



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

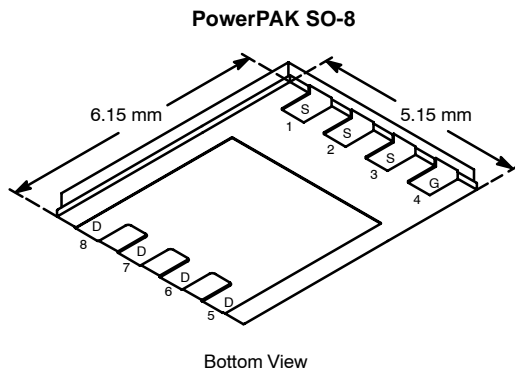
PRODUCT SUMMARY			
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)	$Q_g$ (Typ)
30	0.0042 @ $V_{GS} = 10$ V	25	25
	0.0057 @ $V_{GS} = 4.5$ V	22	

### FEATURES

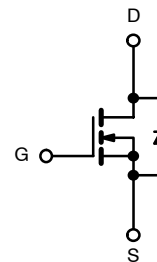
- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK® Package with Low 1.07-mm Profile
- Low Gate Charge
- 100%  $R_g$  Tested

### APPLICATIONS

- Synchronous Rectifier



Ordering Information: Si7892ADP-T1  
Si7892ADP-T1—E3 (Lead (Pb)-Free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	30		V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	25	15	A
		$T_A = 70^\circ\text{C}$	20	12	
Pulsed Drain Current (10 $\mu\text{s}$ Pulse Width)	$I_{DM}$	60			
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	4.5	1.6		
Avalanche Current	$I_{AS}$	50			
		$L = 0.1$ mH			
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	5.4	1.9	W
		$T_A = 70^\circ\text{C}$	3.4	1.2	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	$t \leq 10$ sec	18	23	$^\circ\text{C/W}$
		Steady State	50	65	
Maximum Junction-to-Case (Drain)	$R_{thJC}$	1.0	1.5		

Notes

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

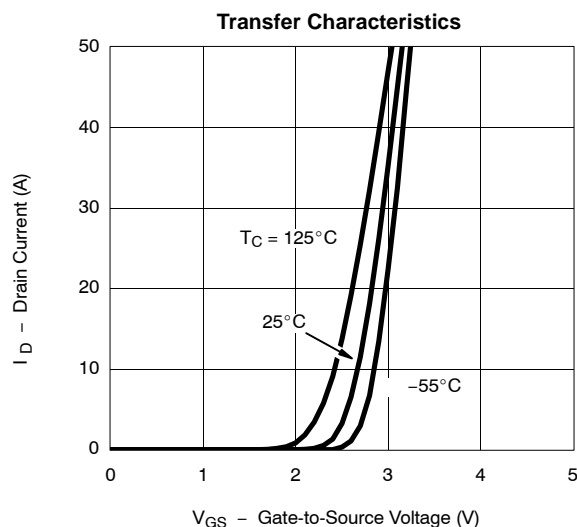
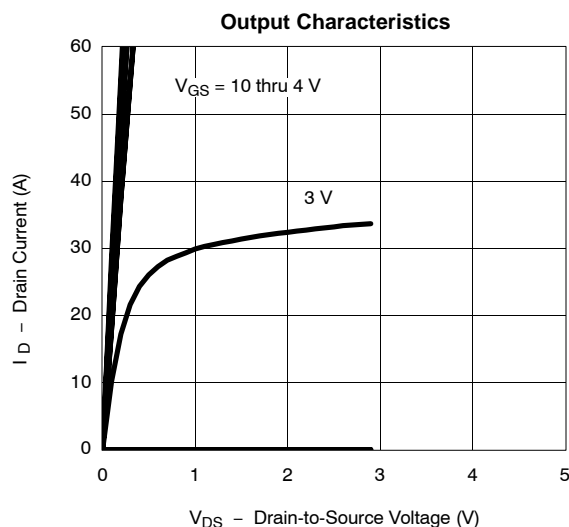
**SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)**

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	1.0		3.0	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 30 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> = 25 A		0.0033	0.0042	Ω
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 22 A		0.0045	0.0057	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 25 A		80		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 4.5 A, V <sub>GS</sub> = 0 V		0.75	1.2	V
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V, f = 1 Hz		2800		pF
Output Capacitance	C <sub>oss</sub>			830		
Reverse Transfer Capacitance	C <sub>rss</sub>			360		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 25 A		25	35	nC
Gate-Source Charge	Q <sub>gs</sub>			6.7		
Gate-Drain Charge	Q <sub>gd</sub>			9.7		
Gate Resistance	R <sub>g</sub>		0.5	1.2	2.0	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	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		17	30	ns
Rise Time	t <sub>r</sub>			10	20	
Turn-Off Delay Time	t <sub>d(off)</sub>			65	130	
Fall Time	t <sub>f</sub>			35	60	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = 2.9 A, di/dt = 100 A/μs		50	

