SDM025N03S

30V N-Channel MOSFETs

Rev A.0

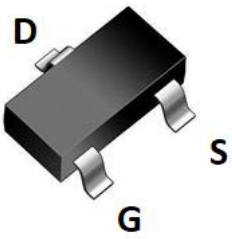
Feature

- Low $R_{DS(ON)}$
- Low Gate Charge
- High current Capability
- Green product (RoHS compliant), lead free
- 100% UIS Tested

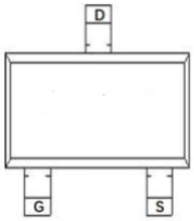
Product Summary

V_{DS}	30	V
$V_{GS(th)\_Typ}$	1.7	V
$R_{DS(ON)\_Typ}$ (at V_{GS} =10V)	18.4	mΩ
I_D (at V_{GS} =10V)	5.8	A

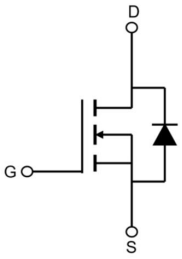
Type	Package	Marking	Outline	Media	Quantity (pcs)
SDM025N03S	SOT-23	3404	Tape	7'' Reel	3000



SOT-23 top view



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings (Rating at T_A=25°C unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	5.8	A
	T_A=100°C		4	
Pulsed Drain Current (1)		I_{DM}	23	A
Maximum Body-Diode Continuous Current		I_S	5.8	A
Power Dissipation	T_C=25°C	P_D	1.1	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{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	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V, V_{GS} =±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.2	1.7	2.2	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance (3)	V_{GS}=10V, I_D=5.5A	-	18.4	24	mΩ
		V_{GS}=4.50V, I_D=4.5A	-	25.5	33	
V_{SD}	Diode Forward Voltage	I_S=5.8A, V_{GS}=0V	-	-	1.2	V
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz	-	487	-	pF
C_{oss}	Output Capacitance		-	71	-	pF
C_{rss}	Reverse Transfer Capacitance		-	55	-	pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	V_{GS}=0 to 10V, V_{DS}=15V, I_D=5A	-	11	-	nC
Q_{gs}	Gate Source Charge		-	3	-	nC
Q_{gd}	Gate Drain Charge		-	3	-	nC
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=15V, I_D=5A, R_{GEN}=3Ω	-	5	-	ns
t_r	Turn-On Rise Time		-	13	-	ns
$t_{D(off)}$	Turn-Off Delay Time		-	15	-	ns
t_f	Turn-Off Fall Time		-	3	-	ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=5A, di/dt=100A/μs	-	7.7	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=5A, di/dt=100A/μs	-	3	-	nC

Thermal Resistances

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal resistance from junction to Ambient (2)	-	113	°C /W

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a $1inch^2$ pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Electrical and Thermal Characteristics

