

Dual Enhancement Mode MOSFET (N-and P-Channel)

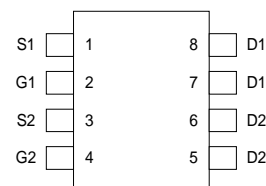
Features

- N-Channel
30V/6.9A, $R_{DS(ON)}=27.44m\Omega$ @ $V_{GS}=10V$
 $R_{DS(ON)}=41.16m\Omega$ @ $V_{GS}=4.5V$
- P-Channel
-30V/-6.9A, $R_{DS(ON)}=32.00m\Omega$ @ $V_{GS}=10.0V$
 $R_{DS(ON)}=50.00m\Omega$ @ $V_{GS}=4.5V$
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Reliable and Rugged
- SO-8 Package

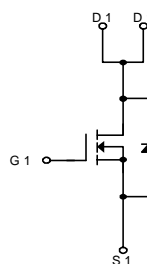
Applications

- Power Management in Notebook Computer ,
Portable Equipment and Battery Powered
Systems.

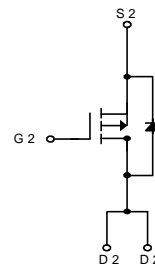
Pin Description



SO-8



N-Channel MOSFET



P-Channel MOSFET

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

Symbol	Parameter		N-Channel	P-Channel	Unit
V_{DSS}	Drain-Source Voltage		30	-30	V
V_{GSS}	Gate-Source Voltage		± 20	± 20	
I_D^*	Maximum Drain Current – Continuous		6.9	-6.9	A
I_{DM}	Maximum Drain Current – Pulsed		28	-20	
P_D	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	2	2	W
T_J	Maximum Junction Temperature		150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 150		$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance – Junction to Ambient		62.5		$^\circ\text{C/W}$

* Surface Mounted on FR4 Board, $t \leq 10$ sec.**Electrical Characteristics** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	4542			Unit	
			Min.	Typ.	Max.		
Static							
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _{DS} =250μA	N-Ch	30			V
			P-Ch	-30			
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V , V _{GS} =0V	N-Ch			1	μA
		V _{DS} =-24V , V _{GS} =0V	P-Ch			-1	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	N-Ch	1	1.5	2	V
		V _{DS} =V _{GS} , I _{DS} =-250μA	P-Ch	-1	-1.5	-2	
I _{GSS}	Gate Leakage Current	V _{GS} =±20V , V _{DS} =0V	N-Ch			±100	nA
		V _{GS} =±20V , V _{DS} =0V	P-Ch			±100	
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =10V , I _{DS} =6.9A	N-Ch			28	mΩ
		V _{GS} =4.5V , I _{DS} =5A				42	
		V _{GS} =-10V , I _{DS} =-6.9A	P-Ch			32	
		V _{GS} =-4.5V , I _{DS} =-5A				50	
V _{SD} ^a	Diode Forward Voltage	I _{SD} =2.0A , V _{GS} =0V	N-Ch		0.7	1.0	V
		I _{SD} =-2.0A , V _{GS} =0V	P-Ch		-0.7	-1.0	

Notes

^a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

Electrical Characteristics (Cont.)

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

Symbol	Parameter	Test Condition	4542			Unit	
			Min.	Typ.	Max.		
Dynamic ^b							
Q _g	Total Gate Charge	N-Channel V _{DS} =15V , I _{DS} = 6.9A V _{GS} =10V P-Channel V _{DS} =-15V , I _{DS} =-6.9A V _{GS} =-10V	N-Ch		19	28	nC
			P-Ch		28	36	
Q _{gs}	Gate-Source Charge		N-Ch		1.6		
			P-Ch		5		
Q _{gd}	Gate-Drain Charge		N-Ch		3.6		
			P-Ch		4		
t _{d(ON)}	Turn-on Delay Time	N-Channel	N-Ch		11	20	ns
		V _{DD} =15V , I _{DS} =2A ,	P-Ch		12	24	
T _r	Turn-on Rise Time	V _{GEN} =10V , R _G =6Ω ,	N-Ch		17	28	
		R _L =7.5Ω	P-Ch		15	29	
t _{d(OFF)}	Turn-off Delay Time	P-Channel	N-Ch		36	62	
		V _{DD} =-15V , I _{DS} =-2A ,	P-Ch		35	60	
T _f	Turn-off Fall Time	V _{GEN} =-10V , R _G =6Ω ,	N-Ch		20	36	
		R _L =7.5Ω	P-Ch		15	30	
C _{iss}	Input Capacitance	N-Channel	N-Ch		835		pF
		V _{GS} =0V, V _{DS} =25V	P-Ch		950		
C _{oss}	Output Capacitance	Frequency=1.0MHz	N-Ch		145		
		P-Channel	P-Ch		160		
C _{rss}	Reverse Transfer Capacitance	V _{GS} =0V, V _{DS} =-25V	N-Ch		15		
		Frequency=1.0MHz	P-Ch		110		

