Description

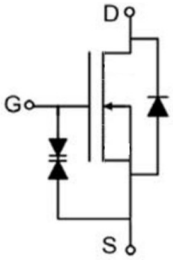
Features

- 70V, 0.2A
  $R_{DS(ON)}$< 20Ω @ V_{GS} =10V
  $R_{DS(ON)}$< 25Ω @ V_{GS} =0V
- Depletion mode
- Pb-free lead plating
- Halogen free
- ESD improved capability

Application

- Load Switch
- PWM Application
- Power management

SOT-23-3



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
VSM0615A-S2	VSM0615A	TAPING	SOT-23-3	7inch	3000	180000

Absolute Maximum Ratings (T_A=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		70	V
V_{GSS}	Gate-Source Voltage		±30	V
I_D	Continuous Drain Current	T_A = 25℃	0.2	A
		T_A = 100℃	0.13	A
I_{DM}	Pulsed Drain Current note1		0.8	A
dv/dt	Peak Diode Recovery dv/dt		5.0	V/ns
P_D	Power Dissipation	T_A = 25℃	0.5	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		250	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}= -30V, I_D=1mA	70	-	-	V
$I_{D(off)}$	Off-state Drain to Source Current	V_{DS}=70V, V_{GS}= -30V, T_J=25°C	-	-	1	mA
		V_{DS}=56V, V_{GS}=-30V, T_J=125°C	-	-	1	mA
I_{GSS}	Gate to Source Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±1	mA
On Characteristics						
I_{DSS}	On-state drain current	V_{GS}=0V, V_{DS}=25V	0.2	-	-	A
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=20V, I_D=8μA	-13	-17	-21	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}=10V, I_D=0.1A	-	15	20	Ω
		V_{GS}=0V, I_D=0.1A	-	18	25	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =25V, V_{GS} =-5V, f = 1.0MHz	-	65	-	pF
C_{oss}	Output Capacitance		-	5	-	pF
C_{rss}	Reverse Transfer Capacitance		-	1.1	-	pF
Q_g	Total Gate Charge	V_{DS} =35V, I_D =0.1A, V_{GS} =-25V to -30V	-	1.5	-	nC
Q_{gs}	Gate-Source Charge		-	0.6	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	0.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=35V, I_D=0.01A, R_{GEN}=6Ω, V_{GS} =-25V to -30V	-	9.9	-	ns
t_r	Turn-on Rise Time		-	55.8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	56.4	-	ns
t_f	Turn-off Fall Time		-	136	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.2	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	0.8	A
V_{SD}	Diode Forward Voltage	I_F=0.2A, VGS=-15V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} =-15V, I_F=0.01A, di/dt=100A/μs	-	245	-	ns
Q_{rr}	Reverse Recovery Charge		-	638	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Figure 1: Maximum Power Dissipation vs. Ambient Temperature

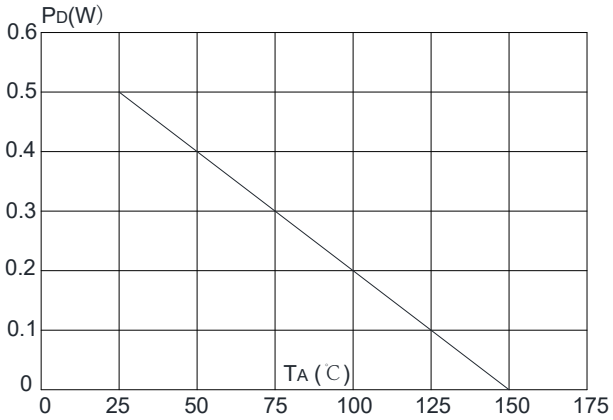


Figure 2: Maximum Continuous Drain Current vs. Ambient Temperature