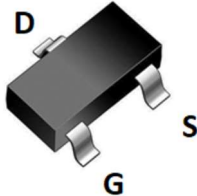
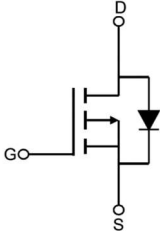


-12V P-Channel MOSFETs
Description

Features <ul style="list-style-type: none"> • $V_{DS} = -12V$, $I_D = -8A$ $R_{DS(ON)} < 18m\Omega$ @ $V_{GS} = -4.5V$ $R_{DS(ON)} < 25m\Omega$ @ $V_{GS} = -2.5V$ • Advanced Trench Technology • Excellent $R_{DS(ON)}$ and Low Gate Charge • Lead free product is acquired 	Application <ul style="list-style-type: none"> • PWM Applications • Load Switch • Power Management
 <p>SOT-23-3L top view</p>	 <p>Schematic Diagram</p>

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-12	V
V_{GSS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	-8
		$T_A = 100^\circ C$	-5.2
I_{DM}	Pulsed Drain Current ^{note1}	-32	A
P_D	Power Dissipation	$T_A = 25^\circ C$	1.6
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	78	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-12	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -12V, V_{GS} = 0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS} = -4.5V, I_D = -8A$	-	14.7	18	m Ω
		$V_{GS} = -2.5V, I_D = -5A$	-	18	25	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0MHz$	-	2700	-	pF
C_{oss}	Output Capacitance		-	680	-	pF
C_{rss}	Reverse Transfer Capacitance		-	590	-	pF
Q_g	Total Gate Charge	$V_{DS} = -6V, I_D = -8A,$ $V_{GS} = -4.5V$	-	35	-	nC
Q_{gs}	Gate-Source Charge		-	5	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	10	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -6V, I_D = -4A,$ $V_{GS} = -4.5V,$ $R_{GEN} = 2.5\Omega$	-	11	-	ns
t_r	Turn-on Rise Time		-	35	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	30	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-8	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-32	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -8A$	-	-0.8	-1.2	V

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

 2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Figure 1: Output Characteristics