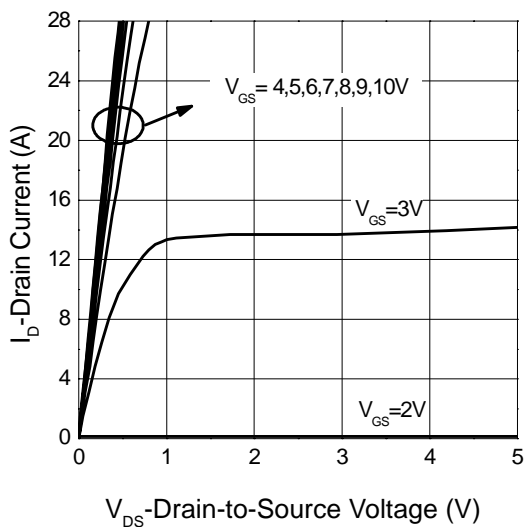
Notes

^b : Guaranteed by design, not subject to production testing

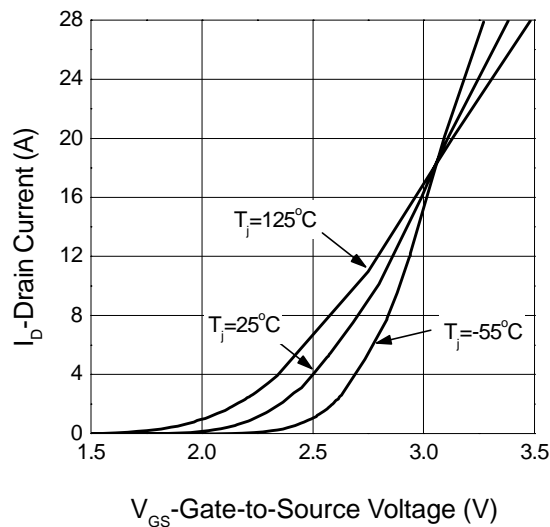
Typical Characteristics

N-Channel

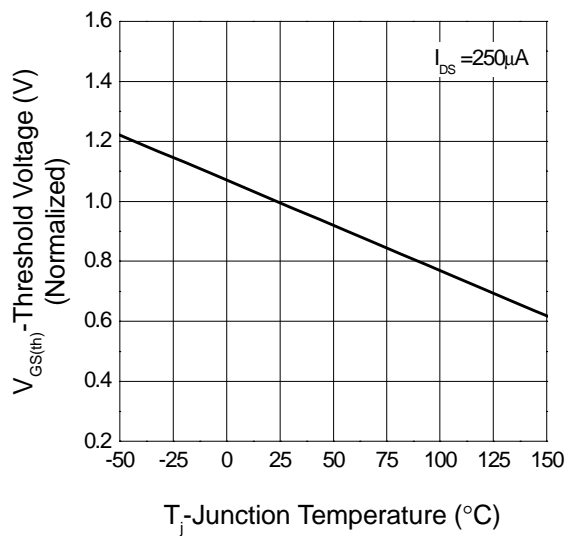
Output Characteristics



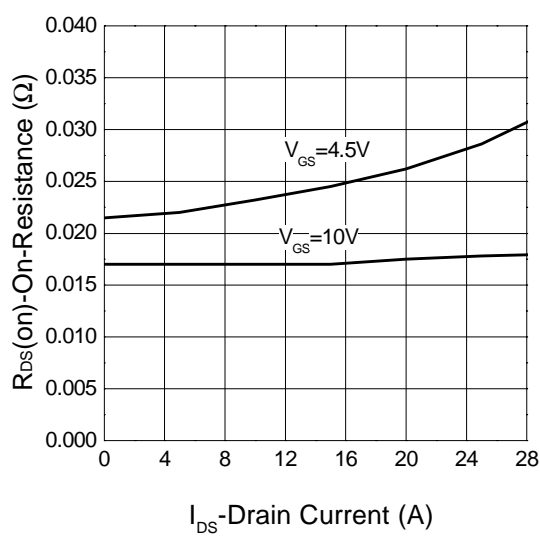
Transfer Characteristics



Threshold Voltage vs. Junction Temperature



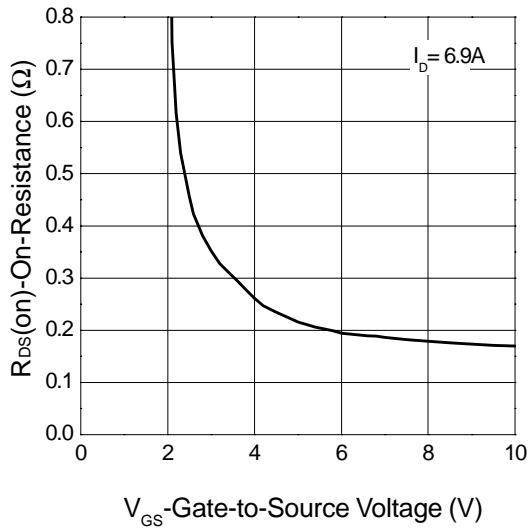
On-Resistance vs. Drain Current



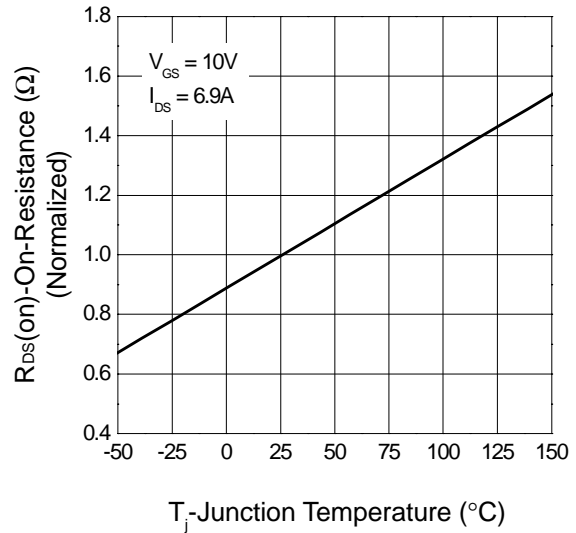
Typical Characteristics (Cont.)

N-Channel

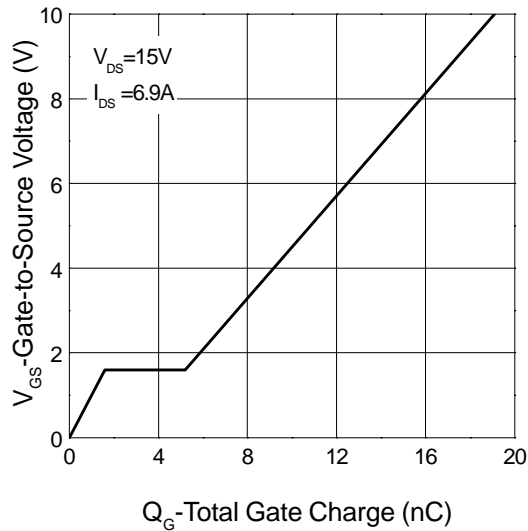
On-Resistance vs. Gate-to-Source Voltage



