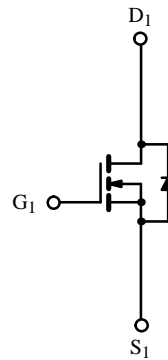
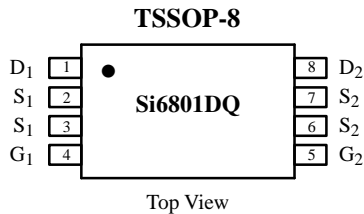


## Dual N- and P-Channel, Reduced $Q_g$ , Fast Switching MOSFET

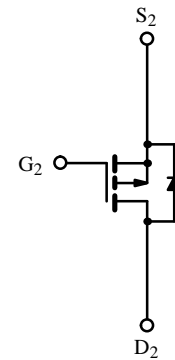
### Product Summary

	$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
N-Channel	20	0.160 @ $V_{GS} = 4.5$ V	$\pm 1.9$
		0.260 @ $V_{GS} = 3.0$ V	$\pm 1.5$
P-Channel	-20	0.190 @ $V_{GS} = -4.5$ V	$\pm 1.7$
		0.280 @ $V_{GS} = -3.0$ V	$\pm 1.3$

**High-Efficiency**  
PWM Optimized



N-Channel MOSFET



P-Channel MOSFET

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	$V_{DS}$	20	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	$\pm 1.9$	A
		$T_A = 70^\circ\text{C}$	$\pm 1.5$	
Pulsed Drain Current	$I_{DM}$	$\pm 8$		
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.0	-1.0	
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.0	W
		$T_A = 70^\circ\text{C}$	0.64	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

### Thermal Resistance Ratings

Parameter	Symbol	N- or P-Channel	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	125	$^\circ\text{C}/\text{W}$

Notes

a. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70187.

