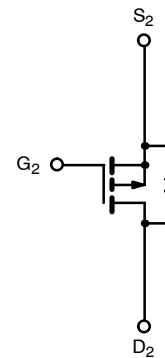
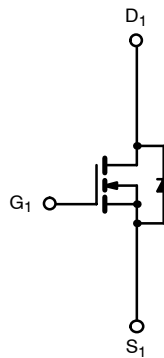
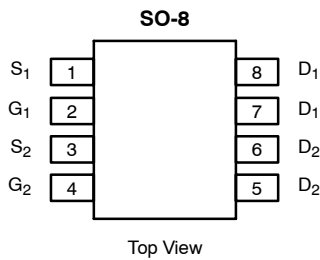




## N- and P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
	V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
N-Channel	30	0.053 @ V <sub>GS</sub> = 10 V	4.9
		0.075 @ V <sub>GS</sub> = 4.5 V	4.1
P-Channel	-30	0.080 @ V <sub>GS</sub> = -10 V	-3.9
		0.135 @ V <sub>GS</sub> = -4.5 V	-3.0

**TrenchFET®**  
Power MOSFETS



Ordering Information: Si4532ADY  
Si4532ADY-T1 (with Tape and Reel)

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		10 secs	Steady State	10 secs	Steady State		
Drain-Source Voltage	V <sub>DS</sub>	30		-30		V	
Gate-Source Voltage	V <sub>GS</sub>	±20		±20		V	
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25 °C	4.9	3.7	-3.9	-3.0	A
		T <sub>A</sub> = 70 °C	3.9	2.9	-3.1	-2.4	
Pulsed Drain Current	I <sub>DM</sub>	20				A	
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	1.7	0.94	-1.7	-1.0	A	
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25 °C	2	1.13	2	1.2	W
		T <sub>A</sub> = 70 °C	1.3	0.73	1.3	0.76	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150				°C	

THERMAL RESISTANCE RATINGS							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		Typ	Max	Typ	Max		
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	t ≤ 10 sec	55	62.5	54	62.5	°C/W
		Steady State	90	110	87	105	
Maximum Junction-to-Foot (Drain)	R <sub>thJF</sub>	40	50	34	45	°C/W	

Notes  
a. Surface Mounted on 1" x 1" FR4 Board.

SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition		Min	Typ	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	1.0			V
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	P-Ch	-1.0			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V	N-Ch			±100	nA
		V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V	P-Ch			±100	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V	N-Ch			1	μA
		V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V	P-Ch			-1	
		V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	N-Ch			5	
		V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	P-Ch			-5	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 10 V	N-Ch	20			A
		V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -10 V	P-Ch	-20			
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 4.9 A	N-Ch		0.044	0.053	Ω
		V <sub>GS</sub> = -10 V, I <sub>D</sub> = -3.9 A	P-Ch		0.062	0.080	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 4.1 A	N-Ch		0.062	0.075	
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3.0 A	P-Ch		0.105	0.135	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 4.9 A	N-Ch		11		S
		V <sub>DS</sub> = -15 V, I <sub>D</sub> = -2.5 A	P-Ch		5		
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.7 A, V <sub>GS</sub> = 0 V	N-Ch		0.80	1.2	V
		I <sub>S</sub> = -1.7 A, V <sub>GS</sub> = 0 V	P-Ch		-0.82	-1.2	
<b>Dynamic<sup>b</sup></b>							
Total Gate Charge	Q <sub>g</sub>	N-Channel V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 4.9 A P-Channel V <sub>DS</sub> = -4 V, V <sub>GS</sub> = -10 V, I <sub>D</sub> = -3.9 A	N-Ch		8	16	nC
Gate-Source Charge	Q <sub>gs</sub>		P-Ch		10	20	
			N-Ch		1.4		
Gate-Drain Charge	Q <sub>gd</sub>		P-Ch		2		
		N-Ch		1.2			
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> = 10 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> = -10 V, R <sub>G</sub> = 6 Ω	N-Ch		12	20	ns
			P-Ch		8	15	
Rise Time	t <sub>r</sub>		N-Ch		10	20	
			P-Ch		9	18	
Turn-Off Delay Time	t <sub>d(off)</sub>		N-Ch		23	45	
			P-Ch		21	40	
Fall Time	t <sub>f</sub>		N-Ch		8	15	
			P-Ch		10	20	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1.7 A, di/dt = 100 A/μs	N-Ch		25	40	
		I <sub>F</sub> = -1.7 A, di/dt = 100 A/μs	P-Ch		27	40	