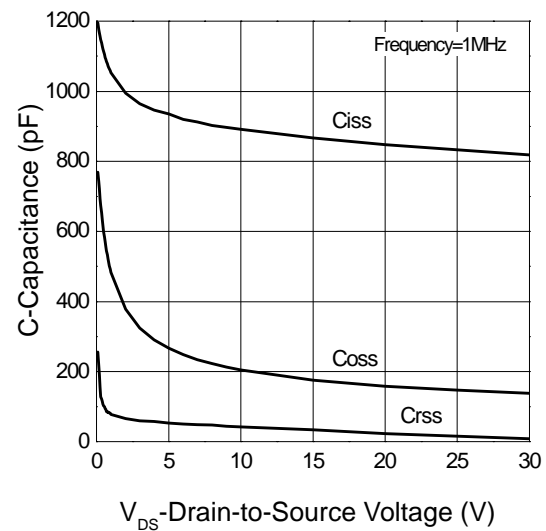
On-Resistance vs. Junction Temperature



Gate Charge



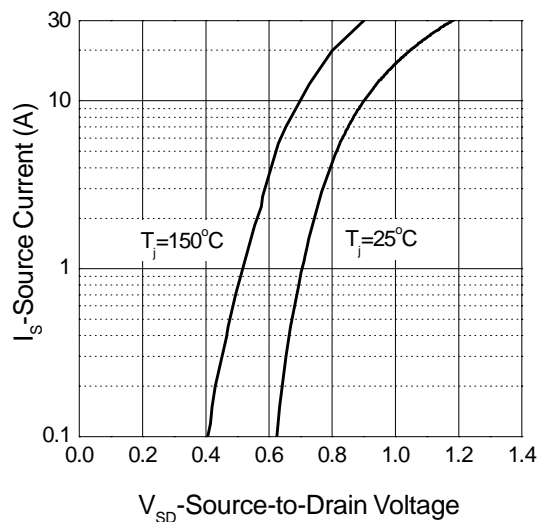
Capacitance Characteristics



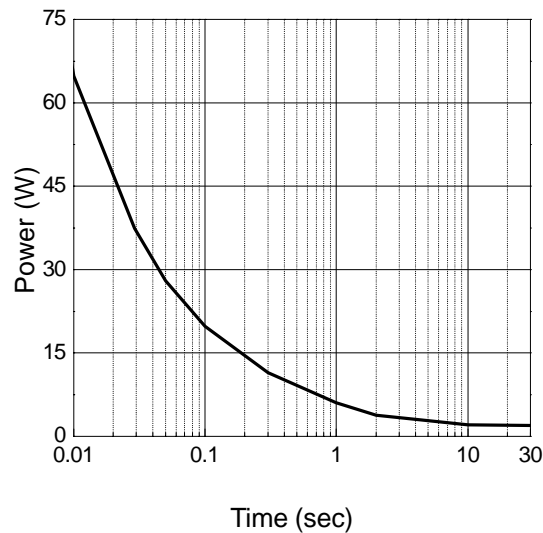
Typical Characteristics (Cont.)

