SDM200P06S

-60V P-Channel MOSFETs

Rev B.0

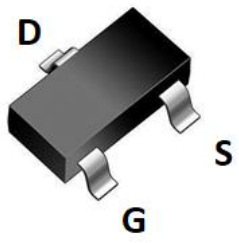
Feature

- ✧ Excellent $R_{DS(ON)}$
- ✧ Low Gate Charge
- ✧ High current Capability
- ✧ Green product (RoHS compliant), lead free
- ✧ 100% UIS Tested
- ✧ AEC-Q101 qualified

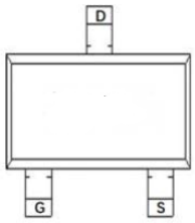
Product Summary

V_{DS}	-60	V
$V_{GS(th)\_Typ}$	-1.5	V
$R_{DS(ON)\_Typ}$ (at V_{GS} =-10V)	150	mΩ
I_D	-2	A

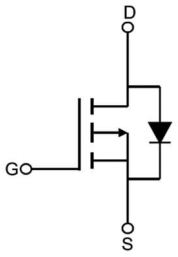
Type	Package	Marking	Outline	Media	Quantity (pcs)
SDM200P06S	SOT-23	N9ADE	Tape	7'' Reel	3000



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}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	-2	A
	T_A=70°C		-1.6	
Pulsed Drain Current (1)		I_{DM}	-8	A
Maximum Body-Diode Continuous Current		I_S	-1.4	A
Power Dissipation	T_A=25°C	P_D	1	W
	T_A=70°C		0.8	
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		-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-60 V_{GS} =0V	T_A=25°C	-	-	-1	μA
		V_{DS}=-60 V_{GS} =0V	T_A=125°C	-	-	-100	
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	-1.5	-2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V,I_D=-2A(2)		-	150	200	mΩ
		V_{GS}=-4.5V, I_D=-1A(2)		-	200	300	
V_{SD}	Diode Forward Voltage	I_S=-2A, V_{GS}=0V		-	-0.84	-1.2	V
DYNAMIC PARAMETERS							
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-30V, f=1MHz		-	311	-	pF
C_{oss}	Output Capacitance			-	23	-	pF
C_{rss}	Reverse Transfer Capacitance			-	17	-	pF
SWITCHING PARAMETERS							
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DD}=-30V, I_D=-2A		-	5.5	-	nC
Q_{gs}	Gate Source Charge			-	1.3	-	nC
Q_{gd}	Gate Drain Charge			-	1.7	-	nC
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=-10V,V_{DS}=-30V,R_G=3.3Ω,		-	43	-	ns
t_r	Turn-On Rise Time			-	23	-	ns
$t_{D(off)}$	Turn-Off Delay Time			-	27	-	ns
t_f	Turn-Off Fall Time			-	33	-	ns

Thermal Resistances

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal resistance from junction to ambient	-	125	°C /W

Notes:

1.Pulse width limited by maximum allowable junction temperature.

2.Pulse test ; Pulse width<300us, duty cycle<2%.

