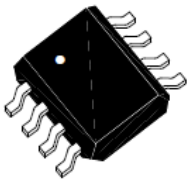
SM9435

P-Channel Enhancement-Mode MOSFET(-30V, -5.3A)

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(on)}$ (m-ohm) Max
-30V	-5.3A	60 @ VGS = -10 V, ID=-5.3A
		90 @ VGS = -4.5V, ID=-4.2A

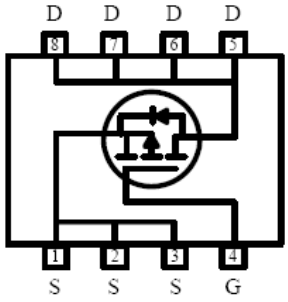
◆ Features

1. Advanced Trench Process Technology.
2. High Density Cell Design for Ultra Low On-Resistance.
3. Fully Characterized Avalanche Voltage and Current.
4. Improved Shoot-Through FOM.
5. RoHS Compliant.



SOP-8

Pin 1 / 2 / 3: Source
Pin 4: Gate
Pin 5 / 6 / 7 / 8: Drain



◆ Ordering Information

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		4	1/2/3	5/6/7/8	
SM9435PRL	SM9435PRG	SOP-8	G	S	D	Tape Reel

SM9435X X X

(1)Package Type
(2)Packing Type
(3)Lead Free

(1) P：SOP-8

(2) R：Tape Reel

(3) G：Halogen Free；L：Lead Free

◆ Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous) [a]	-5.3	A
I_{DM}	Drain Current (Pulsed) [b]	-20	A
P_D	Total Power Dissipation @TA=25°C	2.5	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted) [c]	62.5	°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-in^2 2oz Cu PCB board

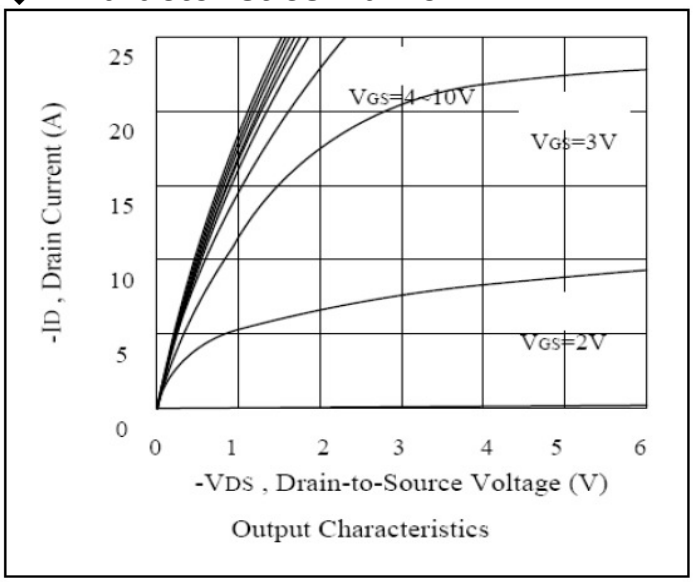
◆ Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	-	-	-1	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-	-3	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=-5.3A	-	-	60	mΩ
		V_{GS}=-4.5V, I_D=-4.2A	-	-	90	
• Dynamic Characteristics[d]						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	-	971.77	-	pF
C_{oss}	Output Capacitance		-	235.06	-	
C_{rss}	Reverse Transfer Capacitance		-	82.97	-	
• Switching Characteristics[d]						
Q_g	Total Gate Charge	V_{DS}=-15V, I_D=-5.3A, V_{GS}=-10V	-	18.13	-	nC
Q_{gs}	Gate-Source Charge		-	2.37	-	
Q_{gd}	Gate-Drain Charge		-	3.2	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-15V,R_L=15Ω, V_{GEN}=-10V, I_D=-1A,R_G=6Ω	-	12.67	-	nS
t_r	Turn-on Rise Time		-	8.67	-	
$t_{d(off)}$	Turn-off Delay Time		-	41.13	-	
t_f	Turn-off Fall Time		-	7	-	
• Drain-Source Diode Characteristics						
I_S	Maximum Diode Forward Current		-	-	-2.6	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=-2.6A	-	-	-1.3	V

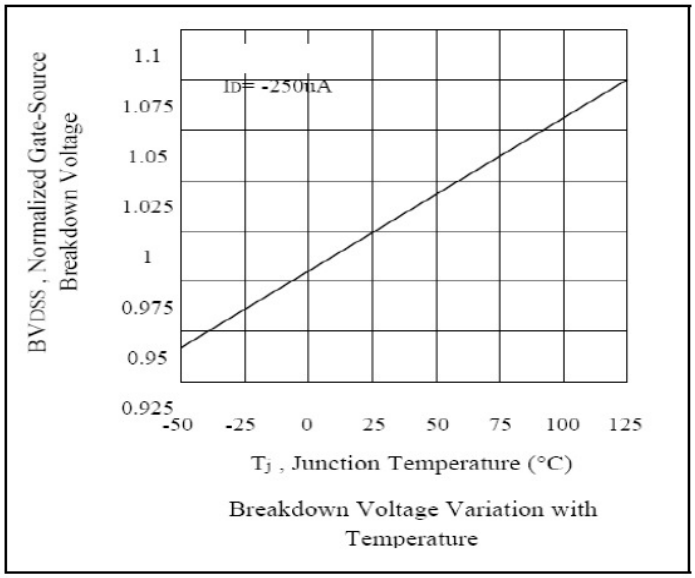
Note: Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%