N-Channel

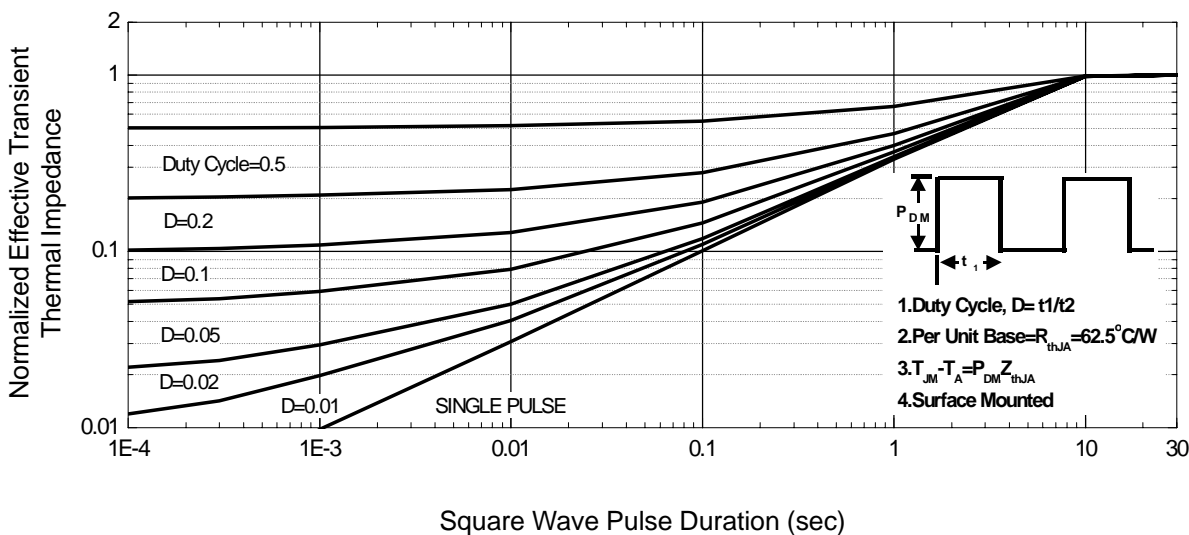
Source-Drain Diode Forward Voltage



Single Pulse Power



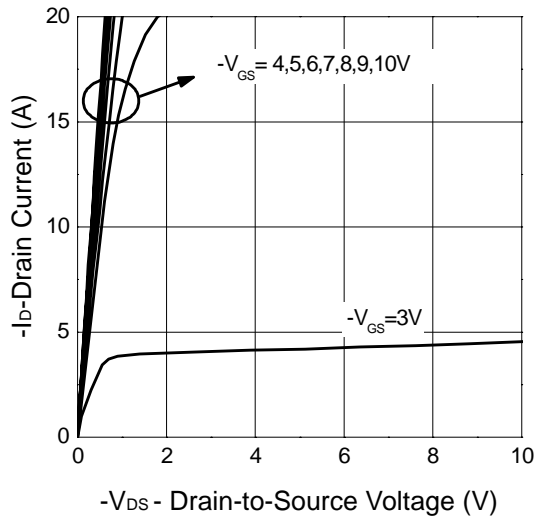
Normalized Transient Thermal Impedance, Junction to Ambient