## Notes

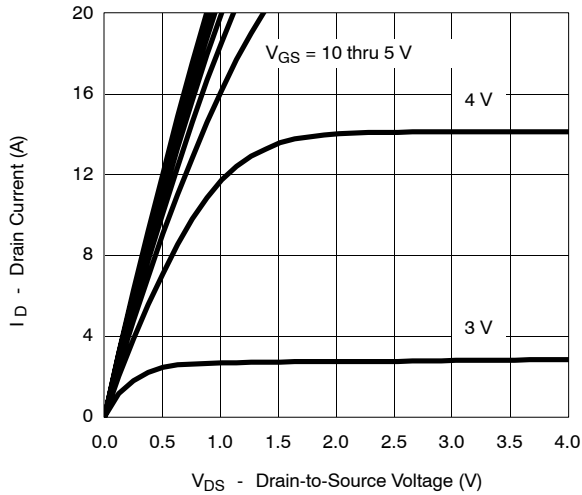
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
 b. Guaranteed by design, not subject to production testing.



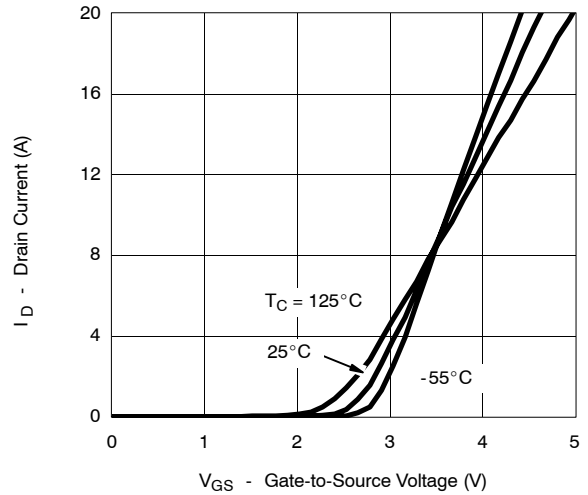
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**NCHANNEL**

