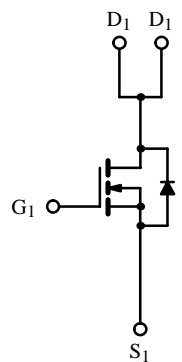
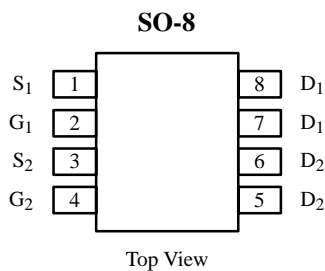


## Dual N- and P-Channel 2.5-V (G-S) Rated MOSFET

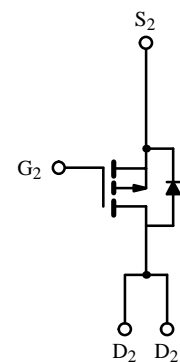
### Product Summary

	V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
N-Channel	20	0.03 @ V <sub>GS</sub> = 4.5 V	± 6
		0.04 @ V <sub>GS</sub> = 2.5 V	± 5.2
P-Channel	-12	0.05 @ V <sub>GS</sub> = -4.5 V	± 5
		0.074 @ V <sub>GS</sub> = -2.5 V	± 4.1

**2.5-V Rated**



N-Channel MOSFET



P-Channel MOSFET

### Absolute Maximum Ratings (T<sub>A</sub> = 25°C Unless Otherwise Noted)

Parameter	Symbol	N-Channel	P-Channel	Unit	
Drain-Source Voltage	V <sub>DS</sub>	20	-12	V	
Gate-Source Voltage	V <sub>GS</sub>	± 8	± 8		
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	± 6	A	
		T <sub>A</sub> = 70°C	± 4.8		
Pulsed Drain Current	I <sub>DM</sub>	± 20	± 20	A	
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	1.7	-1.7		
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	2.0		W
		T <sub>A</sub> = 70°C	1.3		
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C	

### Thermal Resistance Ratings

Parameter	Symbol	N- or P- Channel	Unit
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	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 #70161.