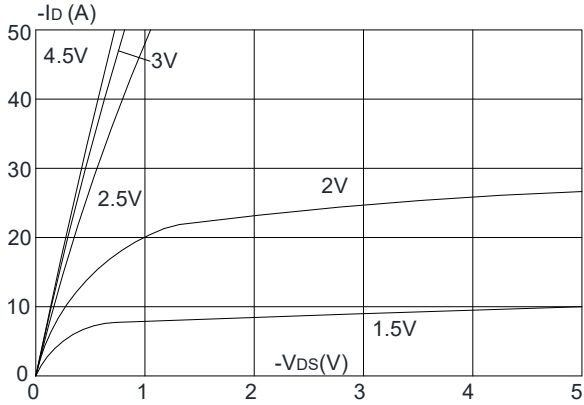


Figure 2: Typical Transfer Characteristics

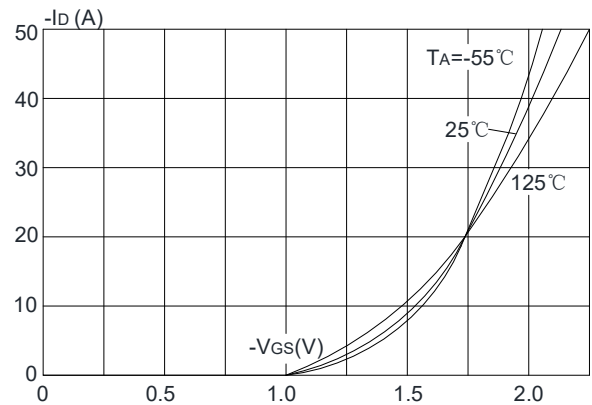


Figure 3: On-resistance vs. Drain Current

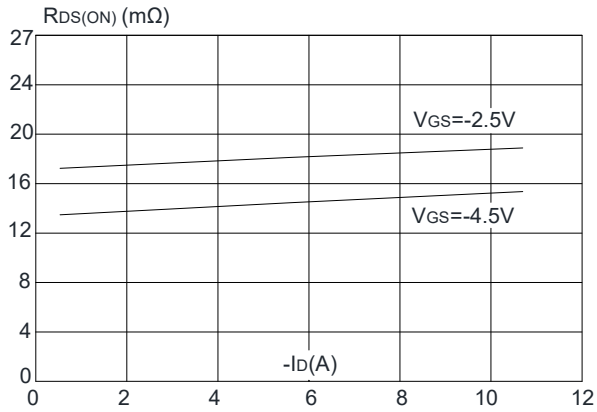


Figure 4: Body Diode Characteristics

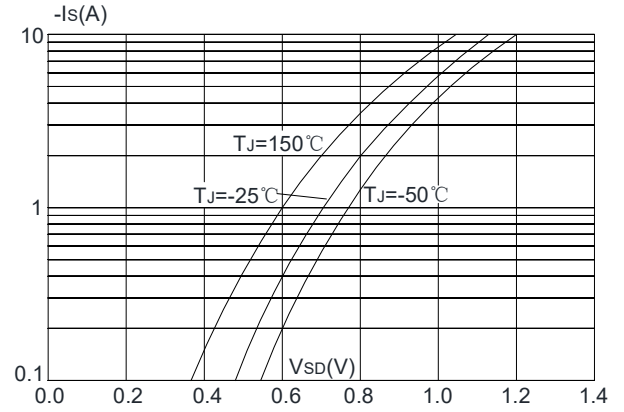


Figure 5: Gate Charge Characteristics

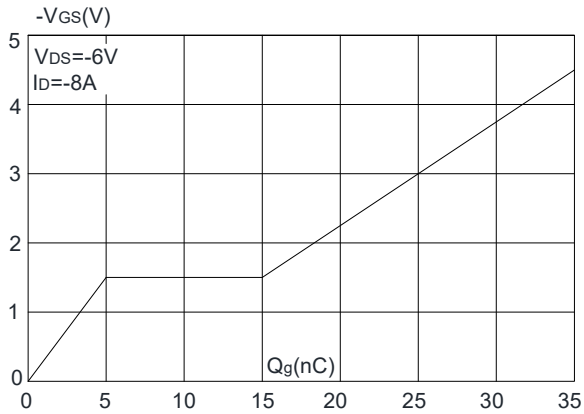


Figure 6: Capacitance Characteristics

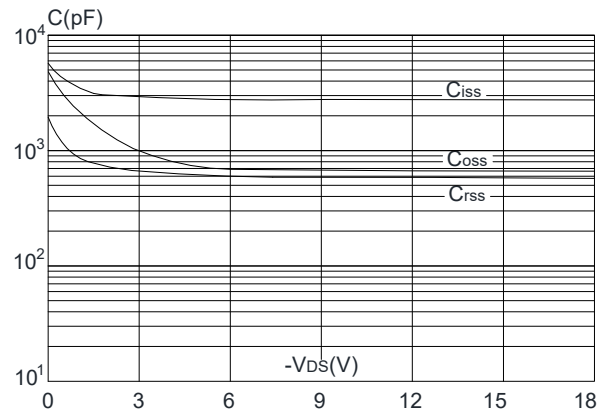