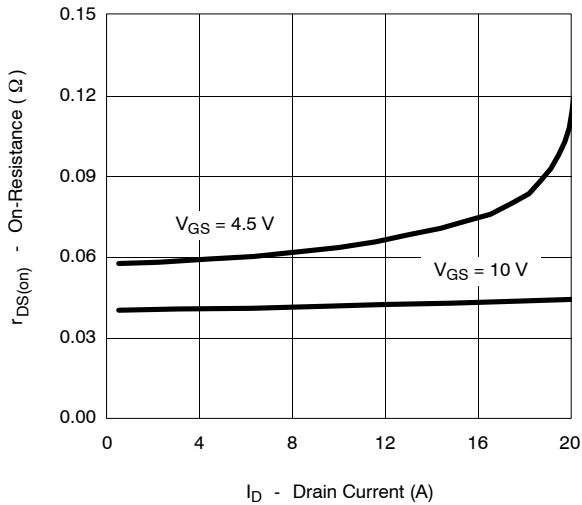
**Output Characteristics**



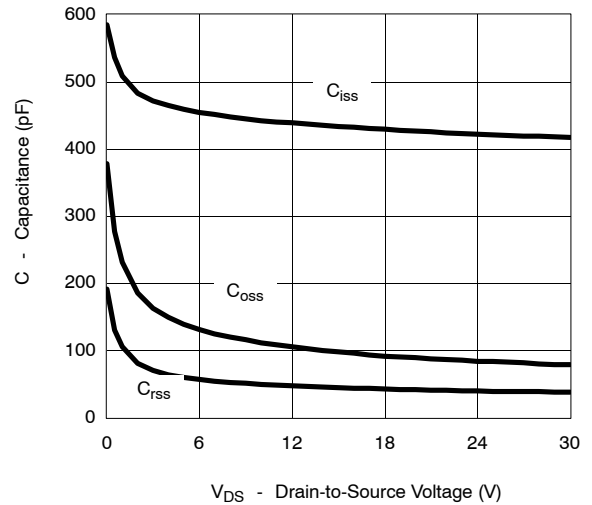
**Transfer Characteristics**



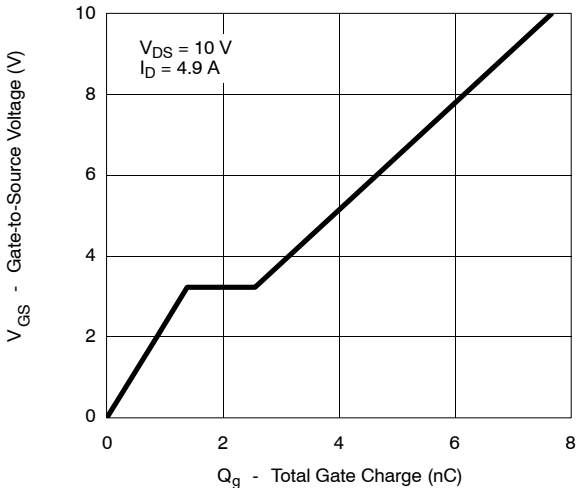
**On-Resistance vs. Drain Current**



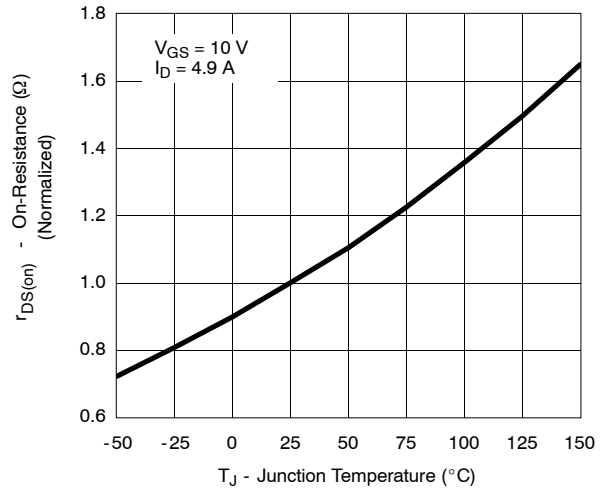
