

SDM080N02S

20V N-Channel MOSFETs

Rev A.0

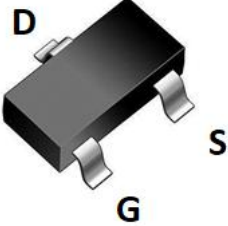
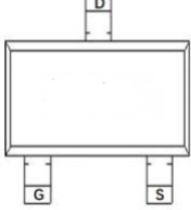
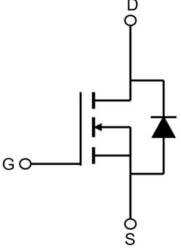
Feature

- ✧ TrenchFET Power MOSFET
- ✧ Load Switch for Portable Devices.
- ✧ Green product (RoHS compliant), lead free

Product Summary

V_{DS}	20	V
$V_{GS(th_Typ)}$	0.95	V
$R_{DS(ON_Typ)}$ (at $V_{GS} = 4.5V$)	35	m Ω
I_D	2.1	A

Type	Package	Marking	Outline	Media	Quantity (pcs)
SDM080N02S	SOT-23	S2	Tape	7" Reel	3000

 <p>SOT-23 top view</p>	 <p>Pin Assignment</p>	 <p>Schematic Diagram</p>
--	---	--

Absolute Maximum Ratings (Rating at $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	2.1	A
Continuous Source-Drain Diode Current	I_S	0.6	A
Power Dissipation	P_D	400	mW
Junction and Storage Temperature Range	T_J, T_{STG}	-50 to +150	$^\circ C$

Electrical Characteristics (Rating at =25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D=10\mu A, V_{GS}=0V$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 8V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=50\mu A$	0.65	0.95	1.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ⁽¹⁾	$V_{GS}=4.5V, I_D=3.6A$	-	35	60	m Ω
		$V_{GS}=2.5V, I_c=3.1A$	-	45	115	
V_{SD}	Diode Forward Voltage	$I_s=0.94A, V_{GS}=0V$	-	0.76	1.2	V
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=10V, f=1MHz$	-	299	-	pF
C_{oss}	Output Capacitance		-	119	-	pF
C_{rss}	Reverse Transfer Capacitance		-	79	-	pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=10V, I_D=3.6A$	-	3.9	9	nC
Q_{gs}	Gate Source Charge		-	0.63	-	nC
Q_{gd}	Gate Drain Charge		-	1.3	-	nC
$t_{D(on)}$	Turn-On Delay Time	$V_{DD}=10V, I_D=3.6A, V_{GEN}=4.5V$ $R_G=6\Omega, R_L=5.5\Omega$	-	6.9	13	ns
t_r	Turn-On Rise Time		-	53	79	ns
$t_{D(off)}$	Turn-Off Delay Time		-	15	59	ns
t_f	Turn-Off Fall Time		-	9	23	ns

Thermal Resistances

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal resistance from junction to Ambient	-	312.5	$^{\circ}\text{C} / \text{W}$

Notes:

Notes: a. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristics

Figure 1: Saturation Characteristics

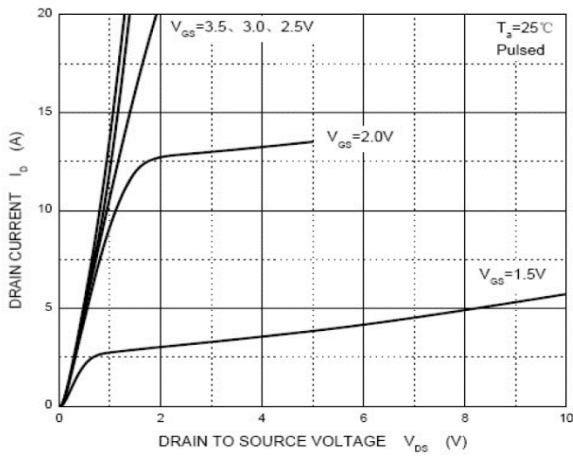


Figure 2: Transfer Characteristics

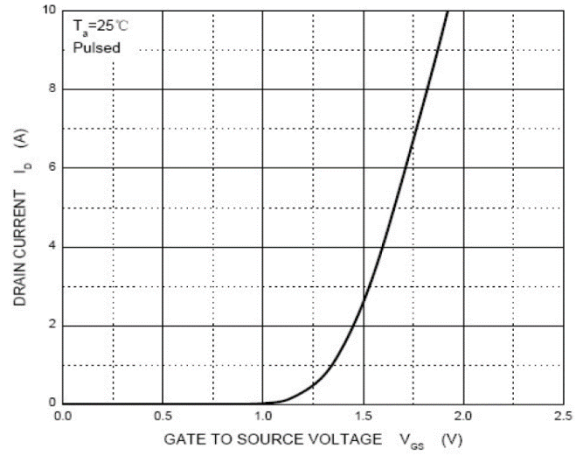


Figure 3: $R_{DS(ON)}$ vs. Drain Current

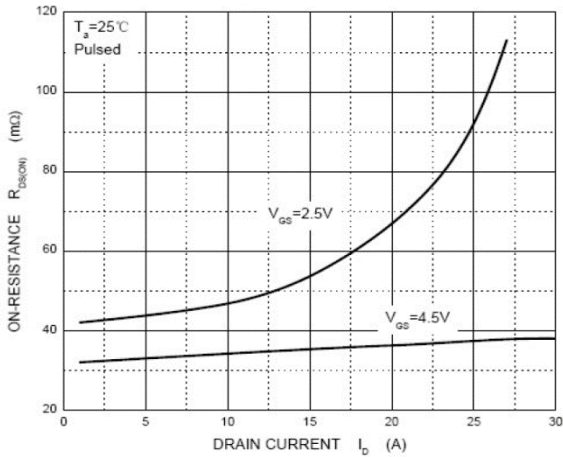


Figure 4: $R_{DS(ON)}$ vs. Gate-Source Voltage

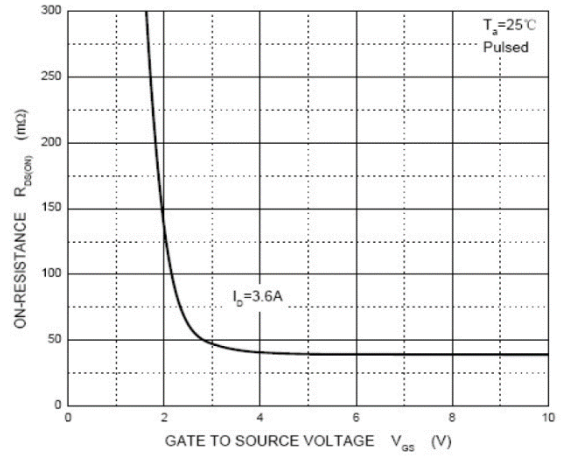
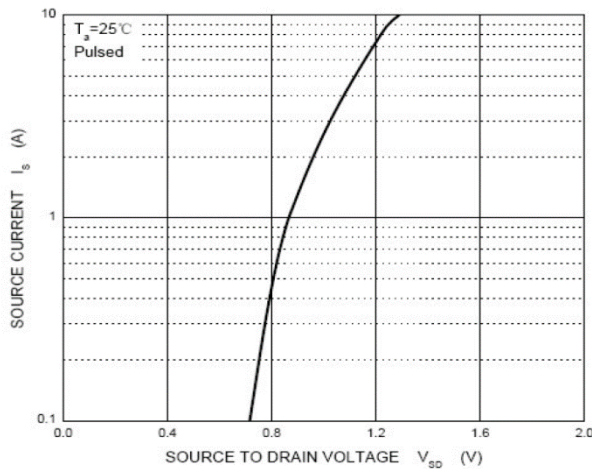