Typical Electrical and Thermal Characteristics

Figure 1: Saturation Characteristics

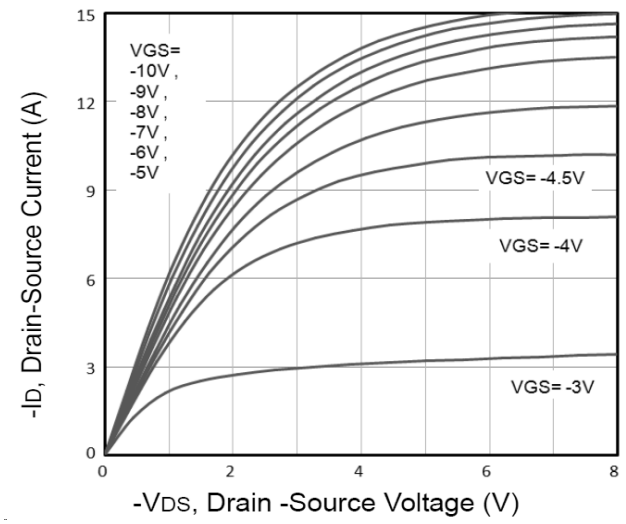


Figure 2: Transfer Characteristics

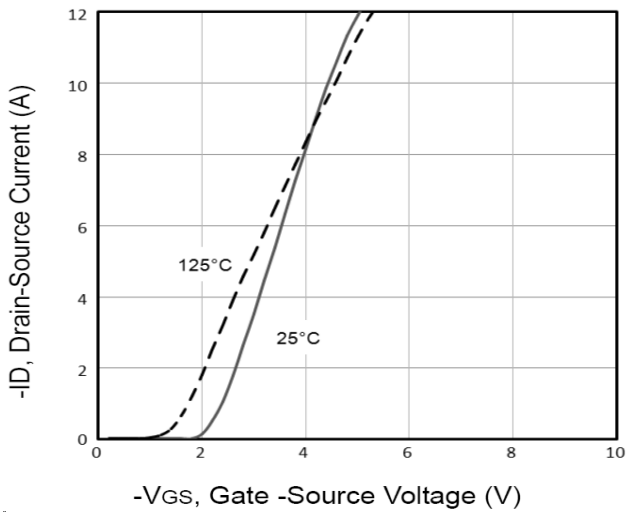


Figure 3: Body-Diode Characteristics

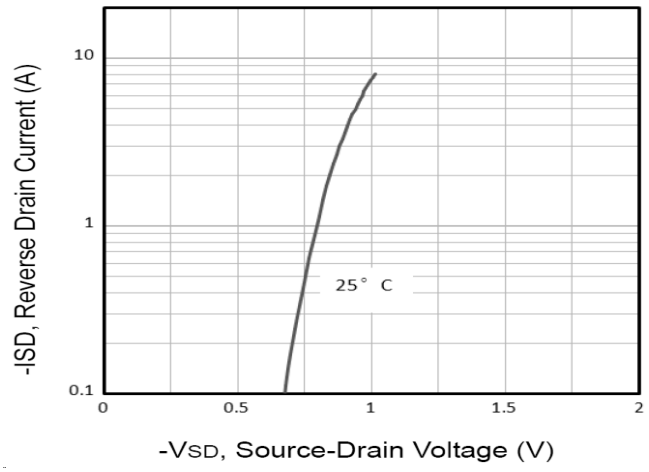
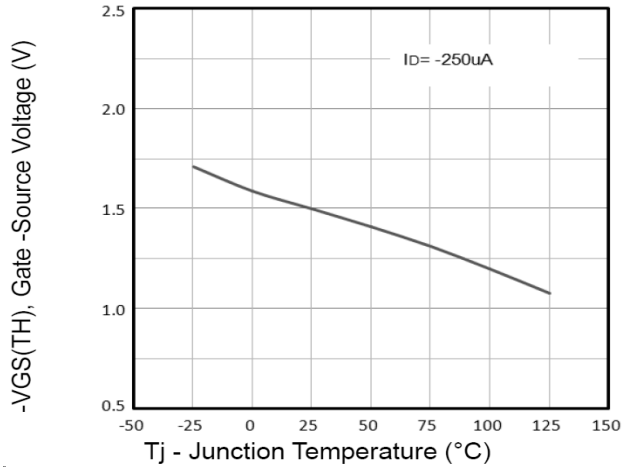


