

P-Channel -20V (D-S) MOSFET

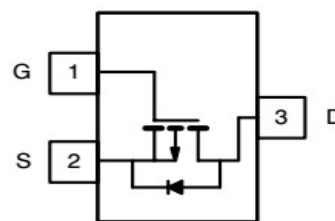
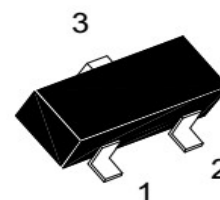
Features

- * -20V / -2.8A ,
 $R_{DS(ON)} = 120 \text{ m}\Omega$ (type.) @ $V_{GS} = -4.5\text{V}$. $I_D = -2.8\text{A}$
 $R_{DS(ON)} = 190 \text{ m}\Omega$ (type.) @ $V_{GS} = -2.5\text{V}$. $I_D = -1.8\text{A}$
- * Low $R_{DS(on)}$ Trench Technology
- * Low Thermal Impedance
- * Fast Switching Speed and Rugged
- * Lead Free Available(RoHS Compliant)
- * SOT-23 Package

Applications

- * Load Switch for Portable Devices
- * DC/DC Converter
- * Motor Drives

Pin Description at SOT-23



P-Channel MOSFET

Package Marking And Ordering Information

Device	Device Marking	Device Package	Reel Size	Quantity
SWM2301P-M3TR	A1SHB	SOT-23	7"	3000

ABSOLUTE MAXIMUM RATINGS (TA = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain - Source Voltage		V_{DS}	-20	V
Gate - Source Voltage		V_{GS}	+/- 8	V
Continuous Drain Current (TJ=150°C) ^{note2}		I_D	-2.8	A
Pulsed Drain Current ^{note 1}		I_{DM}	-10	A
Power Dissipation	TA=25°C	P_D	1.25	W
	TA=70°C		0.8	
Linear Derating Factor			0.01	W/ °C
Single Pulse Avalanche Energy		E_{AS}	33	mJ
Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Maximum Junction-to-Ambient ^{note 2}		R_{QJA}	100	°C/W

Note 1. Pulse width limited by max. junction temperature.

2. Surface mounted on FR4 board, $t \leq 5\text{sec}$.

3. Surface mounted on FR4 board.

ABSOLUTE MAXIMUM RATINGS (TA = 25°C UNLESS OTHERWISE NOTED)

