



SWD5N50Y

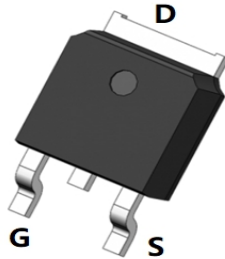
N-channel Enhancement Mode MOSFET

Application

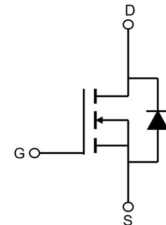
- Load Switch
- PWM Application
- Power management

Features

- 500V,5A
 $R_{DS(ON)} < 2.5\Omega @ V_{GS} = 10V$
- Fast Switching
- Improved dv/dt Capability



TO-252 top view



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
5N50	SWD5N50Y	TO-252	13inch	2500	25000

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

Symbol	Parameter	Value	Unit
VDSS	Drain-Source Voltage (V _{GS} = 0V)	500	V
ID	Continuous Drain Current	5	A
IDM	Pulsed Drain Current (note1)	15	A
VGS	Gate-Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy (note2)	57	mJ
IAR	Avalanche Current (note1)	2.4	A
EAR	Repetitive Avalanche Energy (note1)	6.4	mJ
P _D	Power Dissipation (T _C = 25°C)	32.9	W
T _J , T _{stg}	Operating Junction and Storage Temperature Range	-55~+150	°C
R _{thJC}	Thermal Resistance, Junction-to-Case	6.25	°C/W
R _{thJA}	Thermal Resistance, Junction-to-Ambient	62.5	°C/W

**SWD5N50Y****N-channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	500	550	--	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V, T_J = 25^{\circ}\text{C}$	--	--	1	μA
IGSS	Gate-Source Leakage	$V_{GS} = \pm 30V$	--	--	± 100	nA
VGS(th)	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	$V_{GS} = 10V, I_D = 1.5A$	--	2.1	2.5	Ω
Ciss	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V, f = 1.0\text{MHz}$	--	310	--	pF
Coss	Output Capacitance		--	39	--	
Crss	Reverse Transfer Capacitance		--	6	--	
Qg	Total Gate Charge	$V_{DD} = 400V, I_D = 3A, V_{GS} = 10V$	--	8	--	nC
Qgs	Gate-Source Charge		--	1.2	--	
Qgd	Gate-Drain Charge		--	5	--	
td(on)	Turn-on Delay Time	$V_{DD} = 250V, I_D = 3A, R_G = 25\Omega$	--	7.8	--	ns
tr	Turn-on Rise Time		--	33	--	
td(off)	Turn-off Delay Time		--	23	--	
tf	Turn-off Fall Time		--	59	--	
IS	Continuous Body Diode Current	$T_C = 25^{\circ}\text{C}$	--	--	3.0	A
ISM	Pulsed Diode Forward Current		--	--	12	A
VSD	Body Diode Voltage	$T_J = 25^{\circ}\text{C}, I_{SD} = 3A, V_{GS} = 0V$	--	--	1.4	V
trr	Reverse Recovery Time	$V_{GS} = 0V, I_S = 3A, di_F/dt = 100A/\mu s$	--	80	--	ns
Qrr	Reverse Recovery Charge		--	1.8	--	μC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . IAS = 2.4A, VDD = 50V, RG = 25 Ω , Starting TJ = 25 $^{\circ}\text{C}$
- 3、The test condition is Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$
- 4、The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