Figure 4: Normalized Threshold Voltage Vs. Temperature



Typical Electrical and Thermal Characteristics

Figure 5: Gate-Charge characteristics

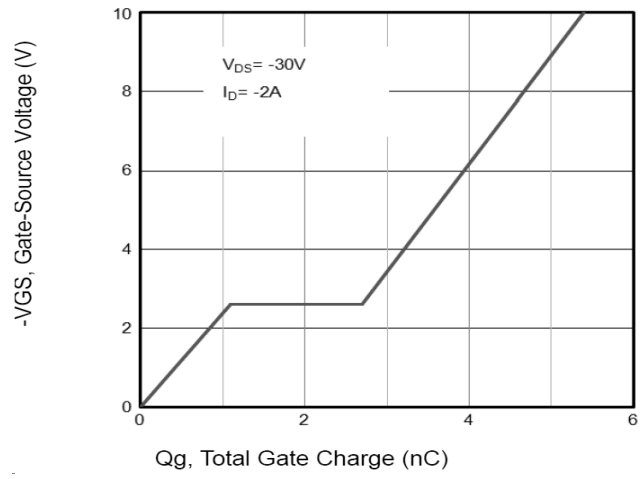


Figure 6: Capacitance characteristics

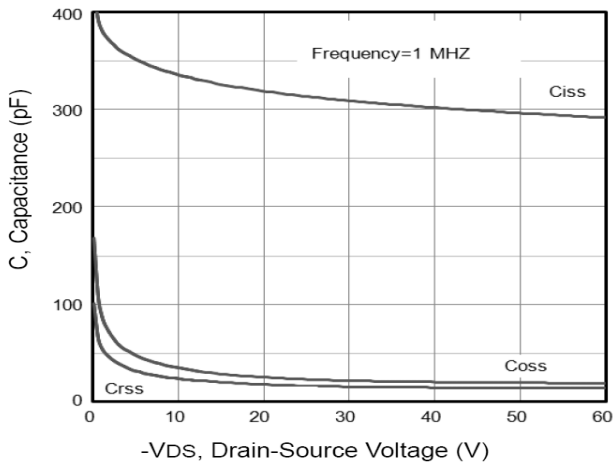


Figure 7: Drain -Source Voltage vs Gate -Source Voltage

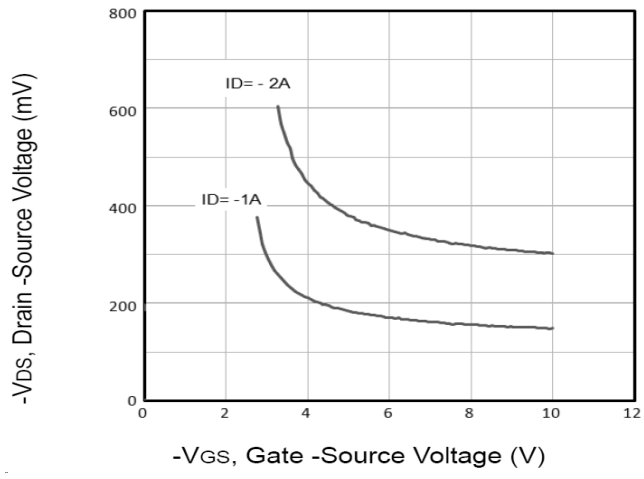


Figure 8: Maximum Safe Operating Area

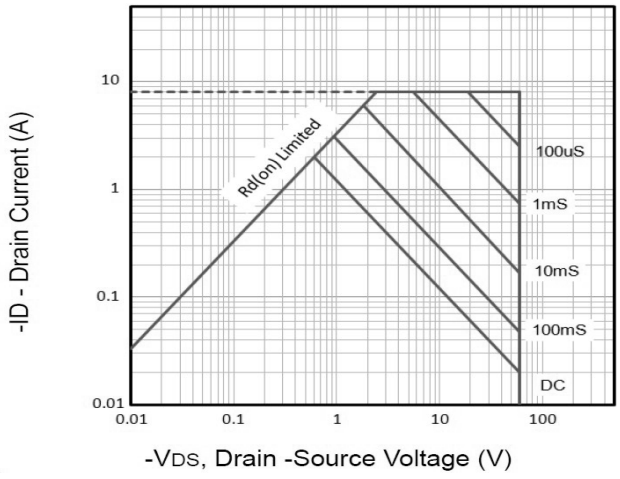
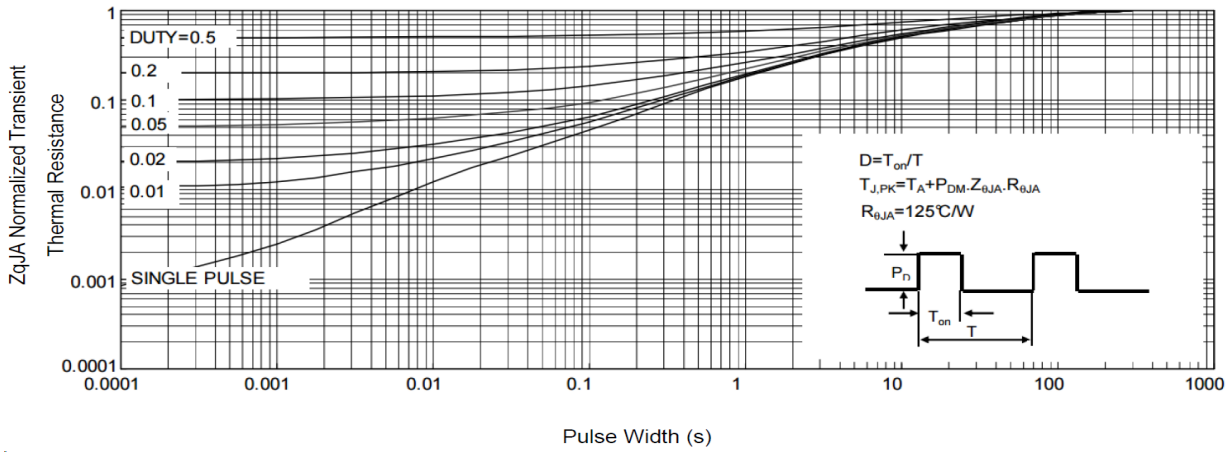