**Capacitance**



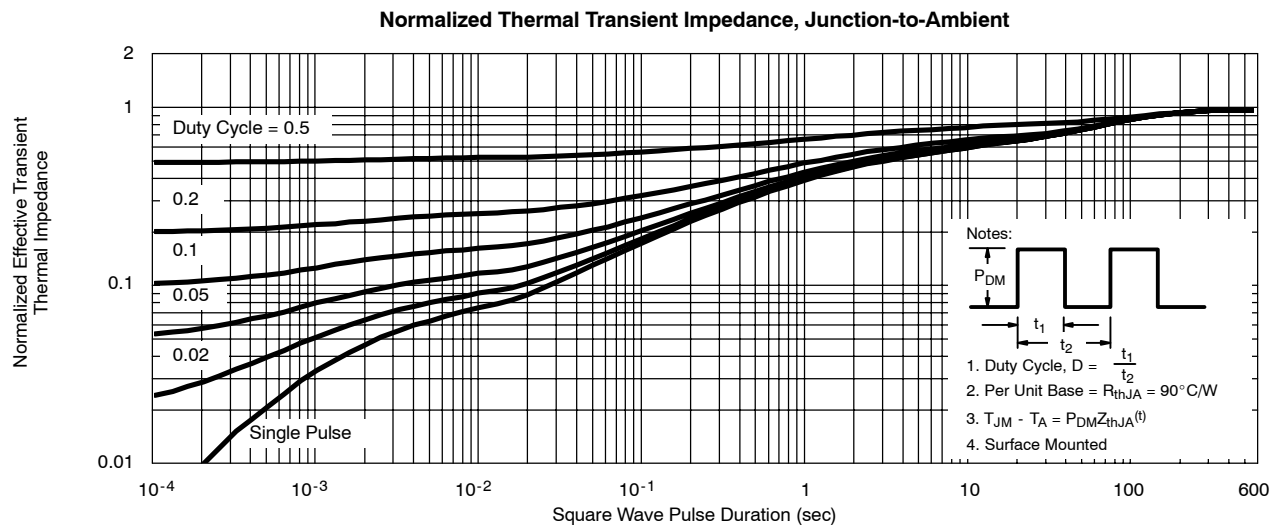
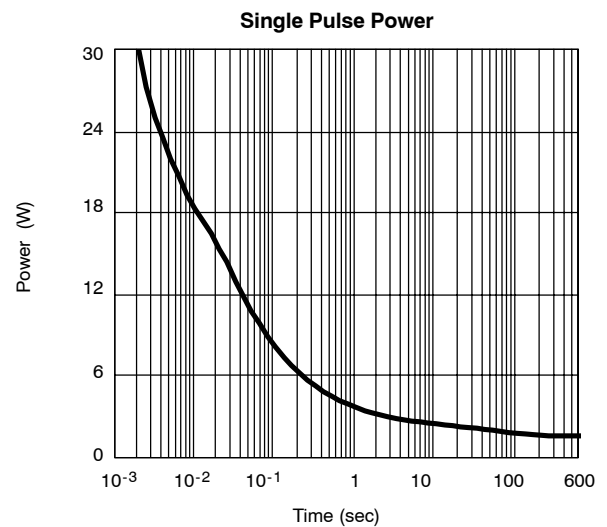
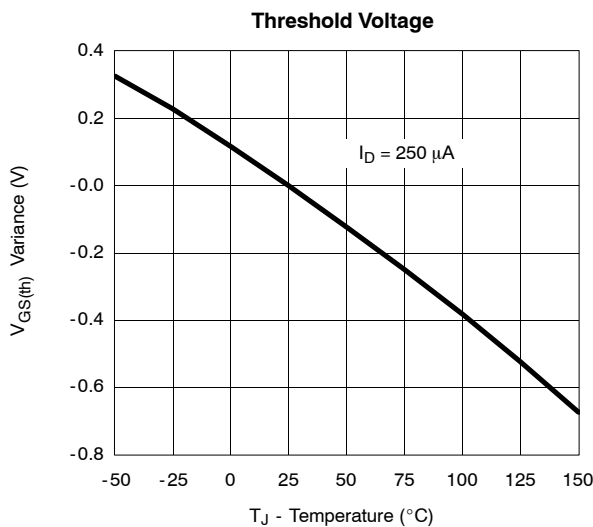
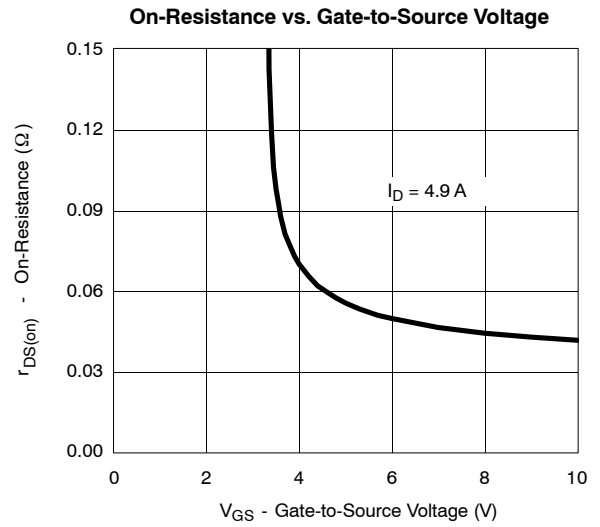
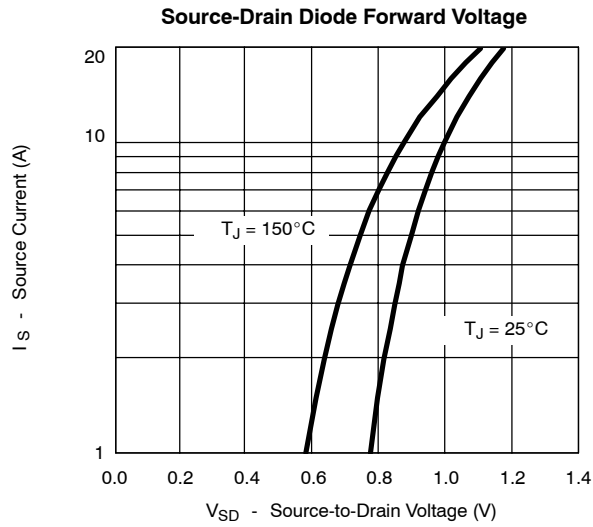
**Gate Charge**