# Si9529DY

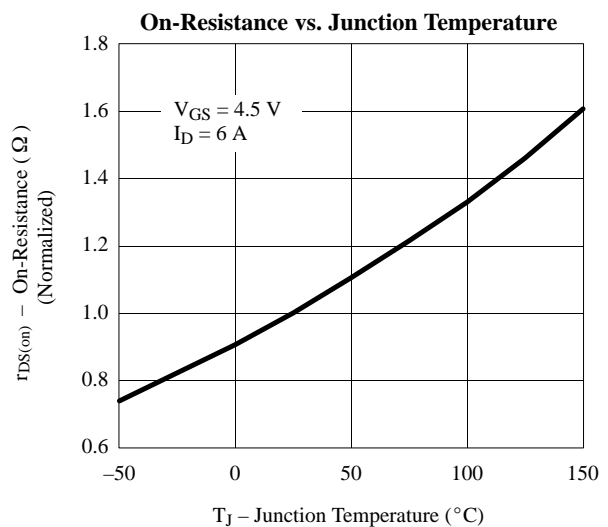
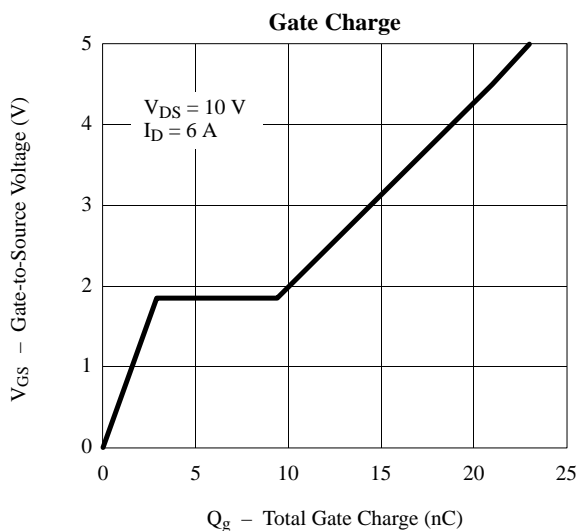
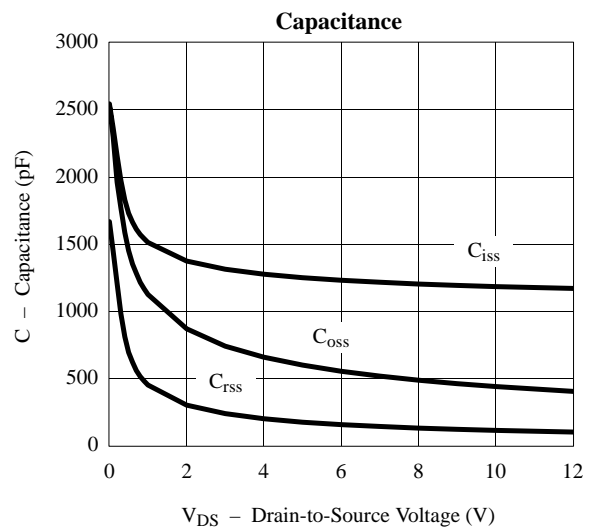
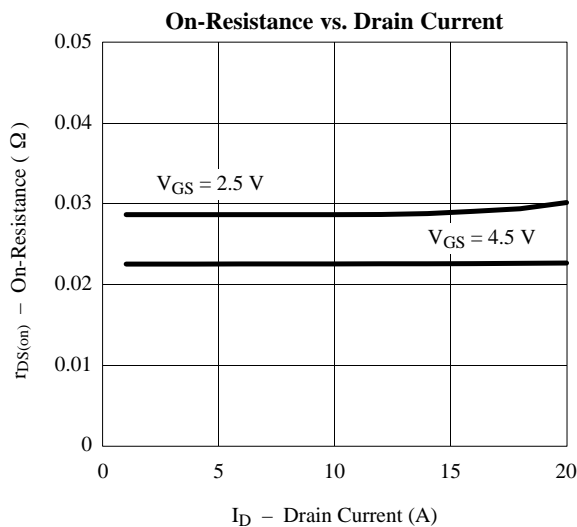
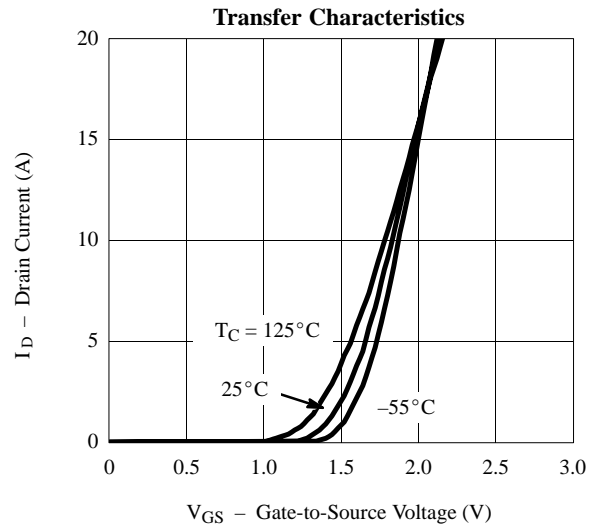
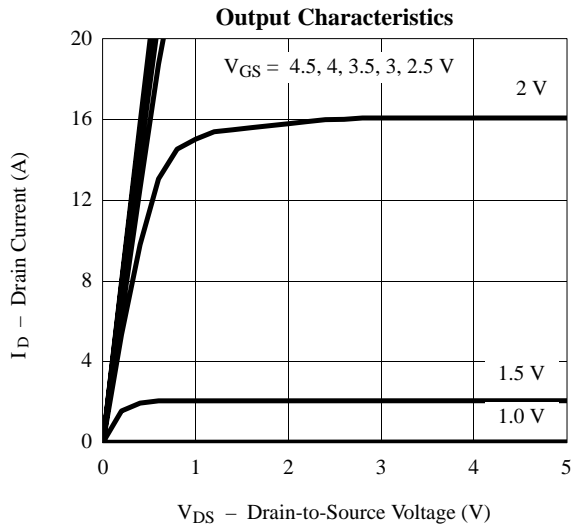
## Specifications (T<sub>J</sub> = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit	
<b>Static</b>							
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	N-Ch	0.6		V	
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	P-Ch	-0.6			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V	N-Ch		±100	nA	
			P-Ch		±100		
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V	N-Ch		1	μA	
		V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V	P-Ch		-1		
		V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C	N-Ch		5		
		V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C	P-Ch		-5		
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 4.5 V	N-Ch	20		A	
		V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	P-Ch	-20			
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6 A	N-Ch		0.023	0.03	Ω
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -5 A	P-Ch		0.039	0.05	
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 5.2 A	N-Ch		0.028	0.04	
