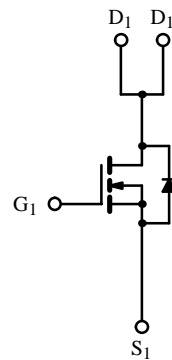
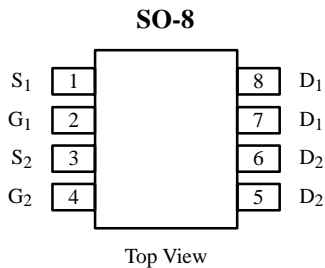


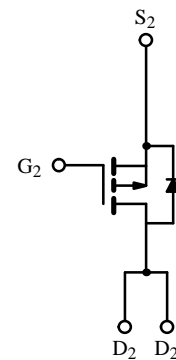
Dual N- and P-Channel 30-V (D-S) Rated MOSFET

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°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	± 5.8	± 4.9	A
		T _A = 70°C	± 4.6	± 3.9	
Pulsed Drain Current	I _{DM}	± 30	± 30		
Continuous Source Current (Diode Conduction) ^a	I _S	1.7	-1.7		
Maximum Power Dissipation ^a	P _D	T _A = 25°C	2.0	2.0	W
		T _A = 70°C	1.3	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.

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)

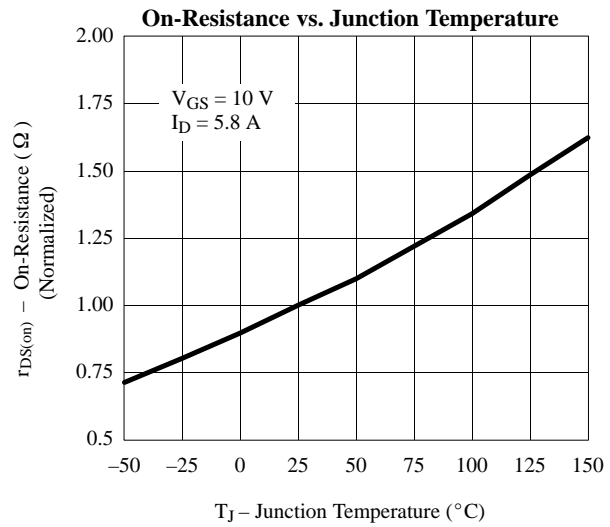
