



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

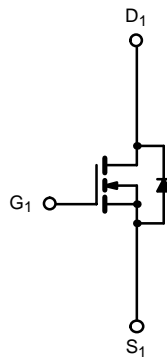
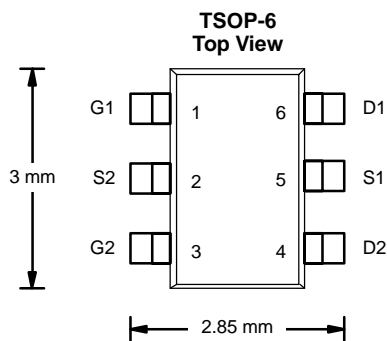
PRODUCT SUMMARY			
	V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
N-Channel	30	0.077 @ V <sub>GS</sub> = 4.5 V	3
		0.120 @ V <sub>GS</sub> = 2.5 V	2
P-Channel	-30	0.170 @ V <sub>GS</sub> = -4.5 V	-2
		0.300 @ V <sub>GS</sub> = -2.5 V	-1.2

### FEATURES

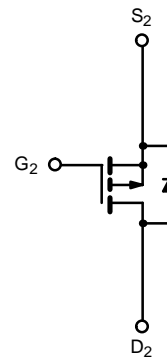
- TrenchFET® Power MOSFET
- Ultra Low r<sub>DS(on)</sub> N- and P-Channel for High Efficiency
- Optimized for High-Side/Low-Side
- Minimized Conduction Losses

### APPLICATIONS

- Portable Devices Including PDAs, Cellular Phones and Pagers



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	
		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>	±12		±12			
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25 °C	3	2.5	-2	-1.7	A
		T <sub>A</sub> = 70 °C	2.3	2.0	-1.6	-1.3	
Pulsed Drain Current	I <sub>DM</sub>	8		-8		A	
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	1.05	0.75	-1.05	-0.75		
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25 °C	1.15	0.83	1.15	0.83	W
		T <sub>A</sub> = 70 °C	0.70	0.53	0.70	0.53	
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	93	110	93	110	°C/W
		Steady State	130	150	130	150	
Maximum Junction-to-Foot (Drain)	R <sub>thJF</sub>	75	90	75	90		

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	0.6		1.5	V
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	P-Ch	-0.6		-1.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V	N-Ch P-Ch			±100 ±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V	N-Ch			1	μA
		V <sub>DS</sub> = -24 V, V <sub>GS</sub> = 0 V	P-Ch			-1	
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	N-Ch			5	
		V <sub>DS</sub> = -24 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> = 4.5 V	N-Ch	5			A
		V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	P-Ch	-5			
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3 A	N-Ch		0.062	0.077	Ω
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2 A	P-Ch		0.135	0.170	
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 2 A	N-Ch		0.095	0.120	
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -1.2 A	P-Ch		0.235	0.300	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 3 A	N-Ch		10		S
		V <sub>DS</sub> = -5 V, I <sub>D</sub> = -2 A	P-Ch		5		
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.05 A, V <sub>GS</sub> = 0 V	N-Ch		0.80	1.10	V
		I <sub>S</sub> = -1.05 A, V <sub>GS</sub> = 0 V	P-Ch		-0.83	-1.10	
<b>Dynamic<sup>b</sup></b>							
Total Gate Charge	Q <sub>g</sub>	<b>N-Channel</b> V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 2 A  <b>P-Channel</b> V <sub>DS</sub> = -15 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2 A	N-Ch		3	4.5	nC
Gate-Source Charge	Q <sub>gs</sub>		P-Ch		3.8	6	
Gate-Drain Charge	Q <sub>gd</sub>		N-Ch		1.0		
Turn-On Delay Time	t <sub>d(on)</sub>	<b>N-Channel</b> V <sub>DD</sub> = 15 V, R <sub>L</sub> = 15 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω  <b>P-Channel</b> V <sub>DD</sub> = -15 V, R <sub>L</sub> = 15 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -10 V, R <sub>G</sub> = 6 Ω	N-Ch		5	8	ns
Rise Time	t <sub>r</sub>		P-Ch		5	8	
Turn-Off Delay Time	t <sub>d(off)</sub>		N-Ch		12	23	
			P-Ch		15	23	
Fall Time	t <sub>f</sub>		N-Ch		13	23	
			P-Ch		20	30	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = 1.05 A, di/dt = 100 A/μs	N-Ch		7	
		I <sub>F</sub> = -1.05 A, di/dt = 100 A/μs	P-Ch		20	30	