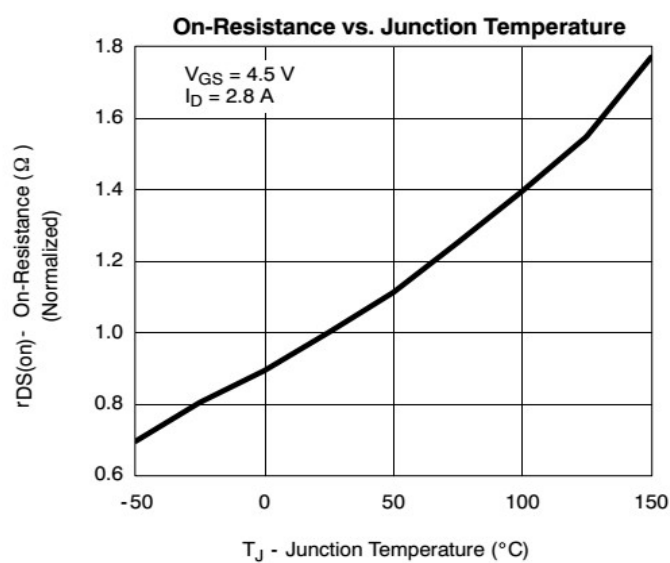
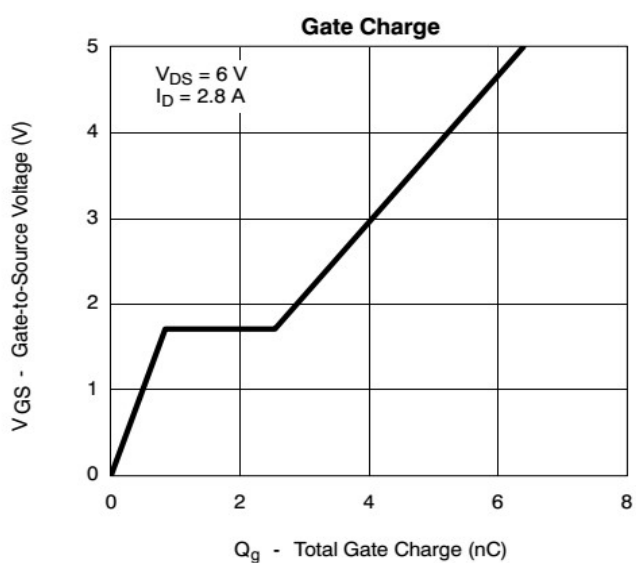
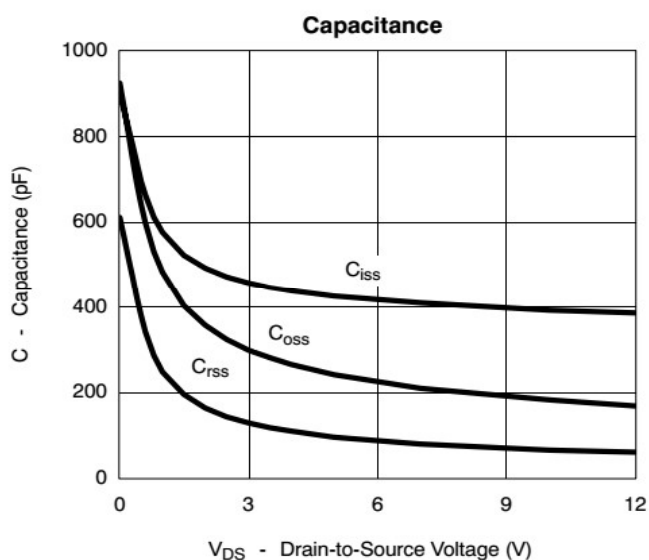
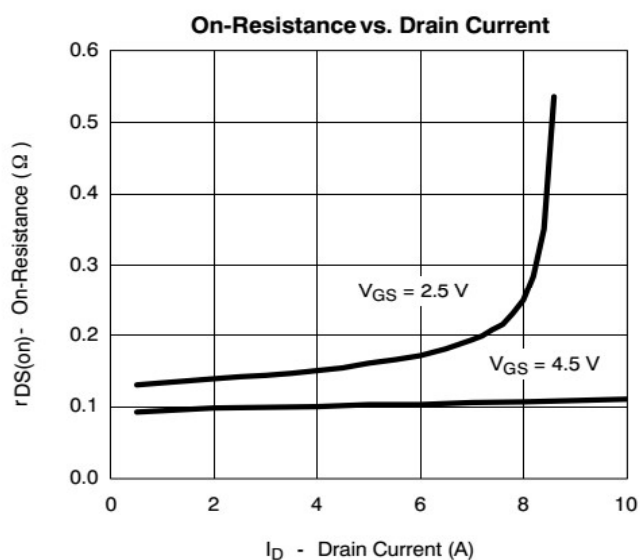
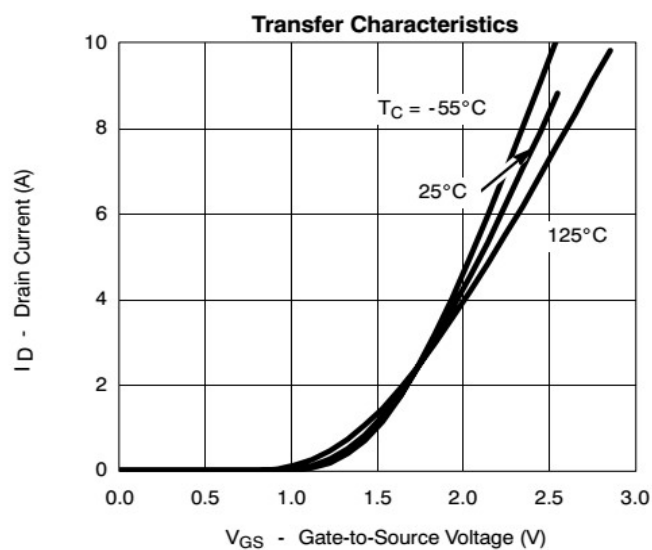
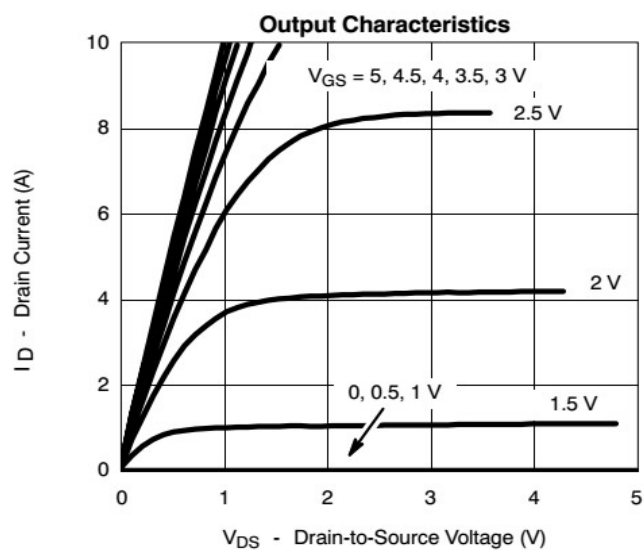
Parameter	Symbol	Test Conditions	SWM2301P			Unit
			Min	Typ	Max	
Off Characteristics						
Drain -Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250uA	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V	-	-	-5.0	nA
Gate-Body Leakage	I _{GSS}	V _{GS} = +/-8V	-	-	+/-100	nA
On Characteristics						
Gate-Source Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = -250uA	-0.5	-0.75	-1.0	V
On-State Drain Current ^{note4}	I _{D(on)}	V _{DS} <=-5V, V _{GS} =-4.5V	-6	-	-	A
		V _{DS} <=-5V, V _{GS} =-2.5V	-3	-	-	
Drain-Source-On-Resistance ^{note4}	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.8A	-	105	120	mΩ
		V _{GS} = -2.5V, I _D = -1.8A	-	145	190	
