



# N-Channel 20-V (D-S) MOSFET

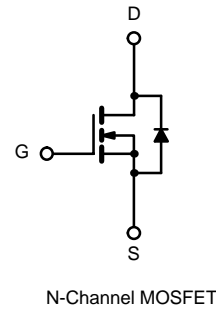
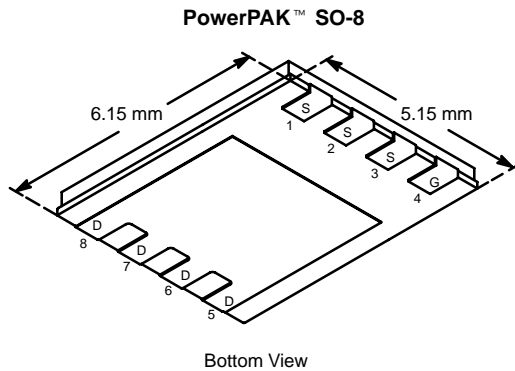
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
20	0.00225 @ V <sub>GS</sub> = 10 V	29
	0.00275 @ V <sub>GS</sub> = 4.5 V	25

## FEATURES

- TrenchFET® Power MOSFET
- Low r<sub>DS(on)</sub>
- PWM (Q<sub>gd</sub> and R<sub>G</sub>) Optimized

## APPLICATIONS

- Low Output Voltage Synchronous Rectifier



ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	V <sub>DS</sub>	20		V	
Gate-Source Voltage	V <sub>GS</sub>	± 16			
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25 °C	29	18	A
		T <sub>A</sub> = 70 °C	25	14	
Pulsed Drain Current (10 μs Pulse Width)	I <sub>DM</sub>	60			
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	4.5	1.6	W	
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25 °C	5.4		1.9
		T <sub>A</sub> = 70 °C	3.4	1.2	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	t ≤ 10 sec	18	23	°C/W
		Steady State	50	65	
Maximum Junction-to-Case (Drain)	R <sub>thJC</sub>	1.0	1.5		

Notes

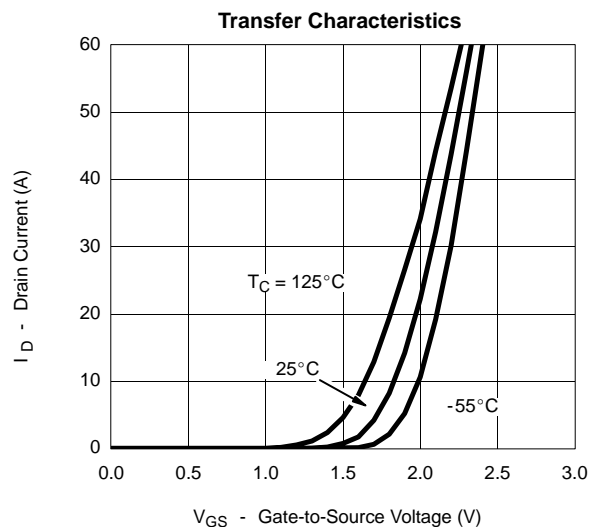
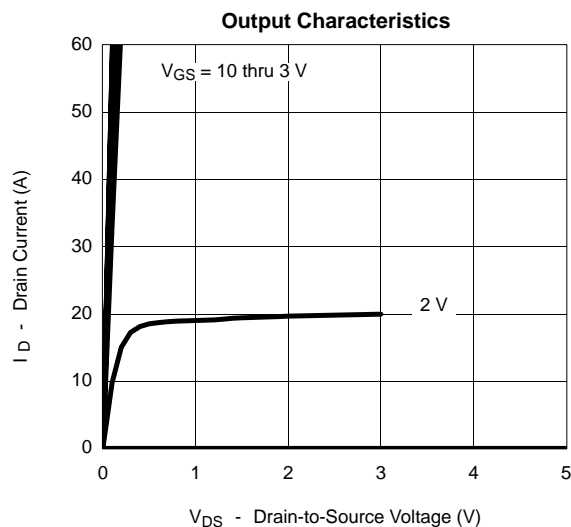
a. Surface Mounted on 1" x 1" FR4 Board.

**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	0.6		1.5	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 16 V			± 100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			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	30			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 29 A		0.0018	0.00225	Ω
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 25 A		0.0022	0.00275	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 6 V, I <sub>D</sub> = 29 A		95		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 4.5 A, V <sub>GS</sub> = 0 V		0.63	1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 29 A		50	75	nC
Gate-Source Charge	Q <sub>gs</sub>			12		
Gate-Drain Charge	Q <sub>gd</sub>			11		
Gate Resistance	R <sub>g</sub>			1.2		Ω
Turn-On Delay Time	t <sub>d(on)</sub>	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		53	80	ns
Rise Time	t <sub>r</sub>			49	75	
Turn-Off Delay Time	t <sub>d(off)</sub>			150	240	
Fall Time	t <sub>f</sub>			75	110	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 2.9 A, di/dt = 100 A/μs		65	100	