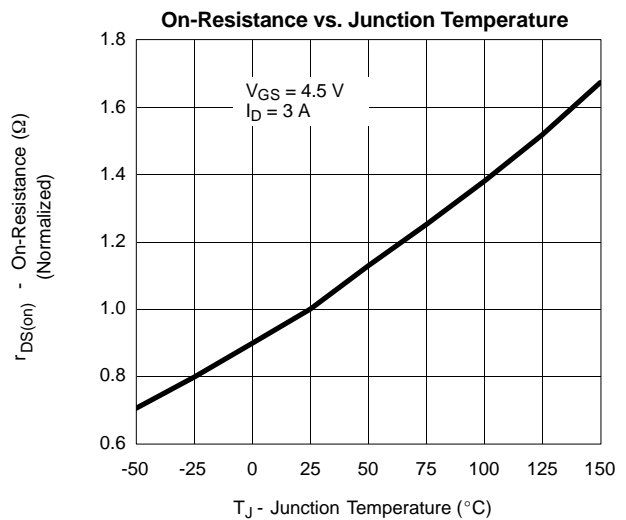
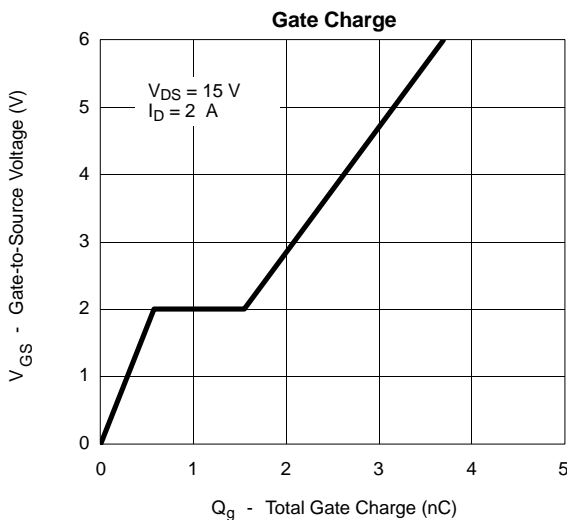
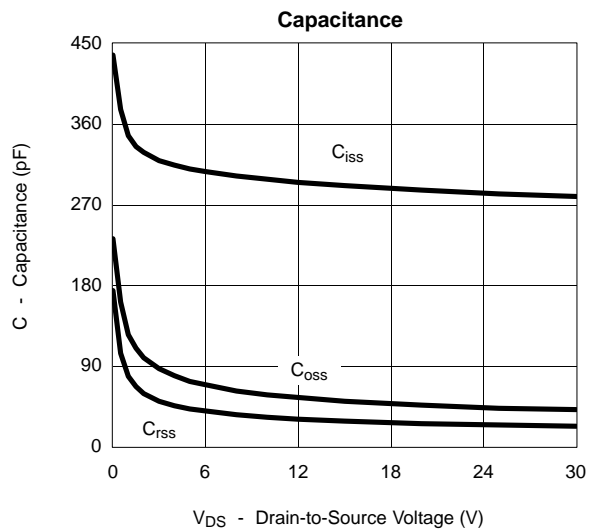
