



Dual N-Channel 30-V (D-S) MOSFET with Schottky Diode

PRODUCT SUMMARY			
	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
Channel-1	30	0.021 @ V _{GS} = 10 V	7.0
		0.0325 @ V _{GS} = 4.5 V	5.6
Channel-2		0.020 @ V _{GS} = 10 V	7.4
		0.0265 @ V _{GS} = 4.5 V	8.4

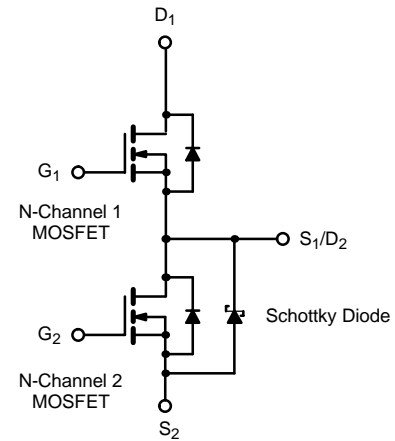
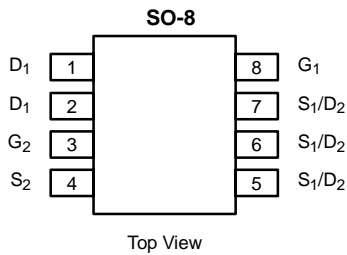
SCHOTTKY PRODUCT SUMMARY		
V _{DS} (V)	V _{SD} (V) Diode Forward Voltage	I _F (A)
30	0.50 V @ 1.0 A	2.0

FEATURES

- LITTLE FOOT Plus™ Integrated Schottky
- Alternative Pinning for Additional Layout Options

APPLICATIONS

- DC/DC Converters
– Notebook



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Channel-1		Channel-2		Unit	
		10 secs	Steady State	10 secs	Steady State		
Drain-Source Voltage	V _{DS}	30				V	
Gate-Source Voltage	V _{GS}	20					
Continuous Drain Current (T _J = 150°C) ^a	I _D	T _A = 25°C	7.0	5.5	7.4	5.7	A
		T _A = 70°C	5.6	4.3	6	4.5	
Pulsed Drain Current	I _{DM}	40		40		A	
Continuous Source Current (Diode Conduction) ^a	I _S	1.7	1.0	1.8	0.95		
Maximum Power Dissipation ^a	P _D	T _A = 25°C	1.9	1.1	2.0	1.16	W
		T _A = 70°C	1.2	0.71	1.3	0.74	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150				°C	

THERMAL RESISTANCE RATINGS							
Parameter	Symbol	Channel-1		Channel-2		Unit	
		Typ	Max	Typ	Max		
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 sec	52	65	47	60	°C/W
		Steady-State	90	112	85	107	
Maximum Junction-to-Foot (Drain)	R _{thJF}	30	38	28	35		

