

Description

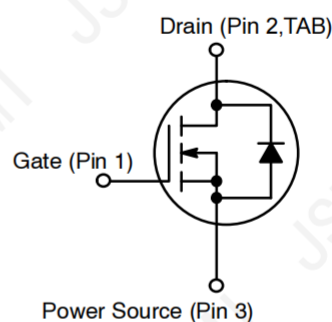
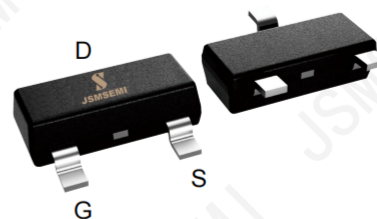
These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry.

General Features

- $V_{DS} = 30V$, $I_D = 4.2A$
 $R_{DS(ON)} < 44 m\Omega @ V_{GS}=10V$
 $R_{DS(ON)} < 48 m\Omega @ V_{GS}=4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management
- Video monitor



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

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	30	V
I_D	Drain Current - Continuous ($T_C = 25^\circ C$)	4.2	A
	- Continuous ($T_C = 70^\circ C$)	1.9	A
I_{DM}	Drain Curren - Pulsed (Note 1)	12	A
V_{GS}	Gate-Source Voltage	± 20	V
P_D	Power Dissipation ($T_C = 25^\circ C$)	1.1	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	$^\circ C$

Thermal Characteristic

Thermal Resistance Junction-to- Ambient	$R_{\theta JA}(\leq 5 s)$	-	$^\circ C/W$
	$R_{\theta JA}(\text{Steady-State})$	113	$^\circ C/W$
Maximum junction-to-foot	$R_{\theta JC}(\text{Steady-State})$	-	$^\circ C/W$

Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V(\text{BR})_{\text{DSS}}$	Drain-source breakdown voltage	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	30			V
$V_{\text{GS}}(\text{th})$	Gate threshold voltage	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	0.6	-	1.5	V
I_{GSS}	Gate-source leakage current	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=\pm 12\text{V}$			± 100	nA
I_{DSS}	Zero gate voltage drain current	$V_{\text{DS}}=30\text{V}, V_{\text{GS}}=0\text{V}$			1	μA
$R_{\text{DS}}(\text{ON})$	Drain-source on-resistance	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=3\text{A}$		35	44	m Ω
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=2\text{A}$		38	48	
		$V_{\text{GS}}=2.5\text{V}, I_{\text{D}}=2\text{A}$		-	60	
V_{SD}	Diode Forward Voltage	$I_{\text{S}}=3\text{A}, V_{\text{GS}}=0\text{V}$		0.8	1.2	V
G_{fs}	Forward transconductance	-		-		S
DYNAMIC PARAMETERS						
Q_{g}	Total Gate Charge	$V_{\text{DS}}=15\text{V}, V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=3\text{A}$		8.25		nC
Q_{gs}	Gate- Source Charge			0.6		
Q_{gd}	Gate- Drain Charge			1.17		
C_{iss}	Input capacitance	$V_{\text{DS}}=15\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$		346		nF
C_{oss}	Output Capacitance			39		
C_{rss}	Reverse Transfer Capacitance			30		
R_{g}	Gate Resistance	$f=1\text{MHz}$		-		Ω
$t_{\text{d}}(\text{on})$	Turn- On Delay Time	$V_{\text{DD}}=15\text{V}, R_{\text{L}}=2.7\Omega, V_{\text{GS}}=4.5\text{V}, R_{\text{G}}=3\Omega, I_{\text{D}}=3\text{A}$		16		ns
t_{r}	Rise Time			45		
$t_{\text{d}}(\text{off})$	Turn- Off Delay Time			18		
t_{f}	Fall Time			12		

