Dual N-channel Enhancement Mode Power MOSFET

Features

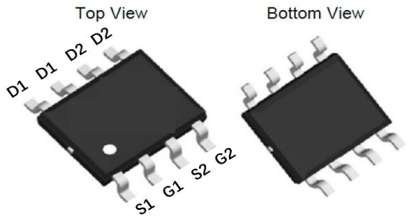
- VDS= 20V, ID= 6 A
  RDS(ON) < 21 mΩ @ VGS = 10V
  RDS(ON) < 25 mΩ @ VGS = 4.5V

General Features

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

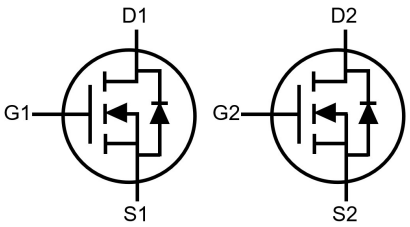
100% UIS TESTED!
100% ΔVds TESTED!

RoHS



SOP-8 (Dual)

Pin Assignment



Schematic diagram

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		20	V
V_{GS}	Gate-to-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A = 25°C	6	A
		T_A = 100°C	4	
I_{DM}	Pulsed Drain Current (1)		24	A
E_{AS}	Single Pulsed Avalanche Energy (2)		7.5	mJ
P_D	Power Dissipation	T_A = 25°C	1.7	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)		75	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

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	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	0.5		1.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 4.5V, I_D = 6A	-		21	mΩ
		V_{GS} = 2.5V, I_D = 5A	-		25	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	-	455	-	pF
C_{oss}	Output Capacitance		-	64	-	pF
C_{rss}	Reverse Transfer Capacitance		-	55	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 4.5V V_{DD} = 10V, I_D = 2A	-	6	-	nC
Q_{gs}	Gate Source Charge		-	1	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	1.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 4.5V, V_{DD} = 10V I_D= 2A, R_{GEN} = 3Ω	-	4	-	ns
t_r	Turn-On Rise Time		-	13	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	65	-	ns
t_f	Turn-Off Fall Time		-	33	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	24	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 6A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 2A, di/dt = 60A/us	-	6	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	0.8	-	nC

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting T_J=25C, V_{DD}=10V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=5.5A
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