**On-Resistance vs. Junction Temperature**



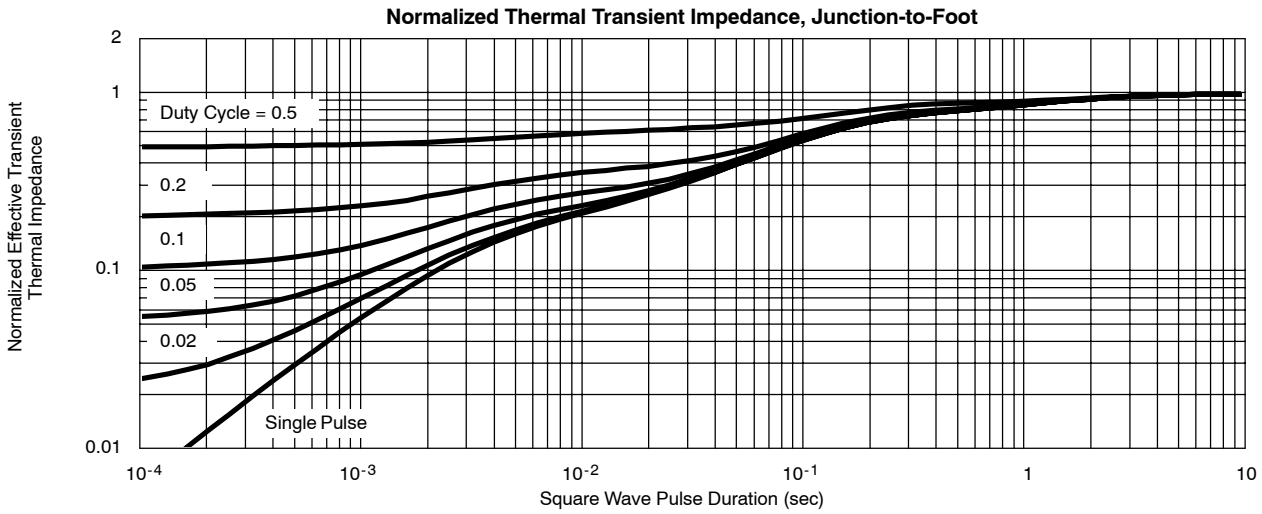
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) NCHANNEL**