Forward Tranconductance ^{note4}	g _{fs}	V _{DS} = -5V, I _D = -2.3A	-	6.5	-	s
Dynamic Characteristics ^{note5}						
Input Capacitance	C _{ISS}	V _{DS} = -6V, V _{GS} =0V F=1MHz	-	415	-	pF
Output Capacitance	C _{OSS}		-	223	-	
Reverse Transfer Capacitance	C _{RSS}		-	87	-	
Total Gate Charge	Q _g	V _{DS} = -6V, V _{GS} = -4.5V I _D = -2.3A	-	5.8	10	nC
Gate to Source Gate Charge	Q _{gs}		-	0.85	-	
Gate to Drain "Miller" Charge	Q _{gd}		-	1.7	-	
Switching Characteristics ^{note6}						
Turn-On Delay Time	t _{d(ON)}	V _{DD} =-6V, R _L =6.0Ω I _D =- 1.0A V _{GEN} =-4.5V R _G =6Ω	-	13	25	ns
Rise Time	t _r		-	36	60	
Turn-Off Delay Time	t _{d(OFF)}		-	42	70	
Fall Time	t _f		-	34	60	
Drain-Source Diode Characteristics						
Continuous Source Current(Body Diode) ^{note2}	I _S	MOSFET Symbol showing the integral reverse p-n junction diode	-	-	-1.6	A
Pulsed Source Current(Body Diode)	I _{SM}		-	-	-10	
Diode Forward Voltage	V _{SD}	I _S = -1.6A V _{GS} =0V	-	-0.8	-1.2	V