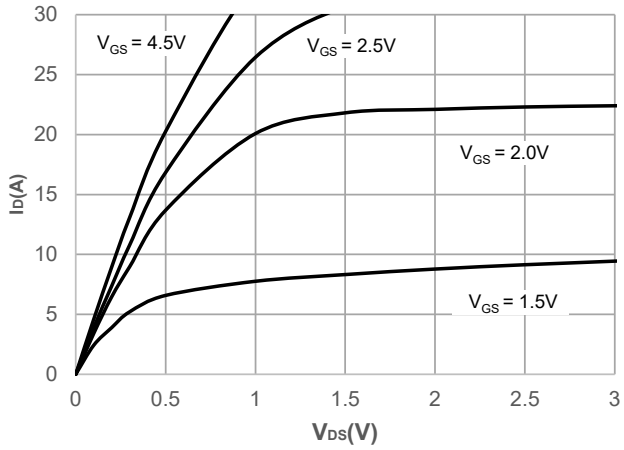


Figure 2: Typical Transfer Characteristics

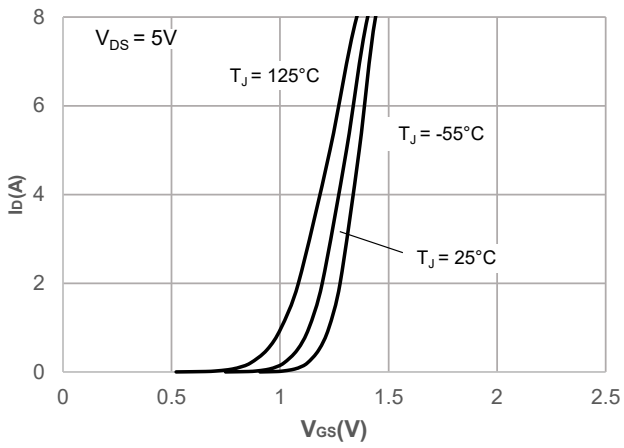


Figure 3: On-resistance vs. Drain Current

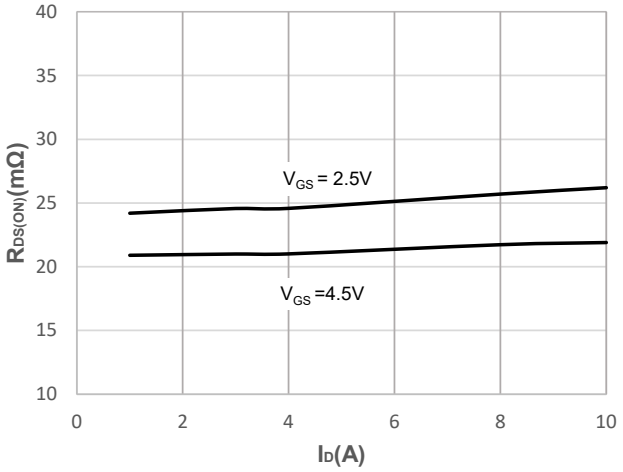