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

MOSFET SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition		Min	Typ ^a	Max	Unit
Static							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	Ch-1	0.8			V
			Ch-2	0.8			
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = 20 \text{ V}$	Ch-1			100	nA
			Ch-2			100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$	Ch-1			1	μA
			Ch-2			100	
		$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 85^\circ\text{C}$	Ch-1			15	
			Ch-2			2000	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 10 \text{ V}$	Ch-1	20			A
			Ch-2	20			
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 7.0 \text{ A}$	Ch-1		0.0175	0.021	Ω
		$V_{GS} = 10 \text{ V}, I_D = 7.4 \text{ A}$	Ch-2		0.0165	0.020	
		$V_{GS} = 4.5 \text{ V}, I_D = 5.6 \text{ A}$	Ch-1		0.027	0.0325	
		$V_{GS} = 4.5 \text{ V}, I_D = 8.4 \text{ A}$	Ch-2		0.022	0.0265	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 7.0 \text{ A}$	Ch-1		17		S
		$V_{DS} = 15 \text{ V}, I_D = 7.4 \text{ A}$	Ch-2		20		
Diode Forward Voltage ^b	V_{SD}	$I_S = 1.7 \text{ A}, V_{GS} = 0 \text{ V}$	Ch-1		0.7	1.1	V
		$I_S = 1 \text{ A}, V_{GS} = 0 \text{ V}$	Ch-2		0.47	0.5	
Dynamic^a							
Total Gate Charge	Q_g	Channel-1 $V_{DS} = 15 \text{ V}, V_{GS} = 5 \text{ V}, I_D = 7.0 \text{ A}$ Channel-2 $V_{DS} = 15 \text{ V}, V_{GS} = 5 \text{ V}, I_D = -7.4 \text{ A}$	Ch-1		6.5	10	nC
			Ch-2		9.7	15	
Gate-Source Charge	Q_{gs}		Ch-1		1.5		
			Ch-2		2.6		
Gate-Drain Charge	Q_{gd}		Ch-1		2.7		
			Ch-2		3.8		
Gate Resistance	R_G	Ch-1		1.6		Ω	
		Ch-2		1.8			
Turn-On Delay Time	$t_{d(on)}$	Channel-1 $V_{DD} = 15 \text{ V}, R_L = 15 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 6 \Omega$ Channel-2 $V_{DD} = 15 \text{ V}, R_L = 15 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 6 \Omega$	Ch-1		12	20	ns
Rise Time	t_r		Ch-2		13	20	
			Ch-1		13	20	
Turn-Off Delay Time	$t_{d(off)}$		Ch-2		13	20	
			Ch-1		22	35	
Fall Time	t_f		Ch-2		29	45	
			Ch-1		8	15	
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = 1.3 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	Ch-1		50	
		$I_F = 2.2 \text{ A}, di/dt = 100 \mu\text{A}/\mu\text{s}$	Ch-2		46	80	