Note: 4. Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

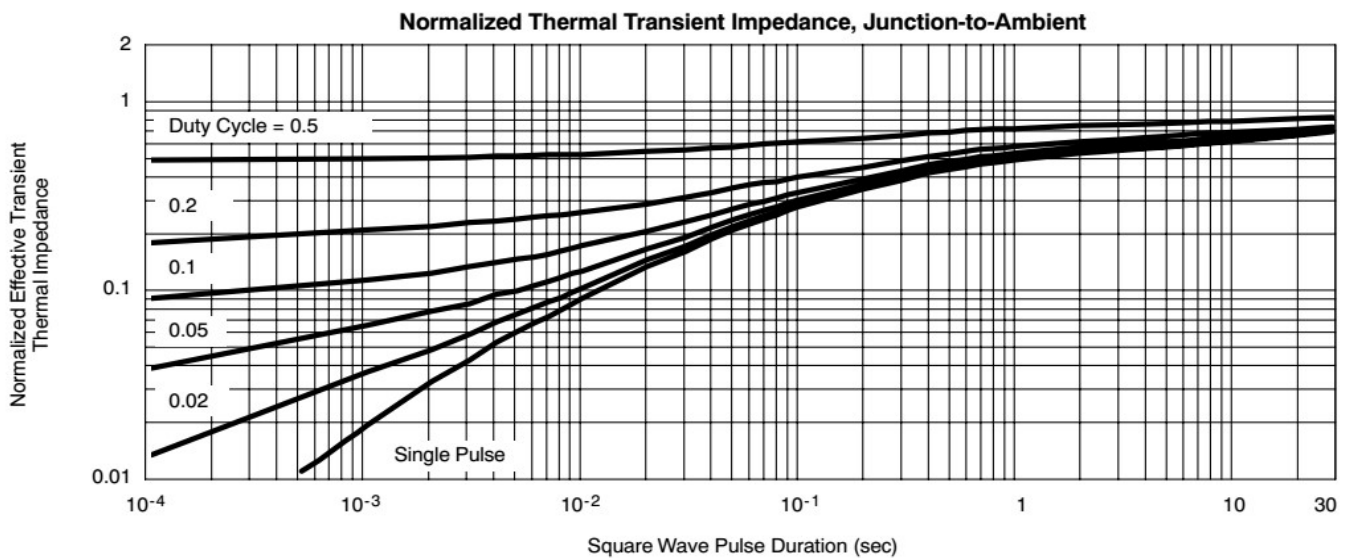
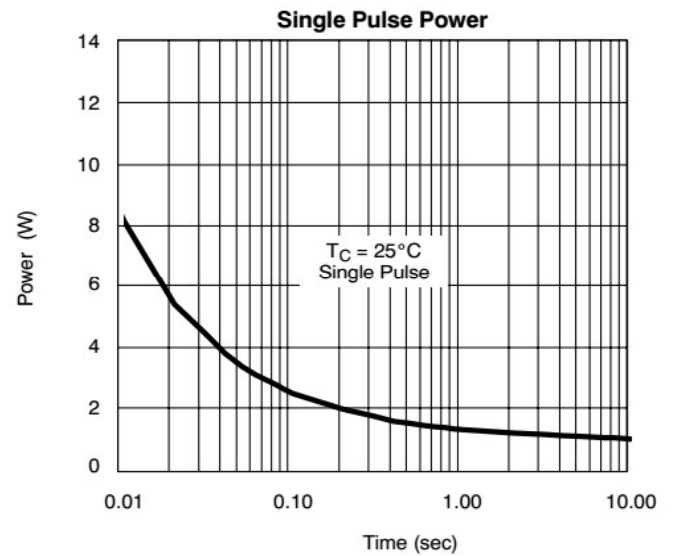
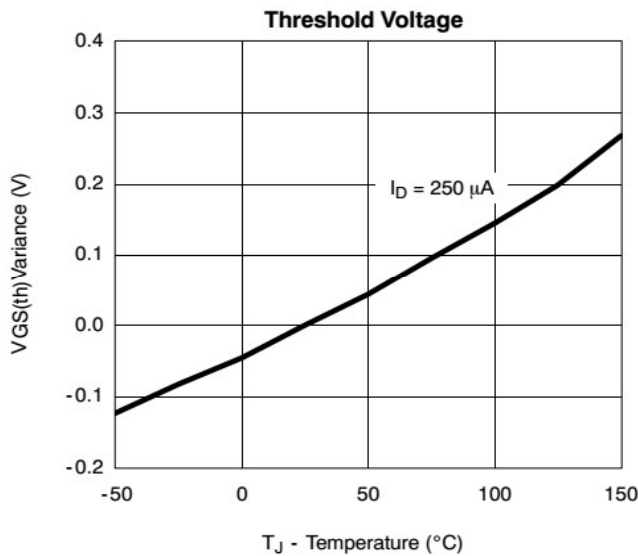
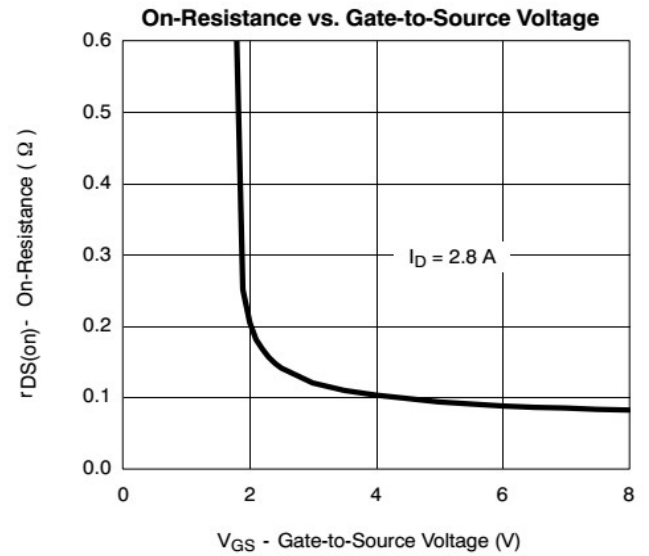
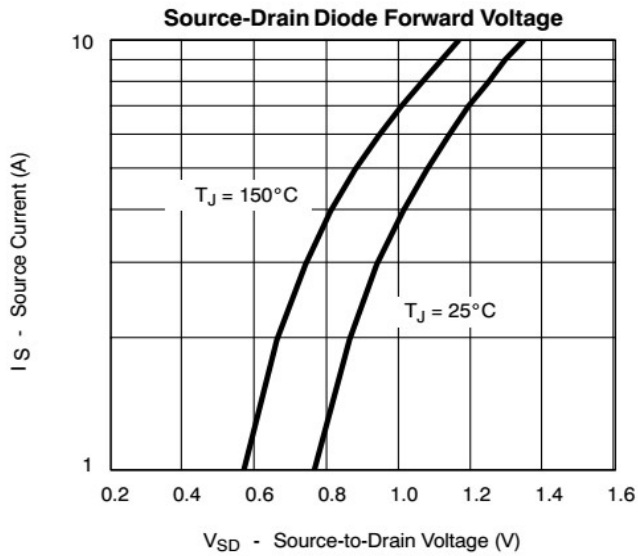
5. For DESIGN AID ONLY, not subject to production testing.

