

## Dual N-Channel 20-V (D-S) MOSFET, Common Drain

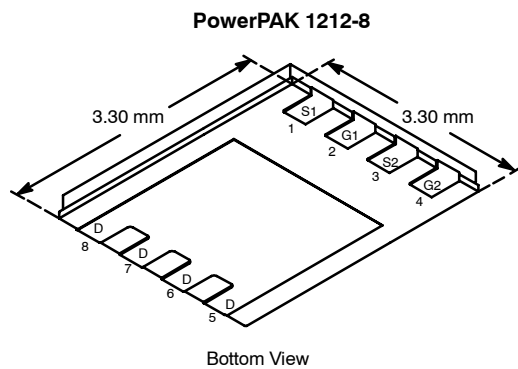
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
20	0.026 @ V <sub>GS</sub> = 4.5 V	8.5
	0.030 @ V <sub>GS</sub> = 2.5 V	8
	0.036 @ V <sub>GS</sub> = 1.8 V	7

### FEATURES

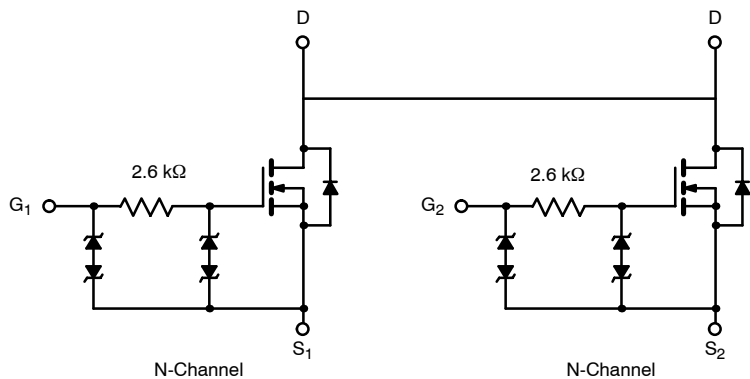
- TrenchFET® Power MOSFETS: 1.8-V Rated
- New PowerPak® Package
  - Low-Thermal Resistance, R<sub>thJC</sub>
  - Low 1.07-mm Profile
- 3000-V ESD Protection

### APPLICATIONS

- Protection Switch for 1-2 Li-ion Batteries



Ordering Information: Si7900AEDN-T1



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>	± 12			
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25 °C	8.5	6	A
		T <sub>A</sub> = 85 °C	6.4	4.3	
Pulsed Drain Current	I <sub>DM</sub>	30			
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	2.9	1.4		
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25 °C	3.1	1.5	W
		T <sub>A</sub> = 85 °C	1.6	0.79	
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	32	40	°C/W
		Steady State	65	82	
Maximum Junction-to-Case	R <sub>thJC</sub>	2.2	2.8		

Notes

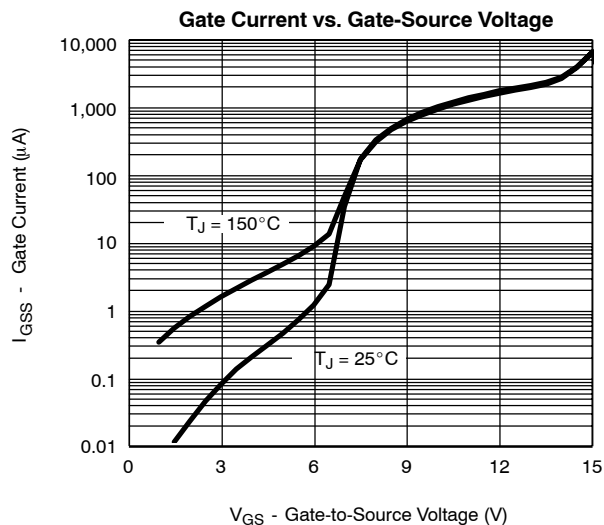
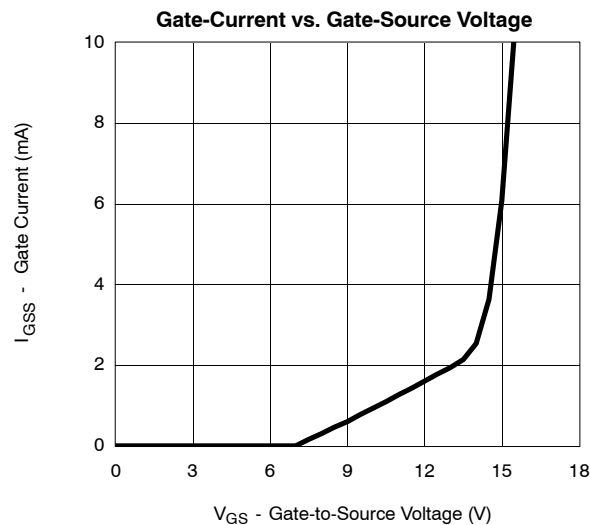
a. Surface Mounted on 1" x 1" FR4 Board.

**SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)**

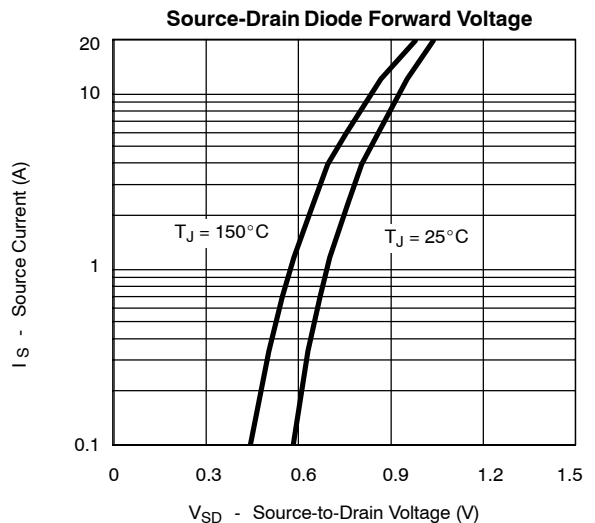
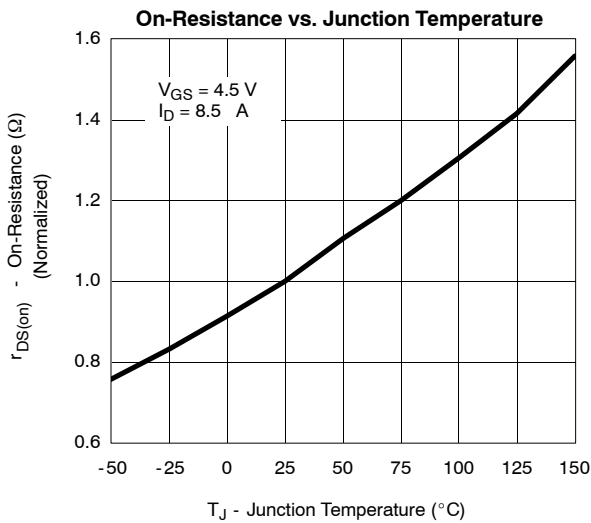
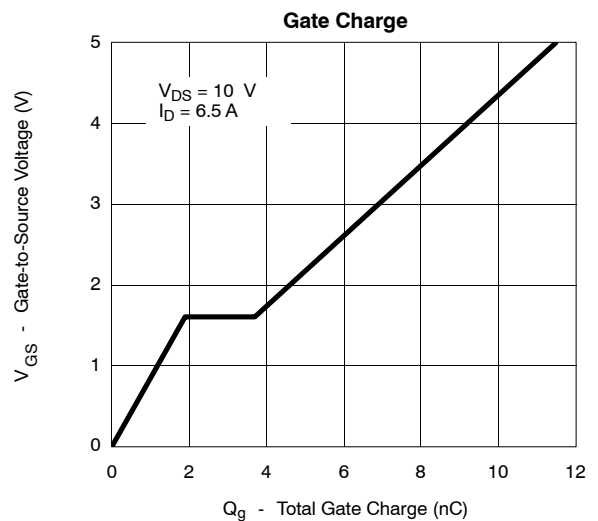
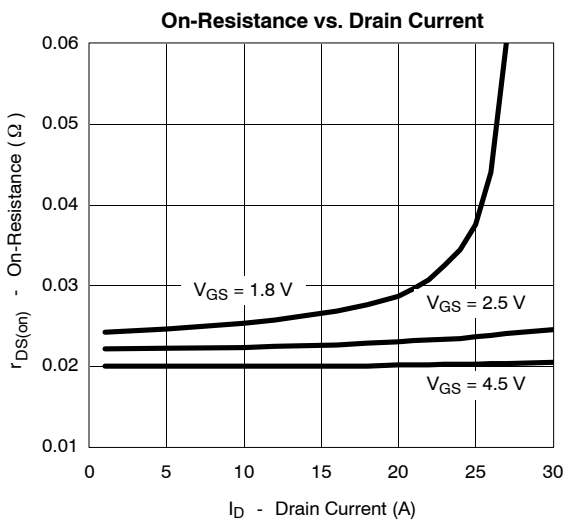
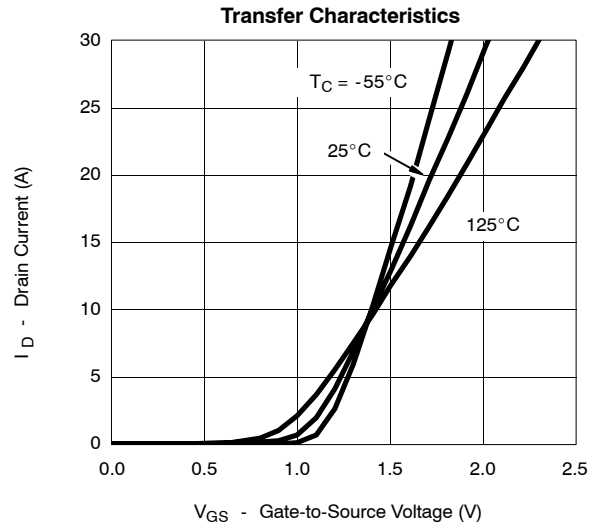
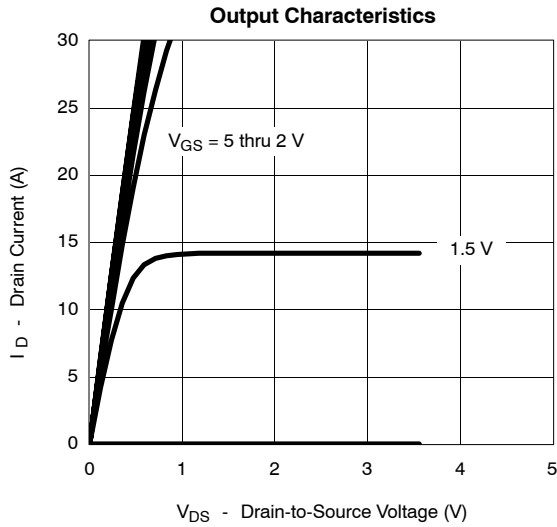
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.40		0.9	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±4.5 V			±1	μA
		V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V			±10	mA
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> = 85 °C			20	μA
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	20			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 8.5 A		0.020	0.026	Ω
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 8 A		0.022	0.030	
		V <sub>GS</sub> = 1.8 V, I <sub>D</sub> = 7 A		0.026	0.036	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 8.5 A		25		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 2.9 A, V <sub>GS</sub> = 0 V		0.65	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> = 6.5 A		10.5	16	nC
Gate-Source Charge	Q <sub>gs</sub>		1.9			
Gate-Drain Charge	Q <sub>gd</sub>		1.8			
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		0.85	1.25	μs
Rise Time	t <sub>r</sub>		1.3	2.0		
Turn-Off Delay Time	t <sub>d(off)</sub>		8.6	13		
Fall Time	t <sub>f</sub>		4.2	6.5		