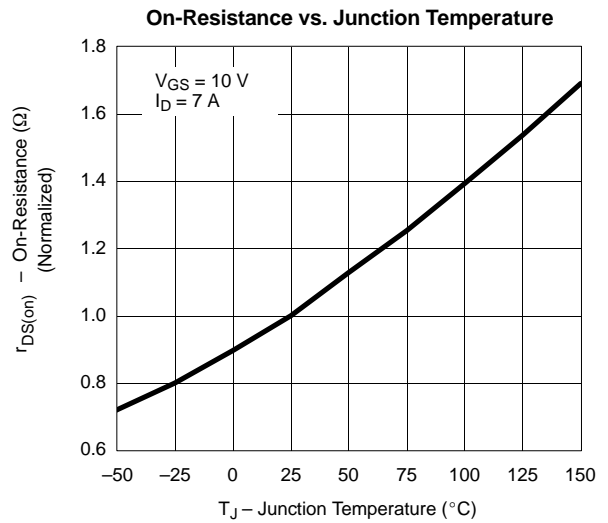
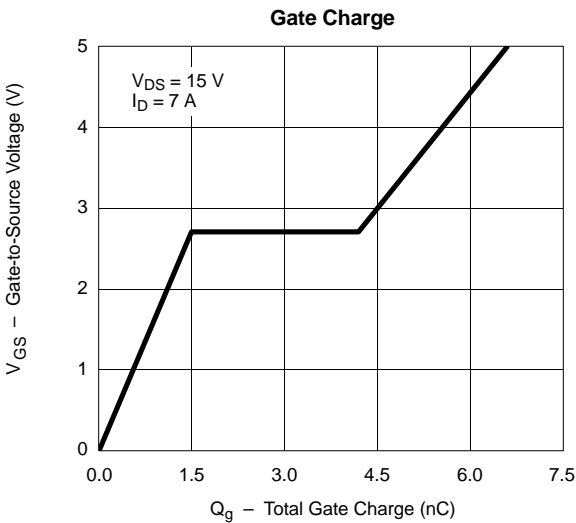
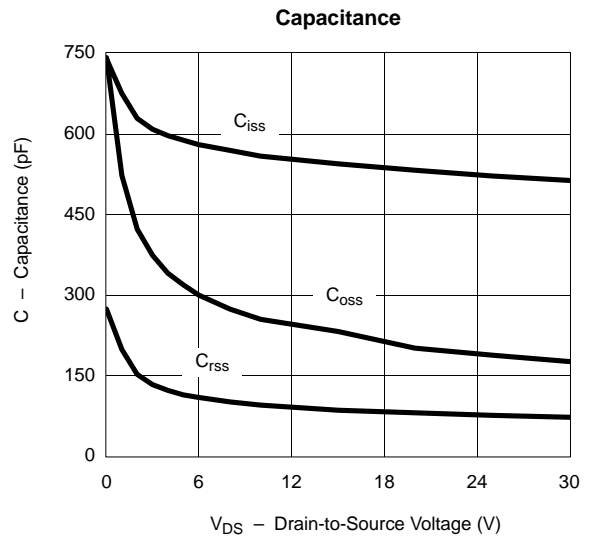
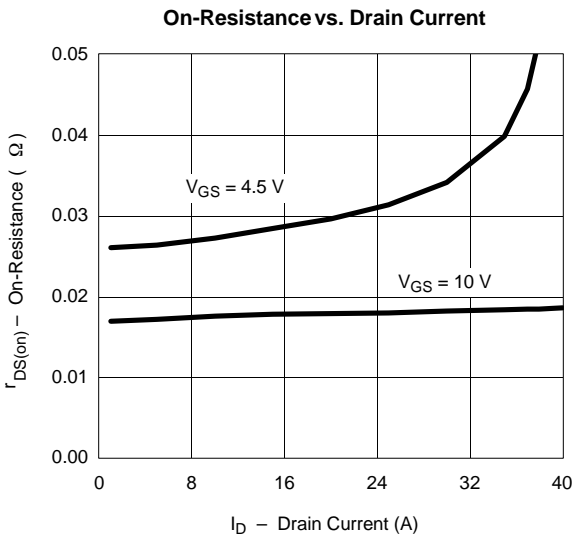
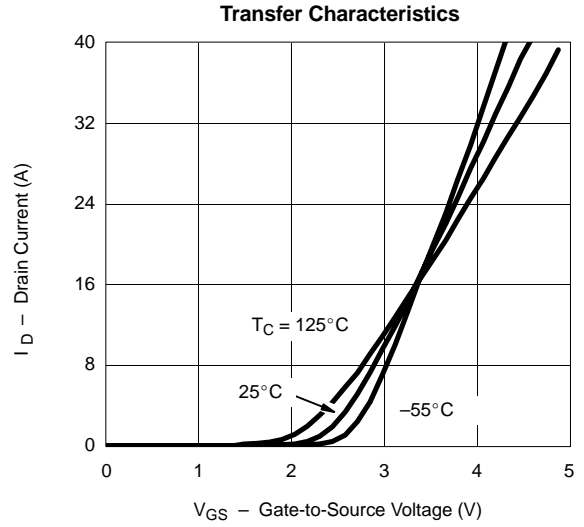
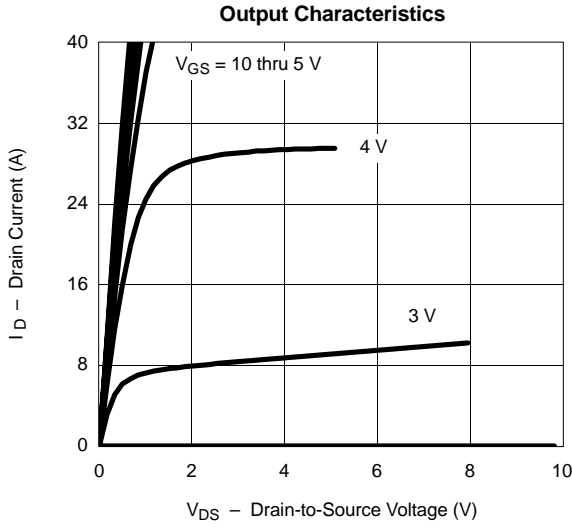
Notes