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

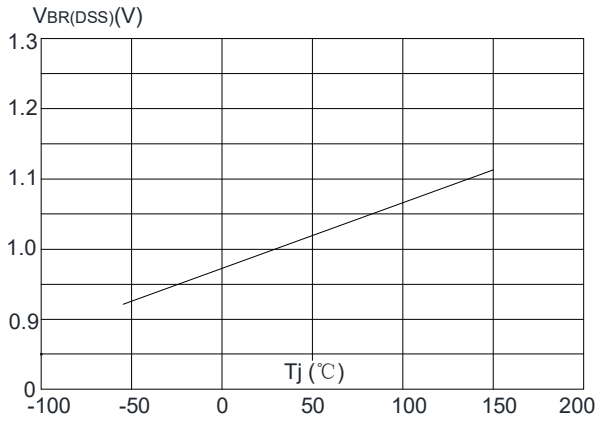


Figure 8: Normalized on Resistance vs. Junction Temperature

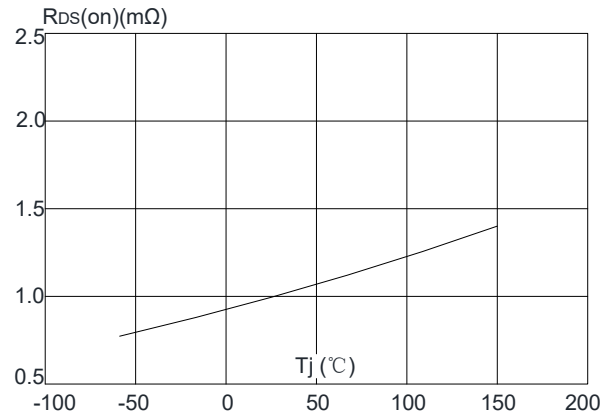


Figure 9: Maximum Safe Operating Area

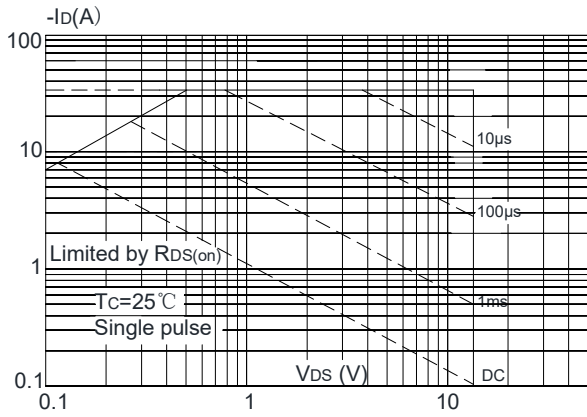


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

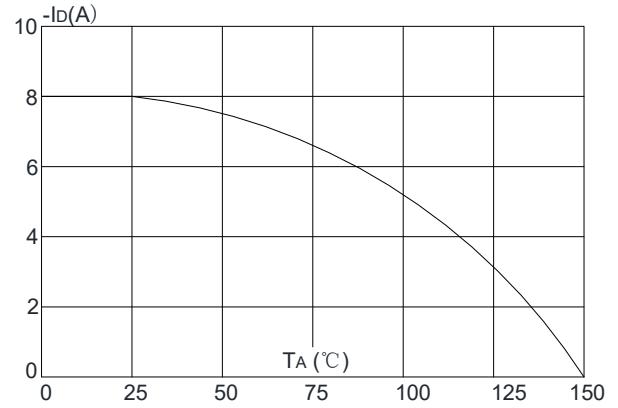
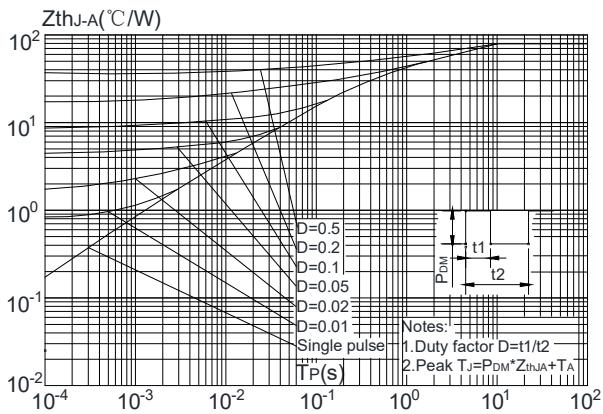
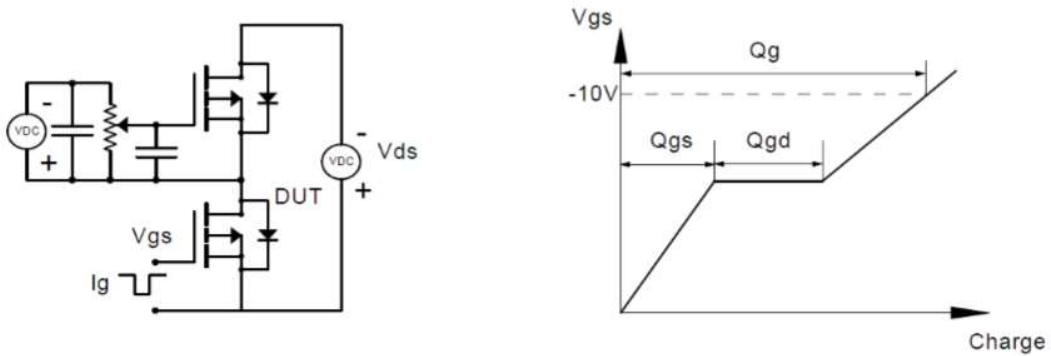