Figure 4: Body Diode Characteristics

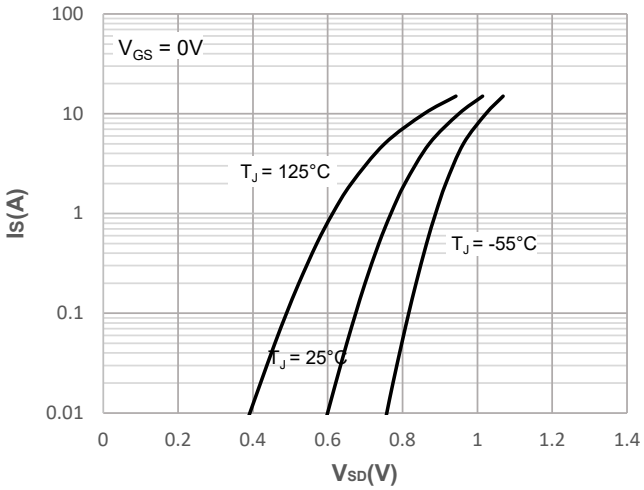


Figure 5: Gate Charge Characteristics

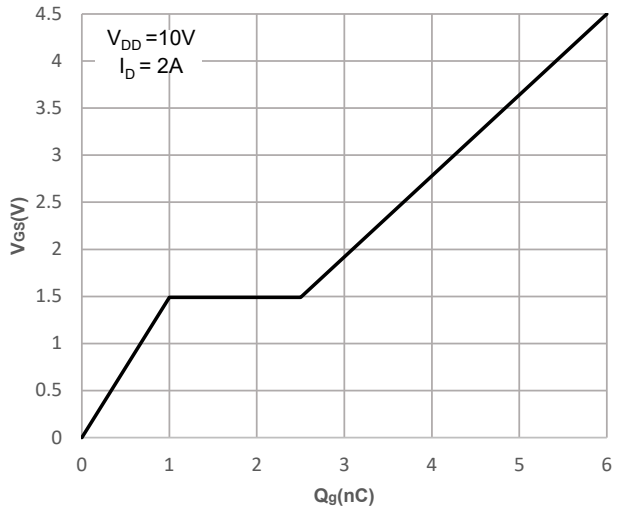
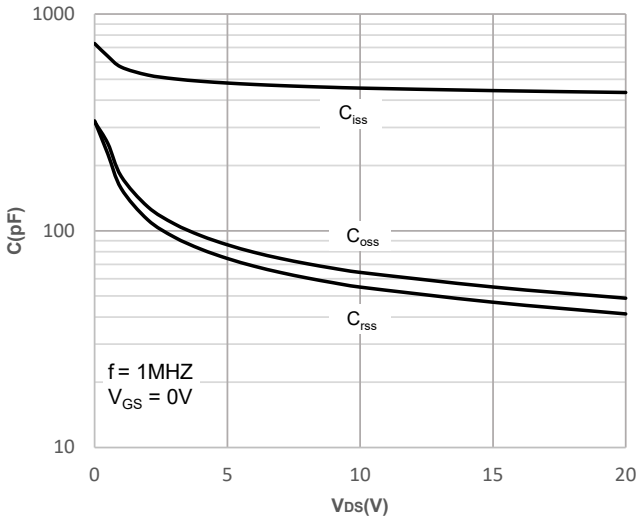