**Specifications ( $T_J = 25^\circ\text{C}$  Unless Otherwise Noted)**

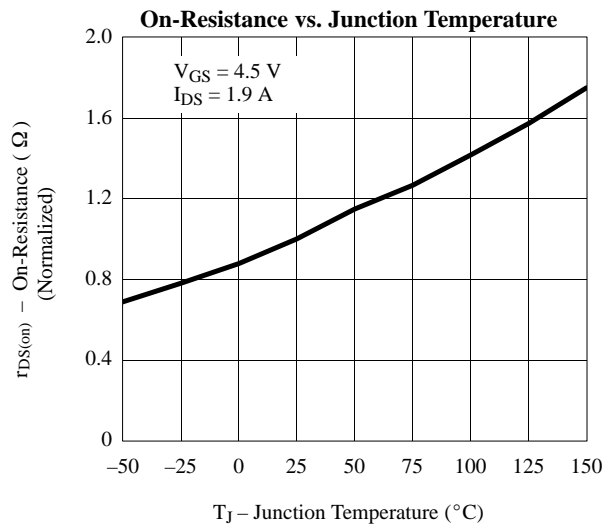
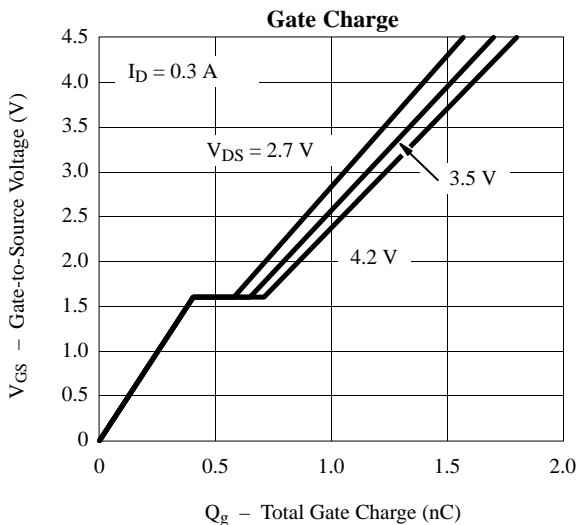
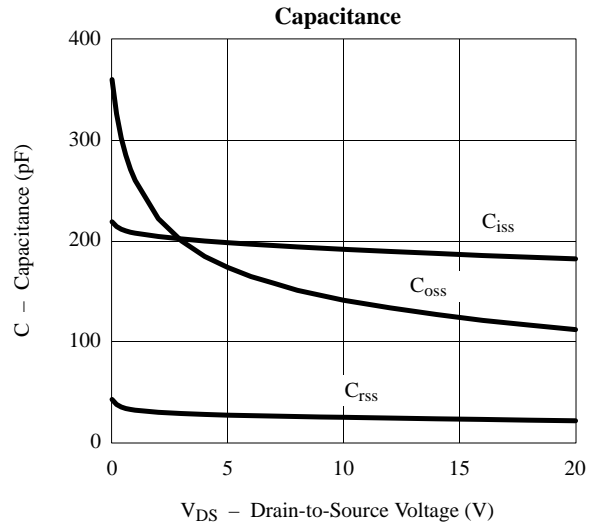
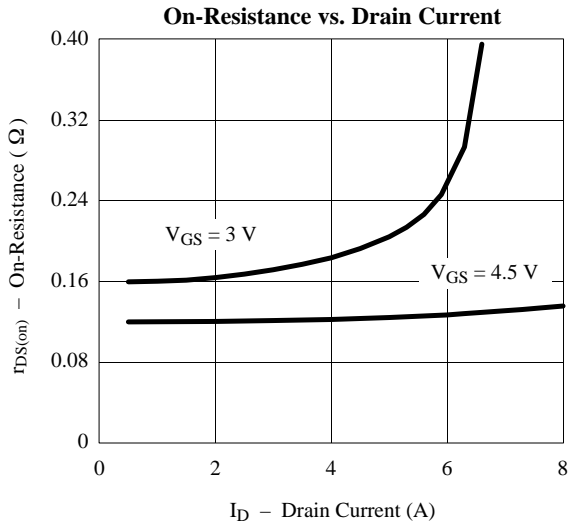
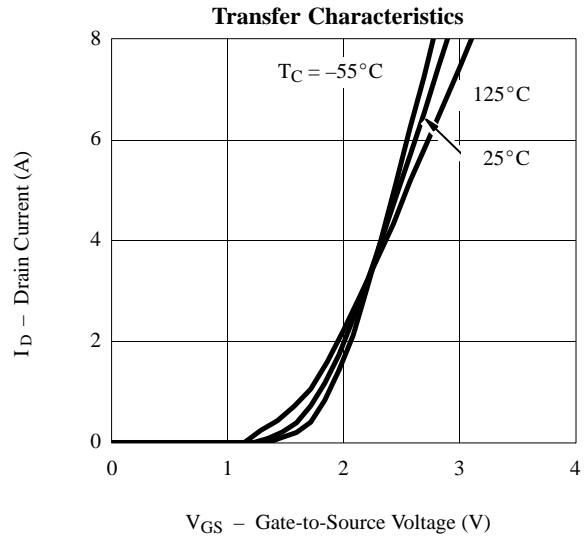
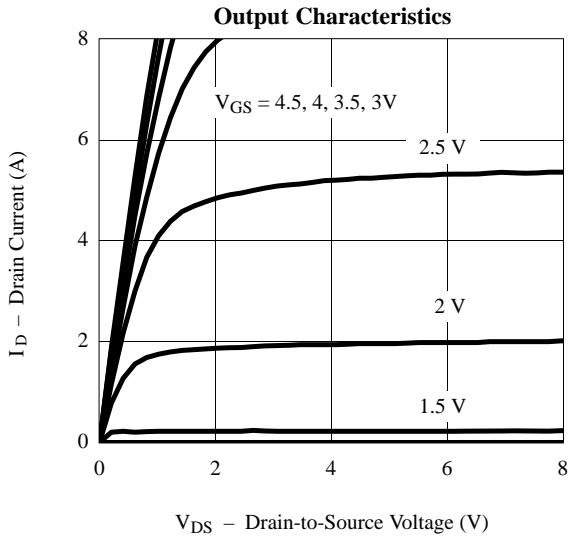
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
<b>Static</b>							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	N-Ch	0.6		V	
		$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	P-Ch	-0.6			
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 12 \text{ V}$	N-Ch		$\pm 100$	nA	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20 \text{ V}, V_{GS} = 0 \text{ V}$	N-Ch		1	$\mu\text{A}$	
		$V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}$	P-Ch		-1		
		$V_{DS} = 20 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$	N-Ch		25		
		$V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$	P-Ch		-25		
On-State Drain Current <sup>b</sup>	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 4.5 \text{ V}$	N-Ch	6		A	
		$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	P-Ch	-6			
Drain-Source On-State Resistance <sup>b</sup>	$r_{DS(on)}$	$V_{GS} = 4.5 \text{ V}, I_D = 1.9 \text{ A}$	N-Ch		0.120	0.160	$\Omega$
		$V_{GS} = -4.5 \text{ V}, I_D = 1.7 \text{ A}$	P-Ch		0.155	0.190	
		$V_{GS} = 3.0 \text{ V}, I_D = 1.5 \text{ A}$	N-Ch		0.160	0.260	