6. Switching time is essentially independent of operating temperature.

Typical Characteristics (TA = 25°C unless otherwise noted)



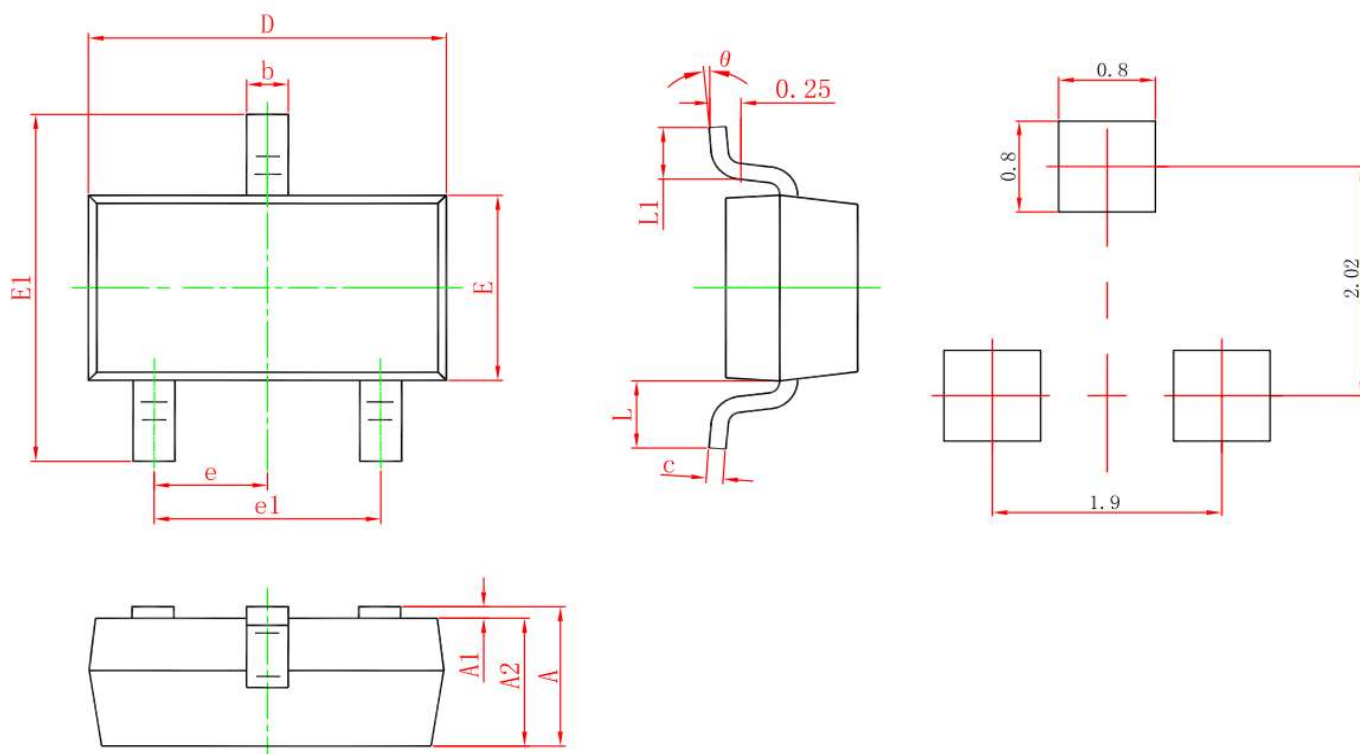
Typical Characteristics (Continued)



Packaging Information

PKG: SOT-23

unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°