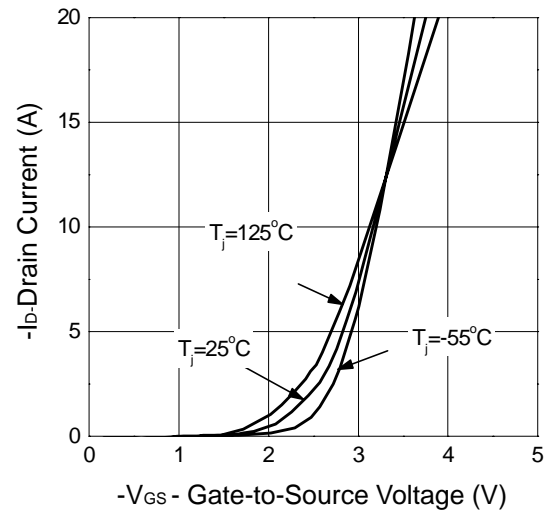
Typical Characteristics

P-Channel

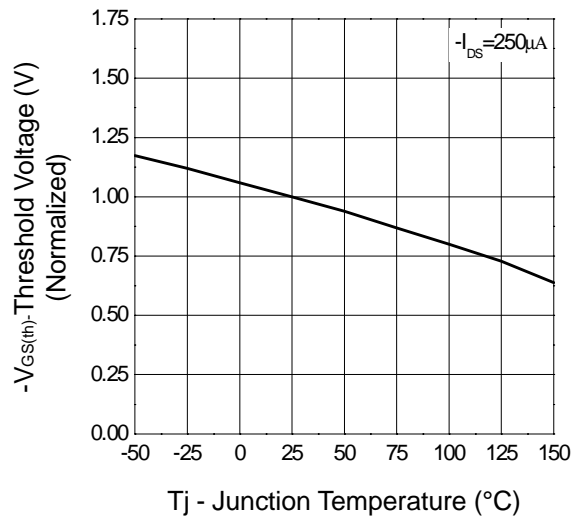
Output Characteristics



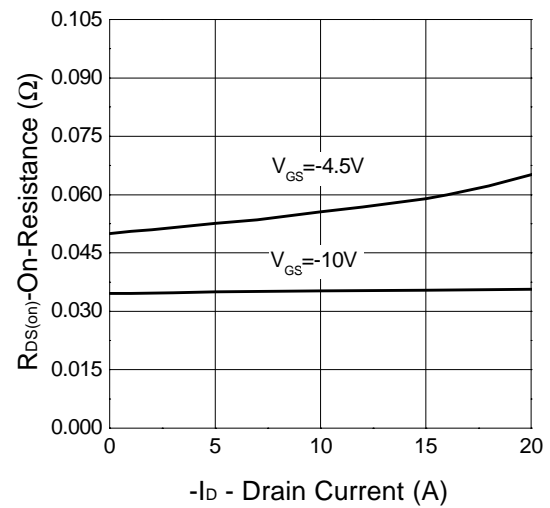
Transfer Characteristics



Threshold Voltage vs. Junction Temperature

