

## Dual P-Channel 12-V (D-S) MOSFET

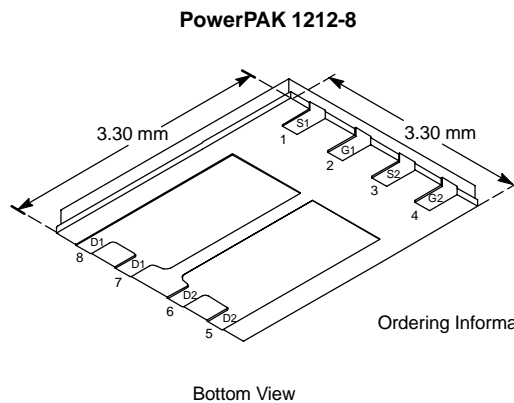
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
-12	0.042 @ V <sub>GS</sub> = -4.5 V	-6.5
	0.058 @ V <sub>GS</sub> = -2.5 V	-5.5
	0.082 @ V <sub>GS</sub> = -1.8 V	-1.2

### FEATURES

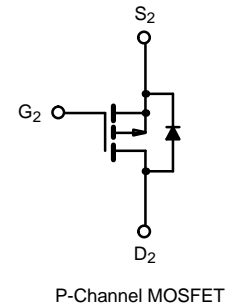
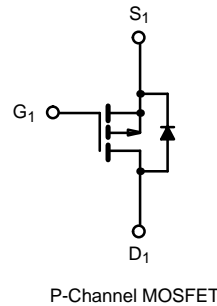
- TrenchFET® Power MOSFET: 1.8-V Rated
- New Low Thermal Resistance PowerPAK® Package
- Advanced High Cell Density Process

### APPLICATIONS

- Load Switch
- PA Switch
- Battery Switch
- Bi-Directional Switch



Ordering Information: Si7925DN-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>	-12		V
Gate-Source Voltage		V <sub>GS</sub>	± 8		
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 25 °C	I <sub>D</sub>	-6.5	-4.8	A
	T <sub>A</sub> = 85 °C		-4.7	-3.4	
Pulsed Drain Current		I <sub>DM</sub>	-20		
continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	-2.1	-1.1	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25 °C	P <sub>D</sub>	2.5	1.3	W
	T <sub>A</sub> = 85 °C		1.5	0.69	
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>	t ≤ 10 sec	R <sub>thJA</sub>	40	50	°C/W
	Steady State		75	94	
Maximum Junction-to-Case	Steady State	R <sub>thJC</sub>	5.6	7	

Notes

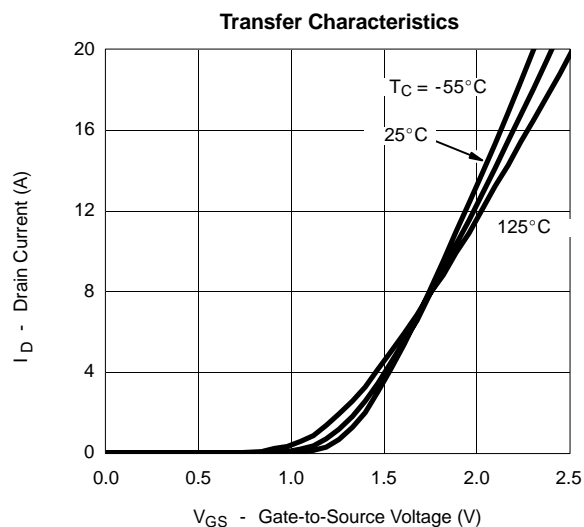
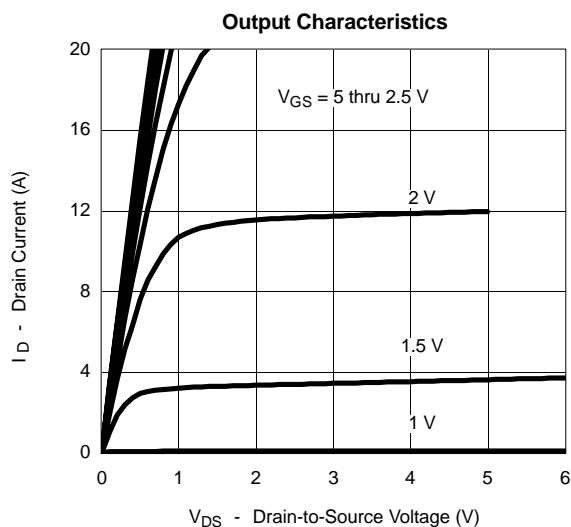
a. Surface Mounted on 1" x 1" FR4 Board.