Typical Electrical and Thermal Characteristics

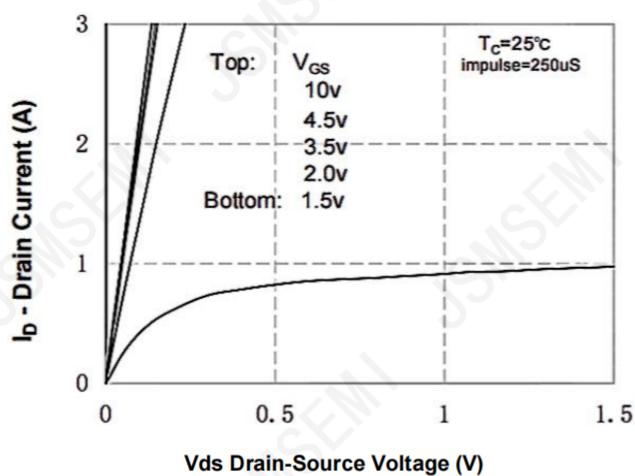


Figure 1. On-Region Characteristics

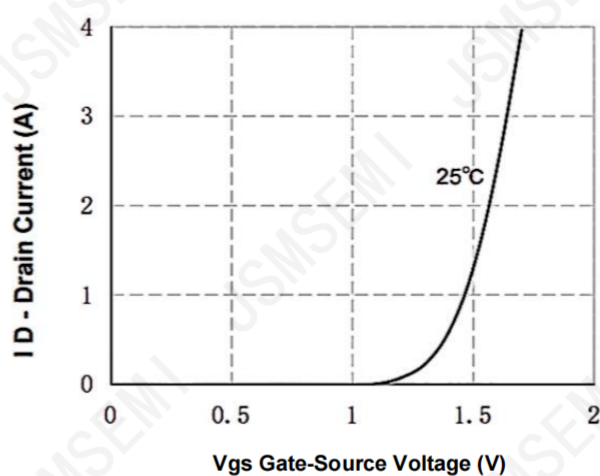


Figure 2. Transfer Characteristics

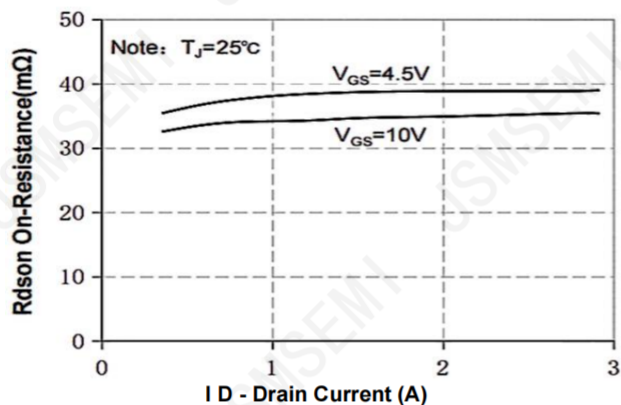


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

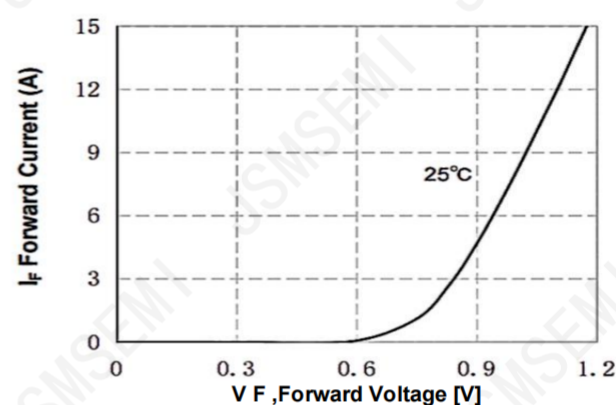


Figure 4. Body Diode Forward Voltage Variation with Source Current