Figure 9: Normalized Maximum Transient Thermal Impedance



Test Circuit

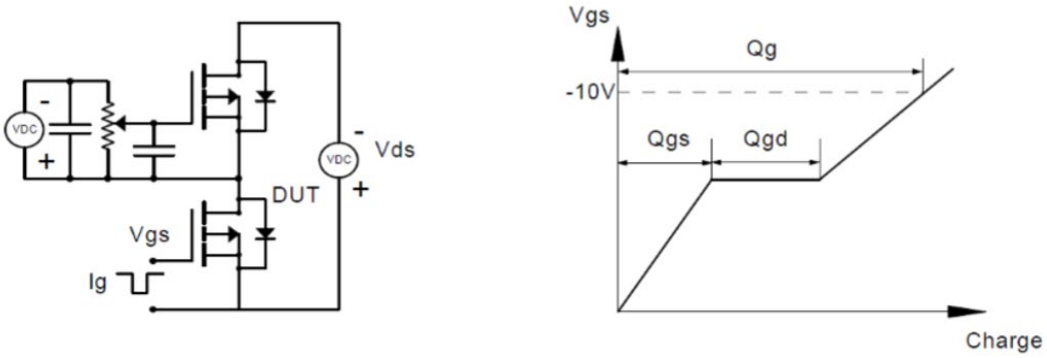


Figure1: Gate Charge Test Circuit & Waveforms

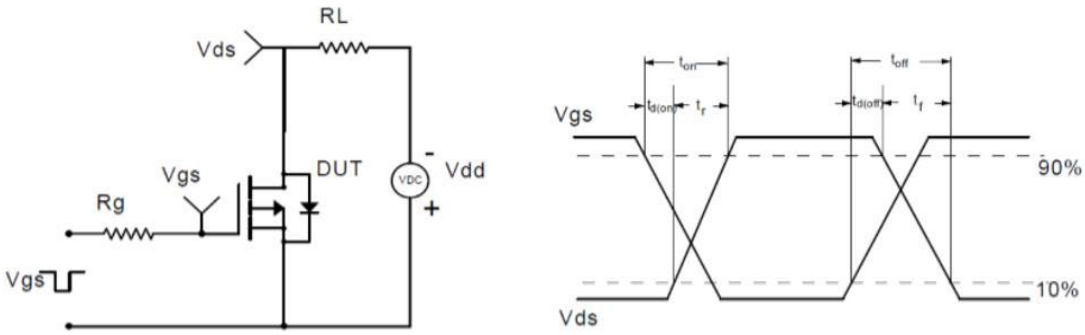


Figure2: Resistive Switching Test Circuit & Waveforms

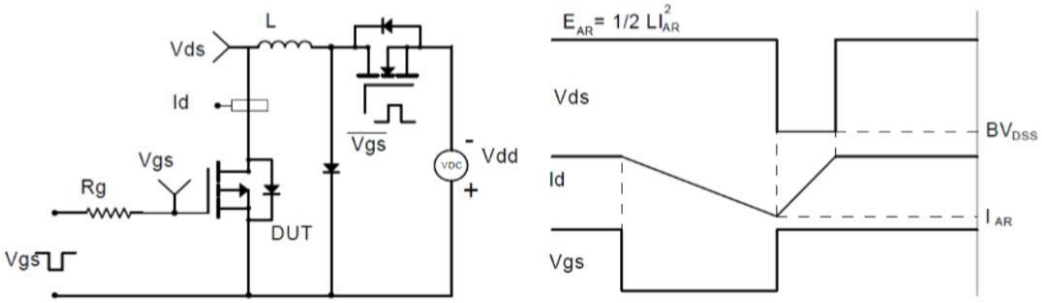


Figure3: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

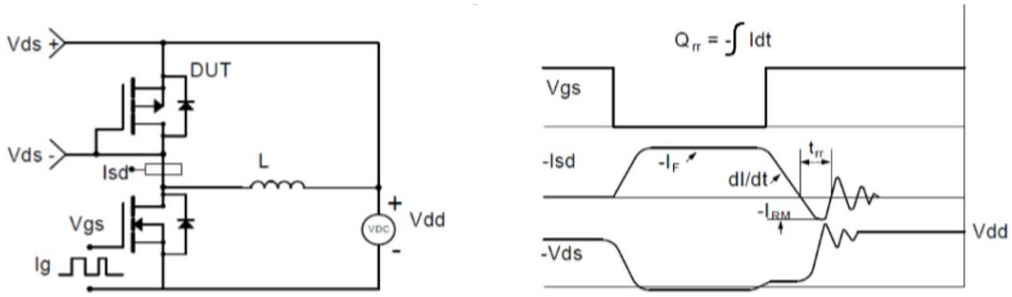