Figure 1: Saturation Characteristics

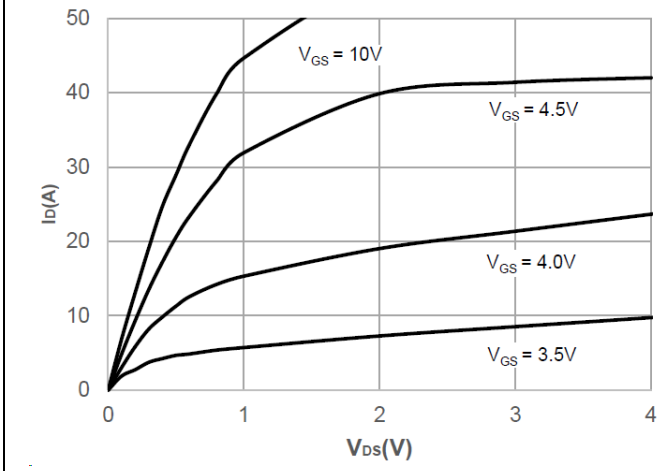


Figure 2: Transfer Characteristics

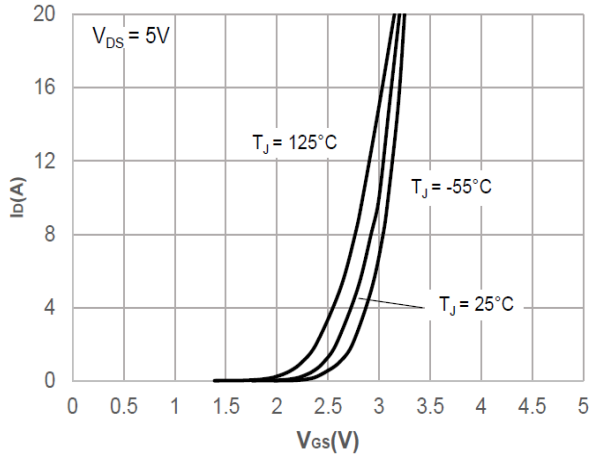


Figure 3: $R_{DS(ON)}$ vs. Drain Current

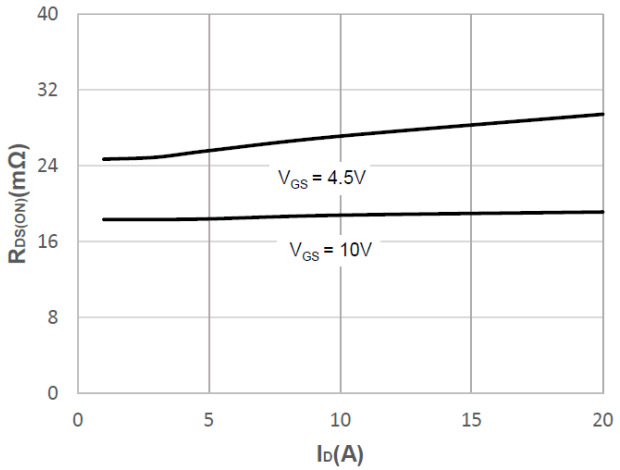


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

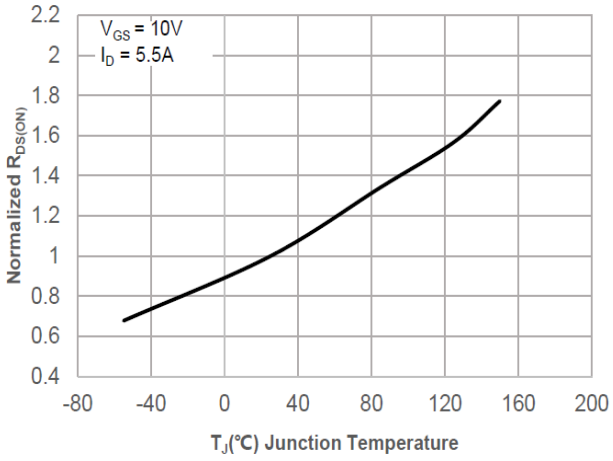


Figure 5: Normalized Breakdown voltage vs. Junction Temperature

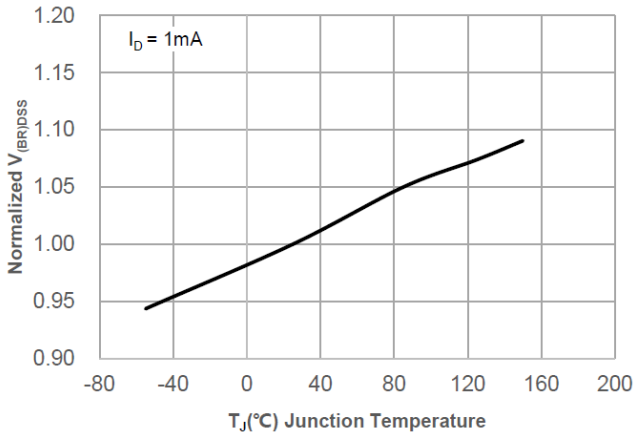
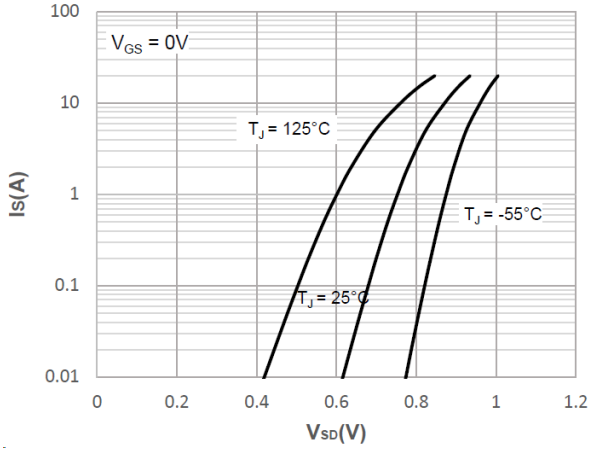