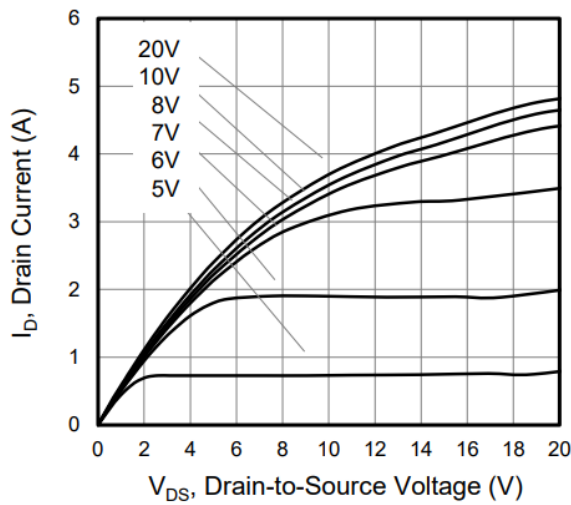


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

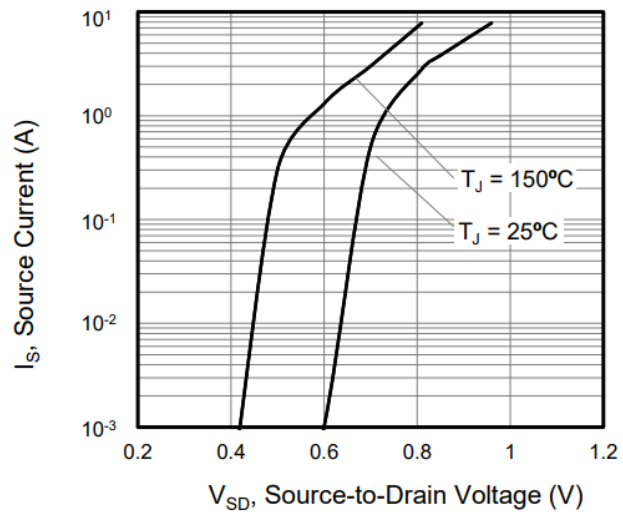


Figure 2. Body Diode Forward Voltage

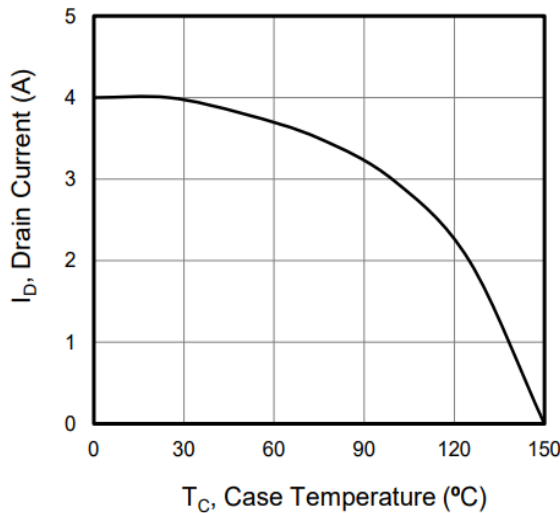


Figure 3. Drain Current vs. Temperature

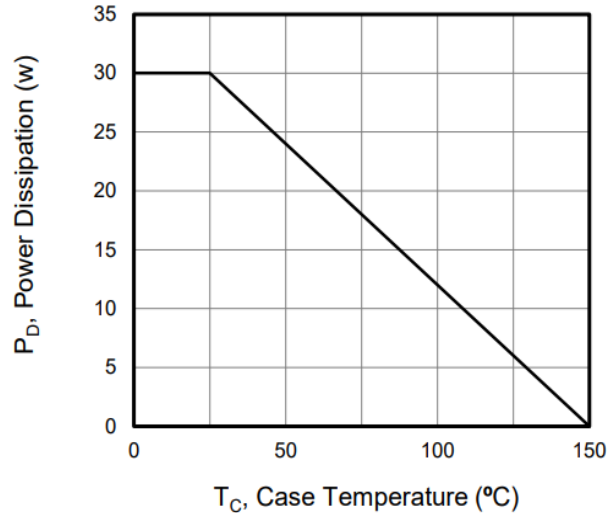


Figure 4. BV DSS Variation vs. Temperature