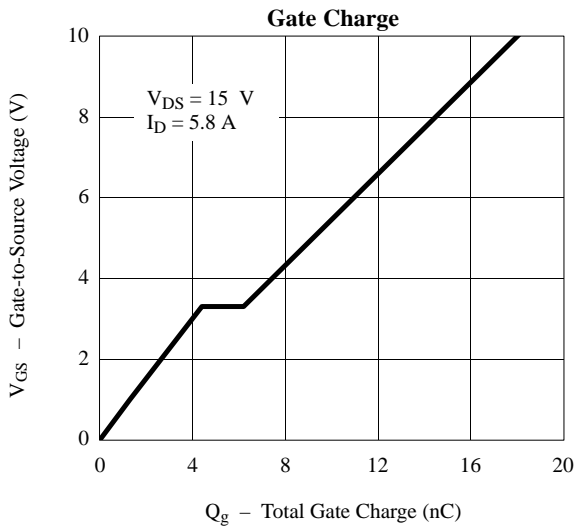
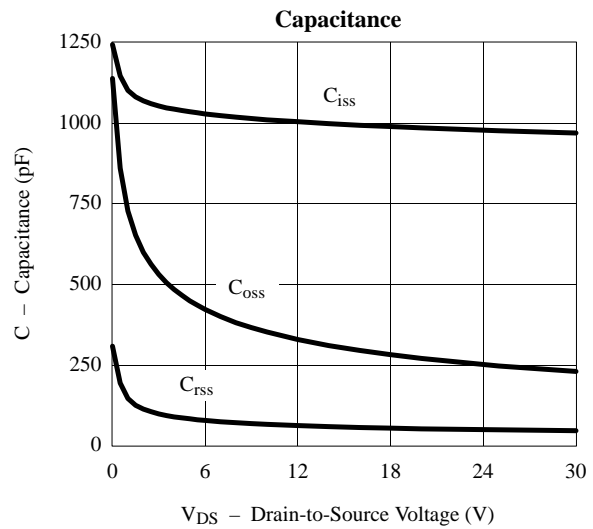
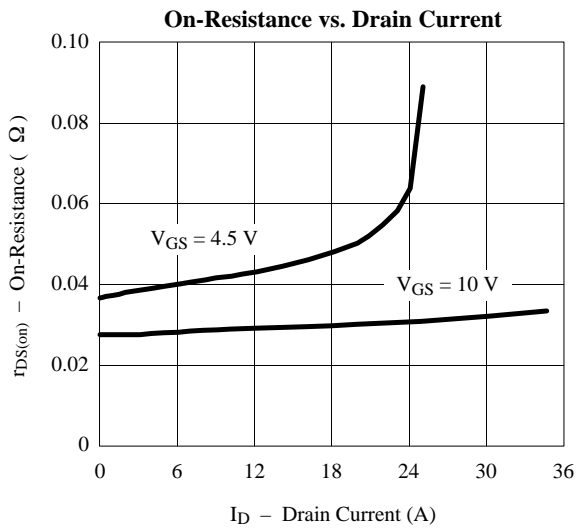
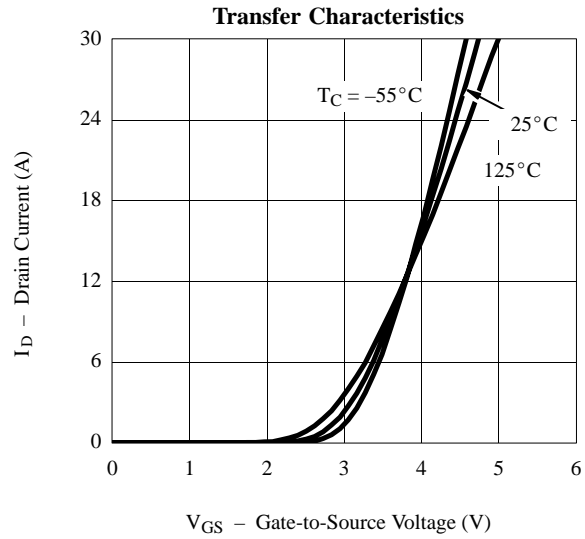
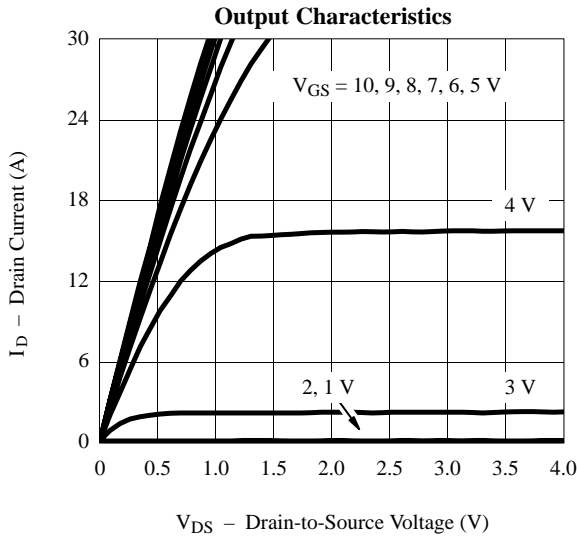
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit		
Static								
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	1.0		V		
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-1.0				
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V	N-Ch		±100	nA		
			P-Ch		±100			
Zero Gate 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		
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)