Figure 6: Body-Diode Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Gate-Charge characteristics

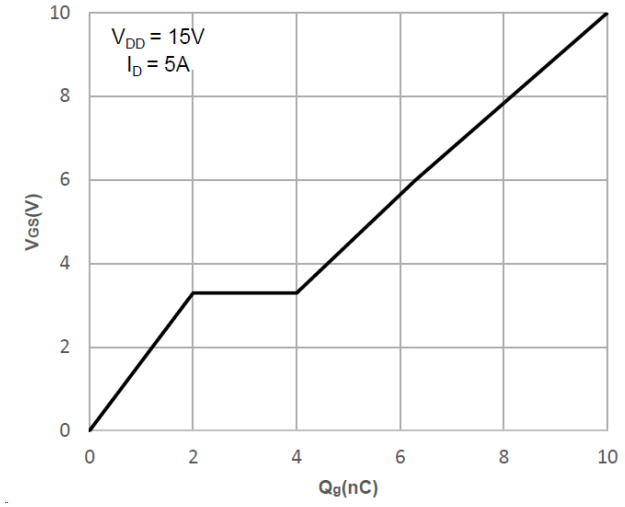


Figure 8: Capacitance characteristics

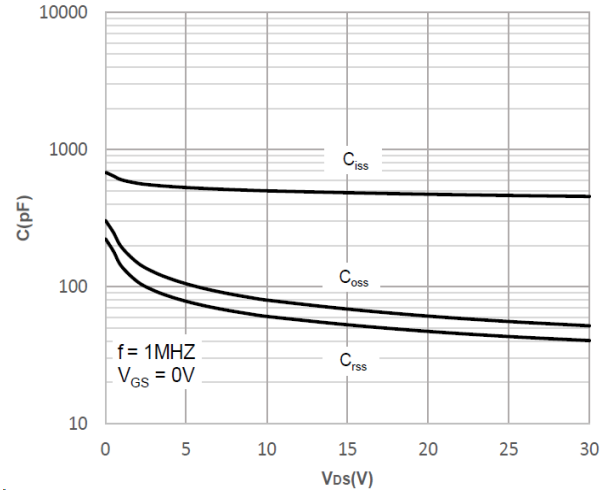


Figure 9: Current De-rating

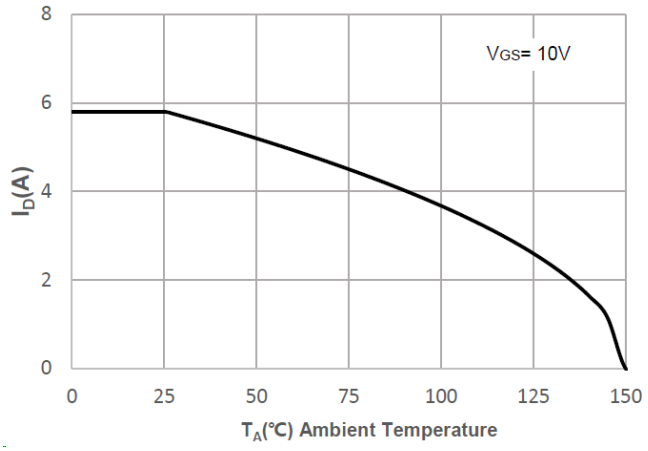


Figure 10: Maximum Safe Operating Area

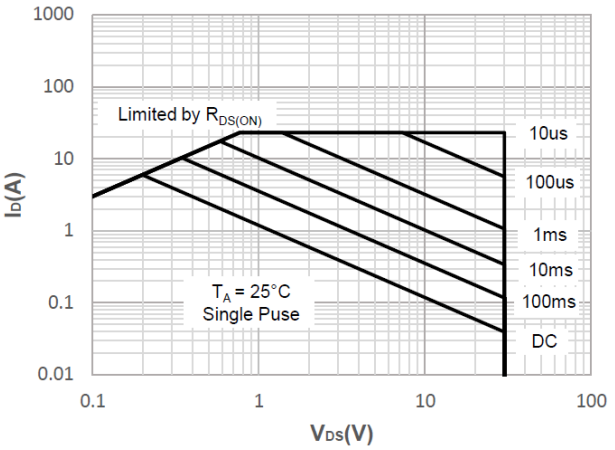


Figure 11: Peak Current Capacity

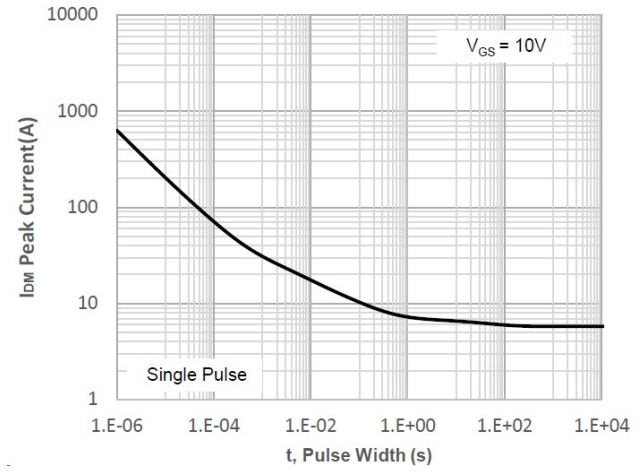
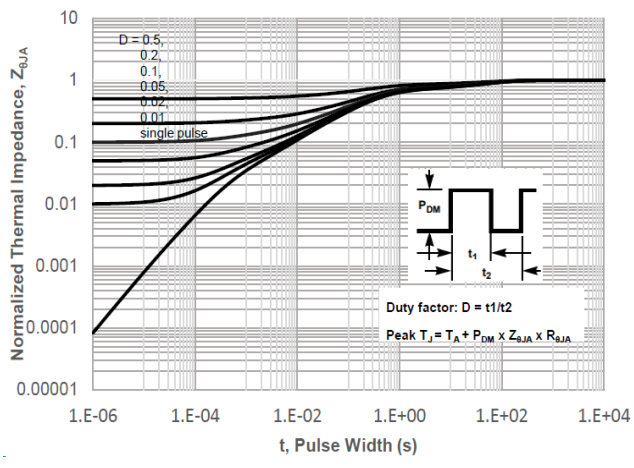


