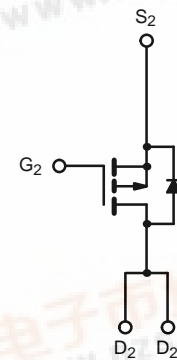
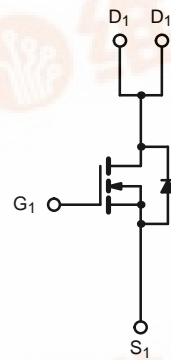
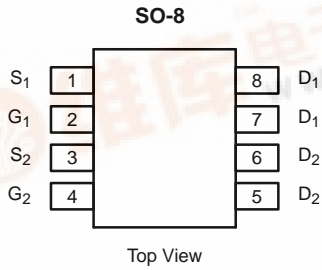




Si9939DY
Vishay Siliconix

Complimentary 30-V (D-S) MOSFET

PRODUCT SUMMARY			
	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
N-Channel	30	0.05 @ V _{GS} = 10 V	±3.5
		0.07 @ V _{GS} = 6 V	±3
		0.08 @ V _{GS} = 4.5 V	±2.5
P-Channel	-30	0.10 @ V _{GS} = -10 V	±3.5
		0.12 @ V _{GS} = -6V	±3
		0.16 @ V _{GS} = -4.5 V	±2.5



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)				
Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V _{DS}	30	-30	V
Gate-Source Voltage	V _{GS}	±20	±20	
Continuous Drain Current (T _J = 150°C) ^a	I _D	T _A = 25°C	±3.5	A
		T _A = 70°C	±2.8	
Pulsed Drain Current	I _{DM}	±20	±20	A
Continuous Source Current (Diode Conduction) ^a	I _S	1.7	-1.7	
Maximum Power Dissipation ^a	P _D	T _A = 25°C	2.0	W
		T _A = 70°C	1.3	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	N- or P- Channel	Unit
Maximum Junction-to-Ambient ^a	R _{thJA}	62.5	°C/W

Notes:
a. Surface Mounted on FR4 Board, t ≤ 10 sec.

Si9939DY

Vishay Siliconix



SPECIFICATIONS (T _J = 25 °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 μA	N-Ch	1.0			V
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-1.0			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V	N-Ch		1	μA	
		V _{DS} = -24 V, V _{GS} = 0 V	P-Ch		-1		
		V _{DS} = 15 V, V _{GS} = 0 V, T _J = 70 °C	N-Ch		5		
		V _{DS} = -15 V, V _{GS} = 0 V, T _J = 70 °C	P-Ch		-5		
On-State Drain Current ^b	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	N-Ch	20		A	
		V _{DS} ≤ -5 V, V _{GS} = -10 V	P-Ch	-20			
		V _{DS} ≥ 5 V, V _{GS} = 4.5 V	N-Ch	3.5			
		V _{DS} ≤ -5 V, V _{GS} = -4.5 V	P-Ch	-3.5			
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 3.5 A	N-Ch		0.04	0.05	Ω
		V _{GS} = -10 V, I _D = 3.5 A	P-Ch		0.074	0.10	
		V _{GS} = 6 V, I _D = 3 A	N-Ch		0.045	0.07	
		V _{GS} = -6 V, I _D = 3 A	P-Ch		0.090	0.12	
		V _{GS} = 4.5 V, I _D = 2.5 A	N-Ch		0.054	0.08	
		V _{GS} = -4.5 V, I _D = 2 A	P-Ch		0.115	0.16	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 3.5 A	N-Ch		9	S	
		V _{DS} = -15 V, I _D = -3.5 A	P-Ch		6		
Diode Forward Voltage ^b	V _{SD}	I _S = 1.7 A, V _{GS} = 0 V	N-Ch		0.75	1.2	V
		I _S = -1.7 A, V _{GS} = 0 V	P-Ch		-0.75	-1.2	
Dynamic^a							
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 10 V, I _D = 3.5 A P-Channel V _{DS} = -10 V, V _{GS} = -10 V I _D = -3.5 A	N-Ch		14	35	nC
Gate-Source Charge	Q _{gs}		N-Ch		1.9		
Gate-Drain Charge	Q _{gd}		P-Ch		2.7		
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω P-Channel V _{DD} = -15 V, R _L = 15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω	N-Ch		10	30	ns
Rise Time	t _r		P-Ch		11	30	
Turn-Off Delay Time	t _{d(off)}		N-Ch		10	40	
			P-Ch		11	40	
Fall Time	t _f		N-Ch		26	50	
			P-Ch		30	50	
Source-Drain Reverse Recovery Time	t _{rr}		N-Ch		10	50	
			P-Ch		12	50	
		I _F = 3.5 A, di/dt = 100 A/μs	N-Ch		60	120	
			P-Ch		40	100	

Notes

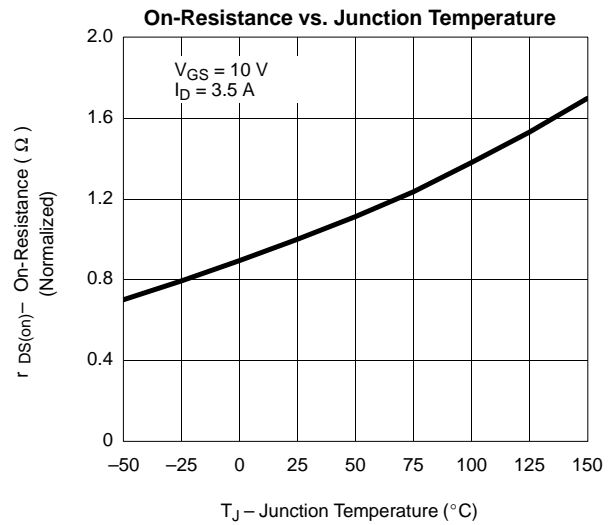
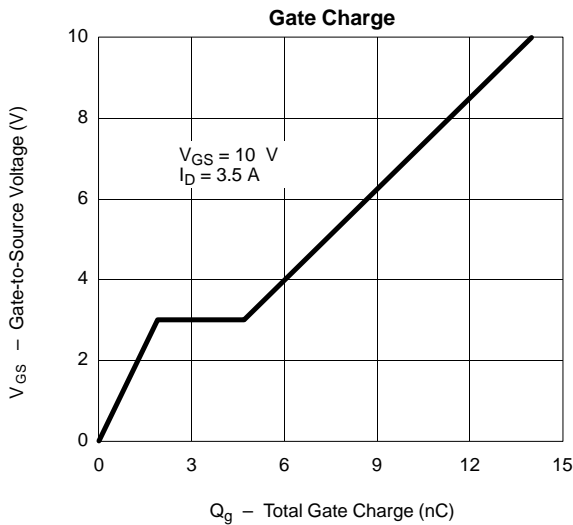
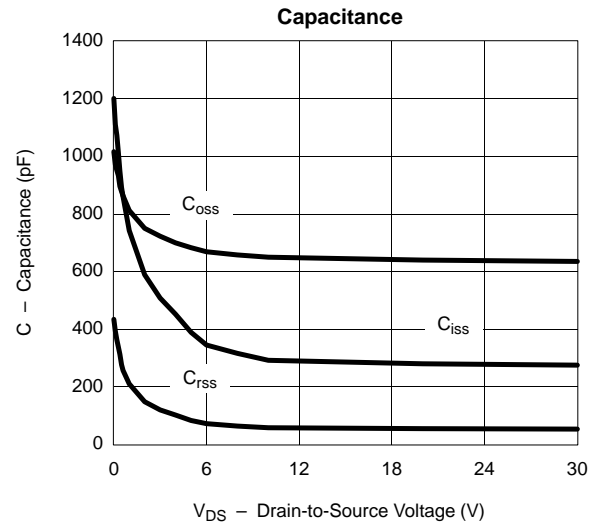
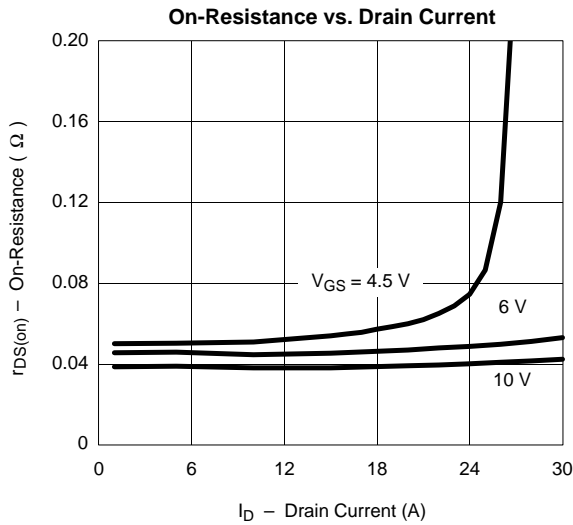
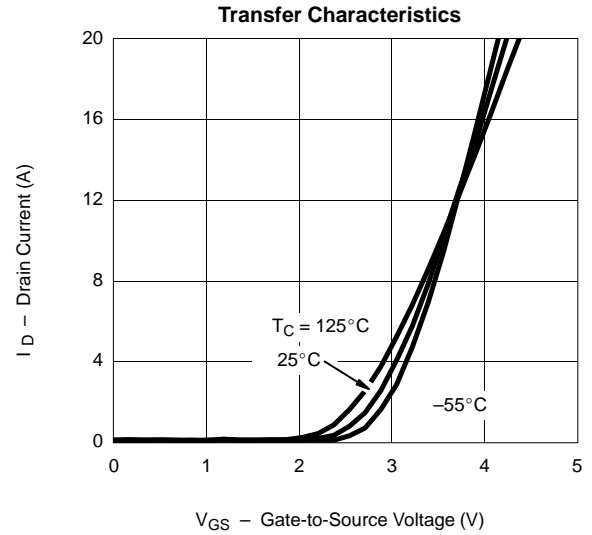
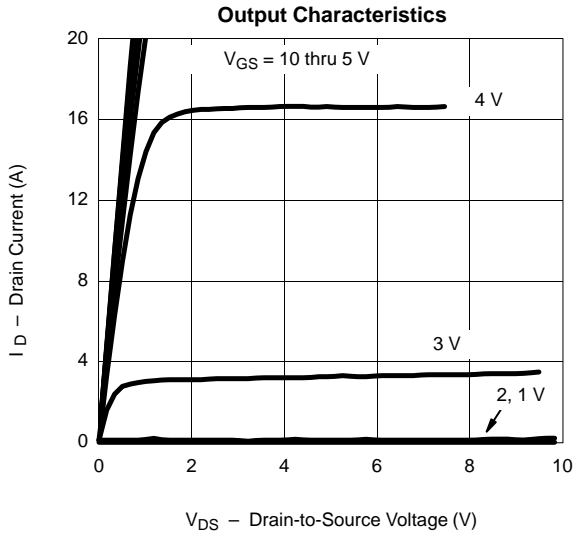
a. Guaranteed by design, not subject to production testing.

b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.



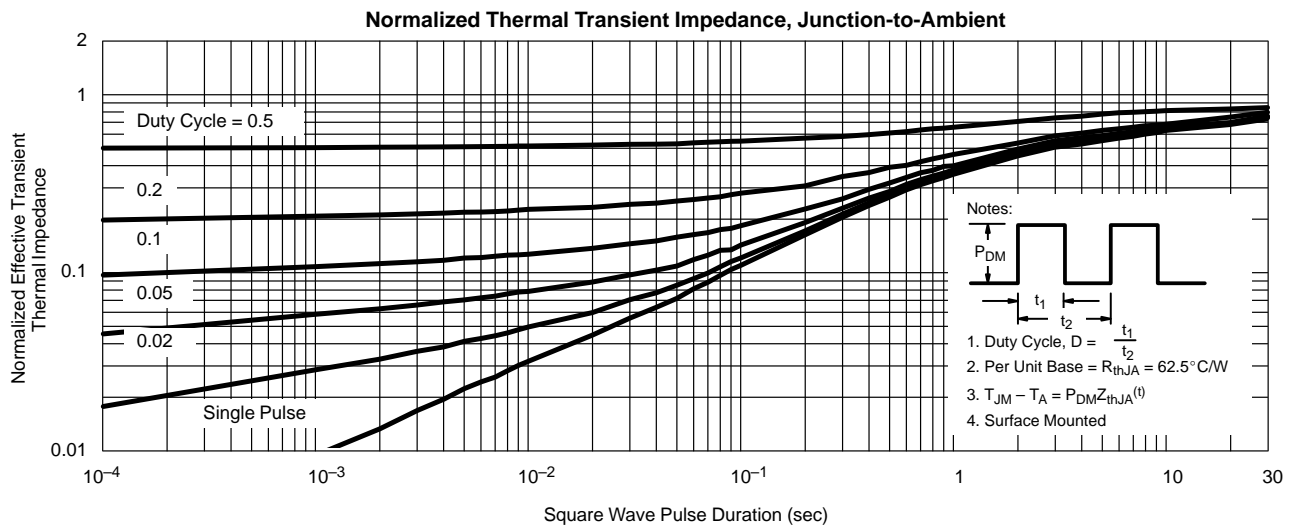
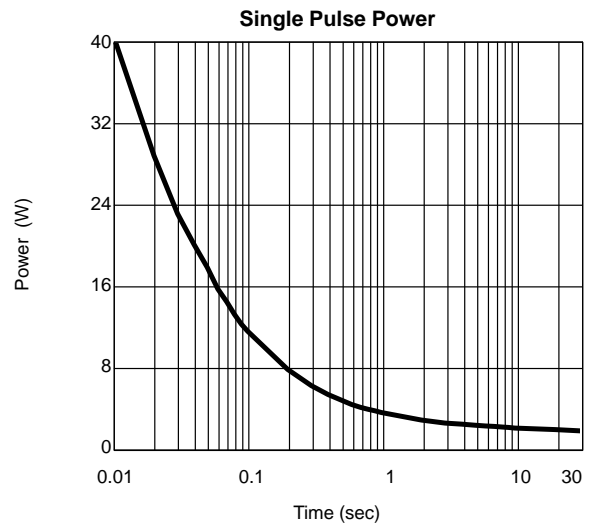
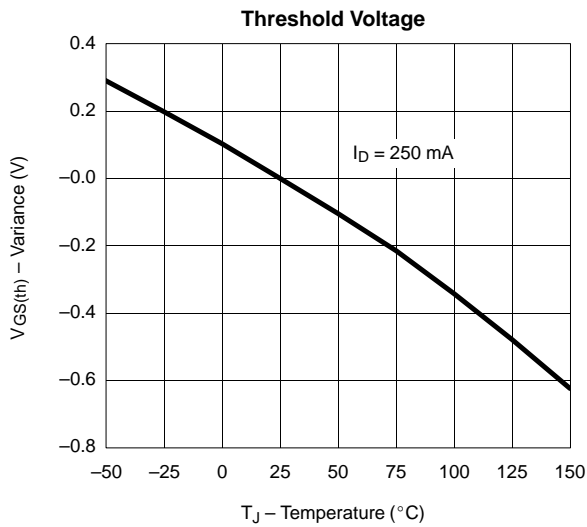
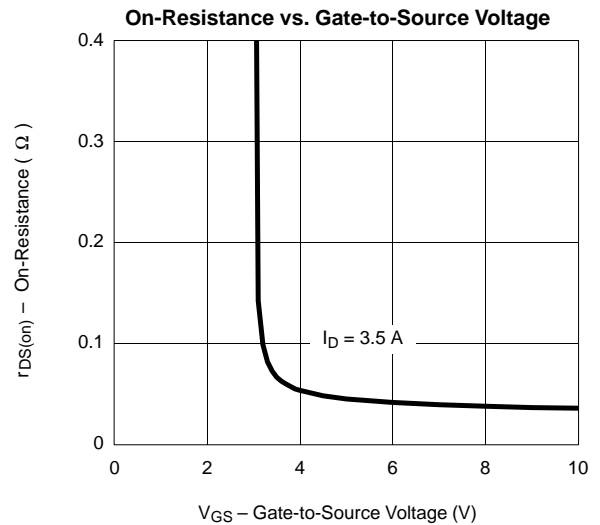
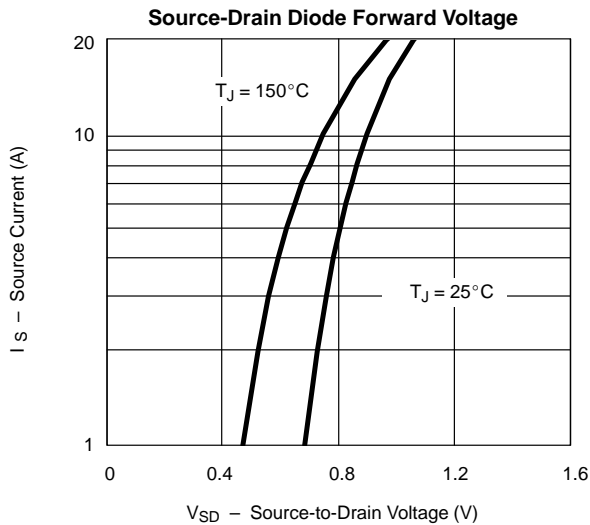
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