		$V_{GS} = -3.0 \text{ V}, I_D = 1.3 \text{ A}$	P-Ch		0.210	0.280	
Forward Transconductance <sup>b</sup>	$g_{fs}$	$V_{DS} = 15 \text{ V}, I_D = 1.9 \text{ A}$	N-Ch		5.4	S	
		$V_{DS} = -15 \text{ V}, I_D = -1.7 \text{ A}$	P-Ch		4.0		
Diode Forward Voltage <sup>b</sup>	$V_{SD}$	$I_S = 1.0 \text{ A}, V_{GS} = 0 \text{ V}$	N-Ch		0.77	1.2	V
		$I_S = -1.0 \text{ A}, V_{GS} = 0 \text{ V}$	P-Ch		-0.77	-1.2	
<b>Dynamic<sup>a</sup></b>							
Total Gate Charge	$Q_g$	N-Channel $V_{DS} = 3.5 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 0.3 \text{ A}$  P-Channel $V_{DS} = -3.5 \text{ V}, V_{GS} = -4.5 \text{ V}$ $I_D = -0.3 \text{ A}$	N-Ch		1.7	3.5	nC
Gate-Source Charge	$Q_{gs}$		N-Ch		0.26		
Gate-Drain Charge	$Q_{gd}$		N-Ch		0.41		
Turn-On Delay Time	$t_{d(on)}$	N-Channel $V_{DD} = 3.5 \text{ V}, R_L = 11.5 \Omega$ $I_D \cong 0.3 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_G = 6 \Omega$  P-Channel $V_{DD} = -3.5 \text{ V}, R_L = 11.5 \Omega$ $I_D \cong -0.3 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$	N-Ch		7.3	15	ns
Rise Time	$t_r$		N-Ch		10.0	20.0	
			P-Ch		10.0	20.0	
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		11.0	20.0	
			P-Ch		10.0	20.0	
Fall Time	$t_f$		N-Ch		6.0	15	
		P-Ch		7.0	15		
Source-Drain Reverse Recovery Time	$t_{rr}$	N-Channel— $I_F = 1.0 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	N-Ch		31	60	
		P-Channel— $I_F = -1.0 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	P-Ch		35	60	