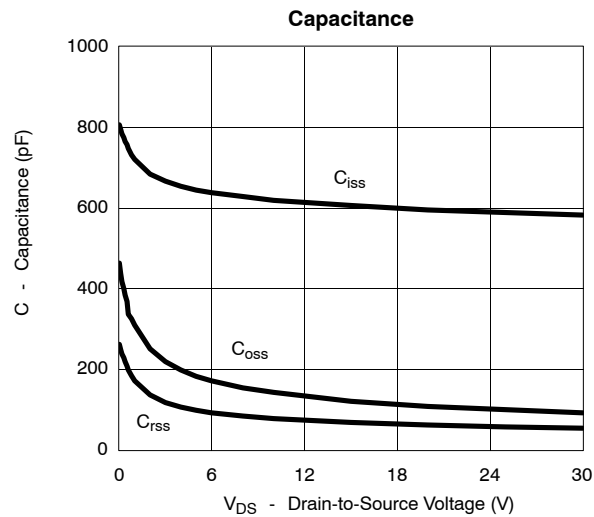
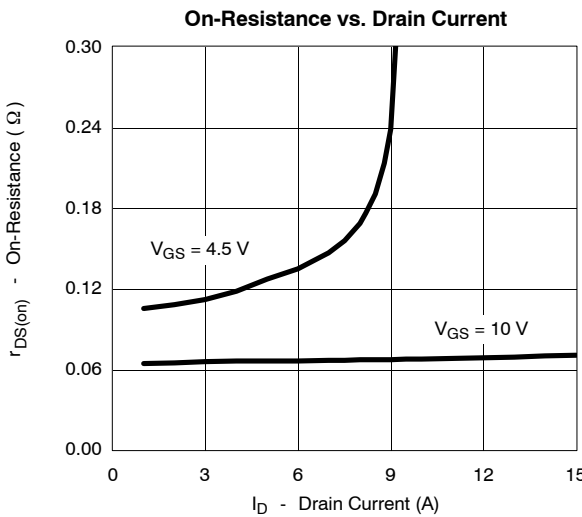
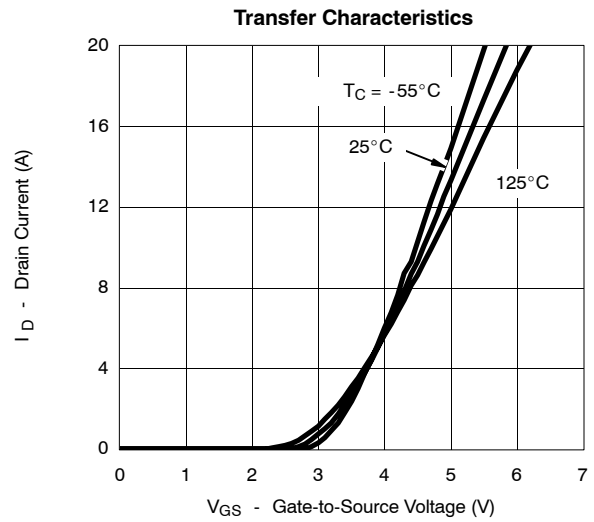
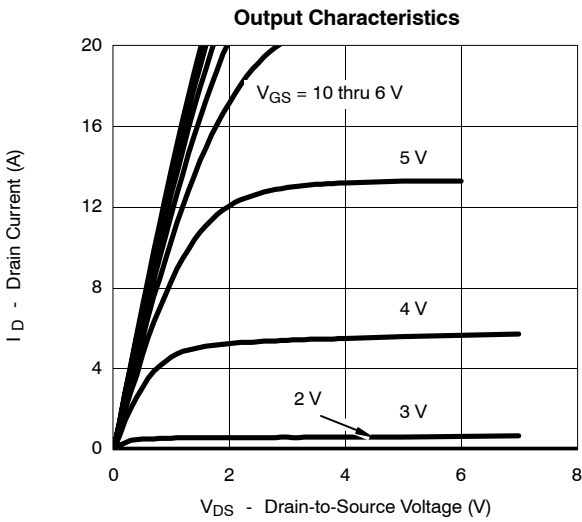
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**NCHANNEL**



