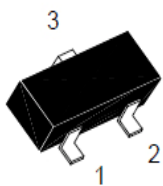


P-Channel Enhancement-Mode MOSFET

◆ Features

1. Advanced Trench Process Technology.
2. High Density Cell Design for Ultra Low On-Resistance.
3. Improved Shoot-Through FOM
4. RoHS Compliant

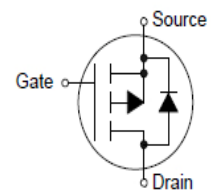
PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(on)} (m-ohm) Max
-20V	-2.8A	100 @ V _{GS} = -4.5V, I _D = -2.8A
		150 @ V _{GS} = -2.5V, I _D = -2.0A
		170 @ V _{GS} = -1.8V, I _D = -2.0A



SM2301 Pin Assignment & Symbol

3-Lead Plastic SOT-23

Pin 1: Gate 2: Source 3: Drain



◆ Ordering Information

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
SM2301 SRL	SM2301 SRG	SOT-23	G	S	D	Tape Reel
SM2301 LR L	SM2301 LR G	SOT-23-3L	G	S	D	Tape Reel

SM2301X X X	
(1) Package Type	↑
(2) Packing Type	↑
(3) Lead Free	↑

(1) S: SOT-23; L: SOT-23-3L
(2) R: Tape Reel
(3) G: Halogen Free; L: Lead Free



◆ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current (Continuous) ^a	-2.8	A
I_{DM}	Drain Current (Pulsed) ^b	-8	A
P_D	Total Power Dissipation @ $T_A=25^\circ\text{C}$	0.9	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted) ^c	140	$^\circ\text{C/W}$