- a. Guaranteed by design, not subject to production testing.
 b. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

SCHOTTKY SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Forward Voltage Drop	V_F	$I_F = 1.0 \text{ A}$			0.47	0.50	V
		$I_F = 1.0 \text{ A}, T_J = 125^\circ\text{C}$			0.36	0.42	
Maximum Reverse Leakage Current	I_{rm}	$V_r = 30 \text{ V}$			0.004	0.100	mA
		$V_r = 30 \text{ V}, T_J = 100^\circ\text{C}$			0.7	10	
		$V_r = -30 \text{ V}, T_J = 125^\circ\text{C}$			3.0	20	
Junction Capacitance	C_T	$V_r = 10 \text{ V}$			50		pF

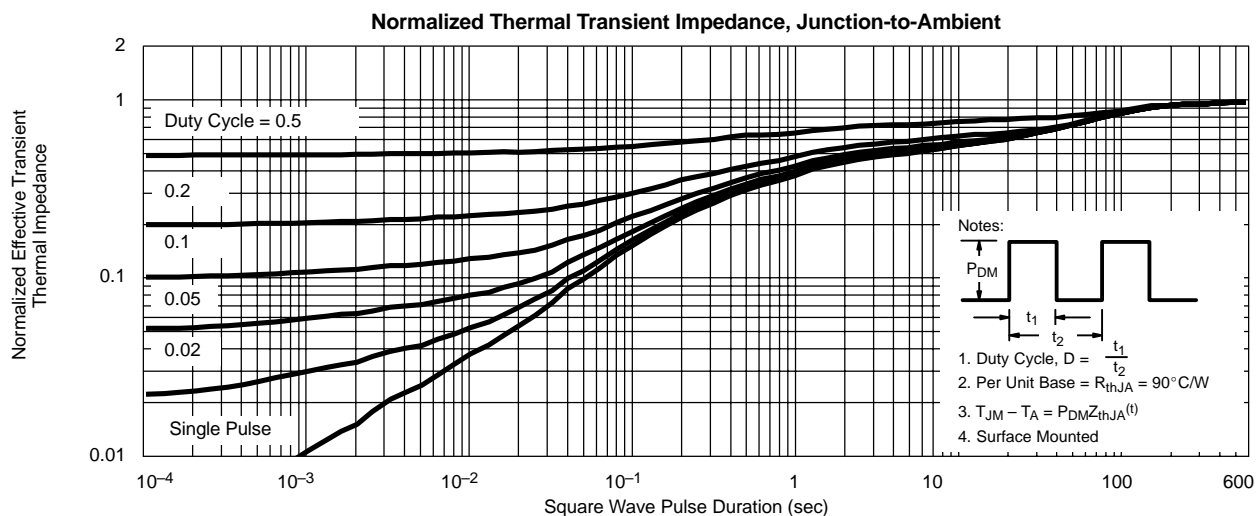
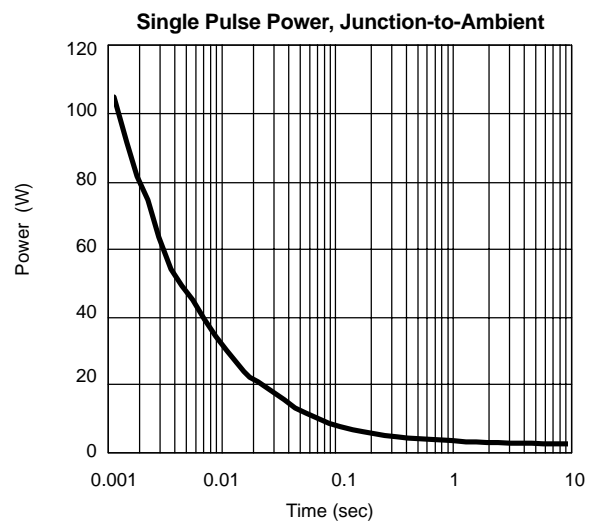
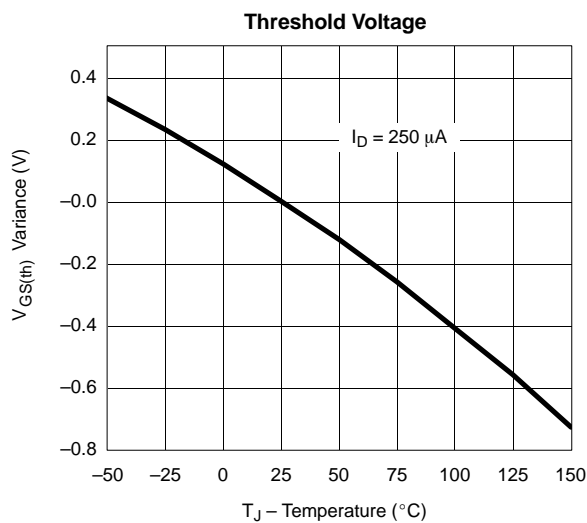
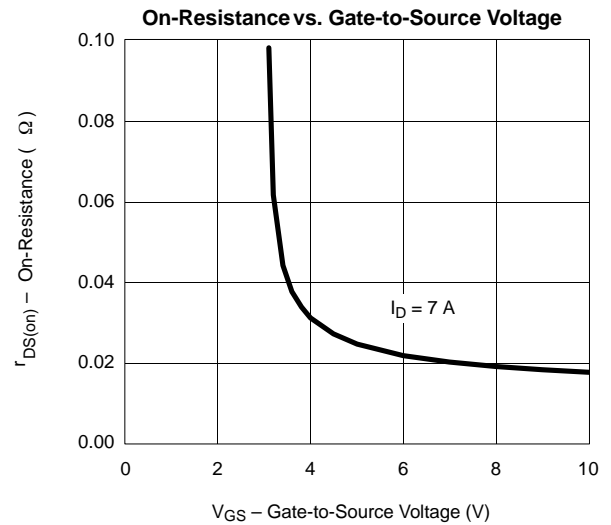
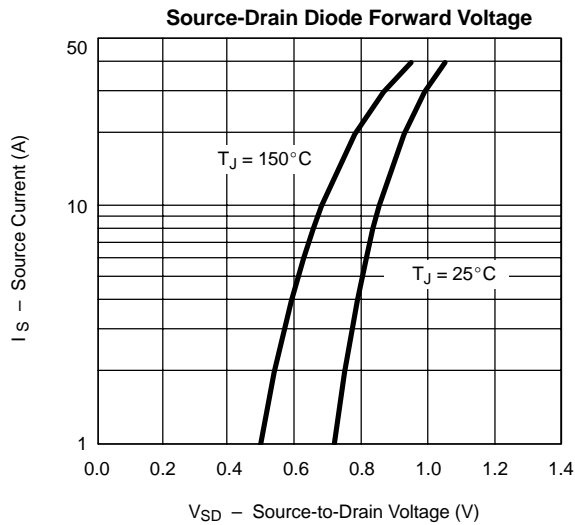