**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		-1.0	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C			-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	-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> = -6.5 A		0.033	0.042	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -5.5 A		0.046	0.058	
		V <sub>GS</sub> = -1.8 V, I <sub>D</sub> = -1.2 A		0.065	0.082	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -6 V, I <sub>D</sub> = -6.5 A		19		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = -2.1 A, V <sub>GS</sub> = 0 V		-0.8	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -6 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -6.5 A		11	12	nC
Gate-Source Charge	Q <sub>gs</sub>			1.7		
Gate-Drain Charge	Q <sub>gd</sub>			2.8		
Gate Resistance	R <sub>g</sub>			8.2		Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -6 V, R <sub>L</sub> = 6 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω		20	30	ns
Rise Time	t <sub>r</sub>			50	75	
Turn-Off Delay Time	t <sub>d(off)</sub>			70	105	
Fall Time	t <sub>f</sub>			50	75	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = -2.1 A, di/dt = 100 A/μs		41	

## Notes

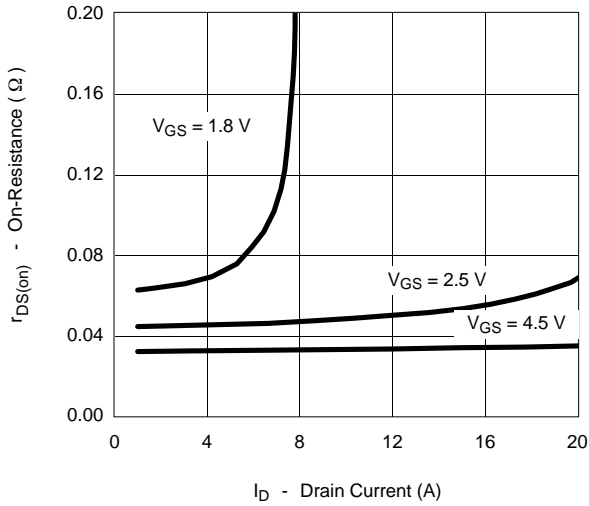
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

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

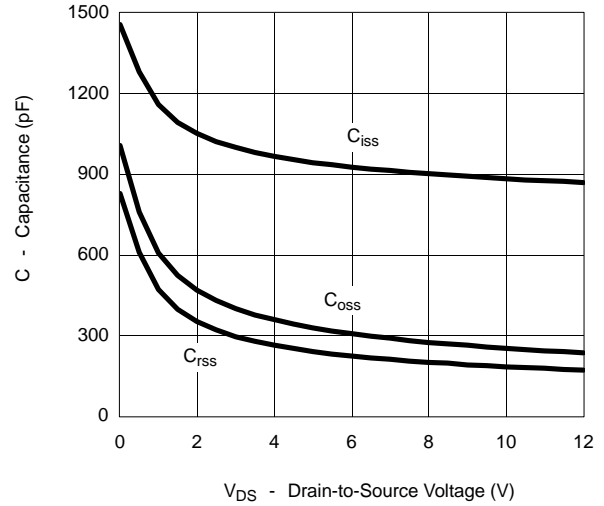


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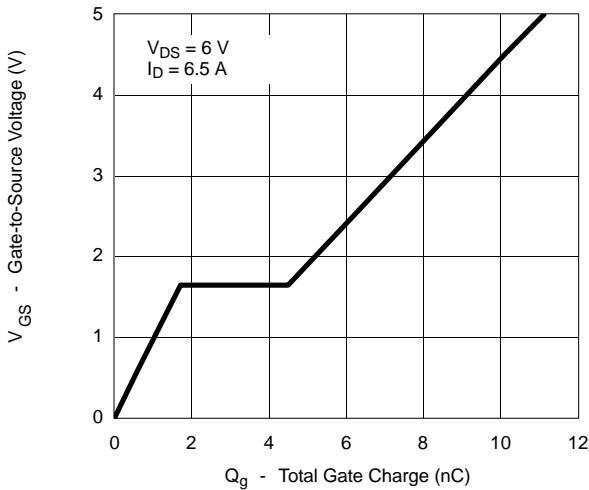
On-Resistance vs. Drain Current