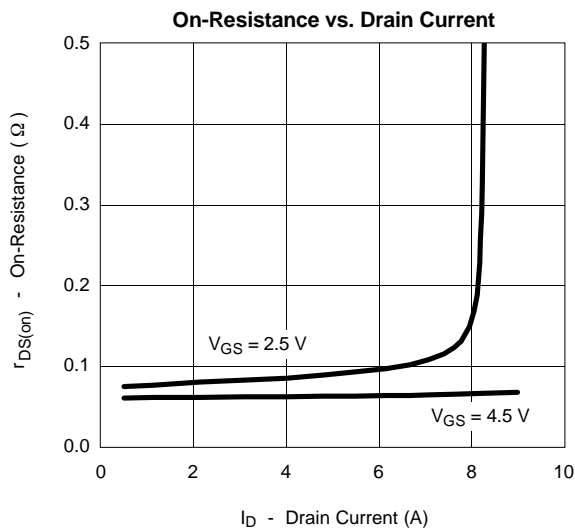
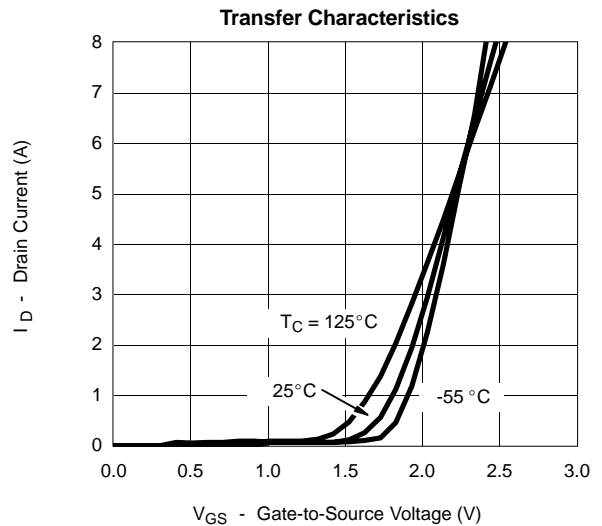
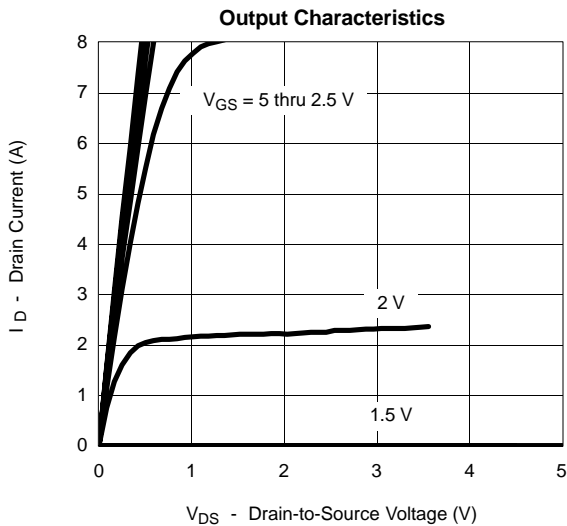
## Notes