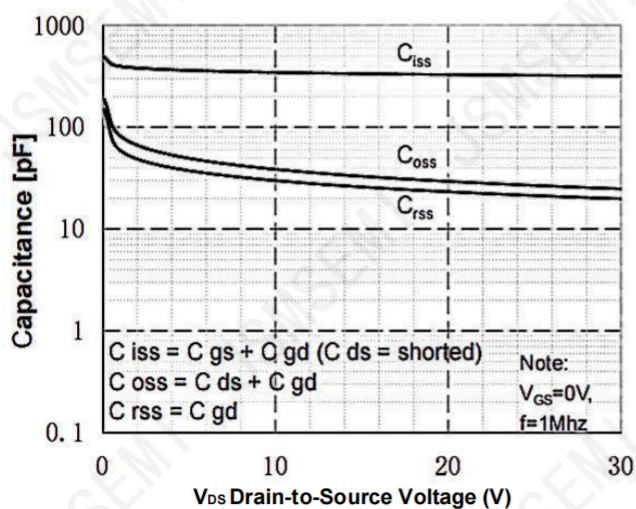


Figure 5. Capacitance Characteristics

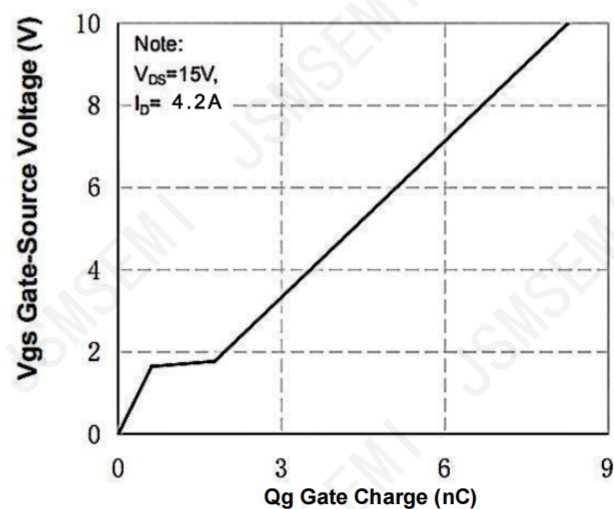


Figure 6. Gate Charge Characteristics

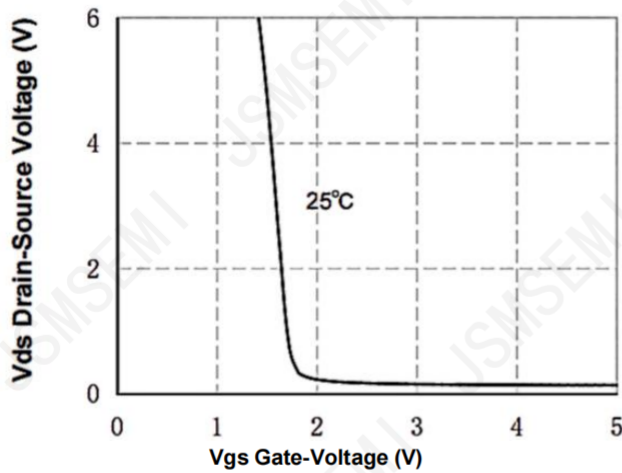


Figure 7. Vds Drain-Source Voltage
vs Gate Voltage

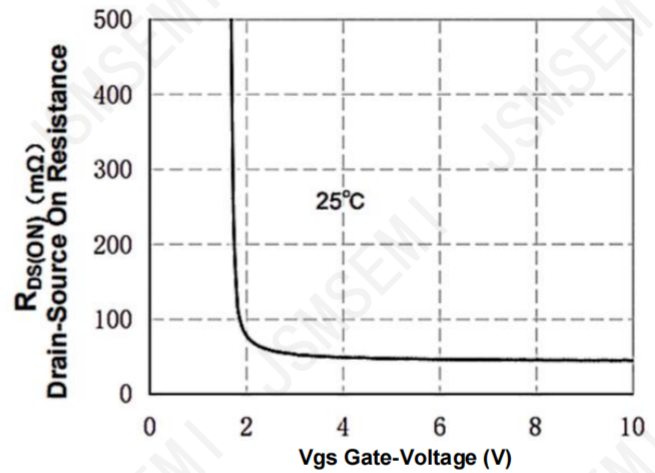


Figure 8. On-Resistance vs Gate Voltage

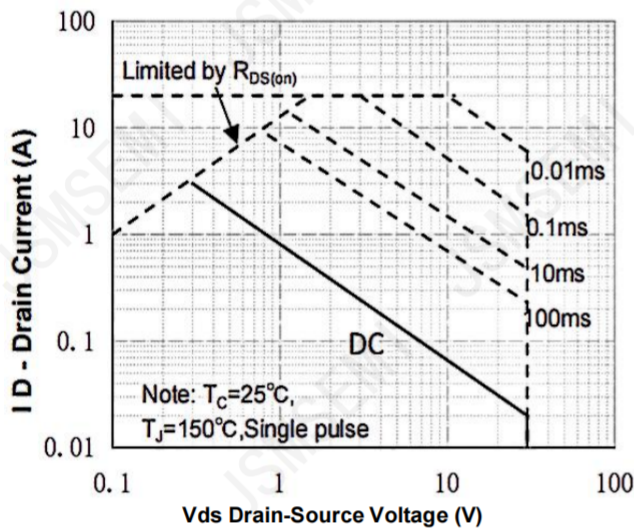


Figure 9. Maximum Safe Operating Area

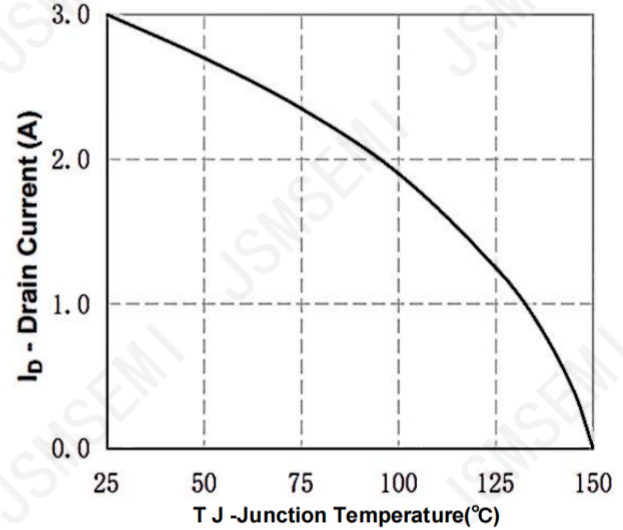