a:Fused current that based on wire numbers and diameter

b:Repetitive Rating: Pulse width limited by the maximum junction temperature

c:1-in² 2oz Cu PCB board

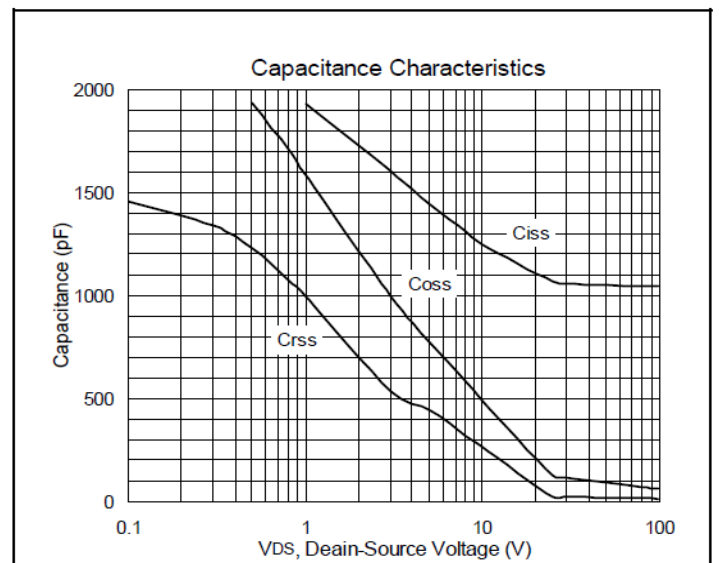
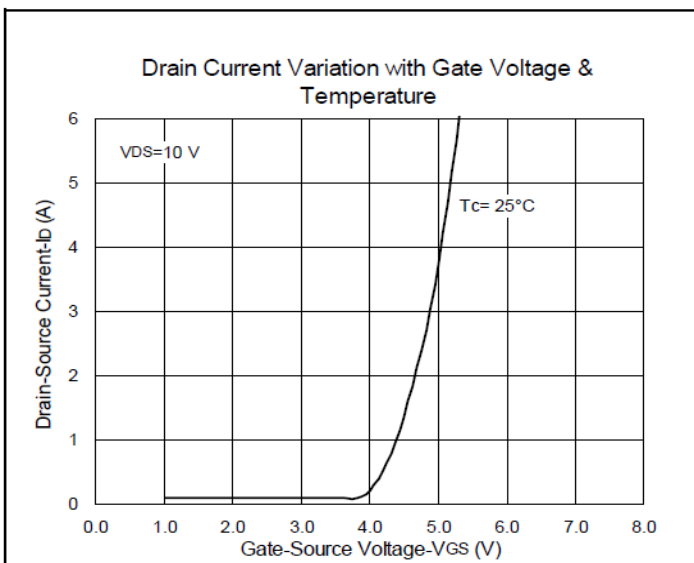
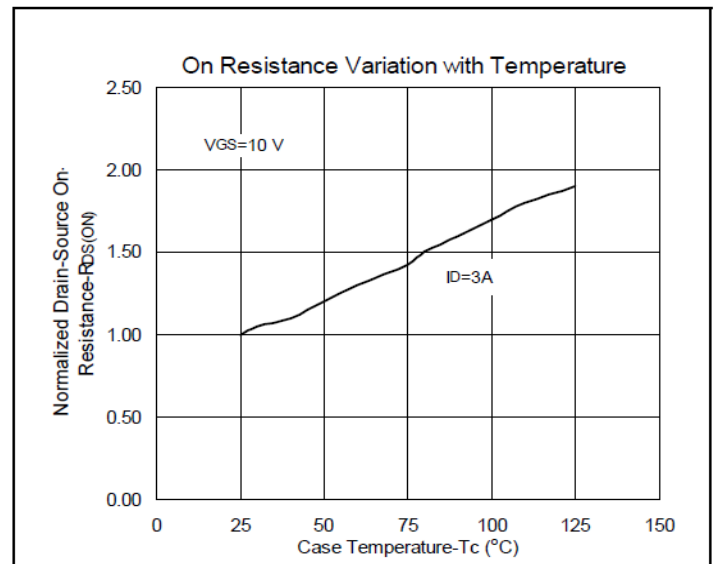
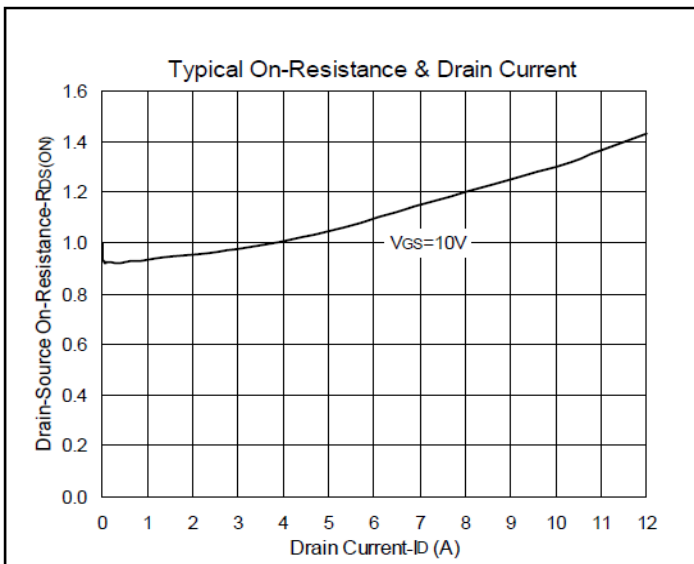
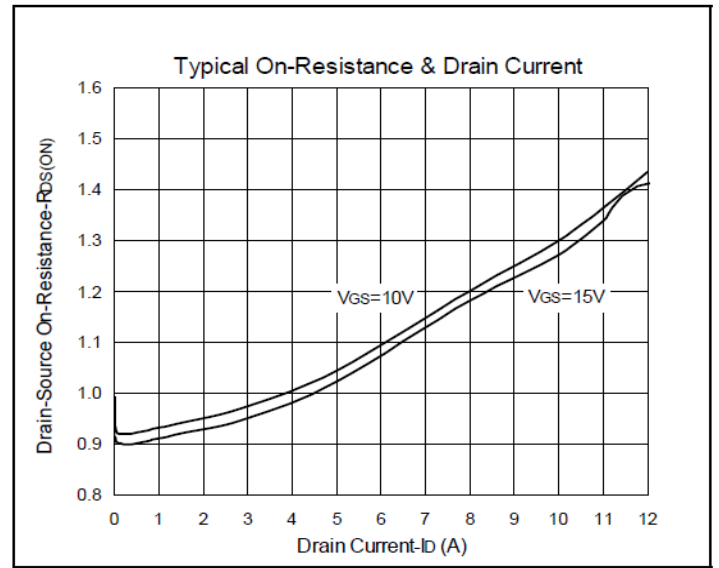
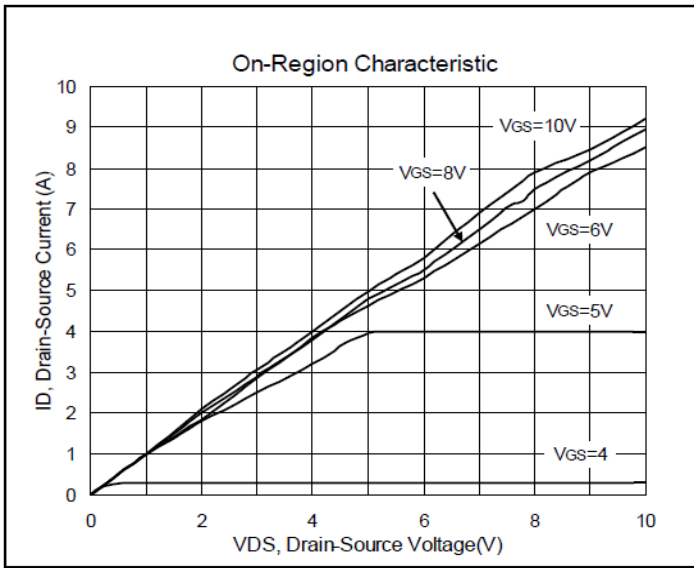
◆ Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu\text{A}$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.45	-0.61	-0.9	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=-4.5V, I_D=-2.8A$	-	70	100	m Ω
		$V_{GS}=-2.5V, I_D=-2A$	-	85	150	
		$V_{GS}=-1.8V, I_D=-2A$	-	120	170	
• Dynamic Characteristics^d						
C_{iss}	Input Capacitance	$V_{DS}=-1V, V_{GS}=0V, f=1\text{MHz}$	-	660.8	-	pF
C_{oss}	Output Capacitance		-	110.4	-	
C_{riss}	Reverse Transfer Capacitance		-	37.6	-	
• Switching Characteristics^d						
Q_g	Total Gate Charge	$V_{DS}=-6V, I_D=-2.8A, V_{GS}=-4.5V$	-	6.396	-	nC
Q_{gs}	Gate-Source Charge		-	2.24	-	
Q_{gd}	Gate-Drain Charge		-	1.05	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-6V, R_L=6\Omega, I_D=-1A, V_{GEN}=-4.5V, R_G=5.6\Omega$	-	7.05	-	nS
t_r	Turn-on Rise Time		-	9.836	-	
$t_{d(off)}$	Turn-off Delay Time		-	23.396	-	
t_f	Turn-off Fall Time		-	7.692	-	
• Drain-Source Diode Characteristics						
I_S	Maximum Diode Forward Current		-	-	-1.6	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=-1.6A$	-	-0.75	-	V