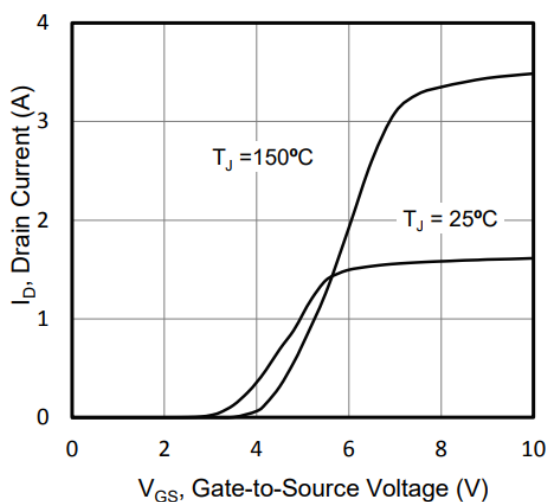


Figure 5. Transfer Characteristics

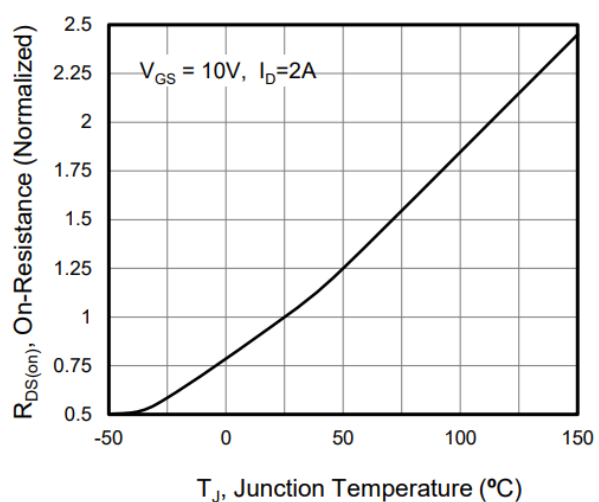


Figure 6. On-Resistance vs. Temperature

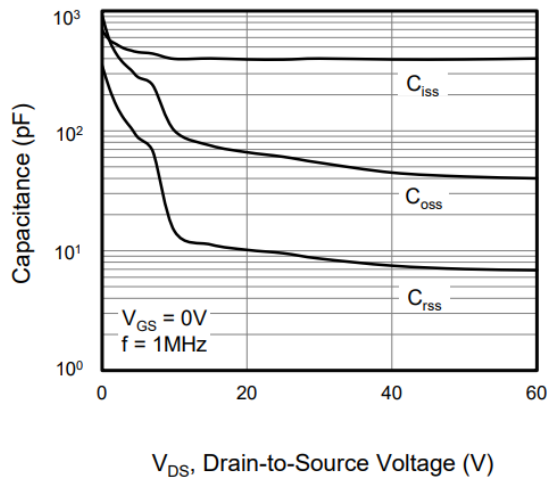


Figure 7. Capacitance

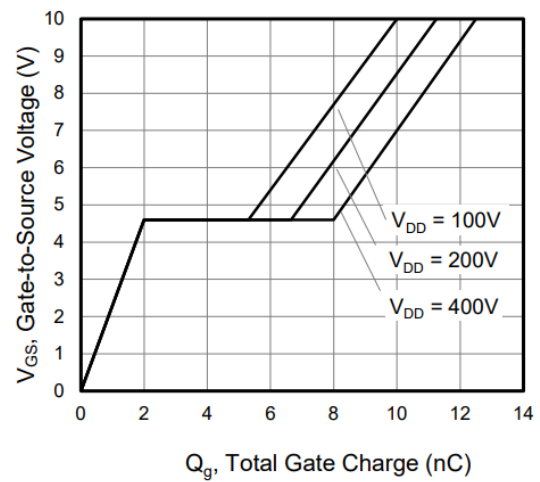


Figure 8. Gate Charge

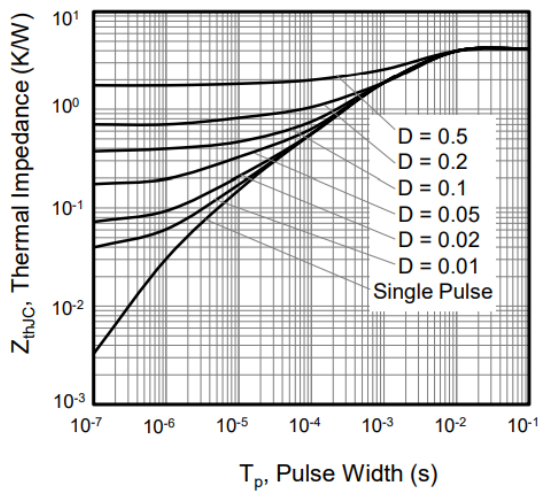