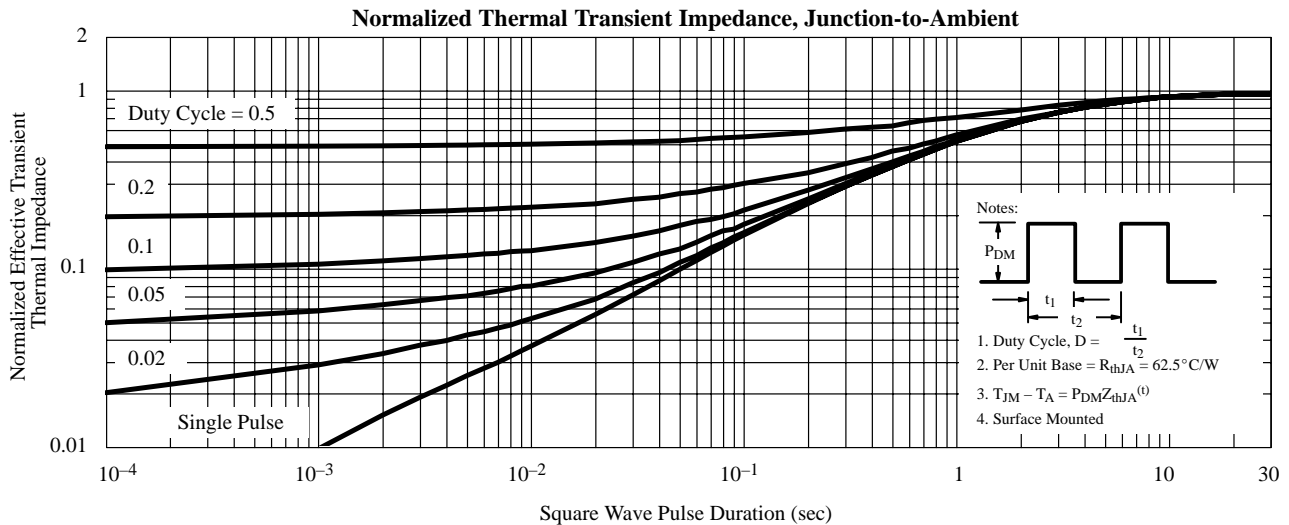
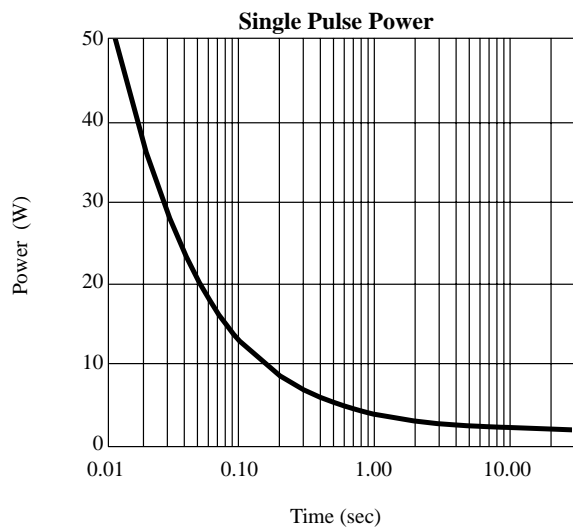
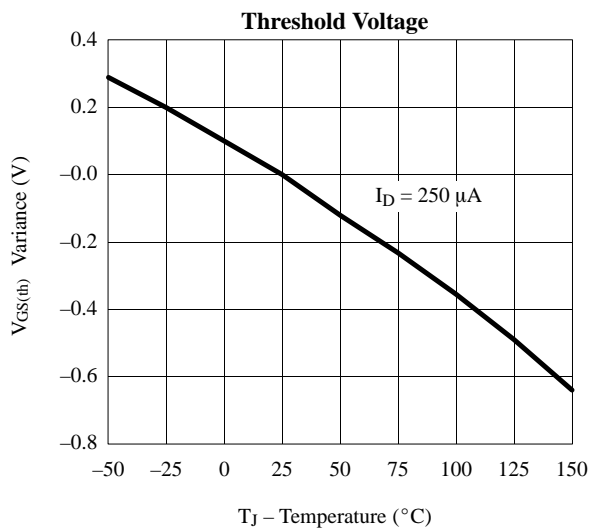
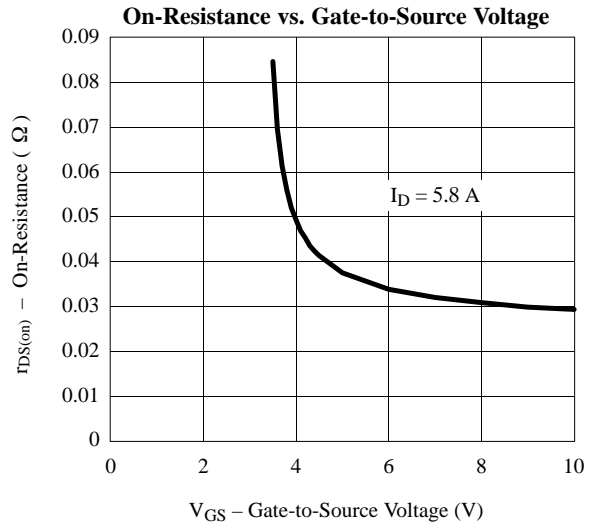
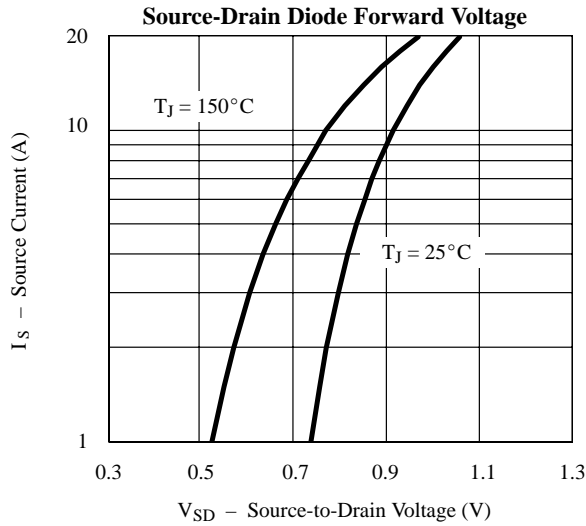
N-Channel