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

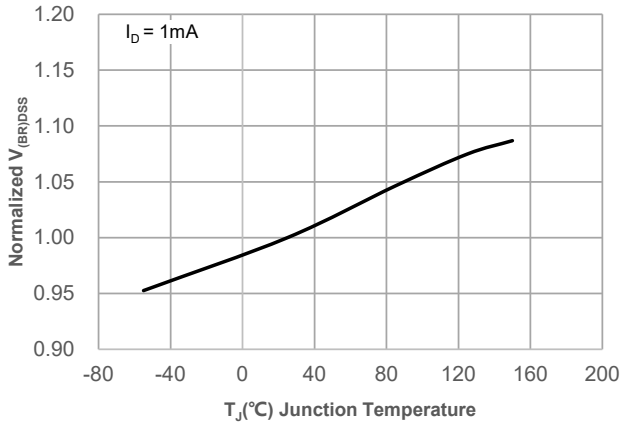


Figure 8: Normalized on Resistance vs. Junction Temperature

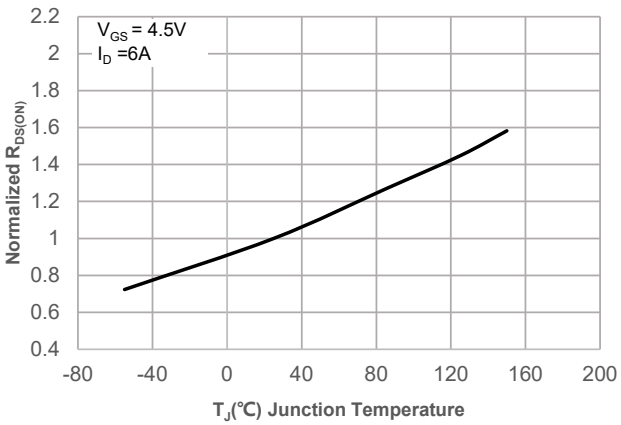


Figure 9: Maximum Safe Operating Area

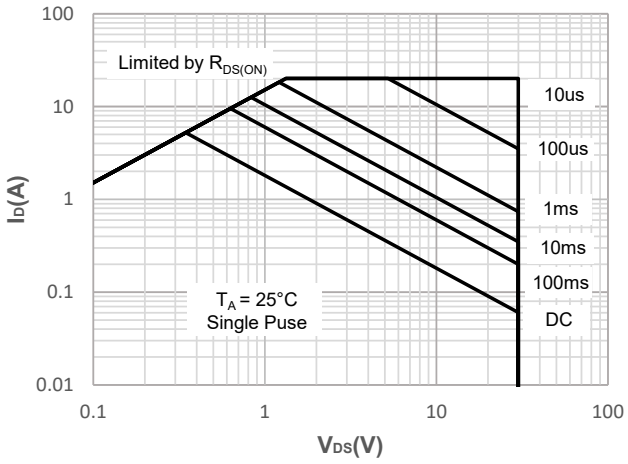


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

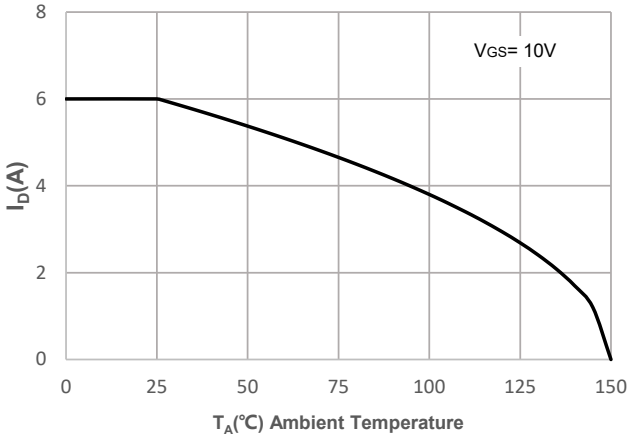


Figure 11: Normalized Maximum Transient Thermal Impedance

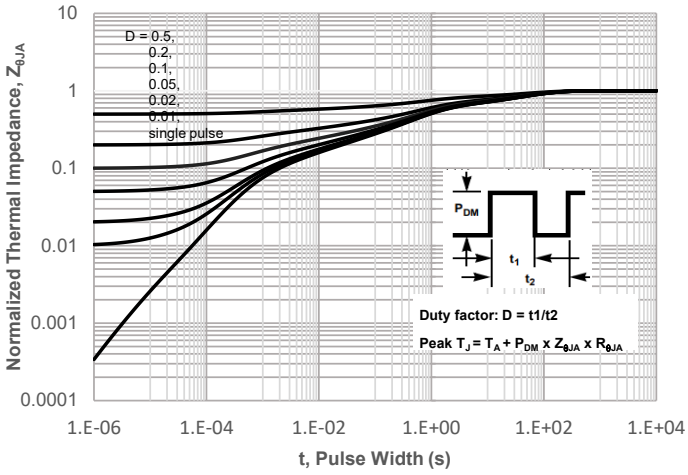
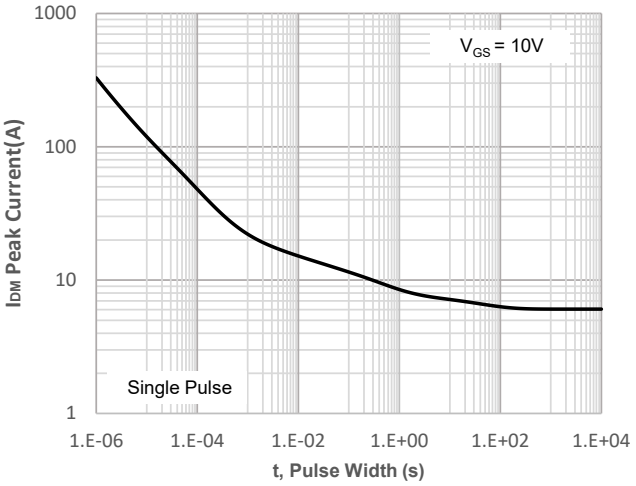