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



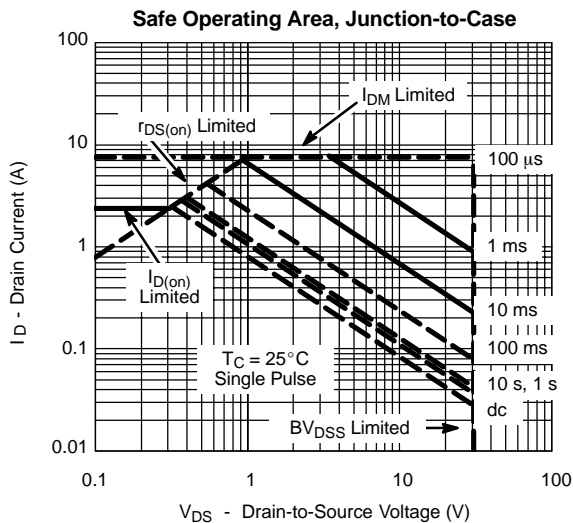
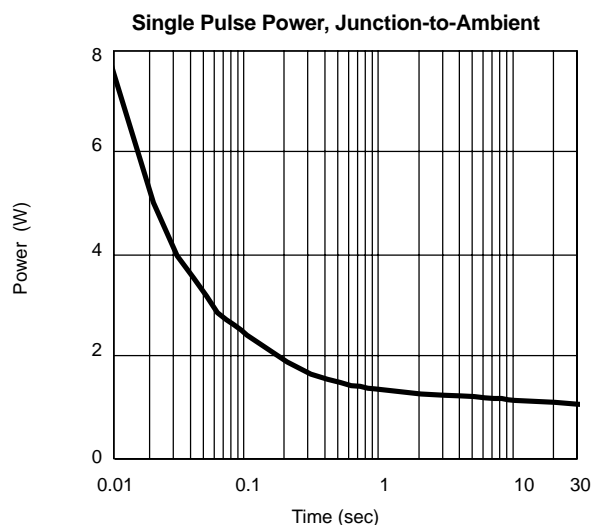
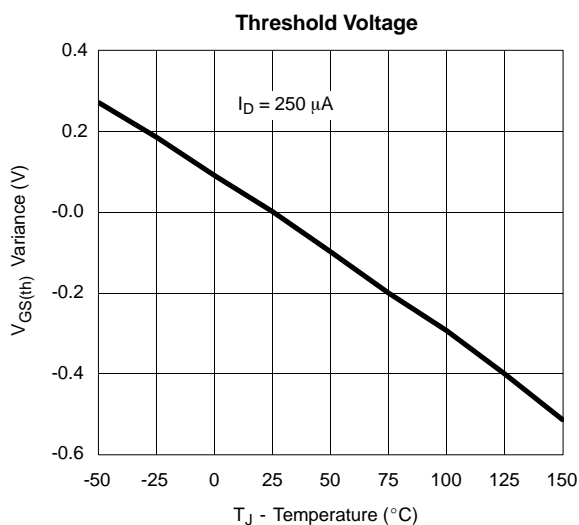
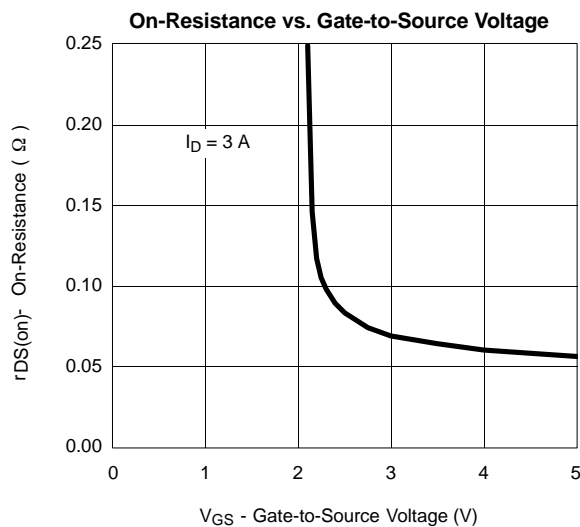
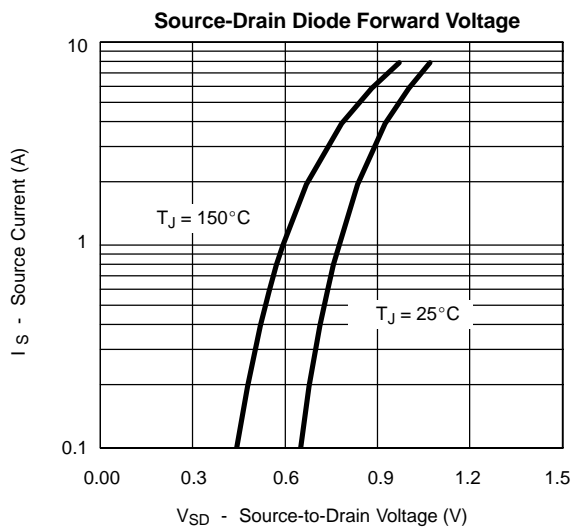
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