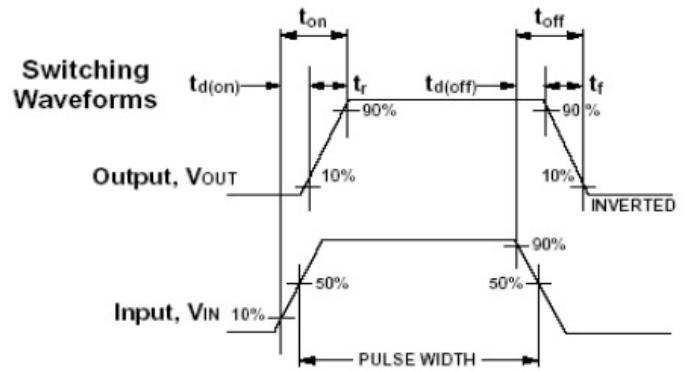
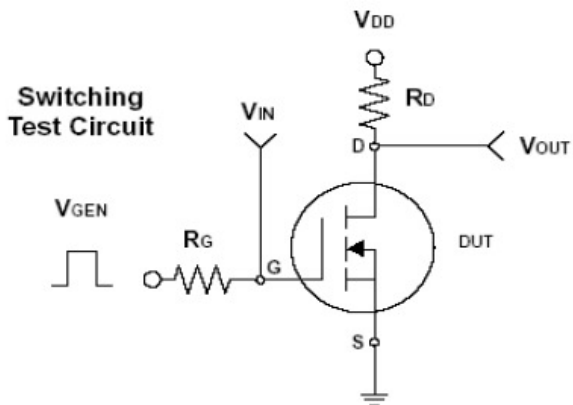
Note: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

d: Guaranteed by design: not subject to production testing

◆ Characteristics Curve



◆ Characteristics Curve



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