## Notes

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

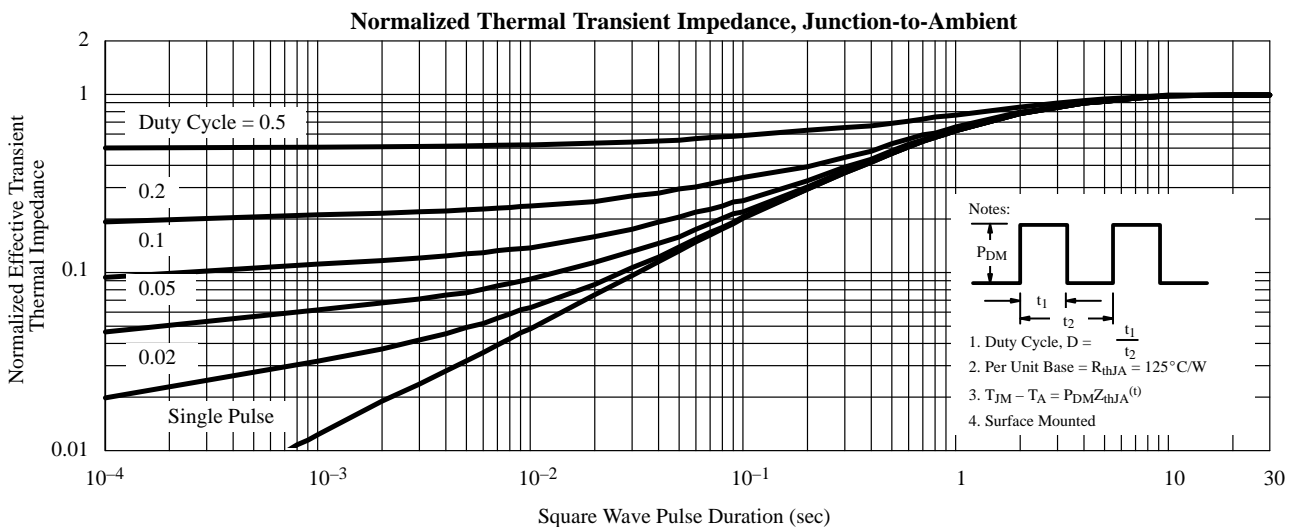
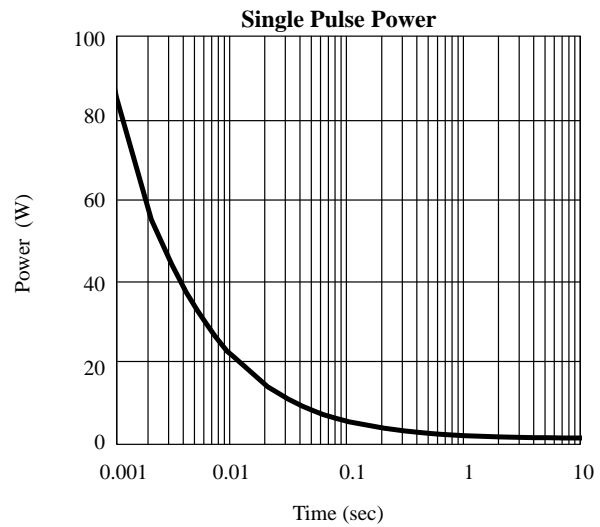