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -4.1 A	P-Ch		0.051	0.074	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 6 A	N-Ch		24	S	
		V <sub>DS</sub> = -9 V, I <sub>D</sub> = -5 A	P-Ch		16		
Diode Forward Voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.7 A, V <sub>GS</sub> = 0 V	N-Ch		0.75	1.2	V
		I <sub>S</sub> = -1.7 A, V <sub>GS</sub> = 0 V	P-Ch		-0.75	-1.2	
<b>Dynamic<sup>a</sup></b>							
Total Gate Charge	Q <sub>g</sub>	N-Channel V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6 A  P-Channel V <sub>DS</sub> = -6 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -5 A	N-Ch		21	40	nC
Gate-Source Charge	Q <sub>gs</sub>		N-Ch		2.9		
			P-Ch		3		
Gate-Drain Charge	Q <sub>gd</sub>		N-Ch		6.5		
		P-Ch		6			
Turn-On Delay Time	t <sub>d(on)</sub>	N-Channel V <sub>DD</sub> = 10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 6 Ω  P-Channel V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω	N-Ch		30	60	ns
Rise Time	t <sub>r</sub>		N-Ch		70	140	
			P-Ch		40	80	
Turn-Off Delay Time	t <sub>d(off)</sub>		N-Ch		70	140	
			P-Ch		100	200	
Fall Time	t <sub>f</sub>		N-Ch		30	60	
			P-Ch		60	120	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = 1.7 A, di/dt = 100 A/μs	N-Ch		70	
		I <sub>F</sub> = -1.7 A, di/dt = 100 A/μs	P-Ch		67	100	