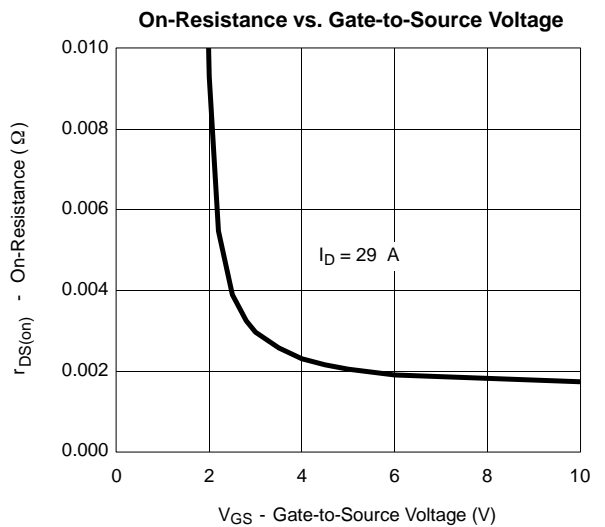
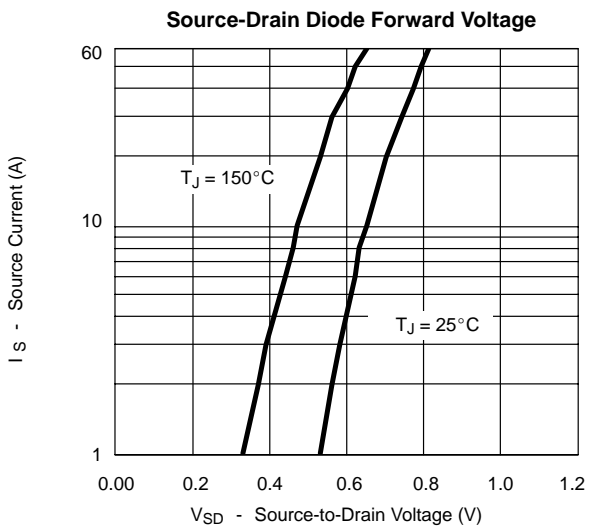
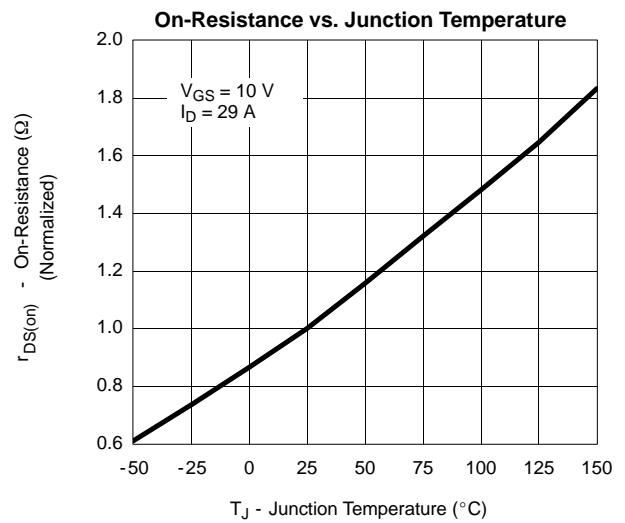
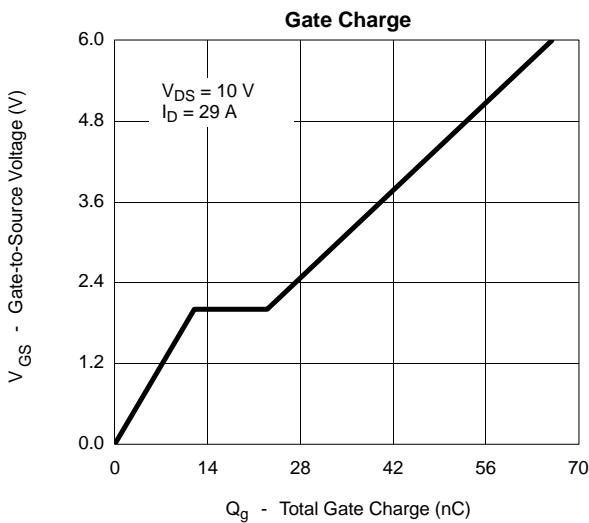
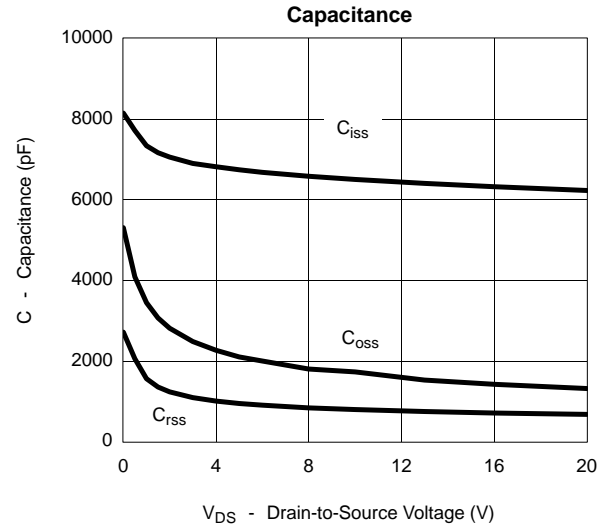
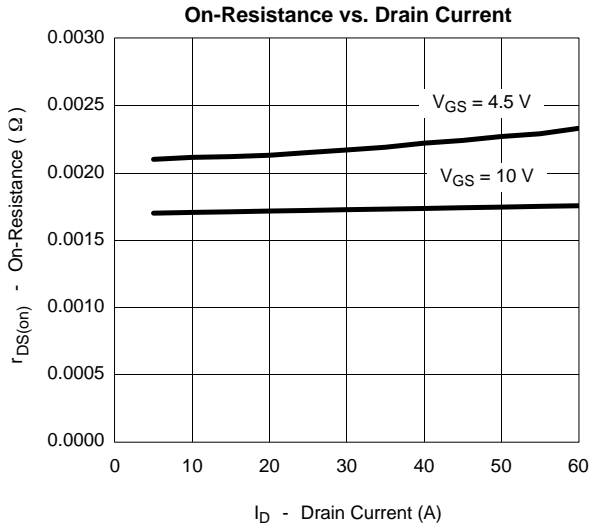
## Notes

- 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)**



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