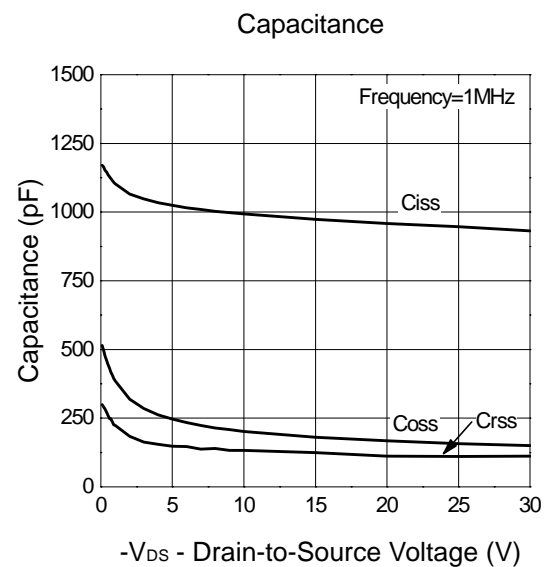
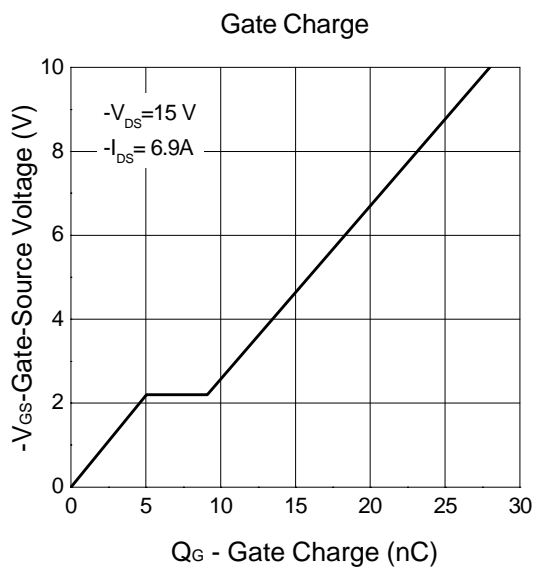
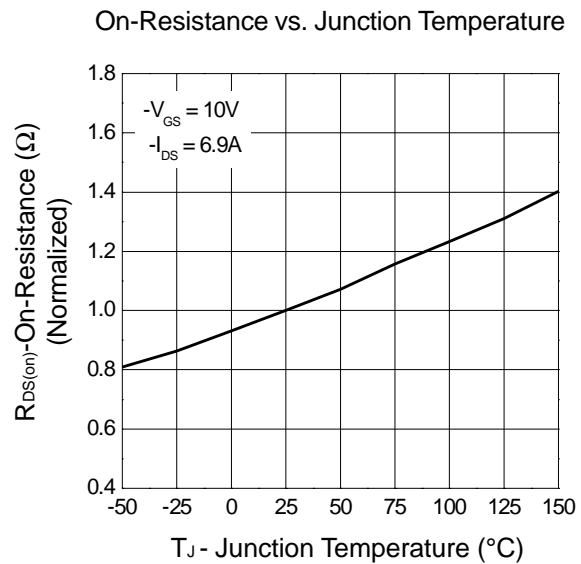
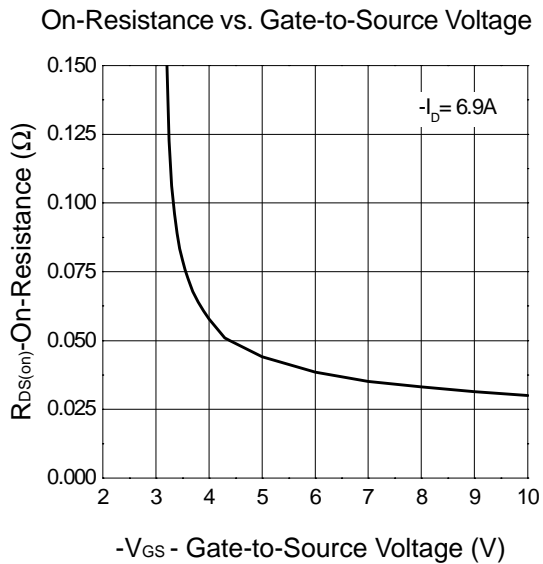


On-Resistance vs. Drain Current



Typical Characteristics (Cont.)

P-Channel



Typical Characteristics (Cont.)

P-Channel