Notes

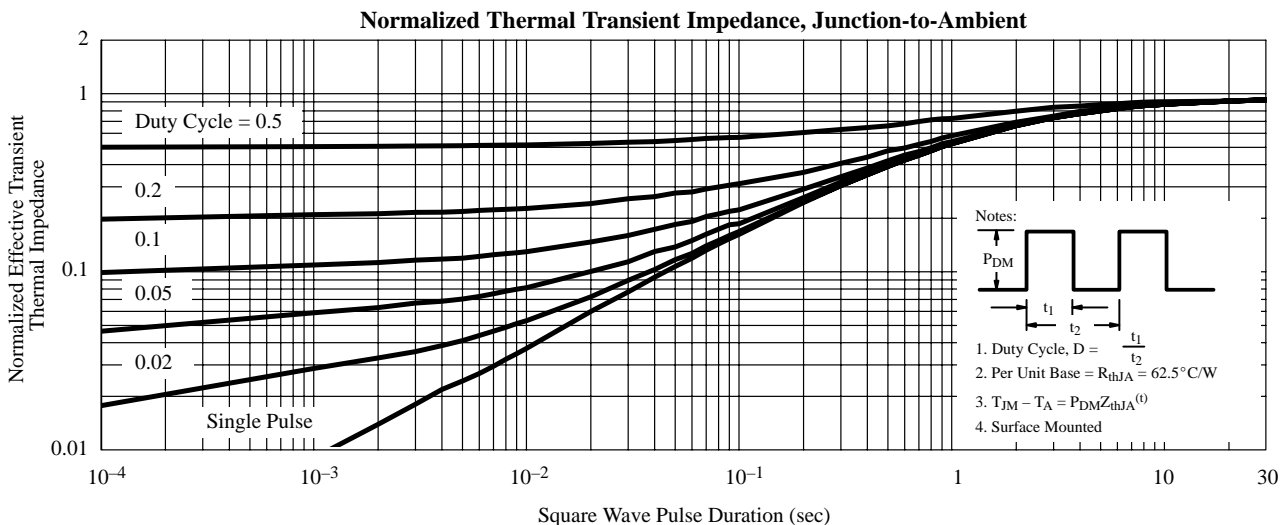
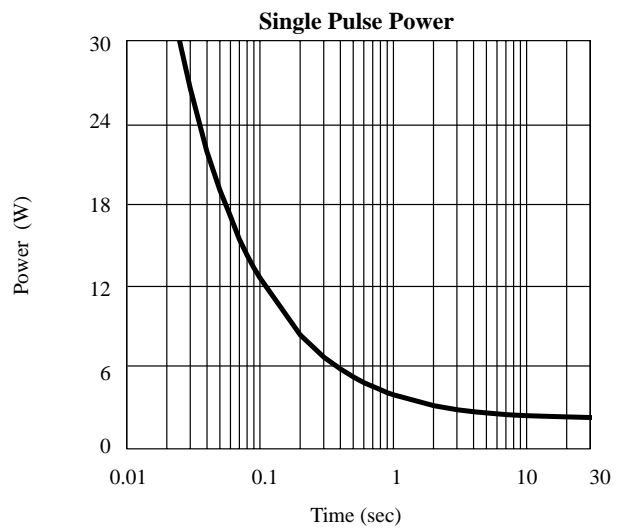
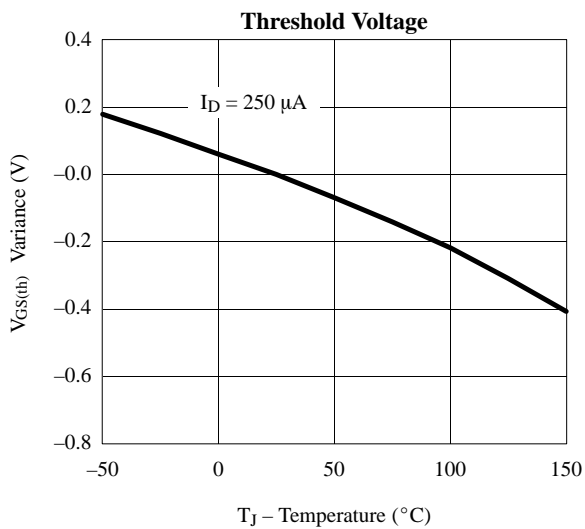
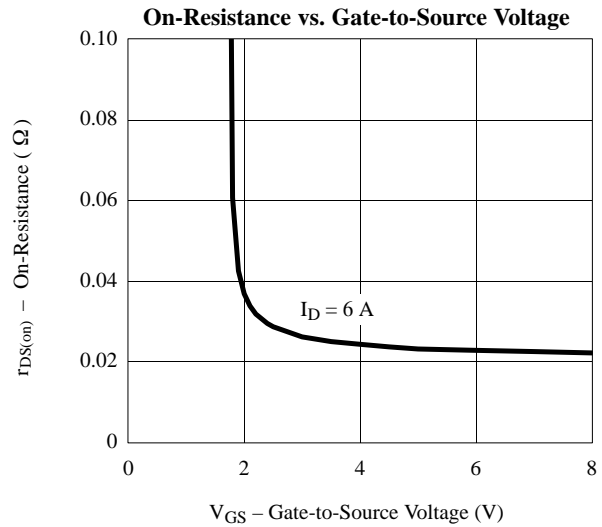
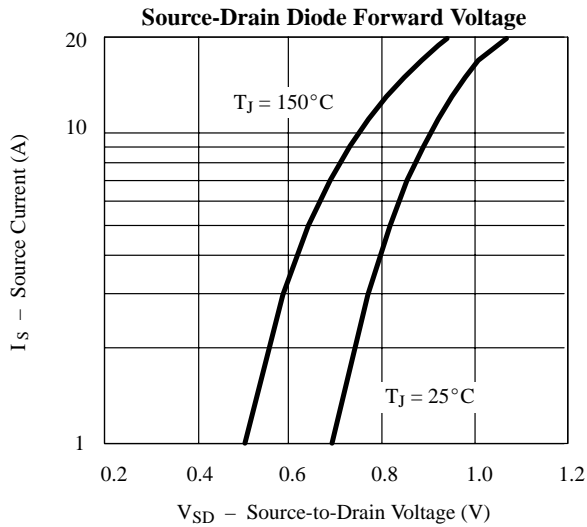
- a. Guaranteed by design, not subject to production testing.  
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