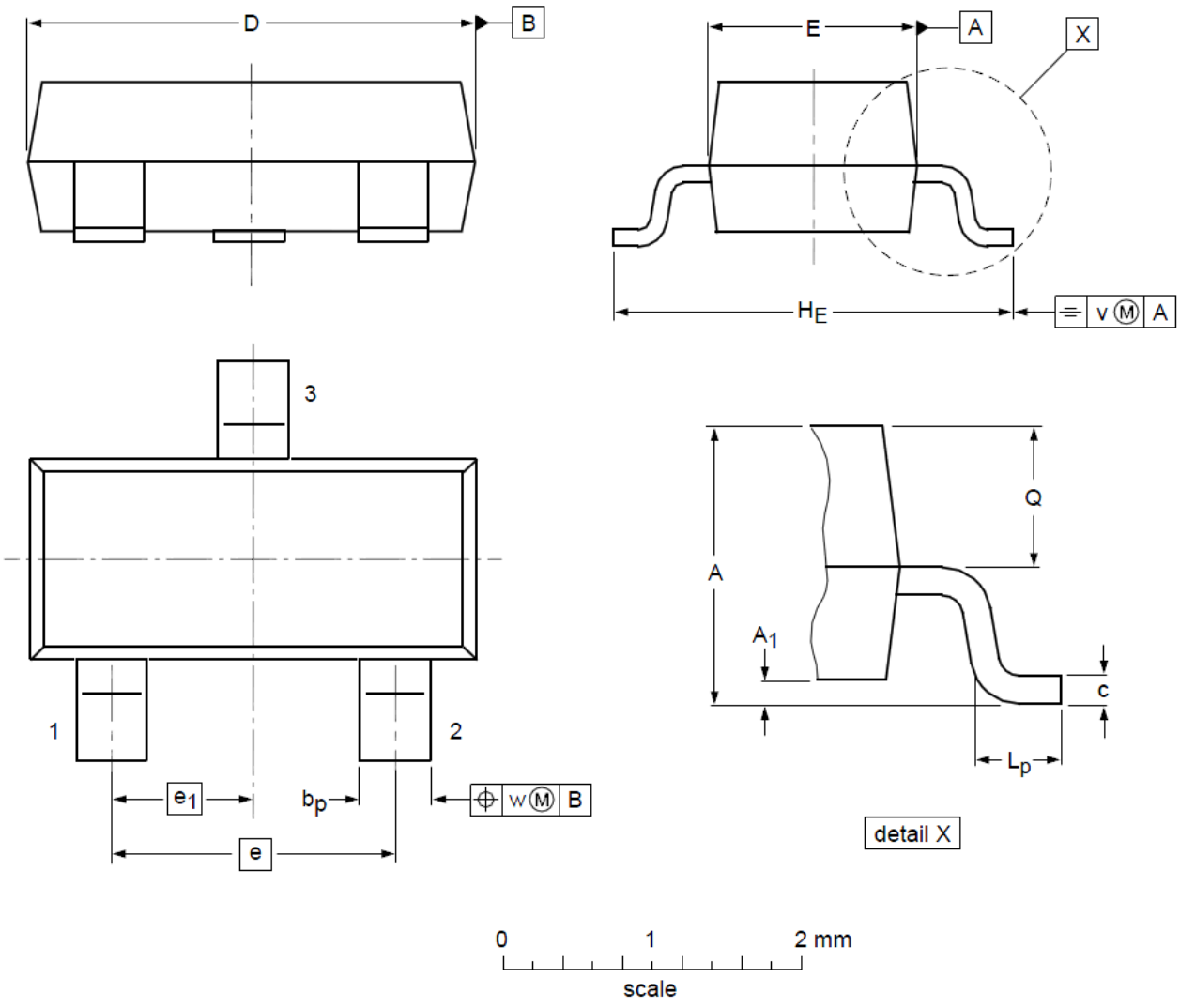


Figure4: Diode Recovery Test Circuit & Waveforms

SOT-23 Package Information



DIMENSIONS (unit : mm)

Symbol		Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	**A_1**	0.01	0.05	0.10
b_p	0.30	0.42	0.50	**c**	0.08	0.13	0.15
D	2.80	2.92	3.00	**E**	1.20	1.33	1.40
e	--	1.90	--	**e_1**	--	0.95	--
H_E	2.25	2.40	2.55	**L_p**	0.30	0.42	0.50
Q	0.45	0.49	0.55	**v**	--	0.20	--
w	--	0.10	--				