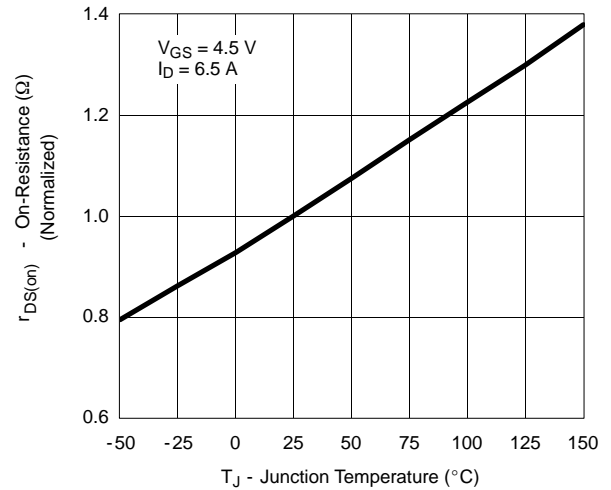
Capacitance



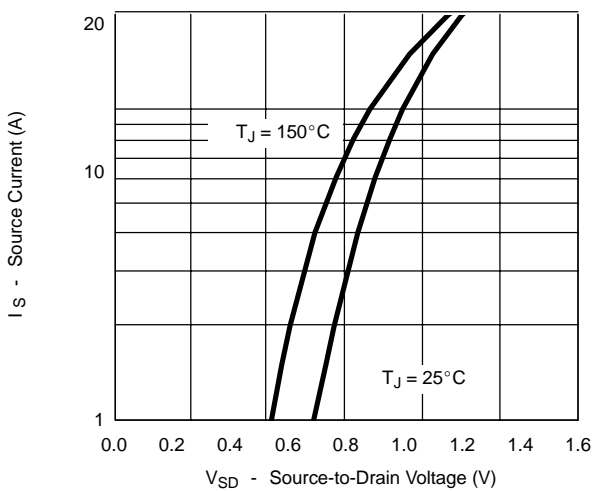
Gate Charge



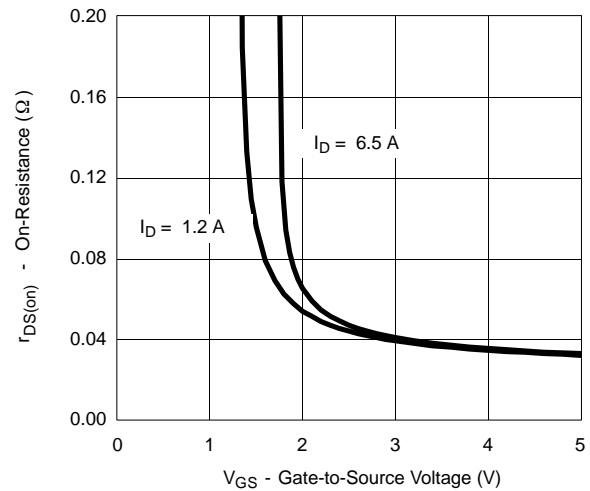
On-Resistance vs. Junction Temperature



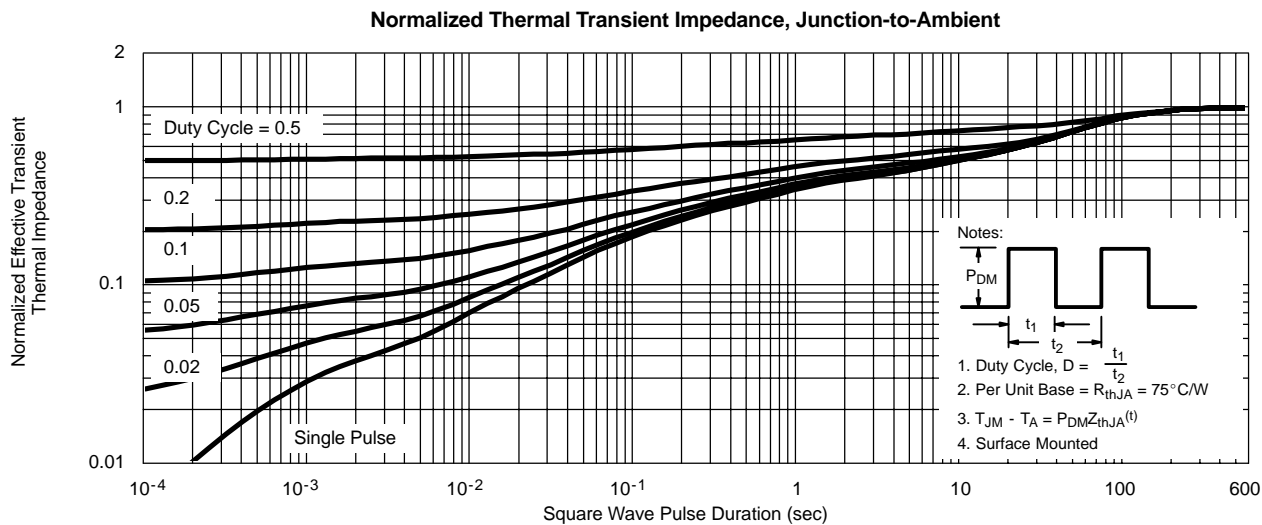
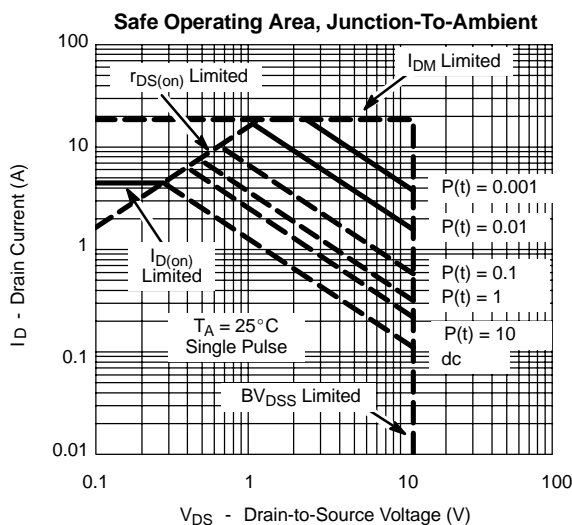