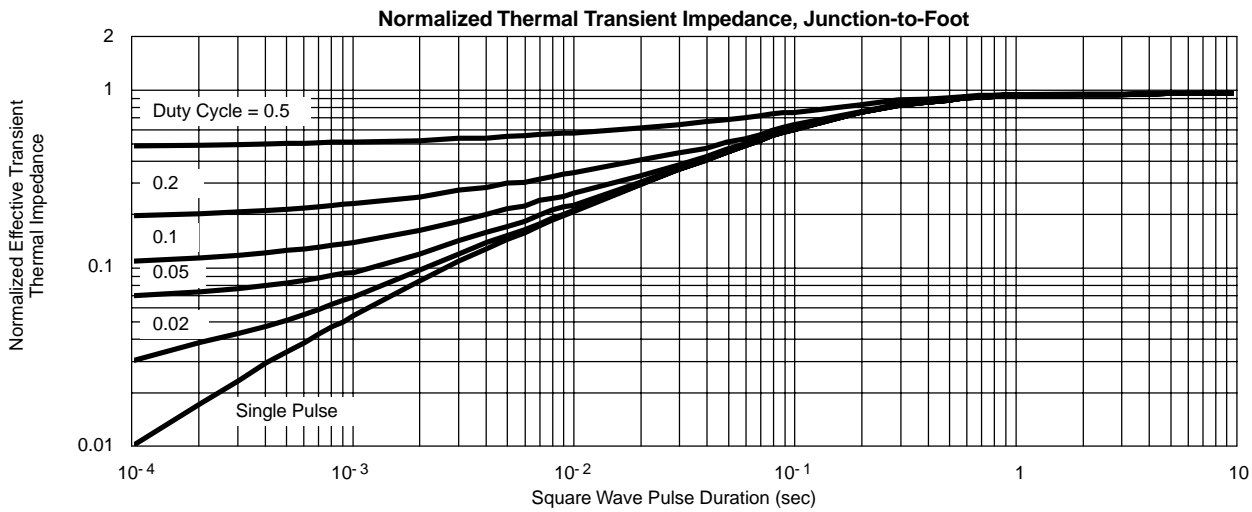
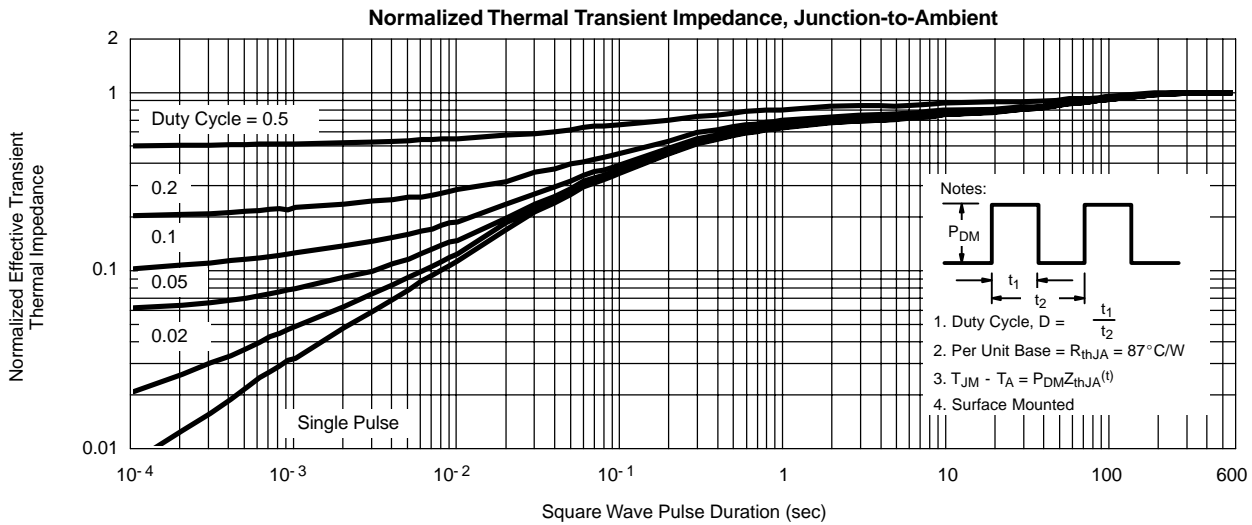
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**N-CHANNEL**