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL-1



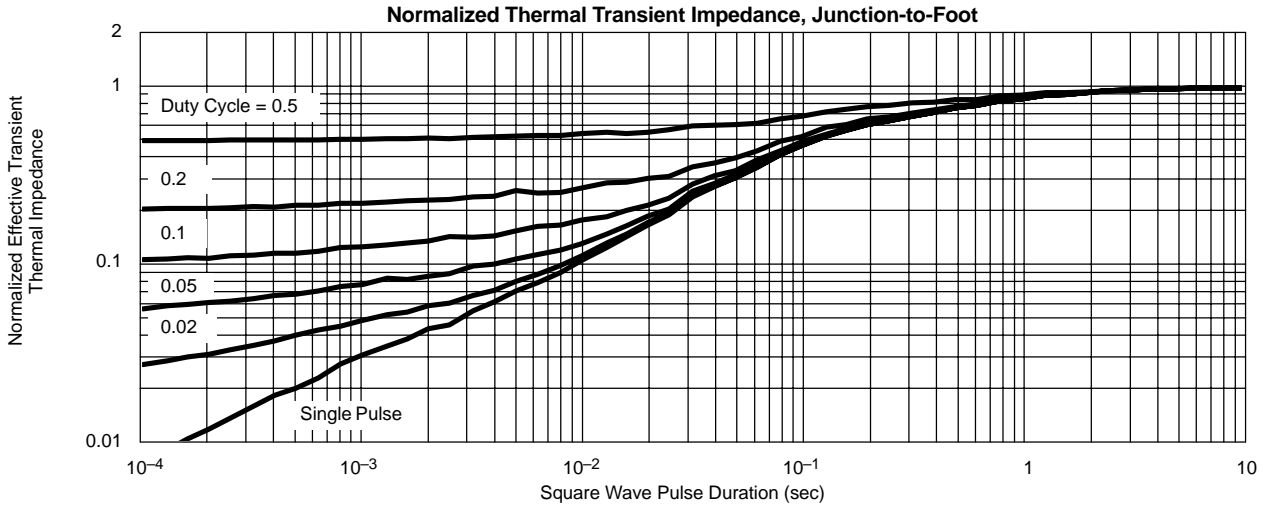
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

CHANNEL-1