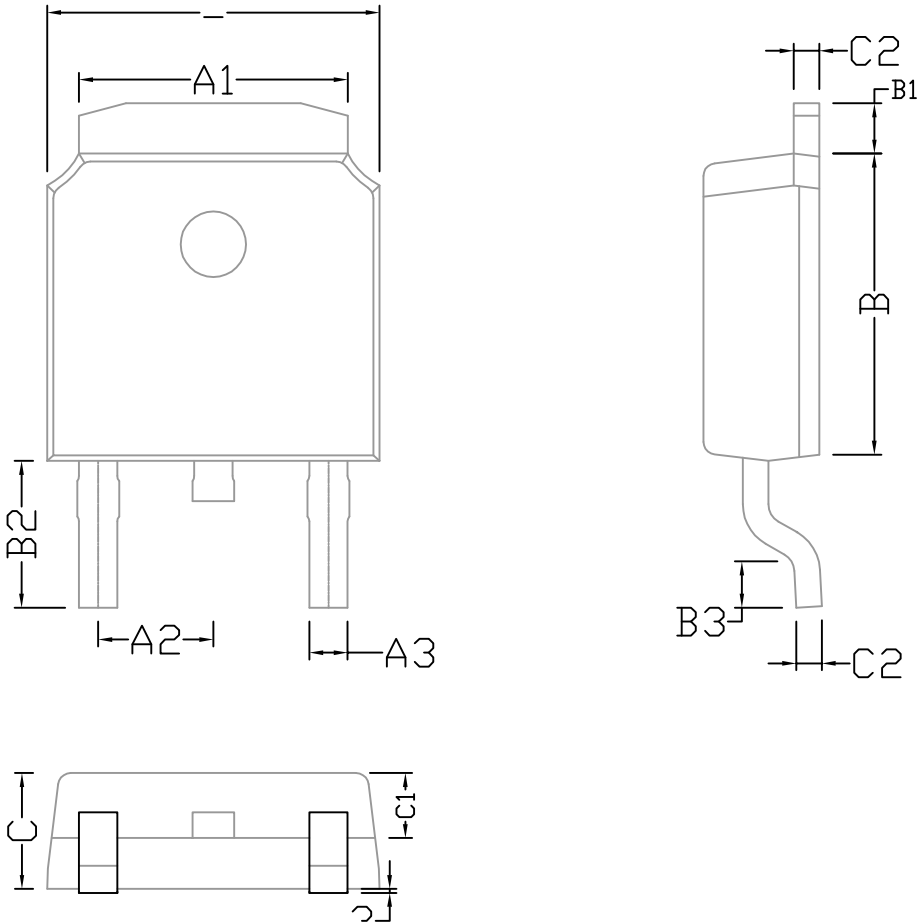


Figure 9. Transient Thermal Impedance



Package Mechanical Data-TO-252



标注	最小	标准	最大	标注	最小	标准	最大	标注	最小	标准	最大
A	6.50	6.60	6.70	B	6.05	6.10	6.15	C	2.25	2.30	2.35
A1	5.28	5.33	5.38	B1	0.95	1.00	1.05	C1	0.76	0.81	0.86
A2	2.23	2.28	2.33	B2	2.85	2.9	2.95	C2	0.45	0.50	0.55
A3	0.70	0.75	0.80	B3	1.45	1.50	1.55	C3	0.01	0.05	0.10