Figure 12: Peak Current Capacity



Test Circuit

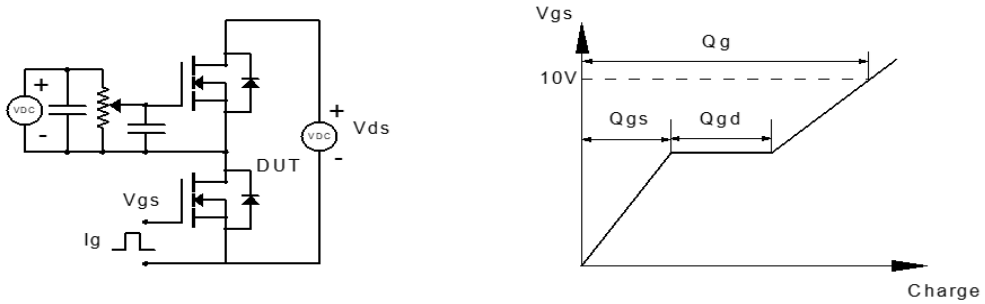


Figure 1: Gate Charge Test Circuit & Waveform

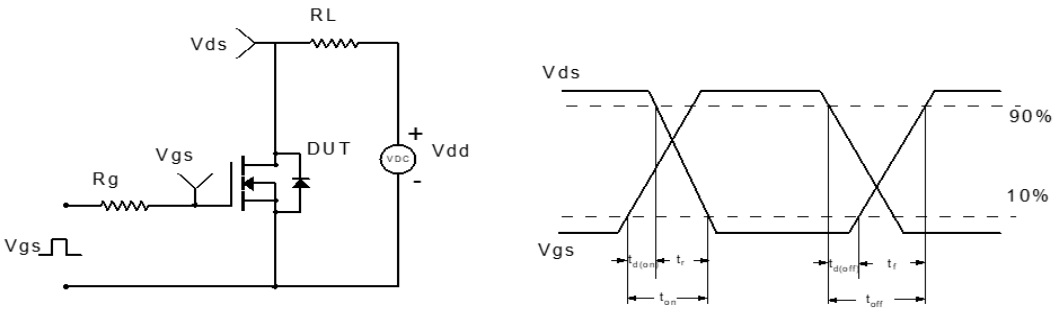


Figure 2: Resistive Switching Test Circuit & Waveform

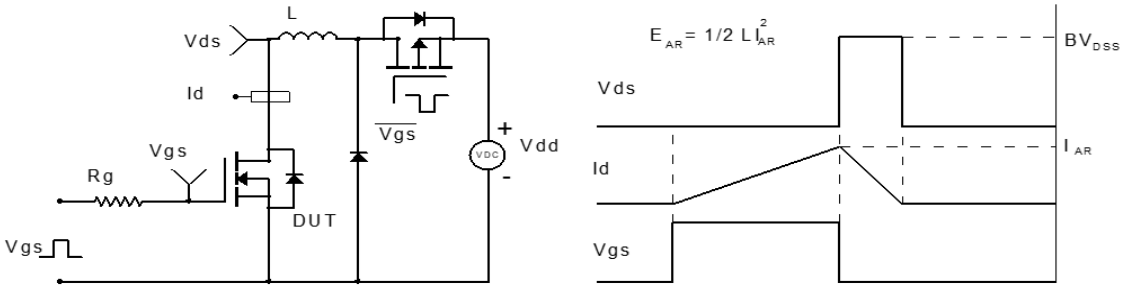


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

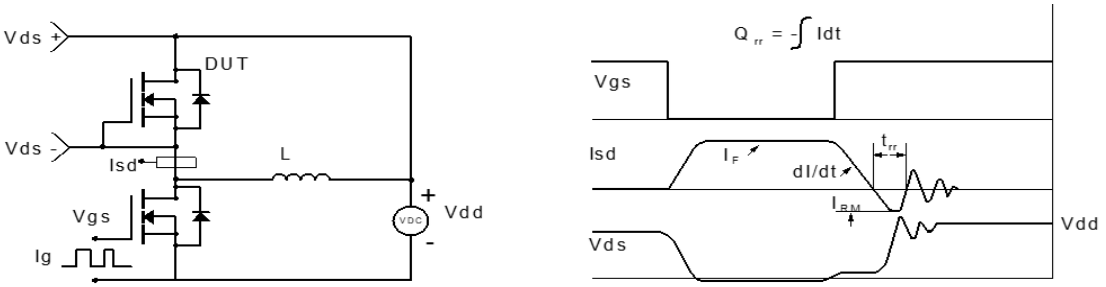


Figure 4: Diode Recovery Test Circuit & Waveform