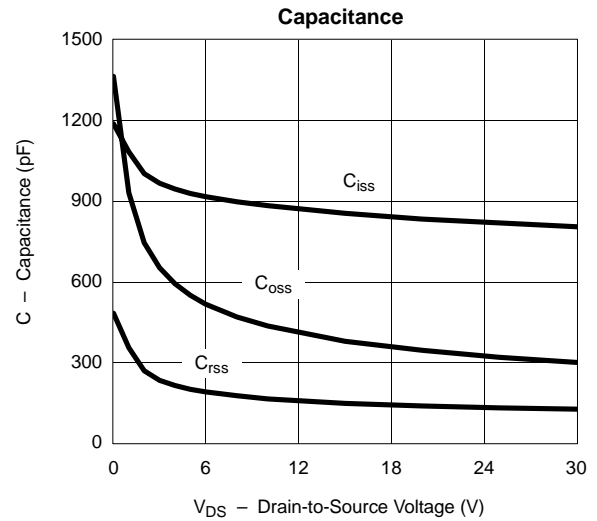
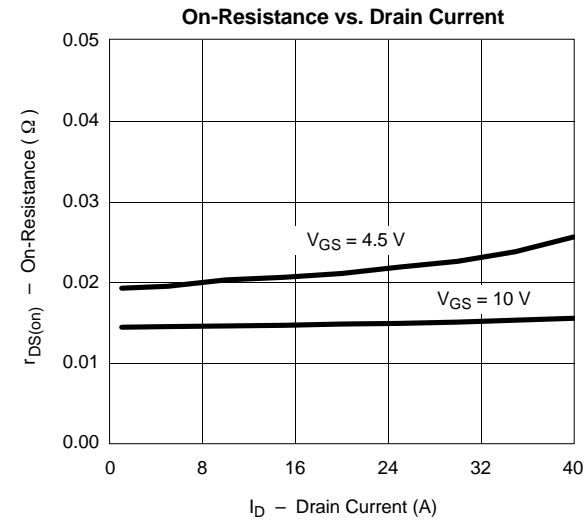
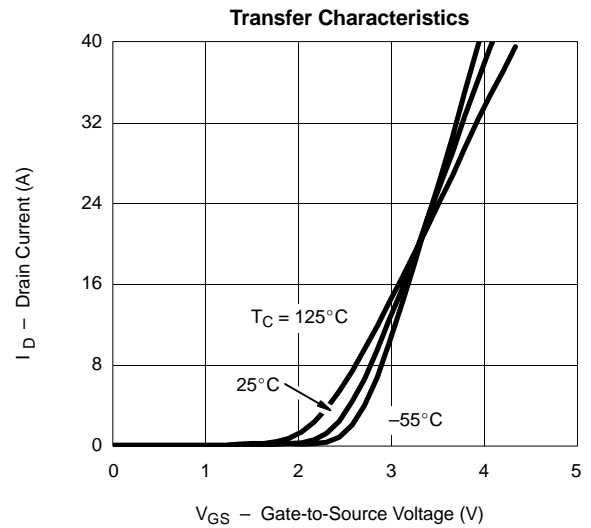
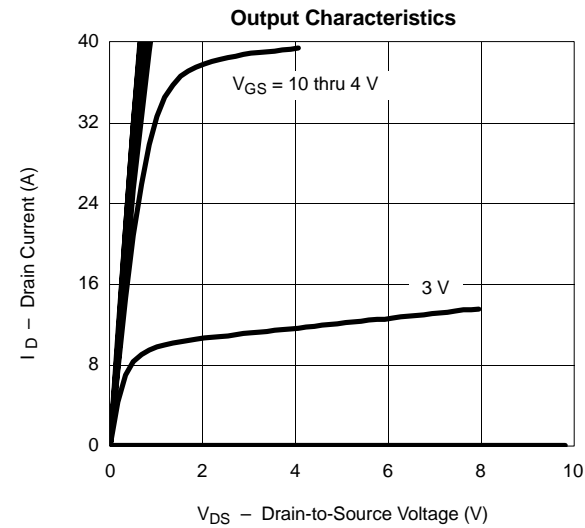