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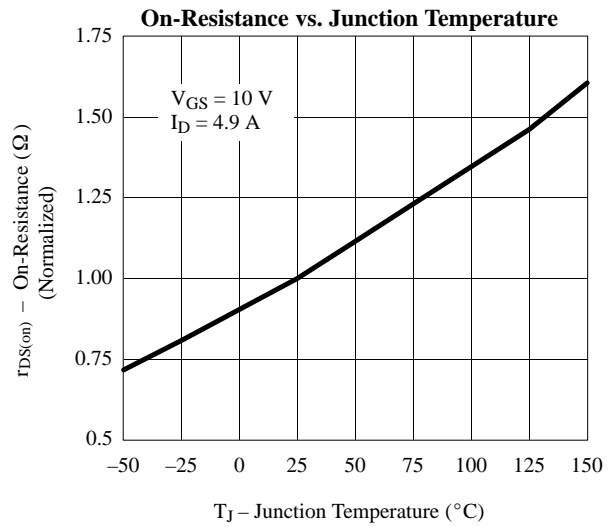
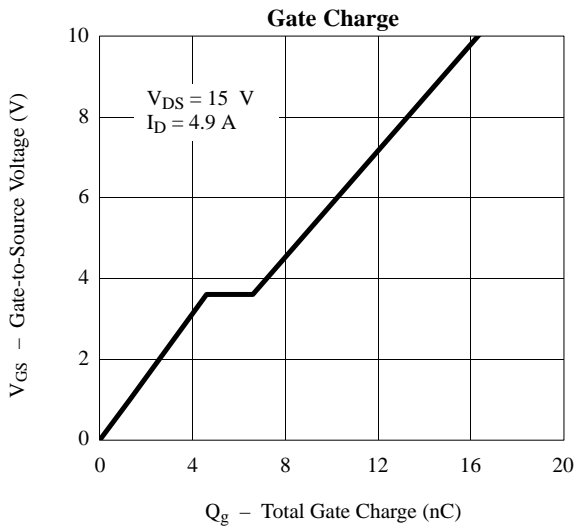
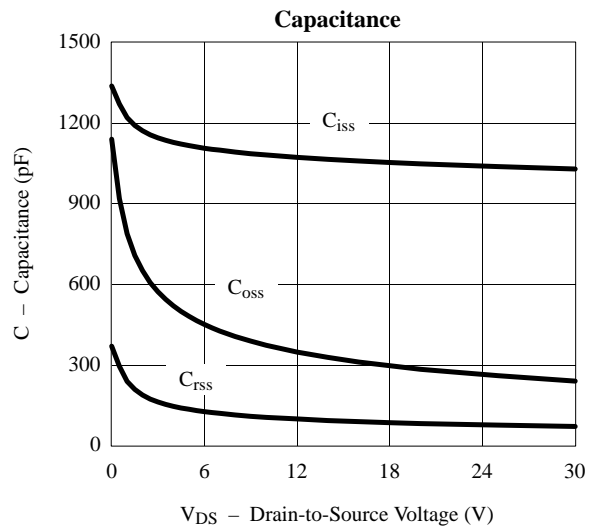
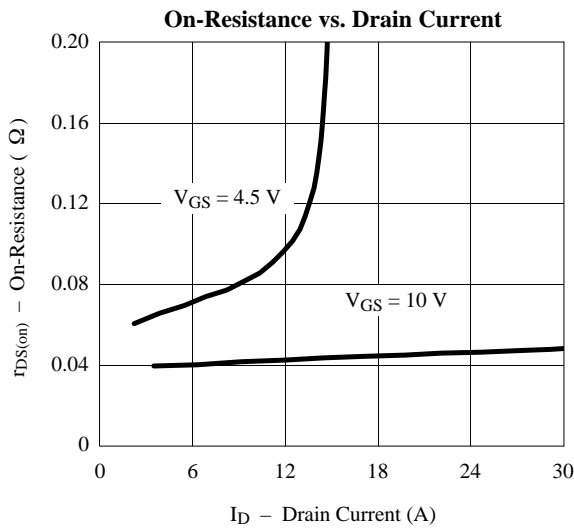
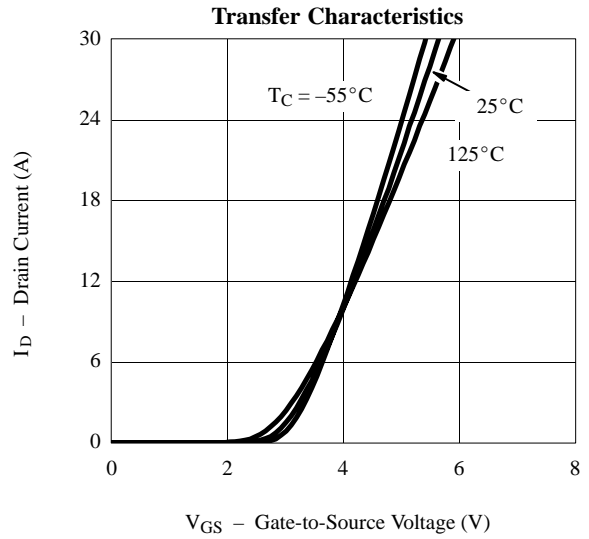
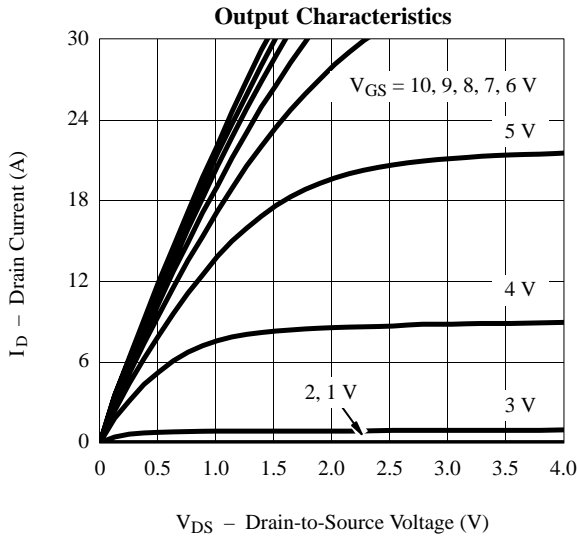
Typical Characteristics (25°C Unless Noted)

