching Test Circuit & Waveform

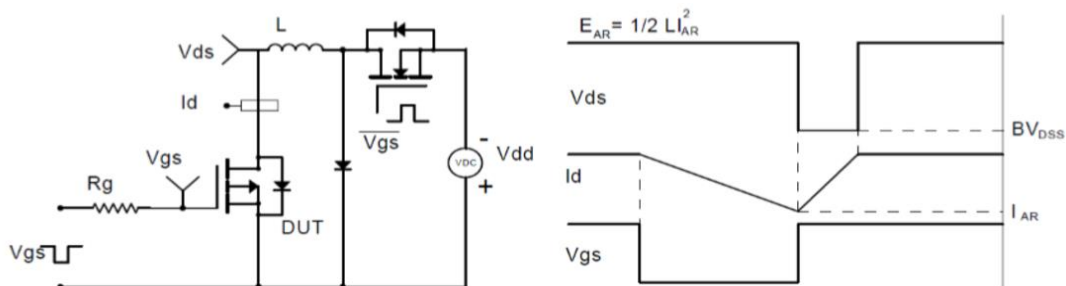


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

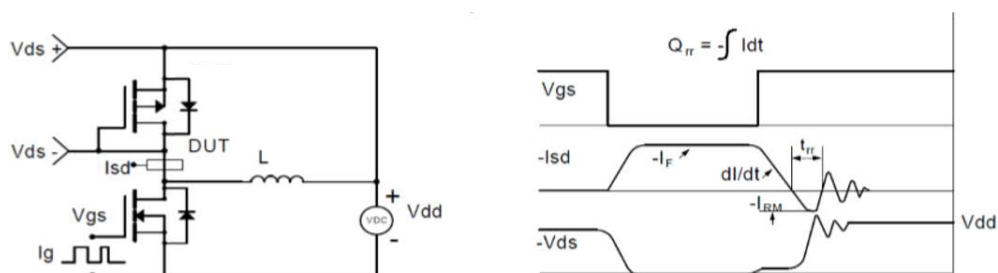
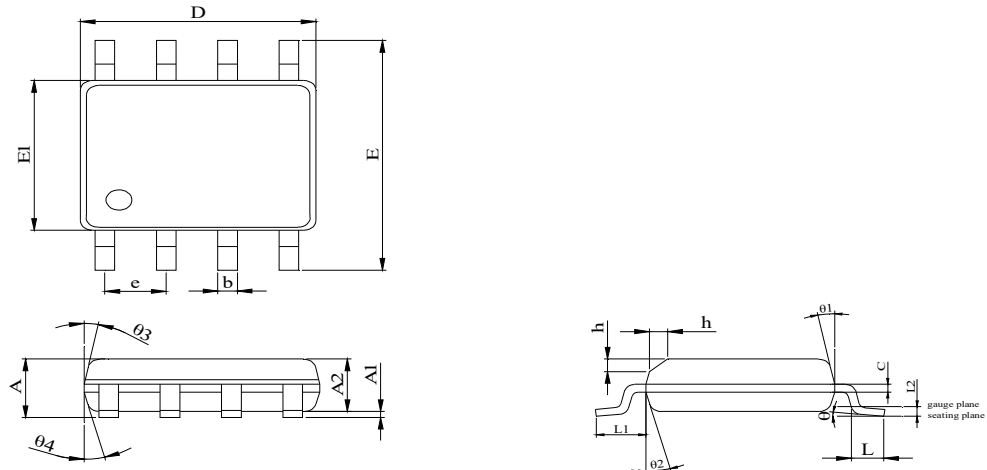


Figure 4: Diode Recovery Test Circuit & Waveform

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°
θ1	10°	12°	14°
θ2	8°	10°	12°
θ3	10°	12°	14°
θ4	8°	10°	12°

Recommend Soldering Footprint

Recommended Soldering Footprint