## Notes

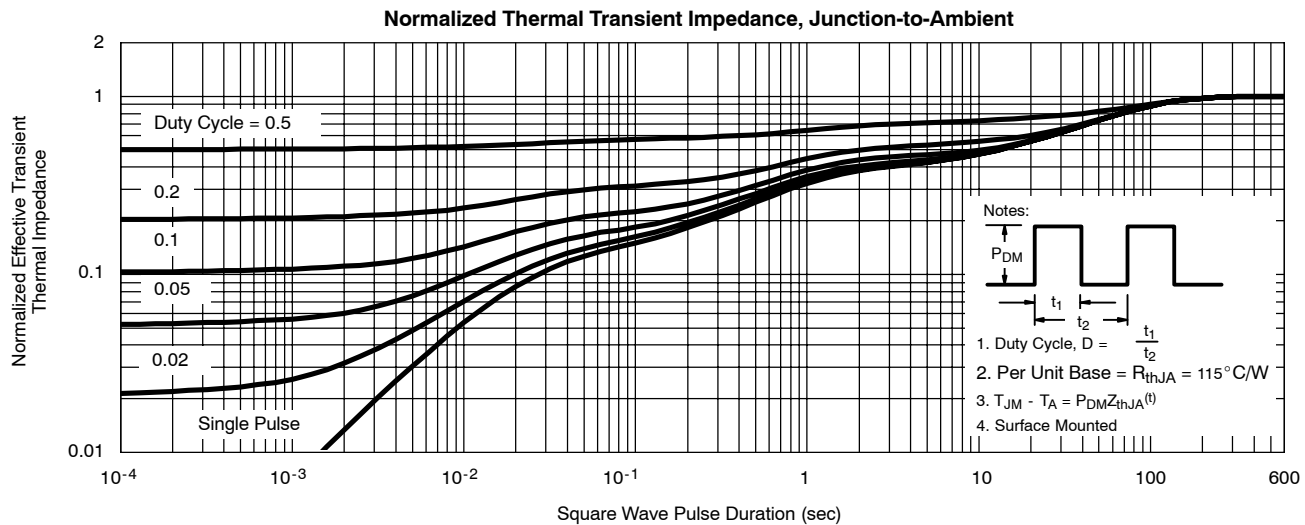
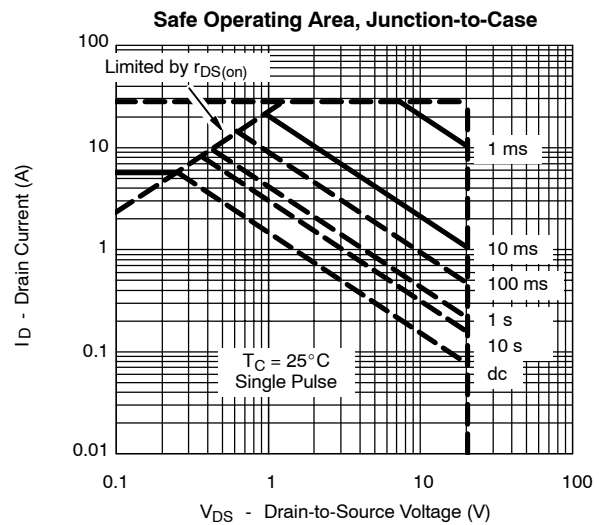
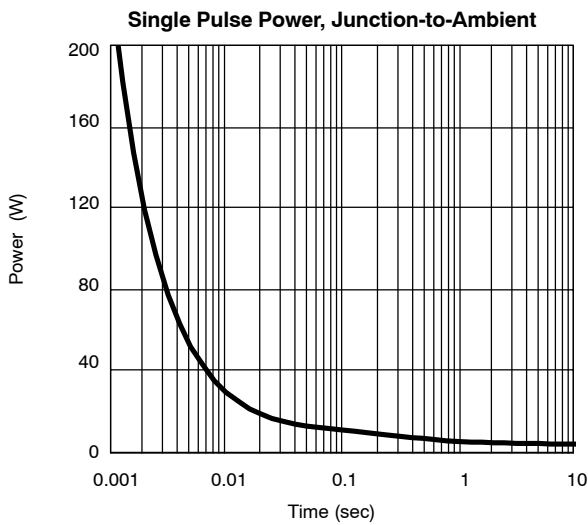
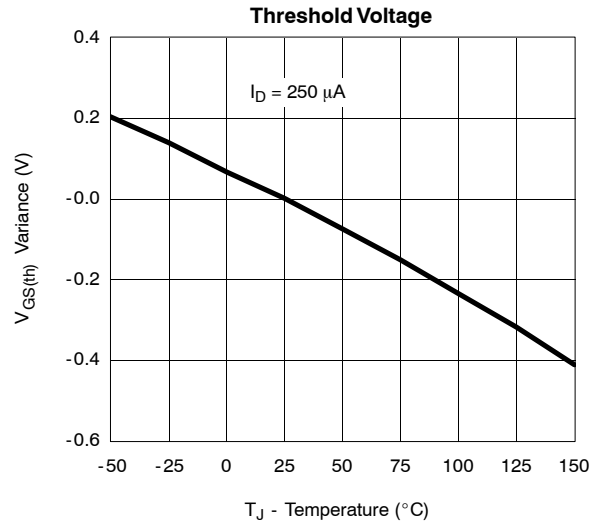
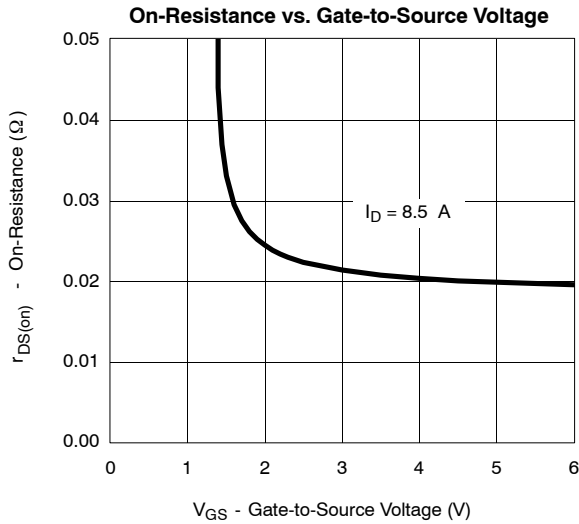
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

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

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