Figure 10. Maximum Continuous Drain
Current vs Temperature

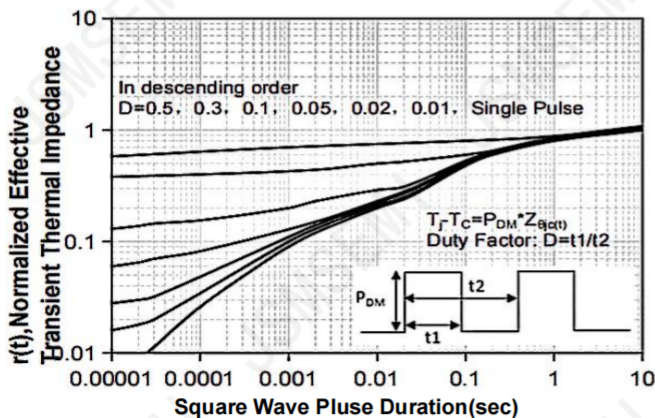
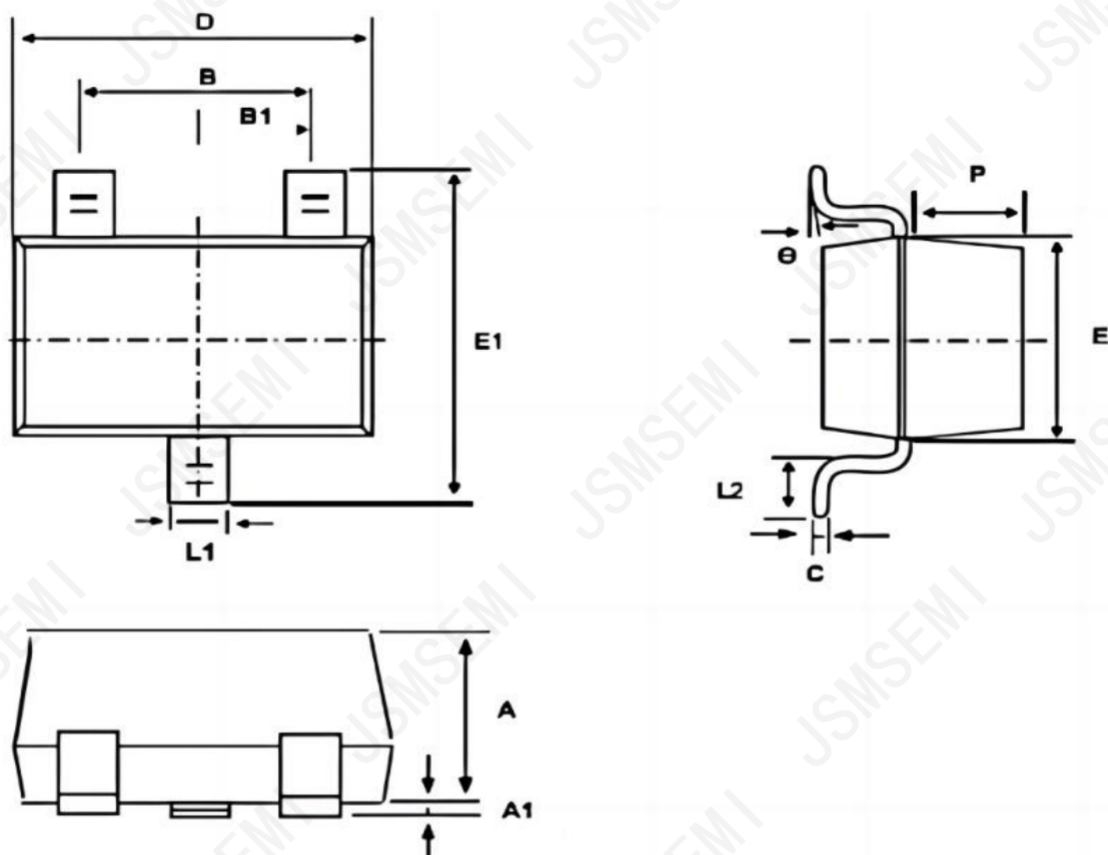


Figure 11. Transient Thermal Response Curve

SOT-23 Package nformation



Symbol	Diminmm		
	Min	Nor	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950TPY.		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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