## Notes

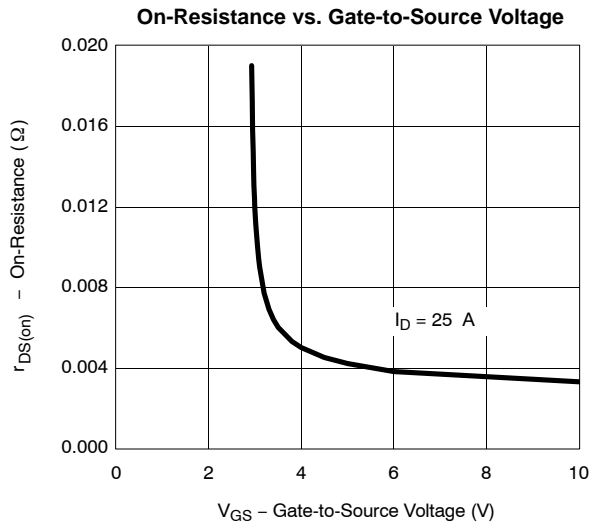
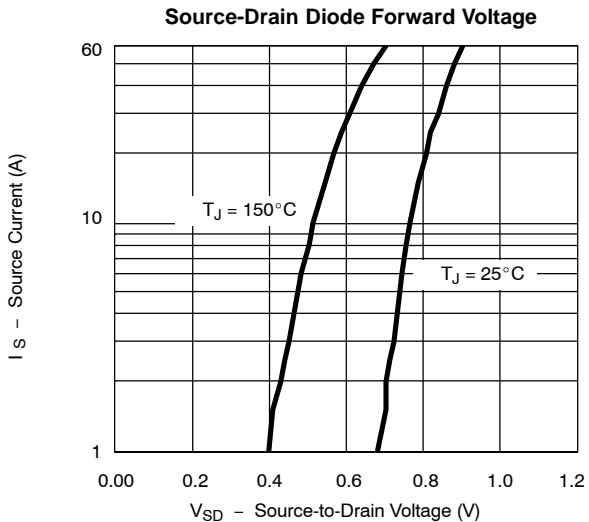
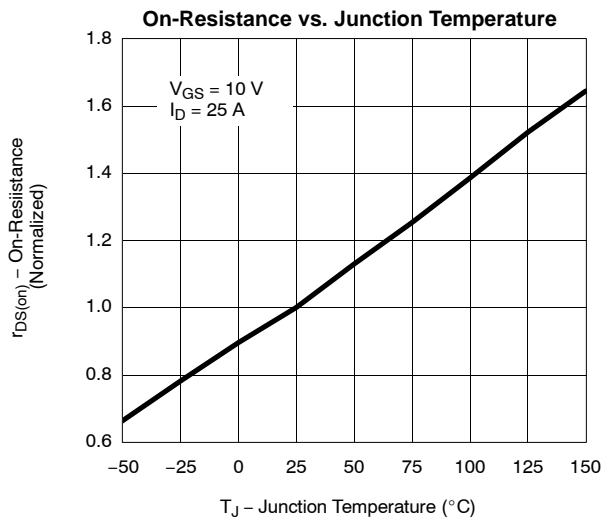
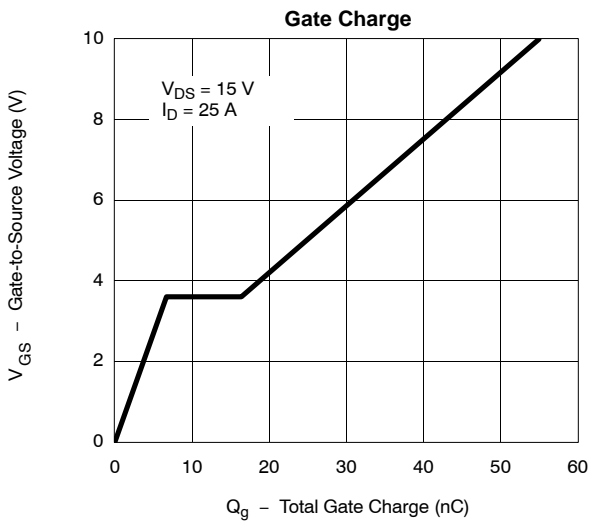
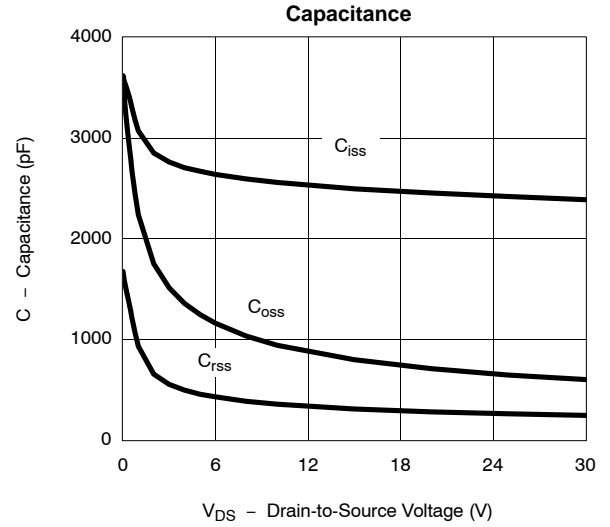
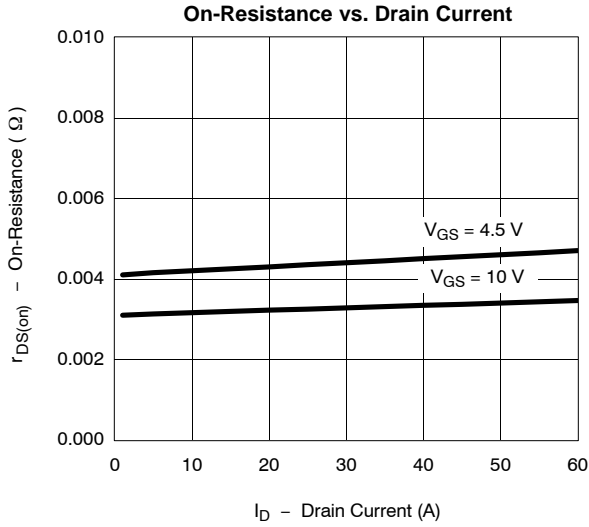
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