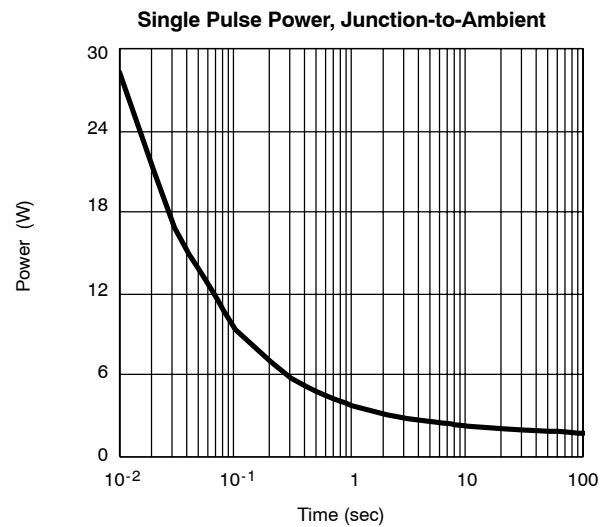
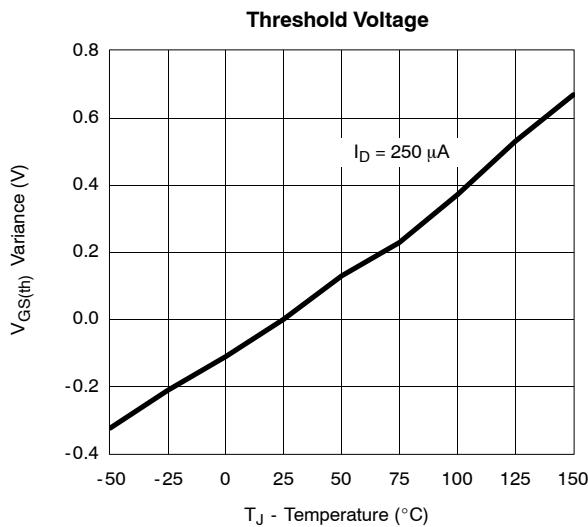
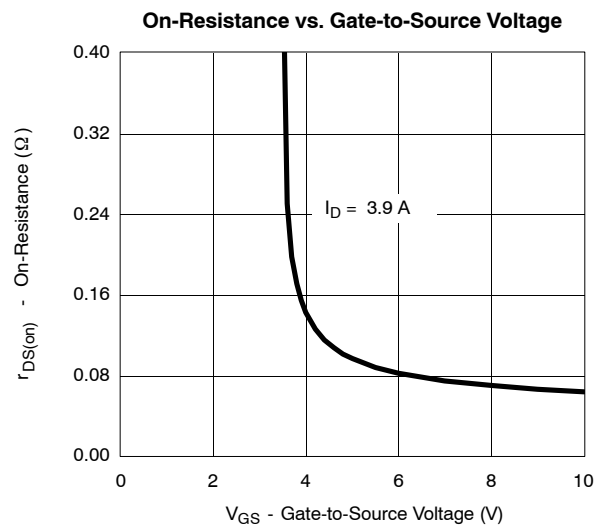
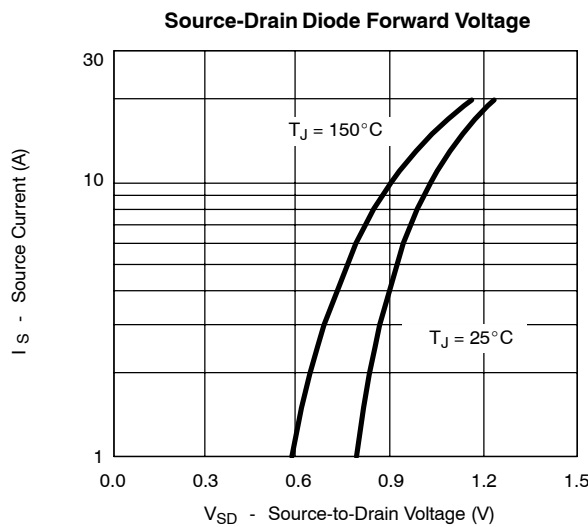
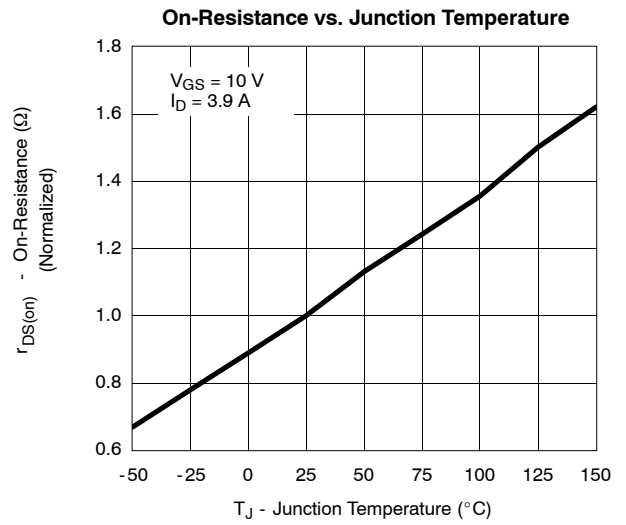
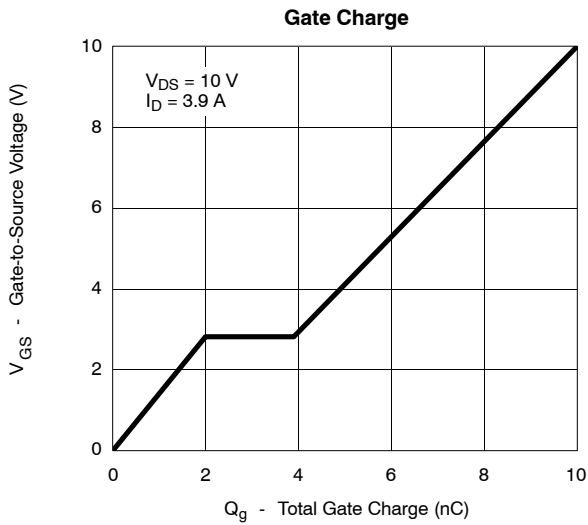
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**PCHANNEL**