d: Guaranteed by design: not subject to production testing

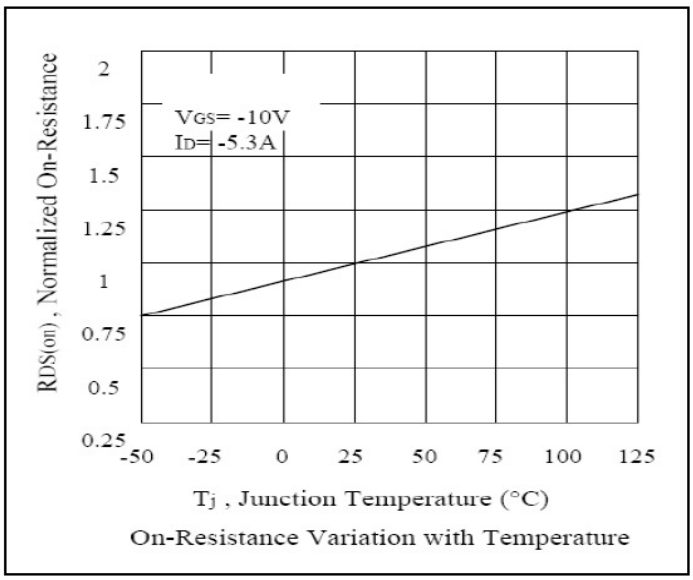
◆ Characteristics Curve



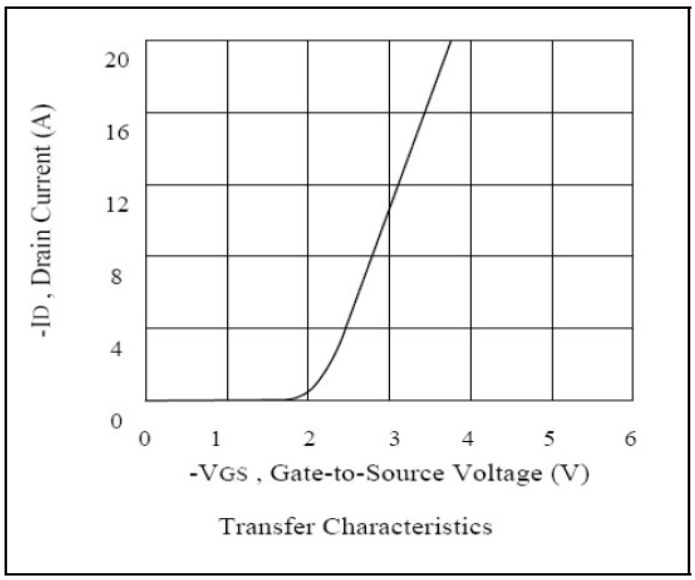
Output Characteristics



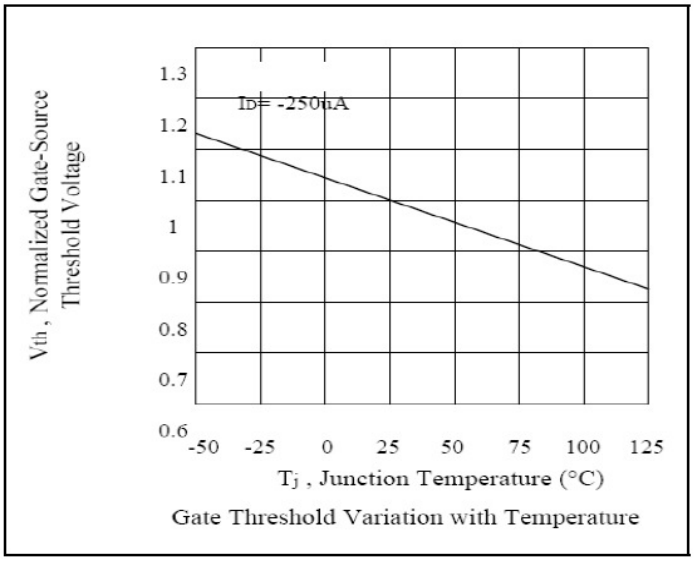
Breakdown Voltage Variation with Temperature