Figure 5: Body-Diode Characteristics



Test Circuit

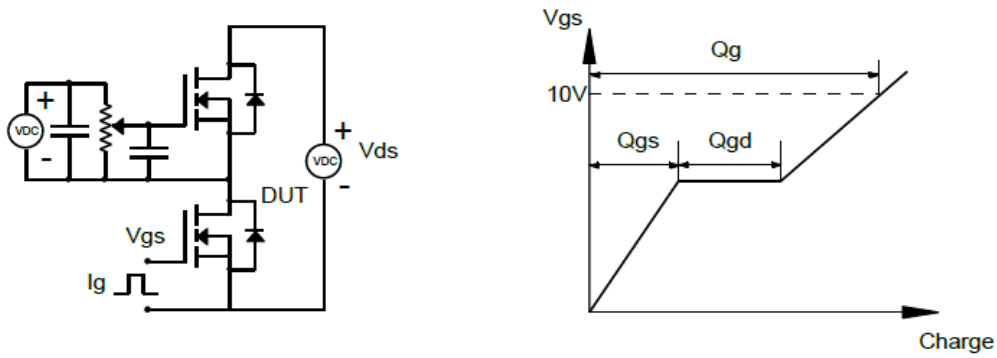


Figure1: Gate Charge Test Circuit & Waveforms

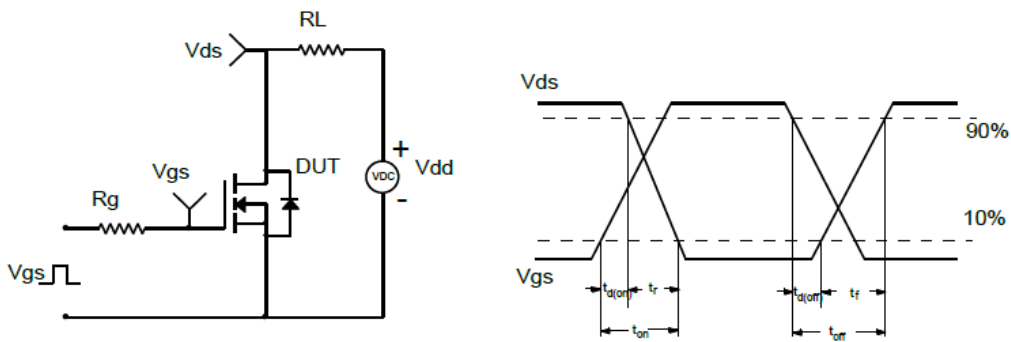


Figure2: Resistive Switching Test Circuit & Waveforms

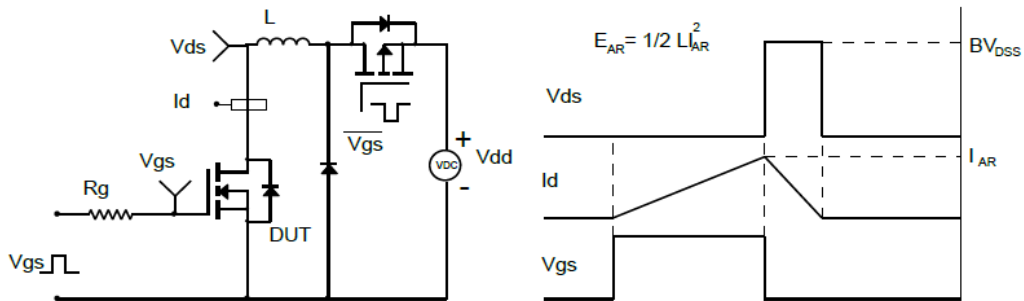


Figure3: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

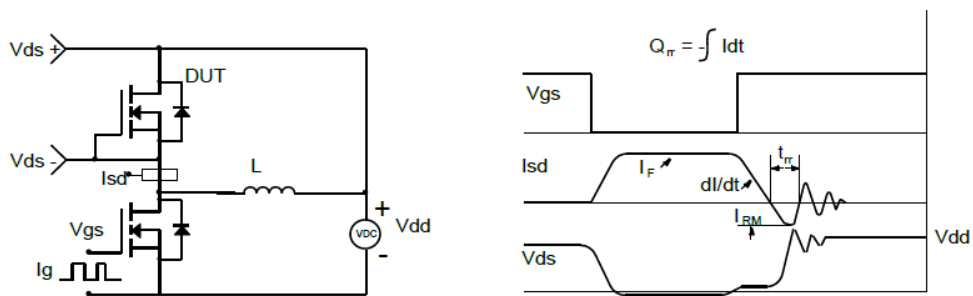
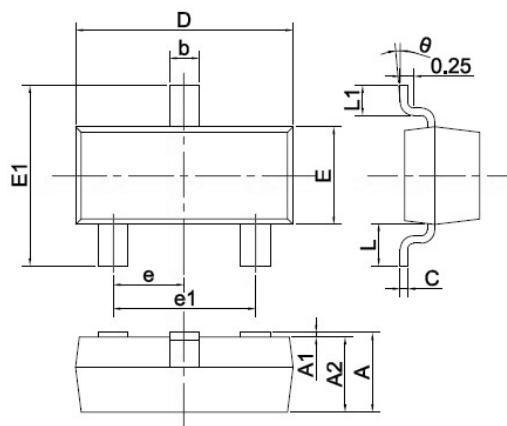


Figure4: Diode Recovery Test Circuit & Waveforms

SOT-23 Package Information



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm