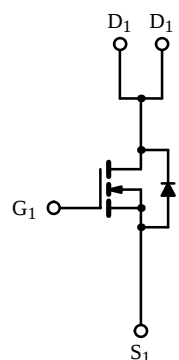
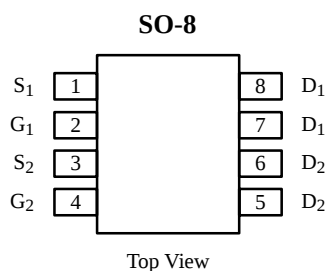


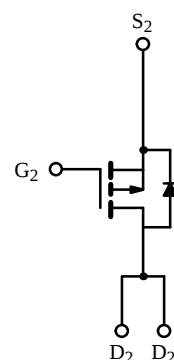
Dual N- and P-Channel 30-V (D-S) Rated MOSFET

Product Summary

	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	30	0.037 @ $V_{GS} = 10$ V	± 5.8
		0.055 @ $V_{GS} = 4.5$ V	± 4.7
P-Channel	-30	0.053 @ $V_{GS} = -10$ V	± 4.9
		0.095 @ $V_{GS} = -4.5$ V	± 3.6



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}	30	-30	V
Gate-Source Voltage		V_{GS}	± 20	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	± 5.8	± 4.9	A
	$T_A = 70^\circ\text{C}$		± 4.6	± 3.9	
Pulsed Drain Current		I_{DM}	± 30	± 30	
Continuous Source Current (Diode Conduction) ^a		I_S	1.7	-1.7	W
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	2.0	2.0	
	$T_A = 70^\circ\text{C}$		1.3	1.3	
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 ^a	R_{thJA}	62.5	$^\circ\text{C/W}$

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 #70152.

A SPICE Model data sheet is available for this product (FaxBack document #70555).

Si4539DY

Specifications (T_J = 25°C Unless Otherwise Noted)

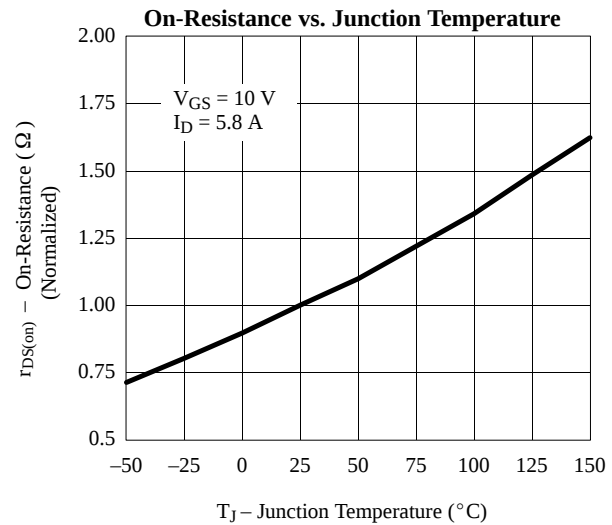
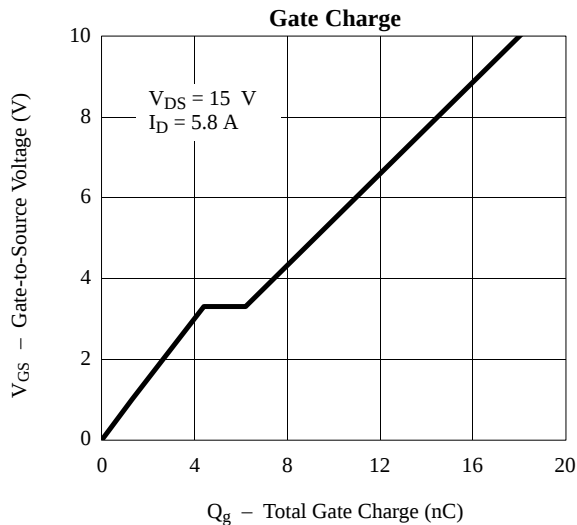
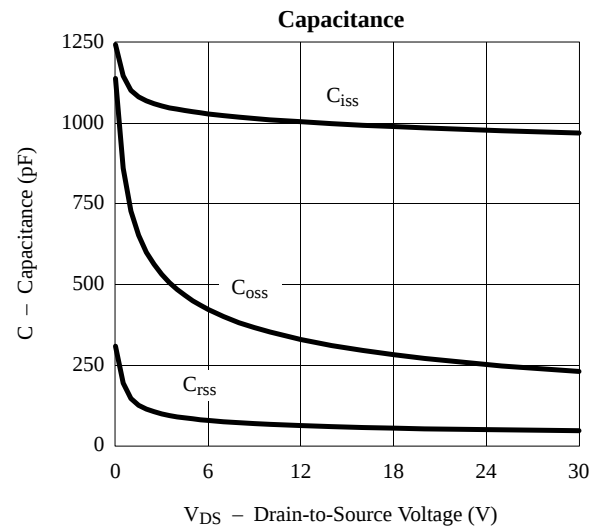
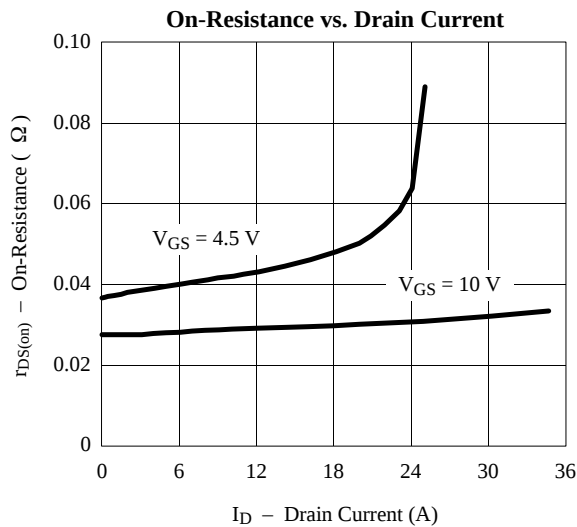
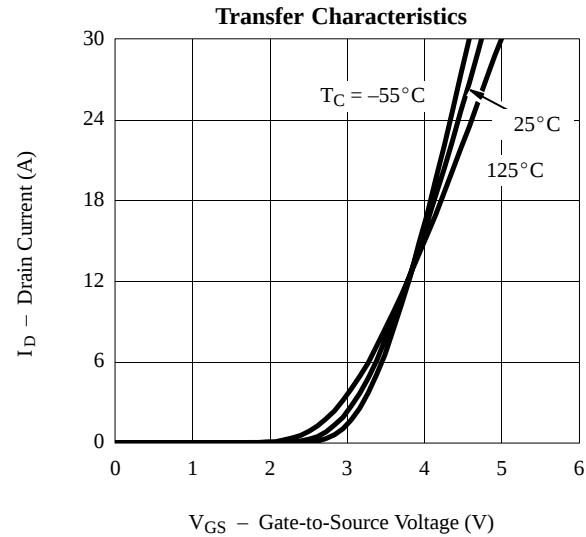
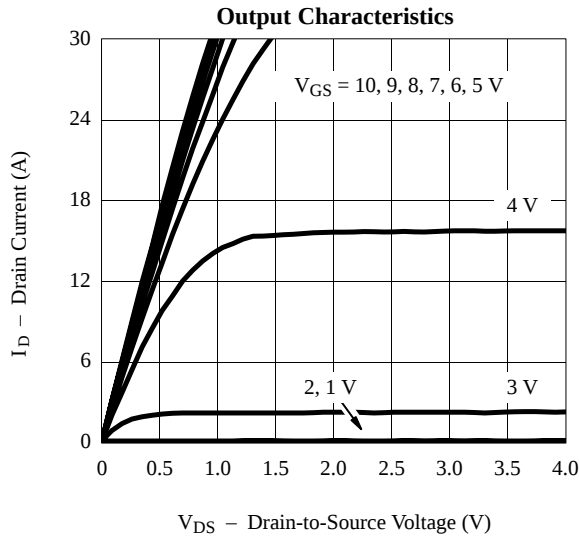
Parameter	Symbol	Test Condition		Min	Typ ^a	Max	Unit
Static							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	1.0			V
		V _{DS} = V _{GS} , I _D = −250 μA	P-Ch	−1.0			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V	N-Ch			±100	nA
			P-Ch			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V	N-Ch			1	μA
		V _{DS} = −30 V, V _{GS} = 0 V	P-Ch			−1	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55°C	N-Ch			25	
		V _{DS} = −30 V, V _{GS} = 0 V, T _J = 55°C	P-Ch			−25	
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			
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 5.8 A	N-Ch		0.030	0.037	Ω
		V _{GS} = −10 V, I _D = −4.9 A	P-Ch		0.043	0.053	
		V _{GS} = 4.5 V, I _D = 4.7 A	N-Ch		0.042	0.055	
		V _{GS} = −4.5 V, I _D = −3.6 A	P-Ch		0.070	0.095	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 5.8 A	N-Ch		13		S
		V _{DS} = −15 V, I _D = −4.9 A	P-Ch		10		
Diode Forward Voltage ^b	V _{SD}	I _S = 1.7 A, V _{GS} = 0 V	N-Ch		0.8	1.2	V
		I _S = −1.7 A, V _{GS} = 0 V	P-Ch		−0.8	−1.2	
Dynamic ^a							
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 10 V, I _D = 5.8 A P-Channel V _{DS} = −15 V, V _{GS} = −10 V, I _D = −4.9 A	N-Ch		18	25	nC
Gate-Source Charge	Q _{gs}		P-Ch		16	25	
			N-Ch		4.5		
Gate-Drain Charge	Q _{gd}		P-Ch		5		
			N-Ch		2.5		
			P-Ch		2		
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	16	ns
Rise Time	t _r		P-Ch		9	15	
			N-Ch		20	16	
Turn-Off Delay Time	t _{d(off)}		P-Ch		13	20	
			N-Ch		27	40	
Fall Time	t _f		P-Ch		25	40	
			N-Ch		24	35	
			P-Ch		15	25	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.7 A, di/dt = 100 A/μs	N-Ch		45	80	
		I _F = −1.7 A, di/dt = 100 A/μs	P-Ch		60	90	

Notes

- a. For design aid only; not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

Typical Characteristics (25°C Unless Noted)

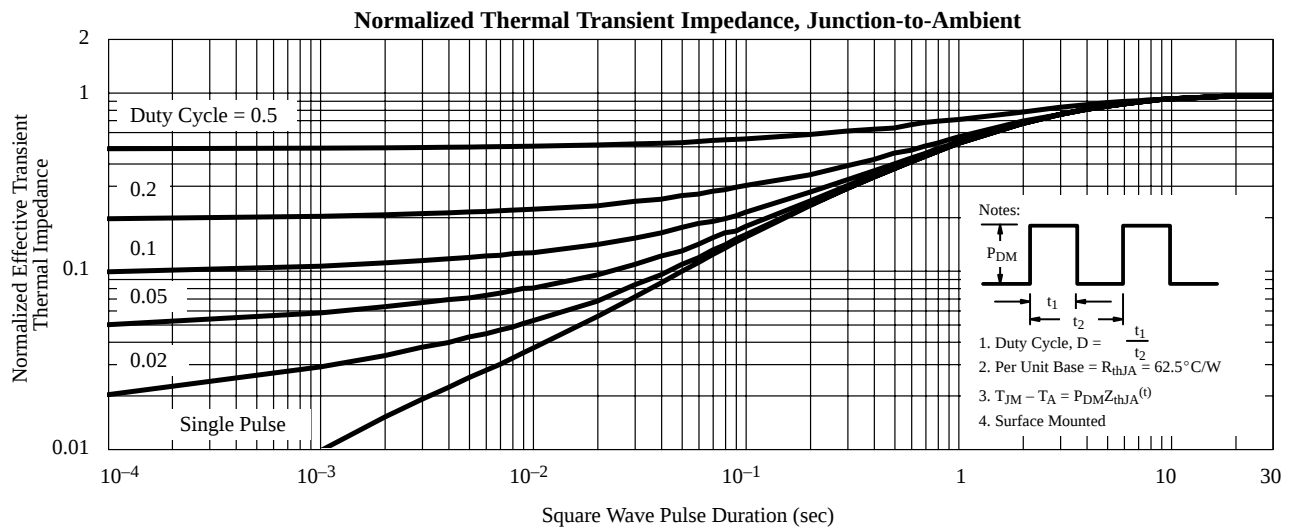
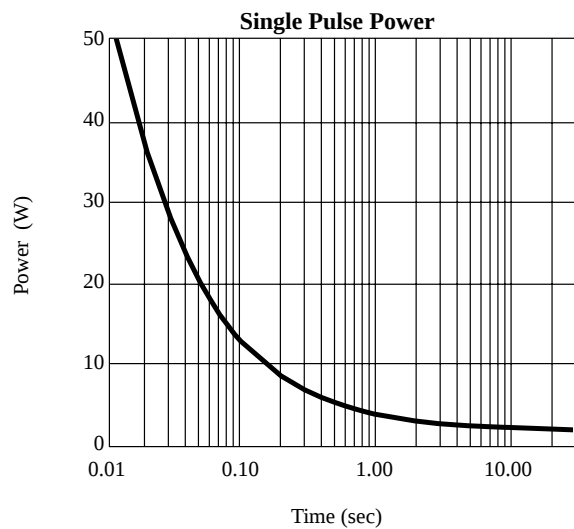
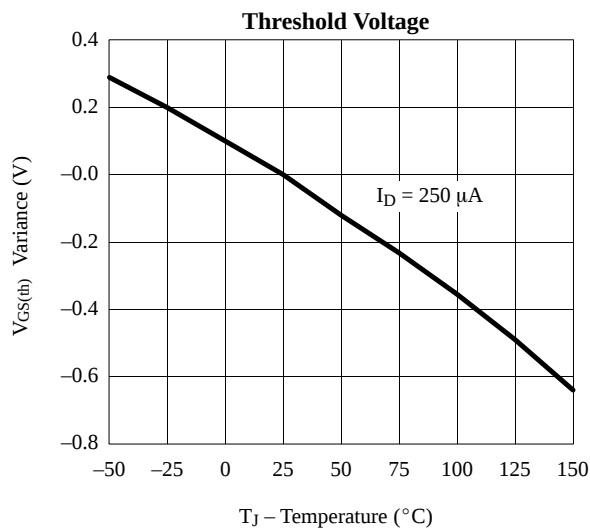
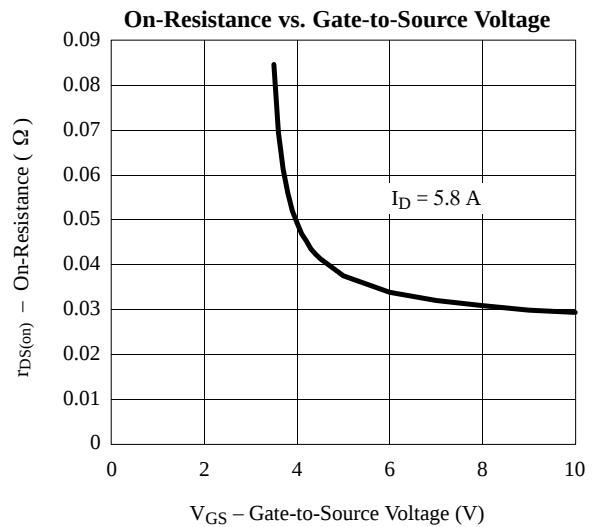
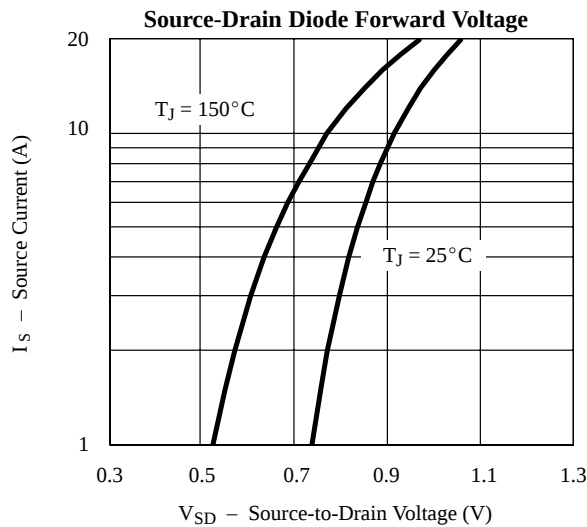
N-Channel



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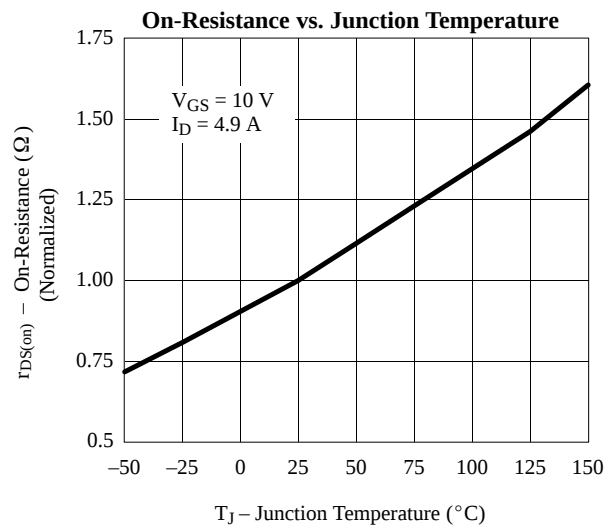
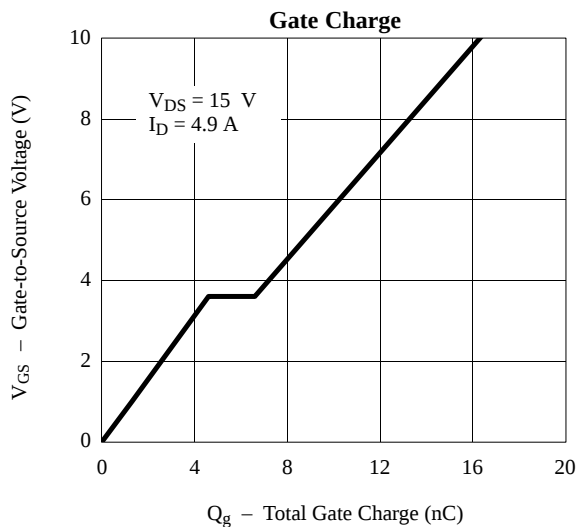
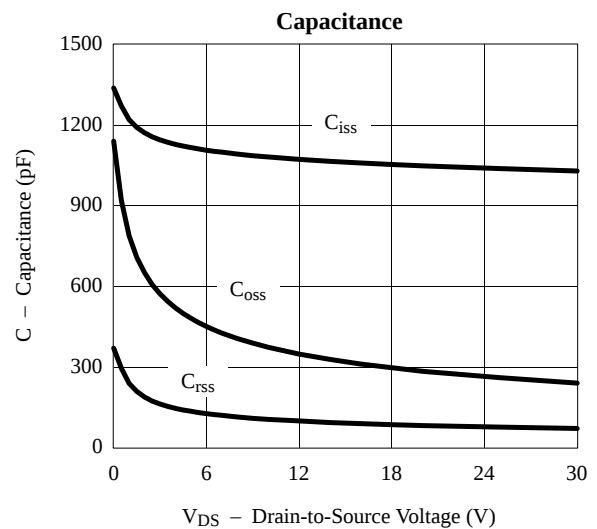
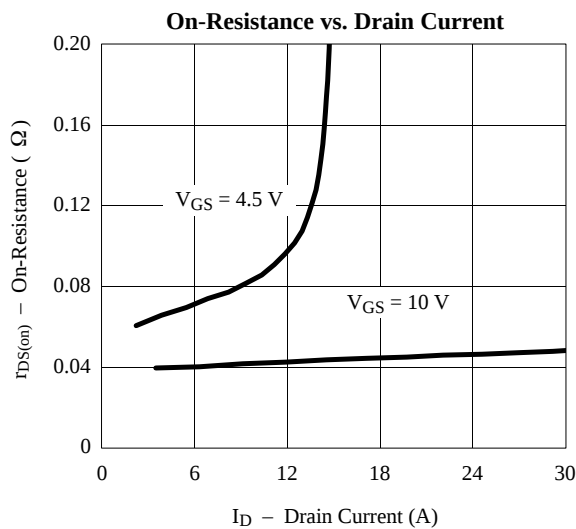
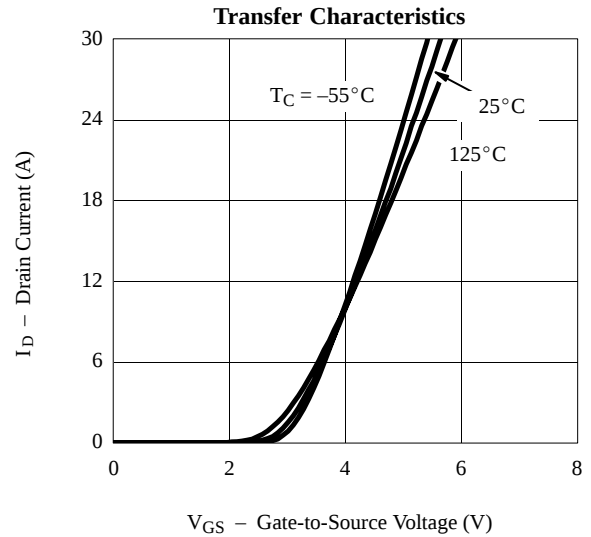
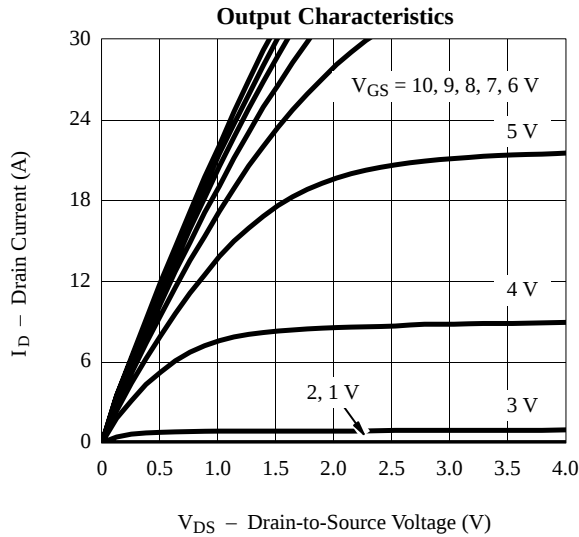
Typical Characteristics (25°C Unless Noted)

N-Channel



Typical Characteristics (25°C Unless Noted)

P-Channel



Si4539DY

Typical Characteristics (25°C Unless Noted)

P-Channel