N-Channel



Typical Characteristics (25°C Unless Noted)

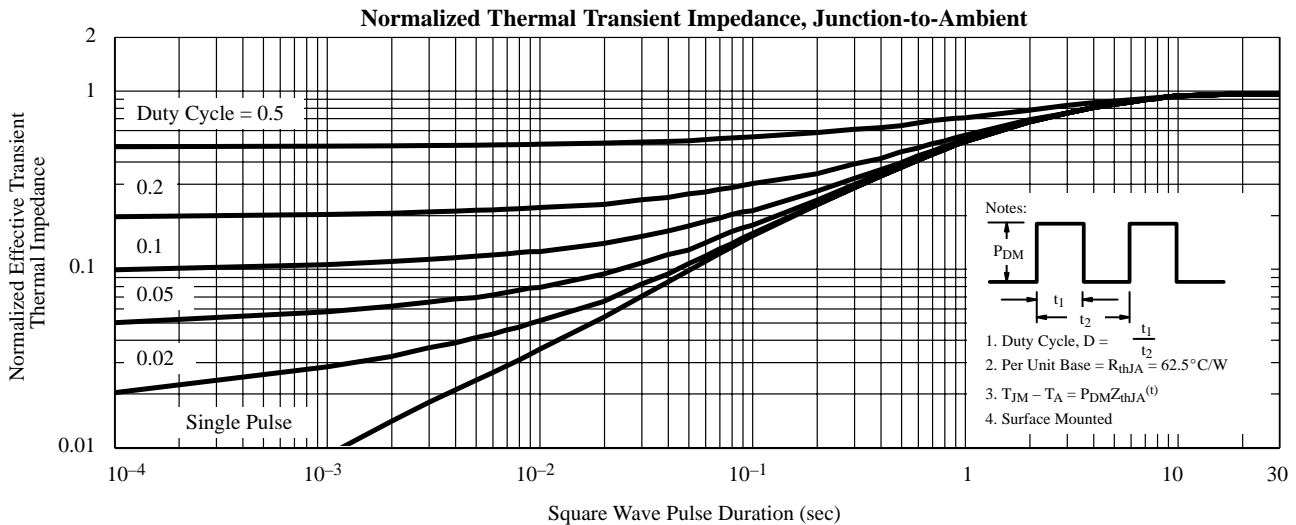
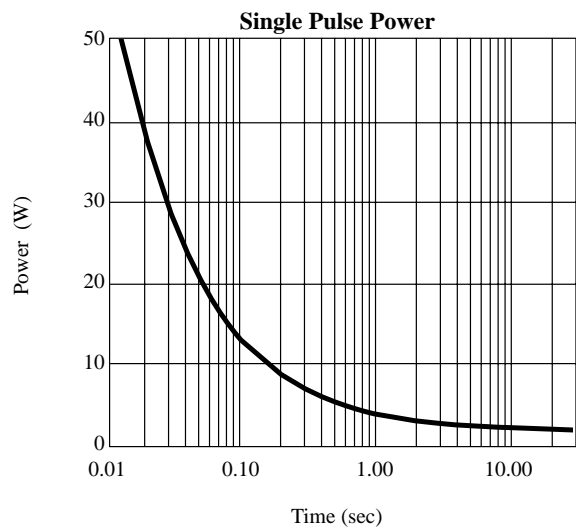
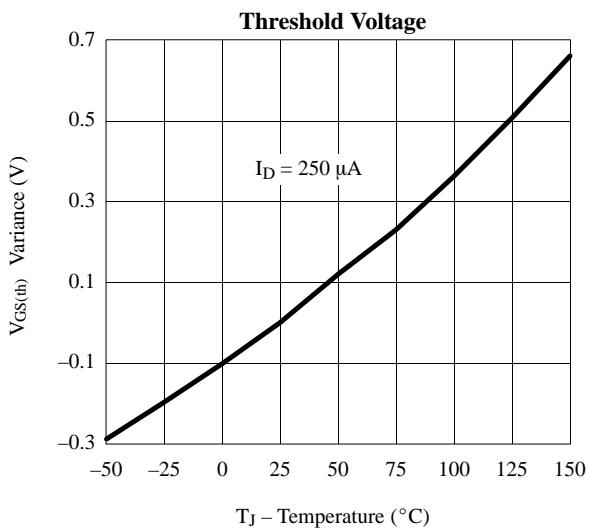
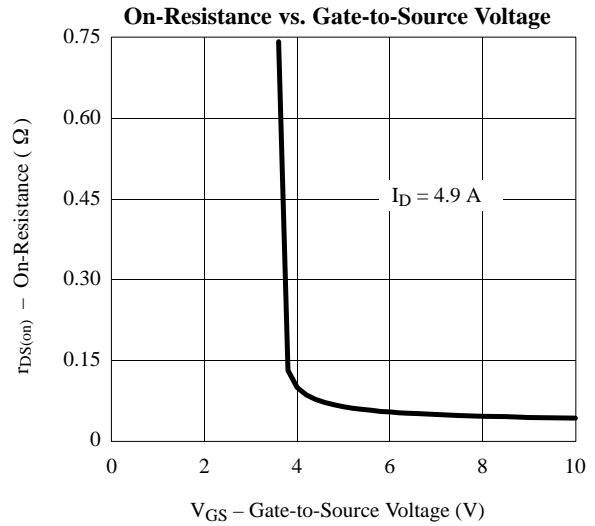
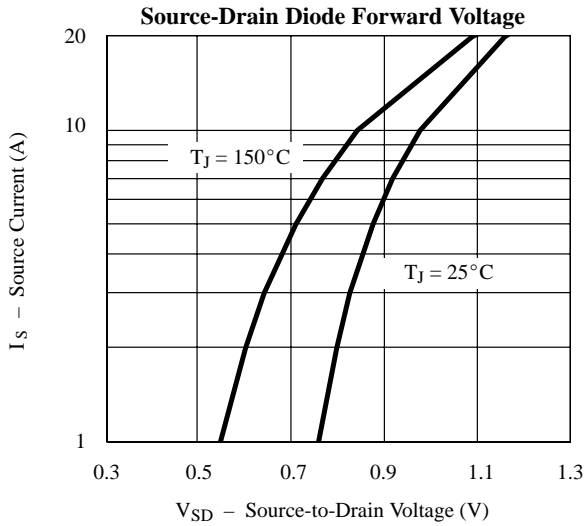
P-Channel



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Typical Characteristics (25°C Unless Noted)

P-Channel





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