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL-1

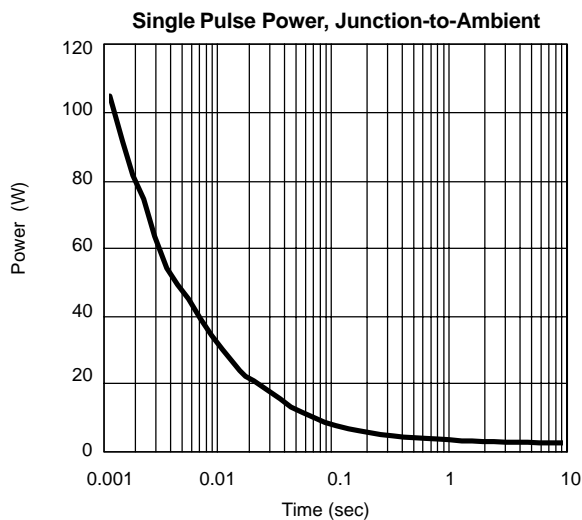
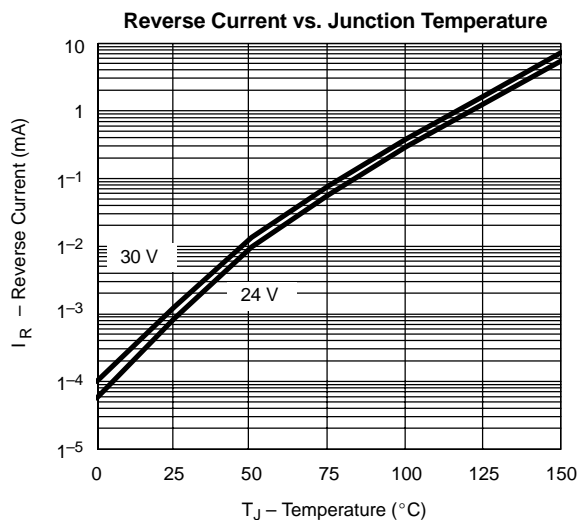
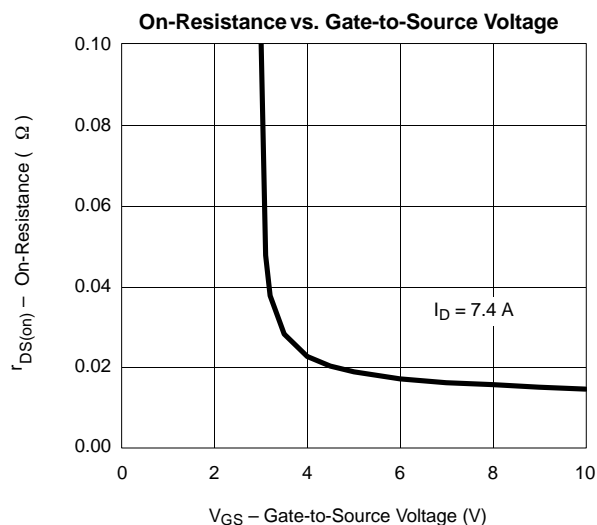
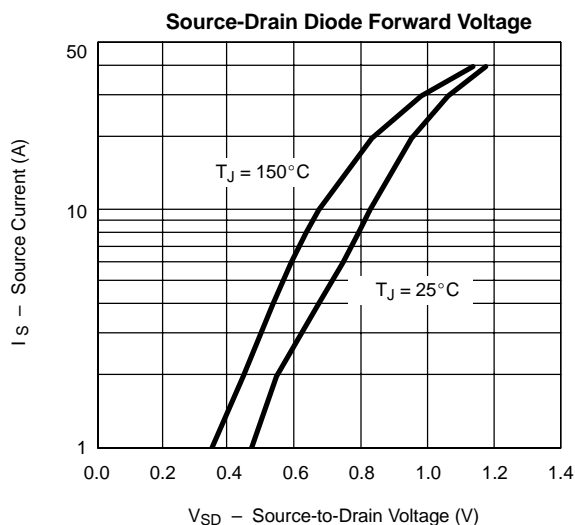
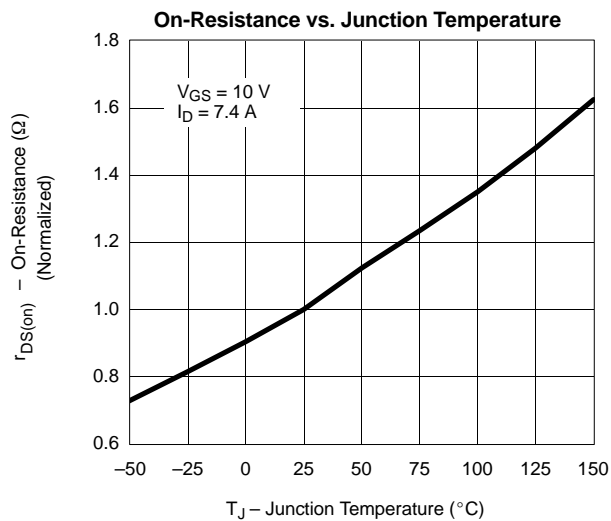
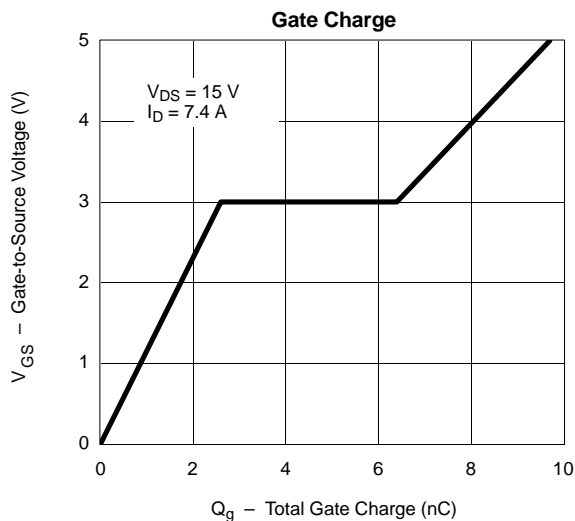


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL-2



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

CHANNEL-2





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) CHANNEL-2