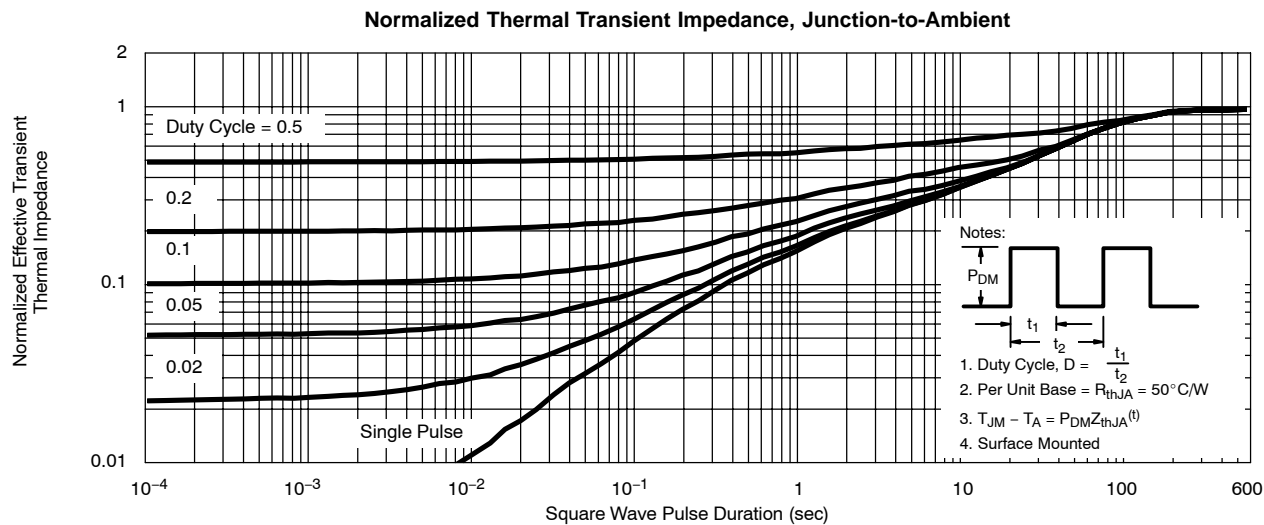
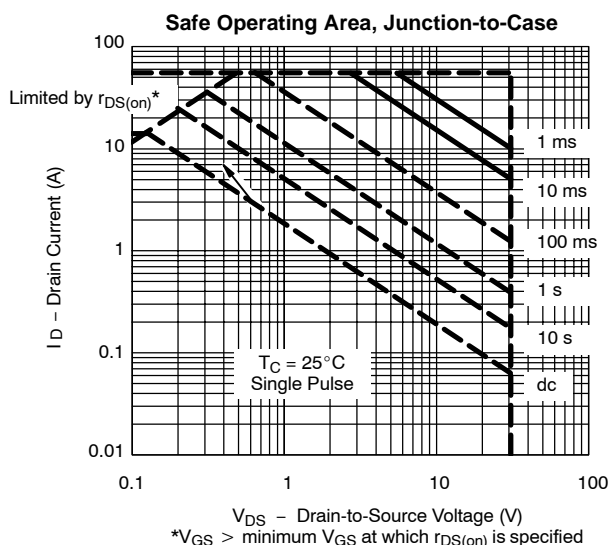
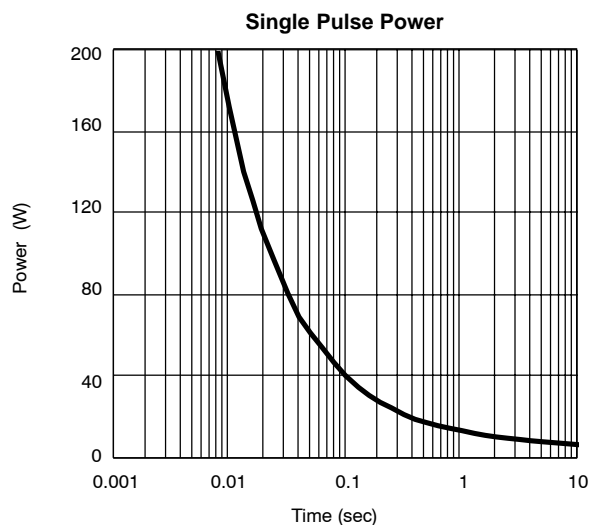
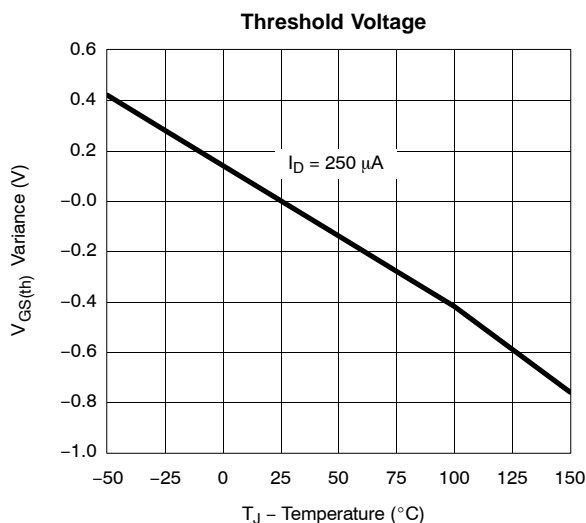
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**