## Typical Characteristics (25°C Unless Otherwise Noted) N-Channel

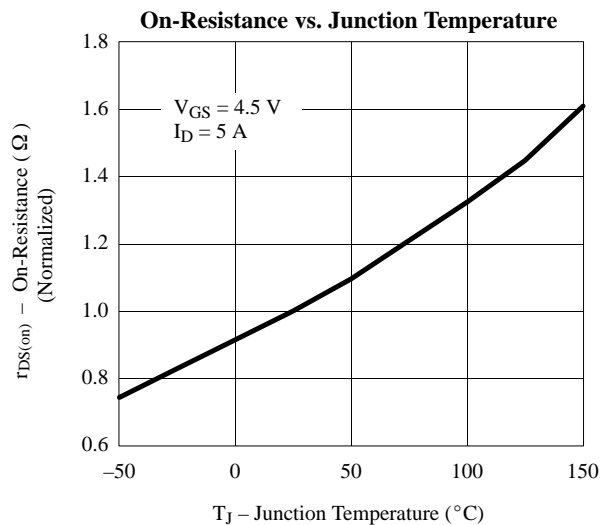
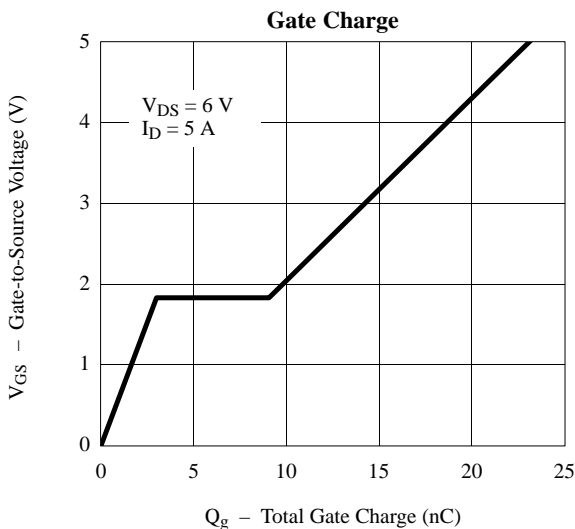
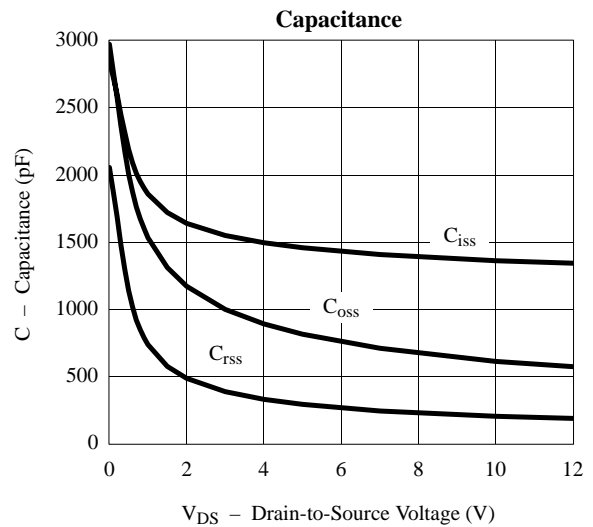
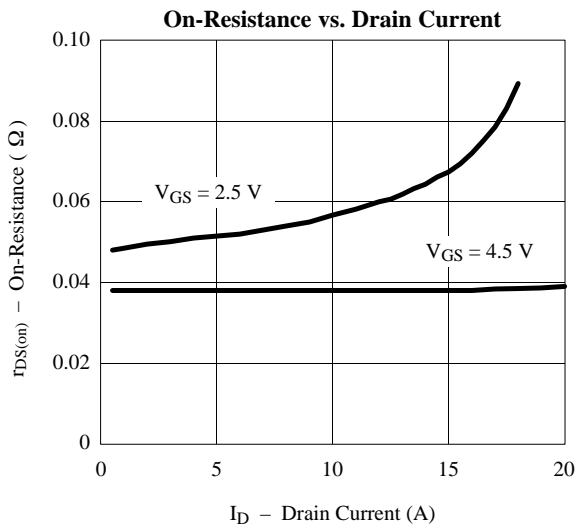
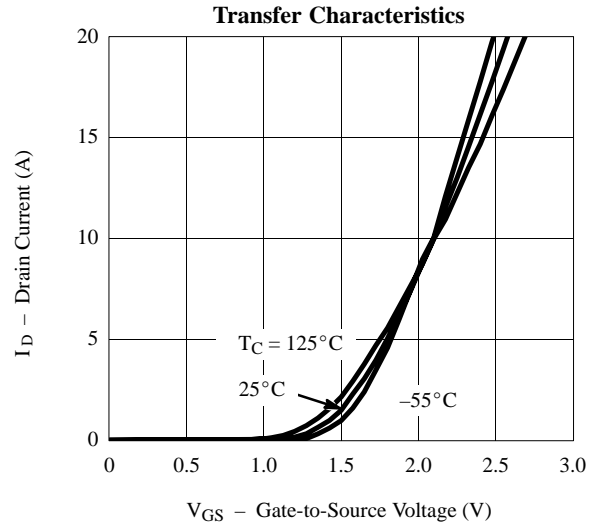
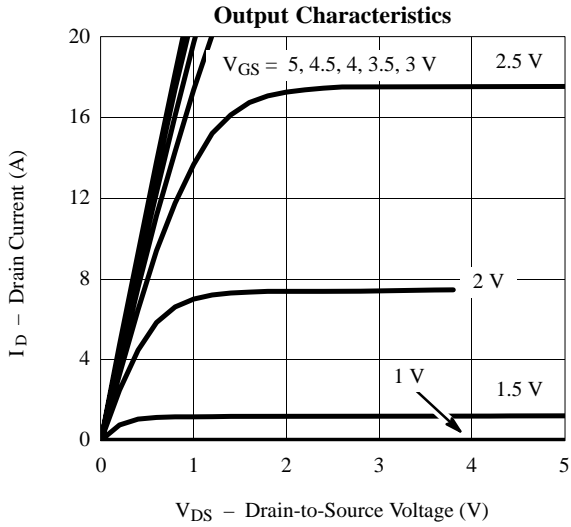