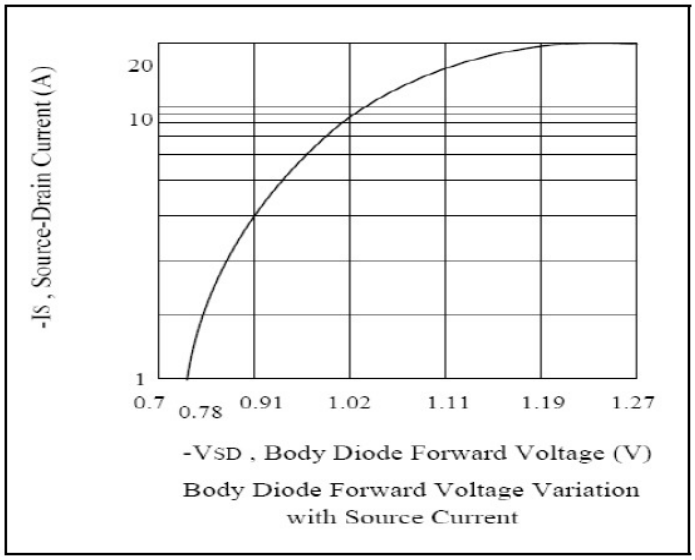
On-Resistance Variation with Temperature



Transfer Characteristics

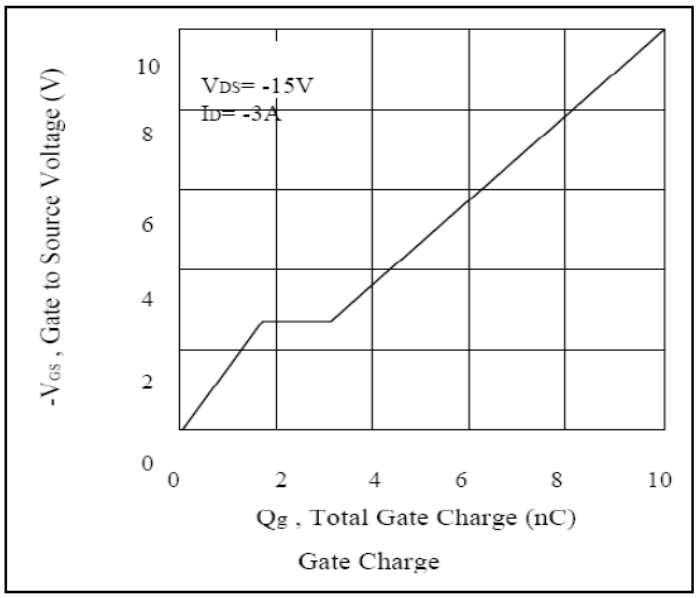


Gate Threshold Variation with Temperature

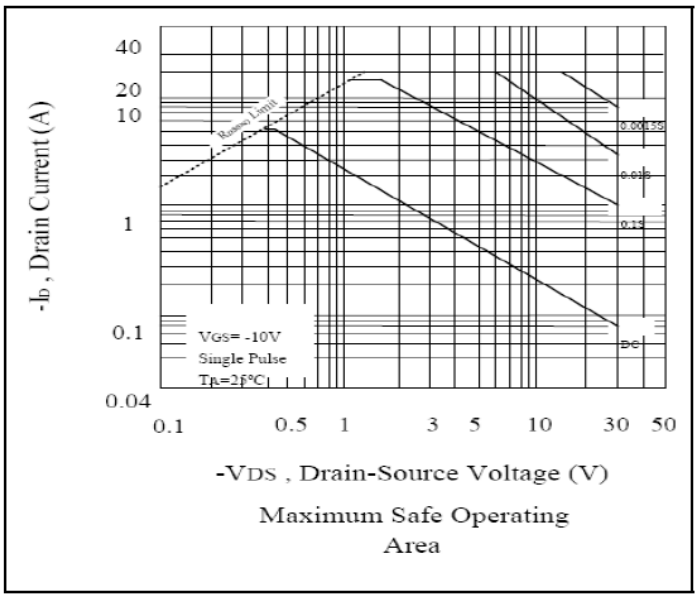


Body Diode Forward Voltage Variation with Source Current

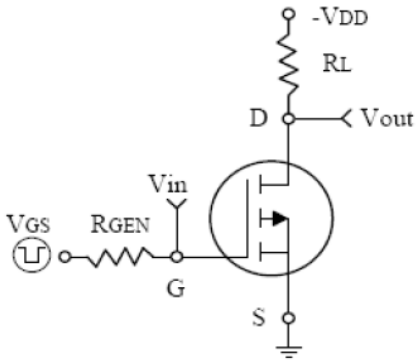
◆ Characteristics Curve

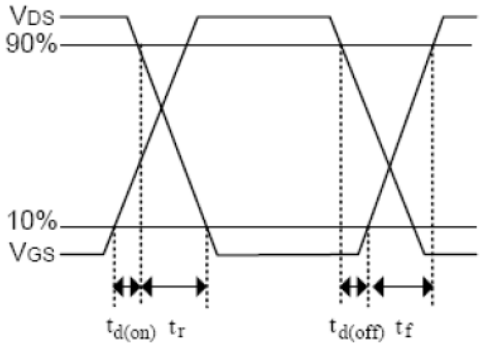


Gate Charge



Maximum Safe Operating Area





Switching Test Circuit and Switching Waveforms