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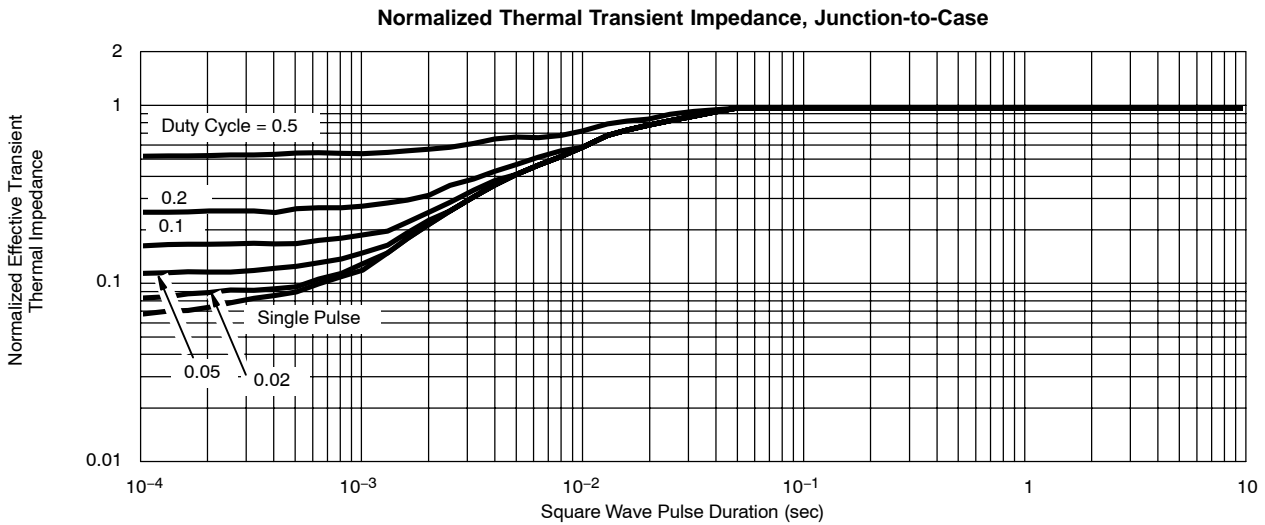


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**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



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