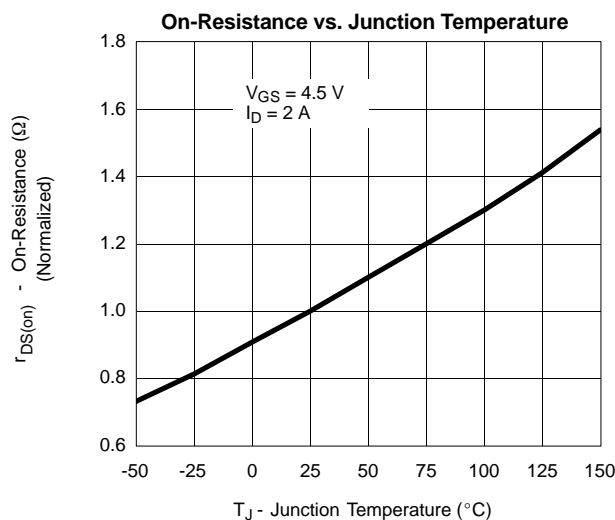
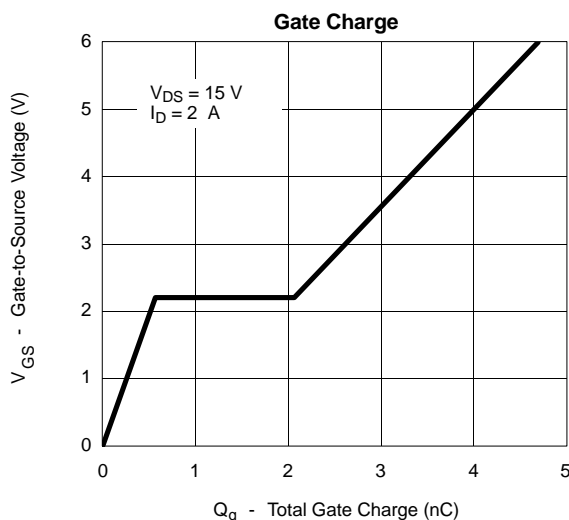
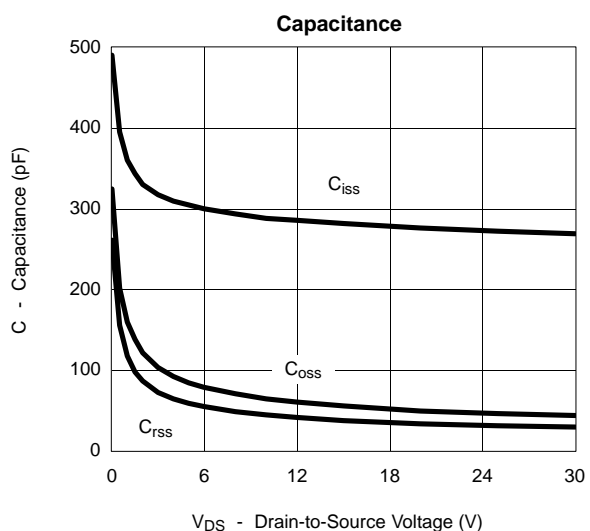