Figure 12: Normalized Maximum Transient Thermal Impedance



Test Circuit

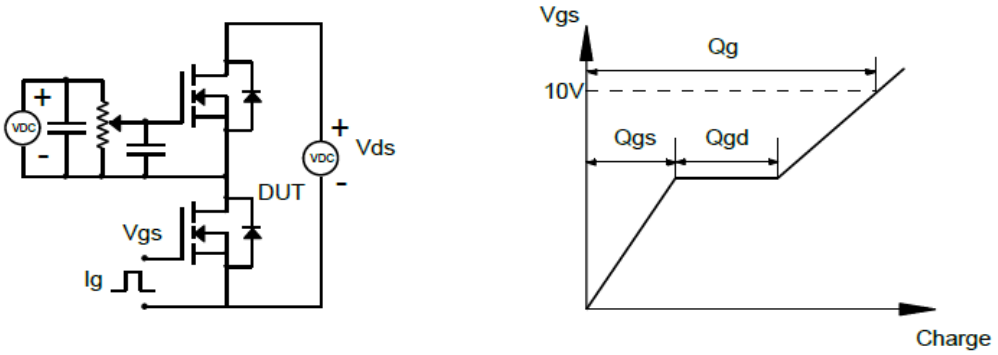


Figure1: Gate Charge Test Circuit & Waveforms

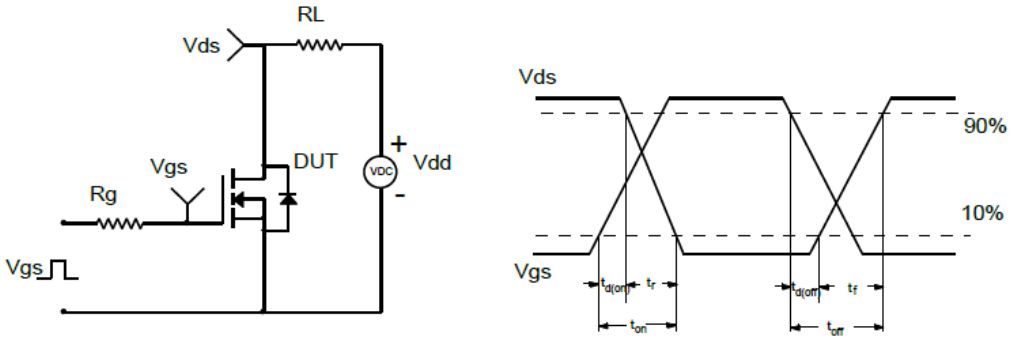


Figure2: Resistive Switching Test Circuit & Waveforms

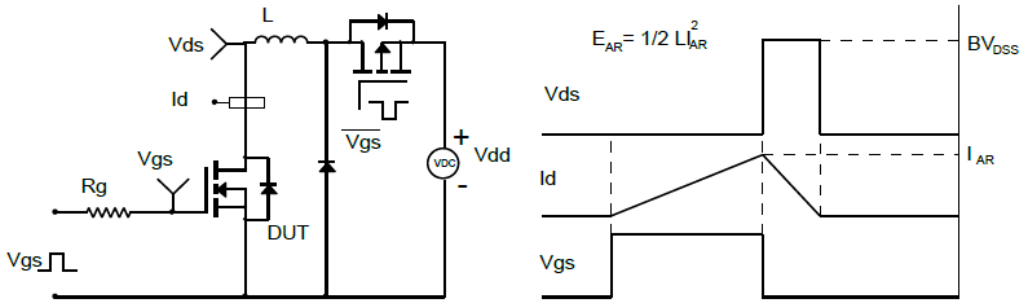


Figure3: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

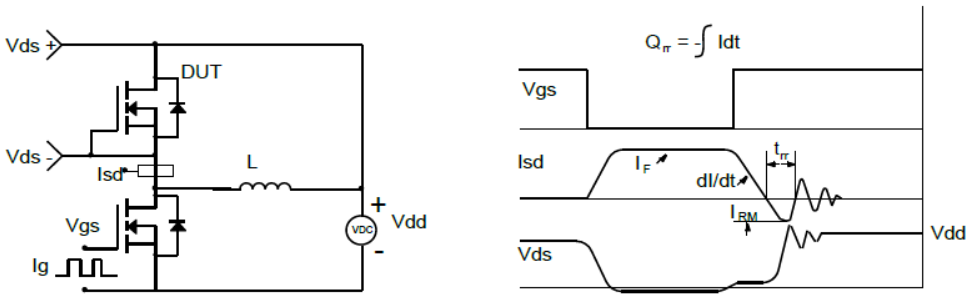
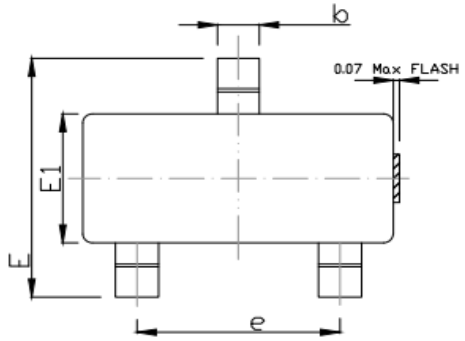
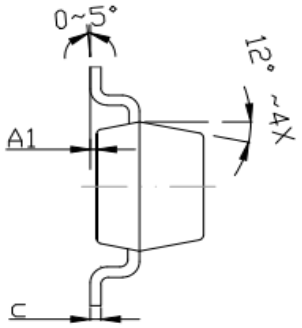
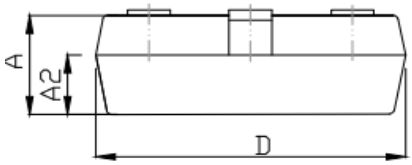


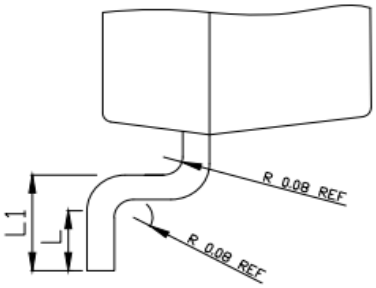
Figure4: Diode Recovery Test Circuit & Waveforms

SOT-23 Package Information









SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
A1	0.01	0.05	0.10
b	0.35	0.40	0.45
c		0.11 BSC	
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
e		1.90 BSC	
L	0.20	–	–
L1	0.30	0.40	0.50
A2		0.60 REF	