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## Typical Characteristics (25°C Unless Otherwise Noted) N-Channel

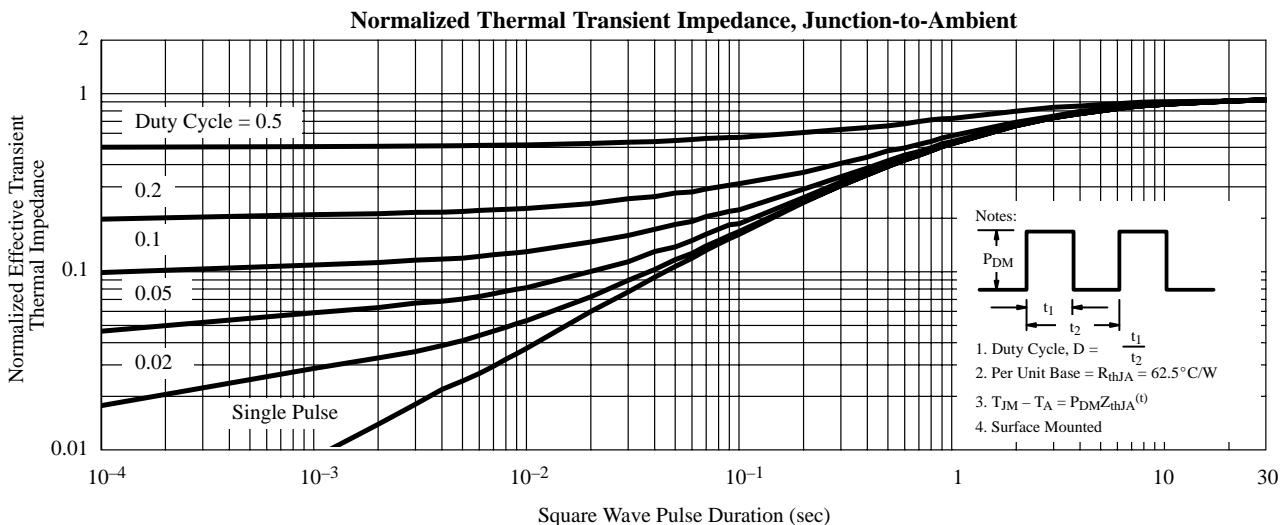
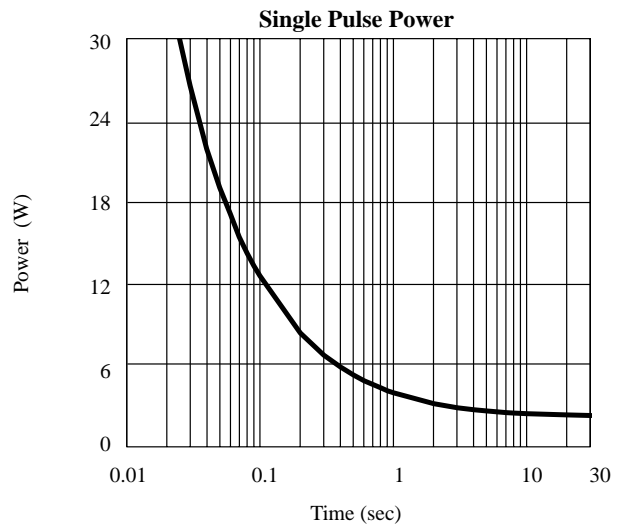
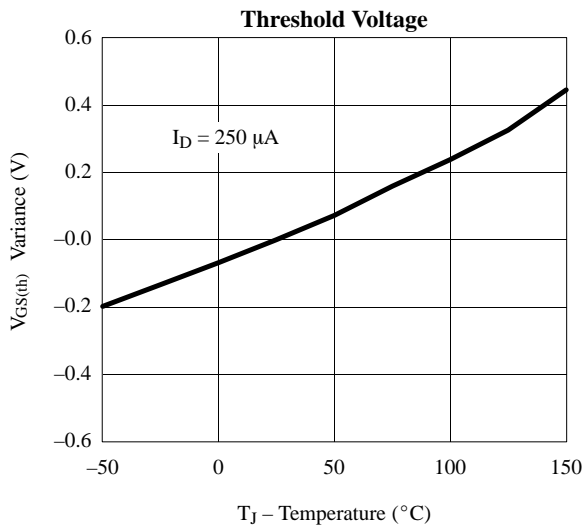
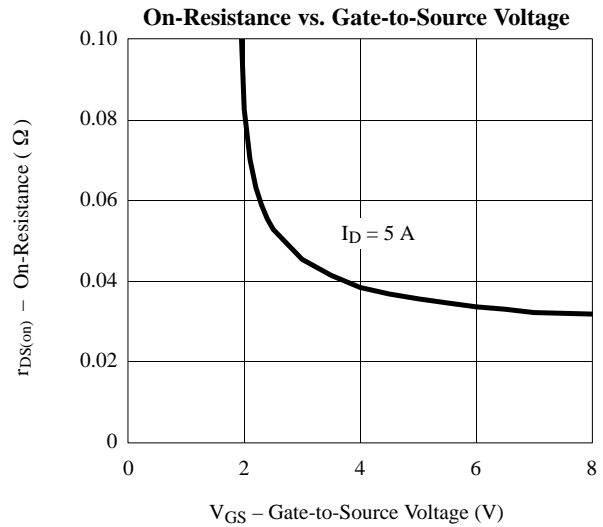
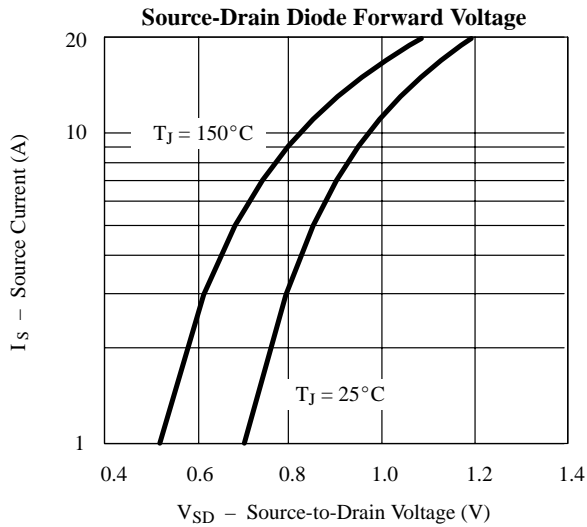


## Typical Characteristics (25°C Unless Otherwise Noted) P-Channel



# Si9529DY

## Typical Characteristics (25°C Unless Otherwise Noted) P-Channel



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