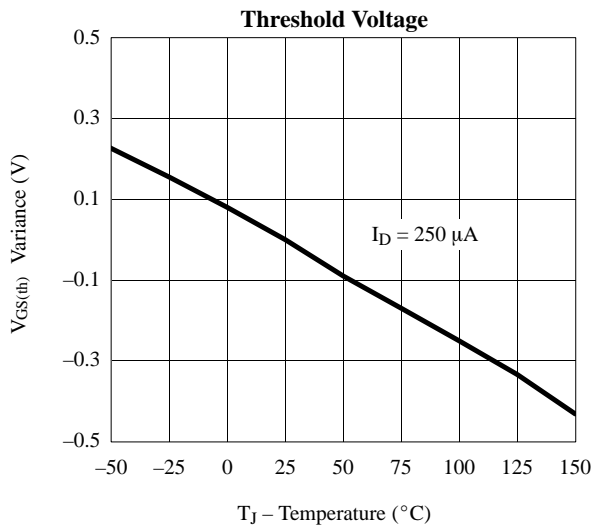
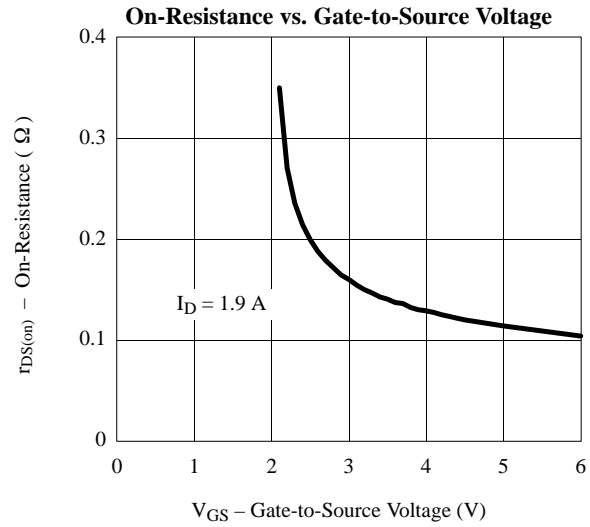
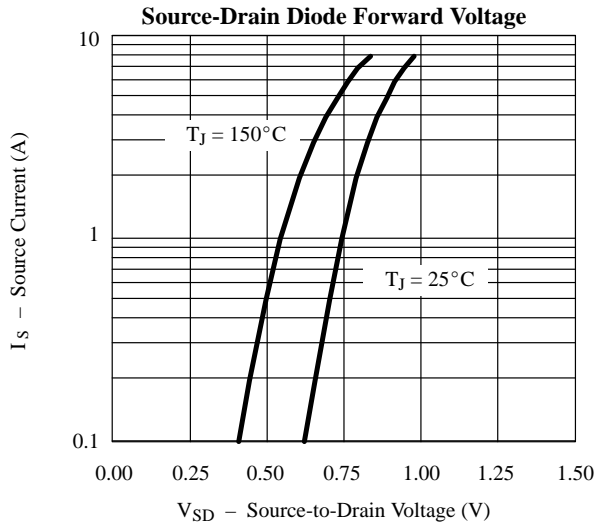
**Typical Characteristics (25°C Unless Noted)**