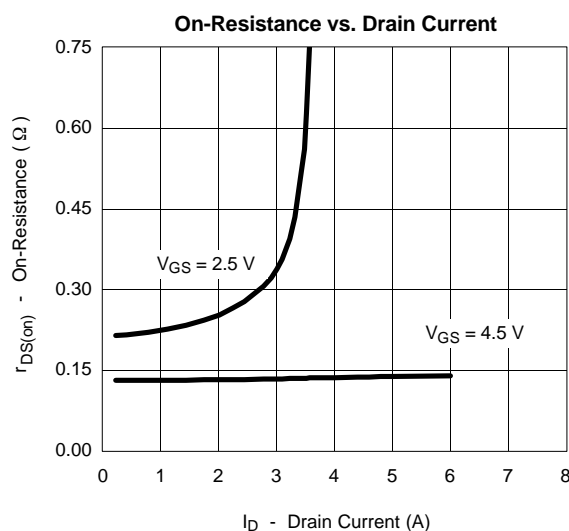
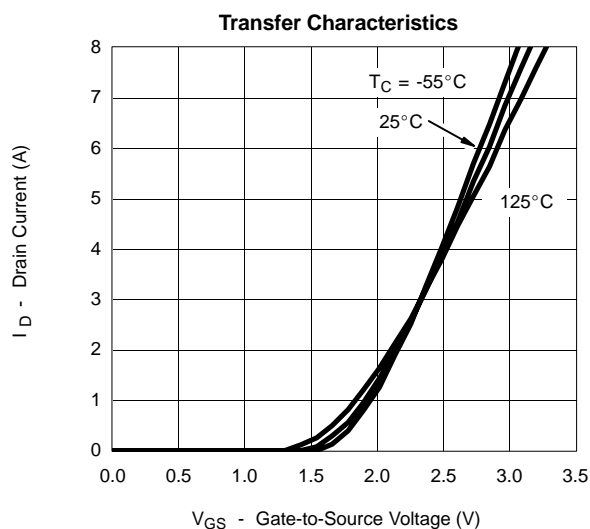
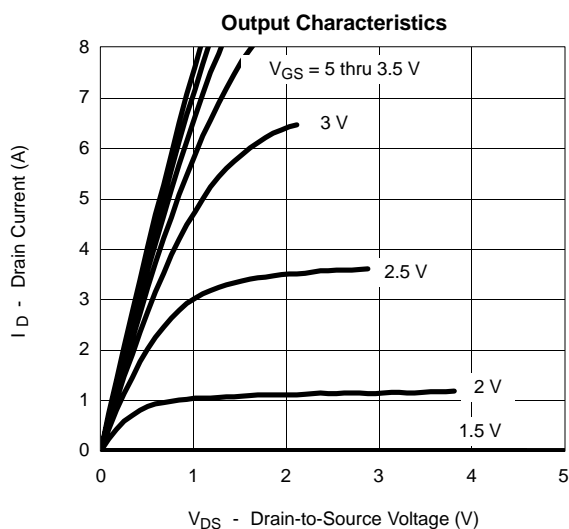