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**PCHANNEL**

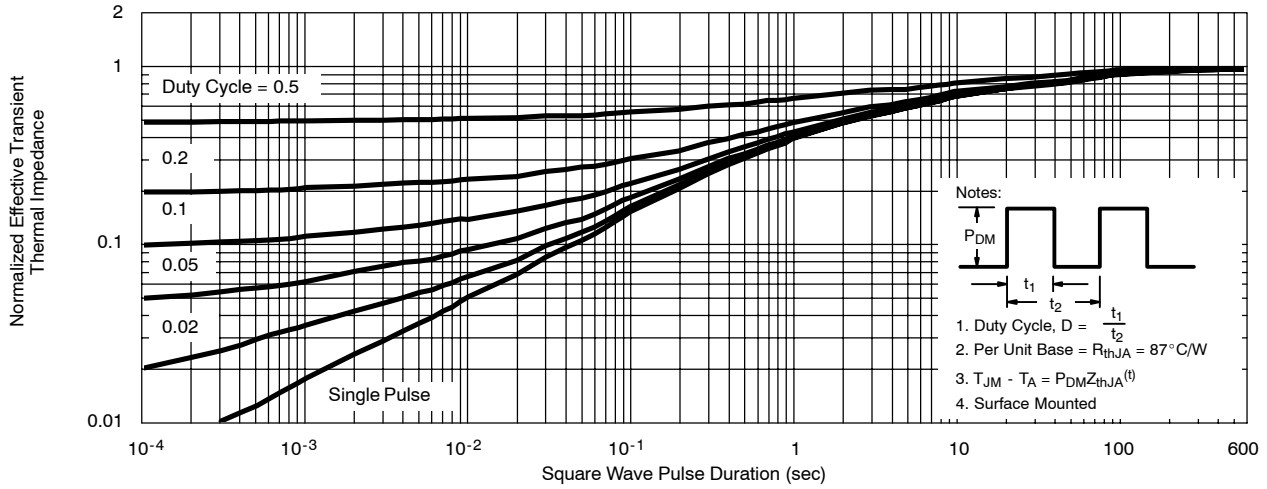




TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

PCHANNEL

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