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

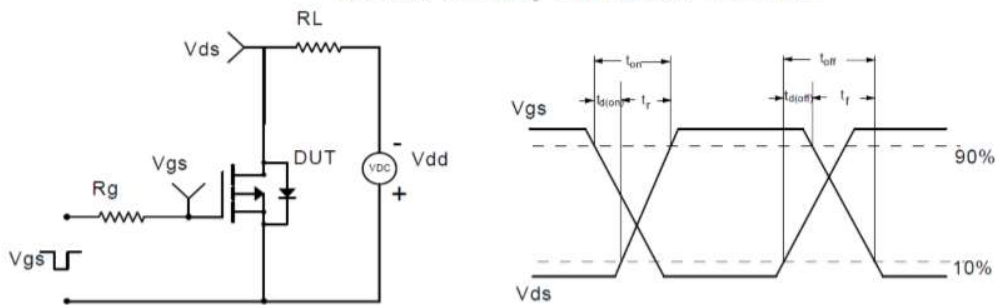


Typical Performance Characteristics

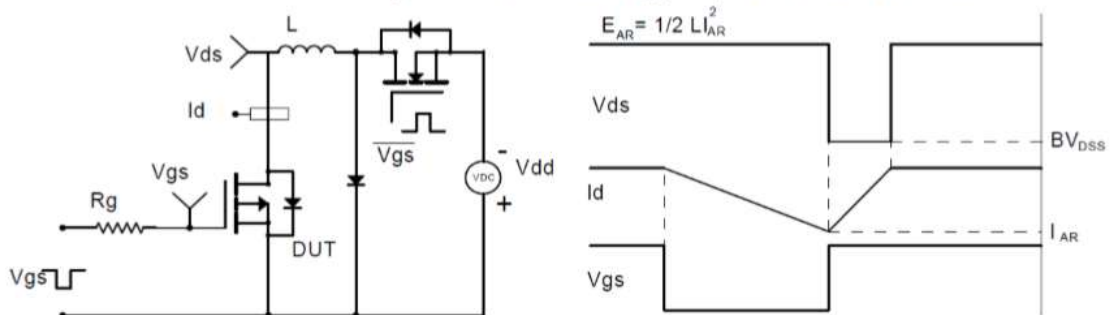
Gate Charge Test Circuit & Waveform



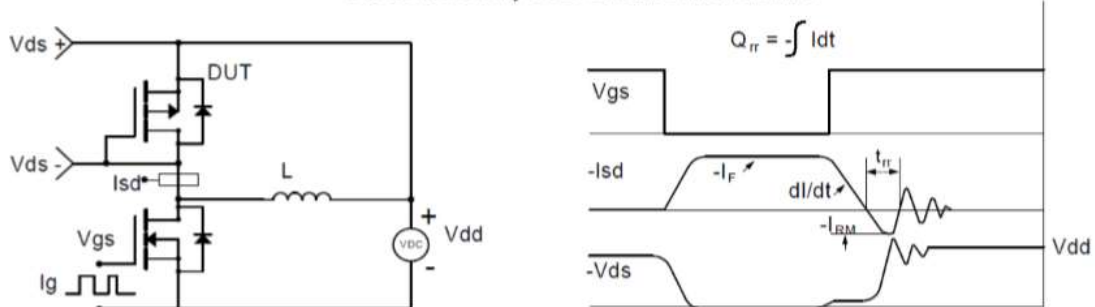
Resistive Switching Test Circuit & Waveforms



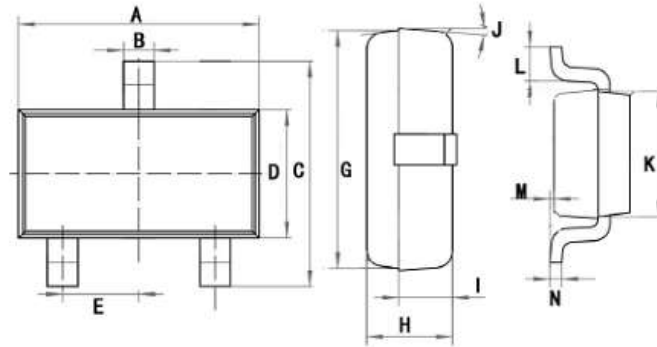
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data



A	2.90±0.1	E	0.950	J	7°	N	0.15 ^{+0.03}
B	0.4±0.01	G	2.85±0.1	K	1.550±0.1		
C	2.80±0.20	H	1.10±0.1	L	0.40		
D	1.60±0.1	I	0.70±0.1	M	0.05±0.03		

Revision history

Date	Revision	Changes
28-May-2020	1.0	Initial release

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