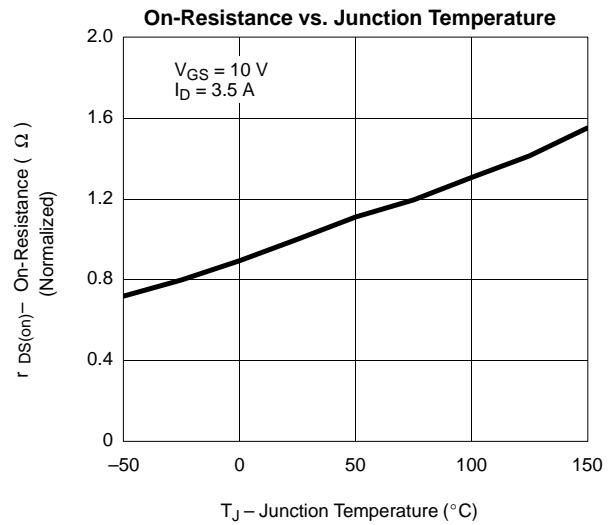
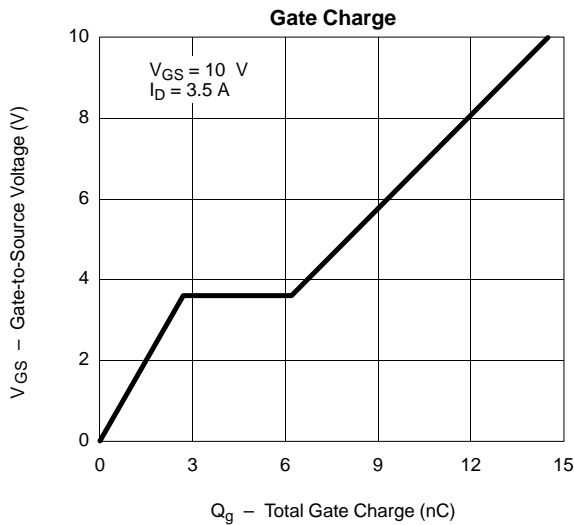
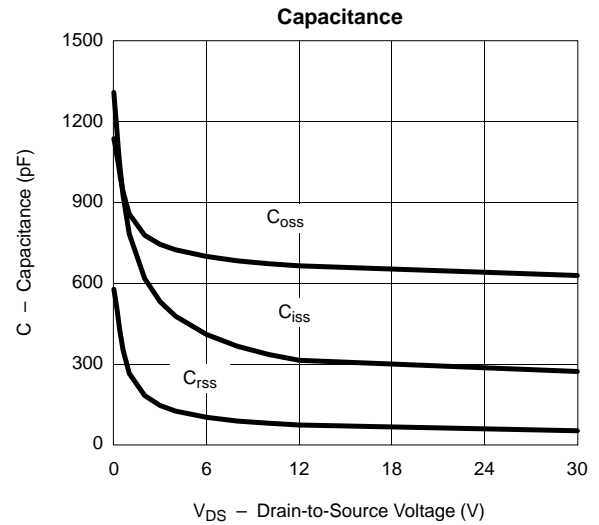
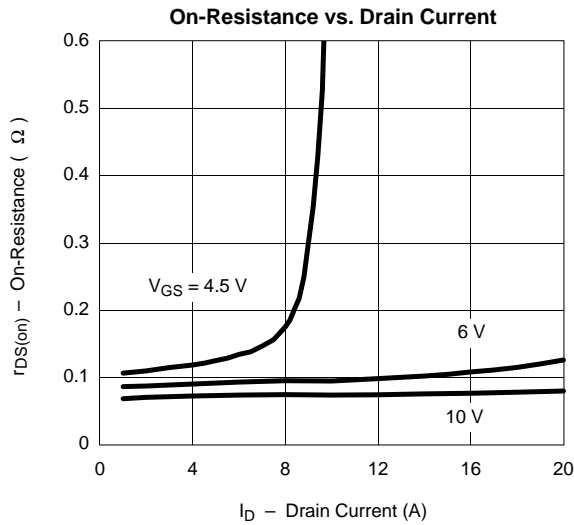
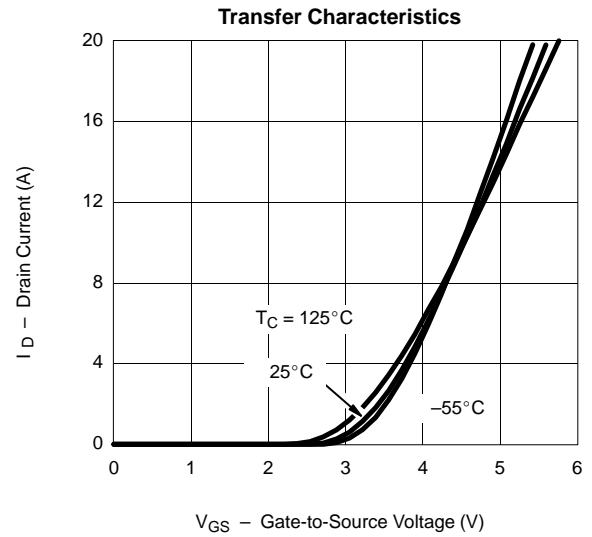
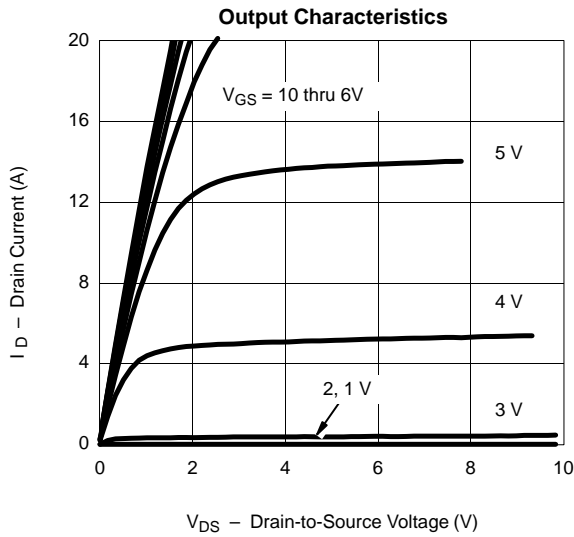
N-CHANNEL





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL