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) N-CHANNEL**



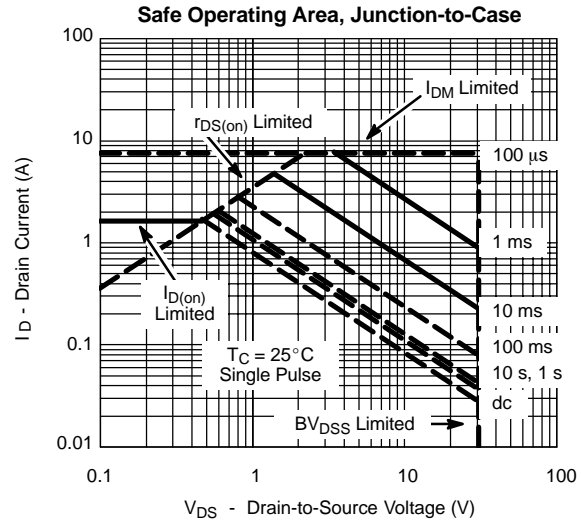
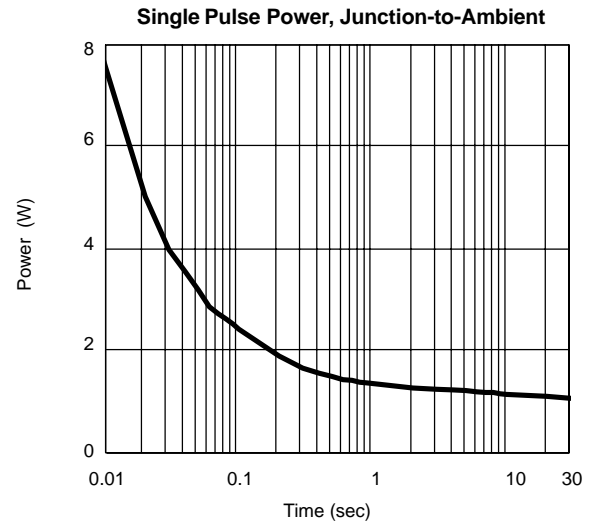
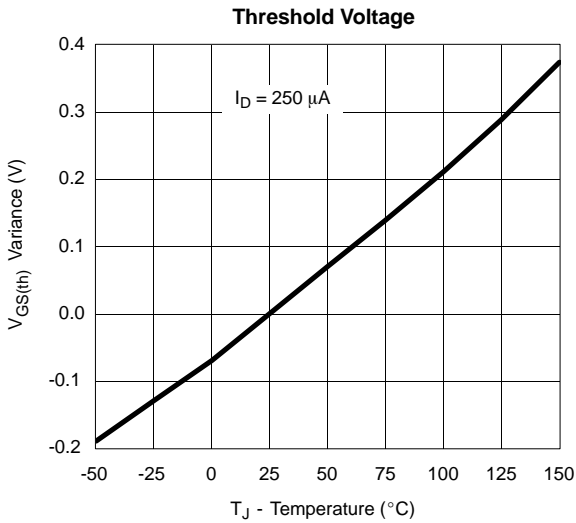
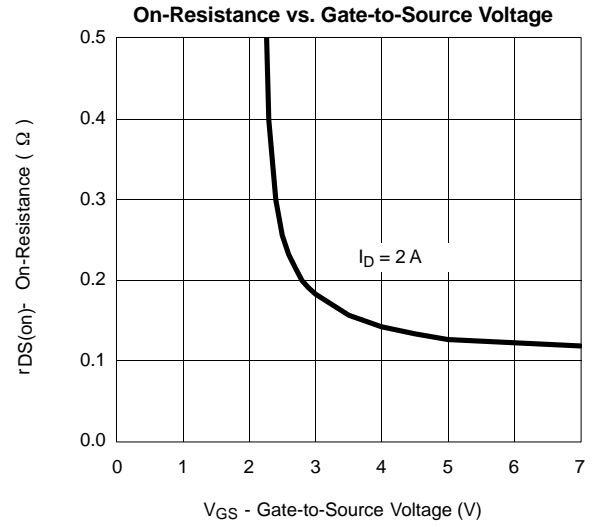
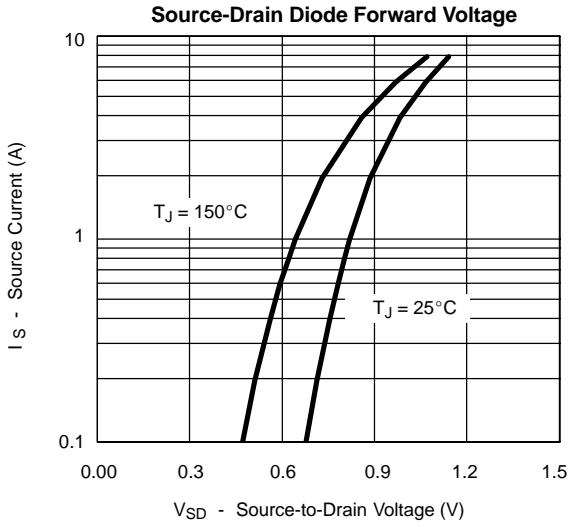
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**P-CHANNEL**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) P-CHANNEL**



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

**P-CHANNEL**