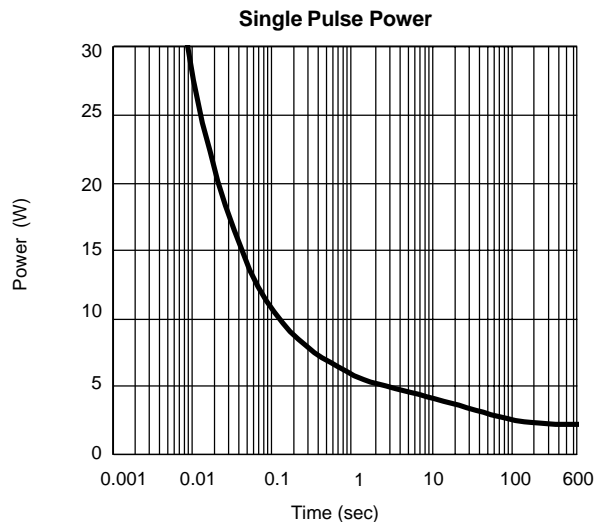
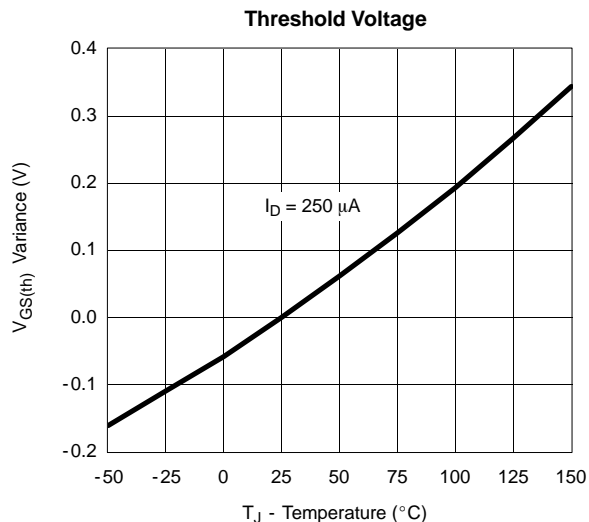
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



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





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