**N-Channel**



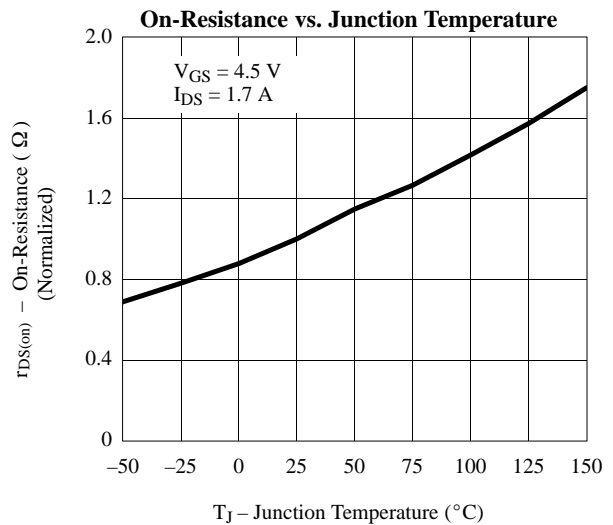
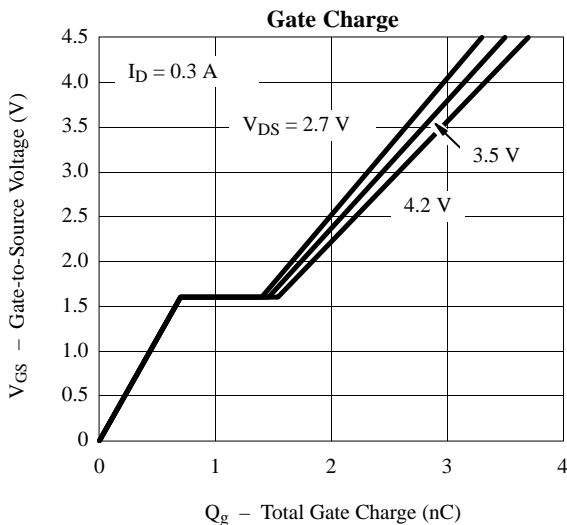
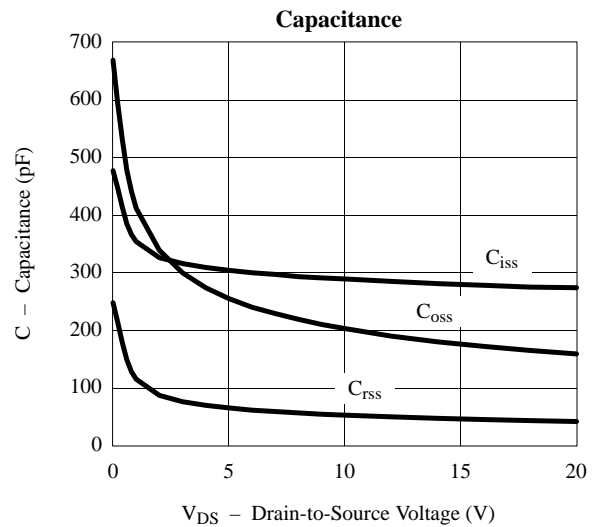
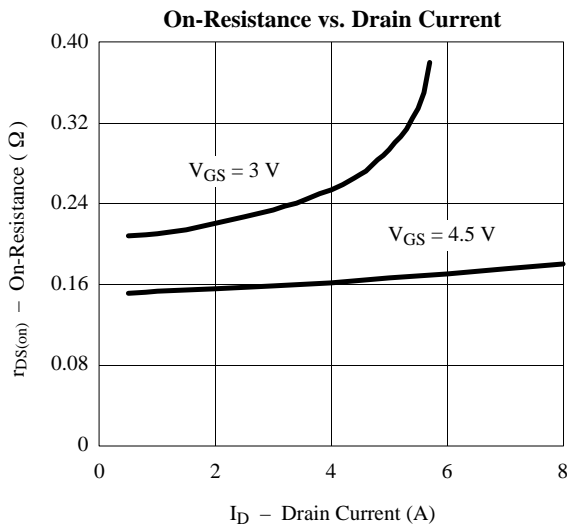
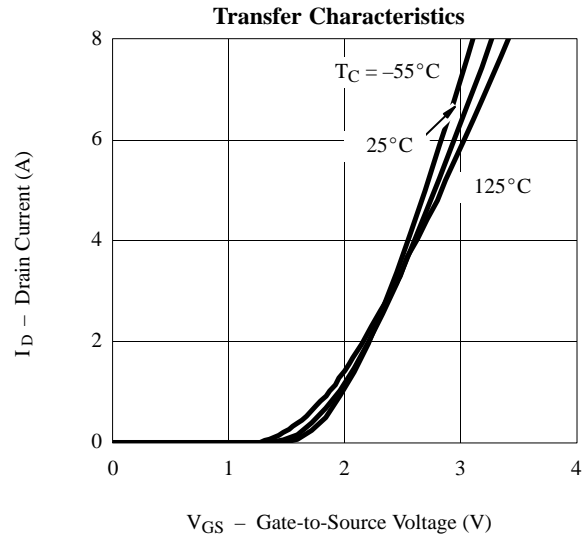
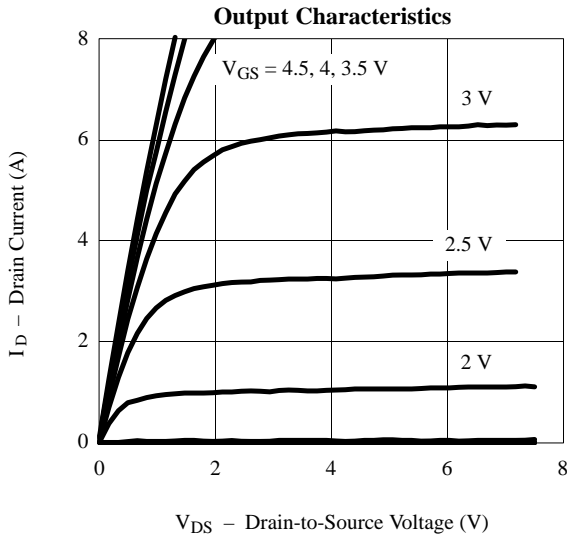
## Typical Characteristics (25°C Unless Noted)

## N-Channel



**Typical Characteristics (25°C Unless Noted)**

**P-Channel**



## Typical Characteristics (25°C Unless Noted)

## P-Channel

