



## N-Channel 60-V (D-S) Fast Switching MOSFET

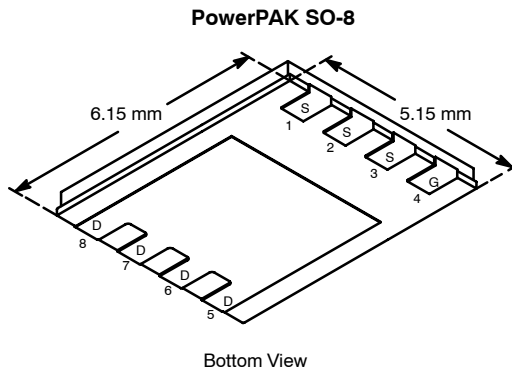
<b>PRODUCT SUMMARY</b>		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
60	0.0096 @ V <sub>GS</sub> = 10 V	18
	0.012 @ V <sub>GS</sub> = 4.5 V	16

### FEATURES

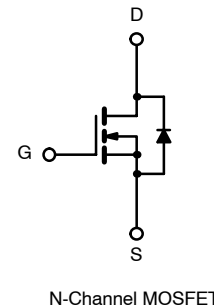
- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK® Package with Low 1.07-mm Profile

### APPLICATIONS

- Automotive 12/24-V Battery
  - ABS
  - ECU
  - Motor Drives



Ordering Information: Si7460DP-T1



<b>ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)</b>				
Parameter	Symbol	10 secs	Steady State	Unit
Drain-Source Voltage	V <sub>DS</sub>	60		V
Gate-Source Voltage	V <sub>GS</sub>	± 20		
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	I <sub>D</sub>	18	11	A
		14	8	
Pulsed Drain Current	I <sub>DM</sub>	40		
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	4.3	1.6	
Avalanche Current	I <sub>AS</sub>	50		
Avalanche Energy	E <sub>AS</sub>	125		
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	5.4	1.9	W
		3.4	1.2	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C

<b>THERMAL RESISTANCE RATINGS</b>				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	18	23	°C/W
		52	65	
Maximum Junction-to-Case (Drain)	R <sub>thJC</sub>	1.0	1.3	

Notes

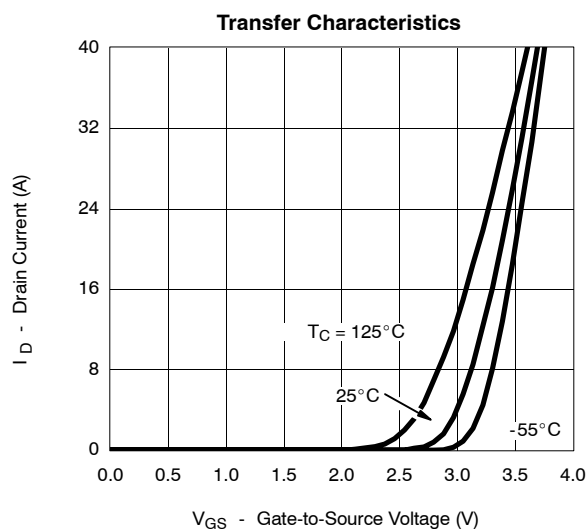
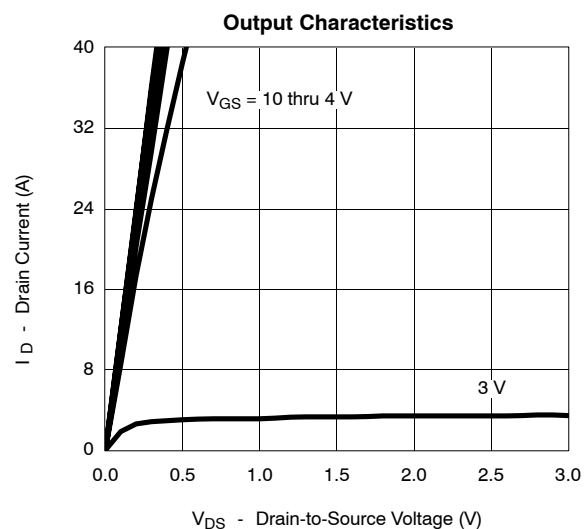
a. Surface Mounted on 1" x 1" FR4 Board.

**MOSFET SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1.0		3	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 48 \text{ V}, V_{GS} = 0 \text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 48 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			5	
On-State Drain Current <sup>NO TAG</sup>	$I_{D(on)}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	40			A
Drain-Source On-State Resistance <sup>NO TAG</sup>	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 18 \text{ A}$		0.008	0.0096	$\Omega$
		$V_{GS} = 4.5 \text{ V}, I_D = 16 \text{ A}$		0.010	0.012	
Forward Transconductance <sup>NO TAG</sup>	$g_{fs}$	$V_{DS} = 15 \text{ V}, I_D = 18 \text{ A}$		60		S
Diode Forward Voltage <sup>NO TAG</sup>	$V_{SD}$	$I_S = 4.3 \text{ A}, V_{GS} = 0 \text{ V}$		0.72	1.2	V
<b>Dynamic<sup>NO TAG</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 18 \text{ A}$		65	100	nC
Gate-Source Charge	$Q_{gs}$			10.5		
Gate-Drain Charge	$Q_{gd}$			16		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30 \text{ V}, R_L = 30 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 6 \Omega$		20	30	ns
Rise Time	$t_r$			16	25	
Turn-Off Delay Time	$t_{d(off)}$			75	120	
Fall Time	$t_f$			30	45	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 4.3 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		41	65	

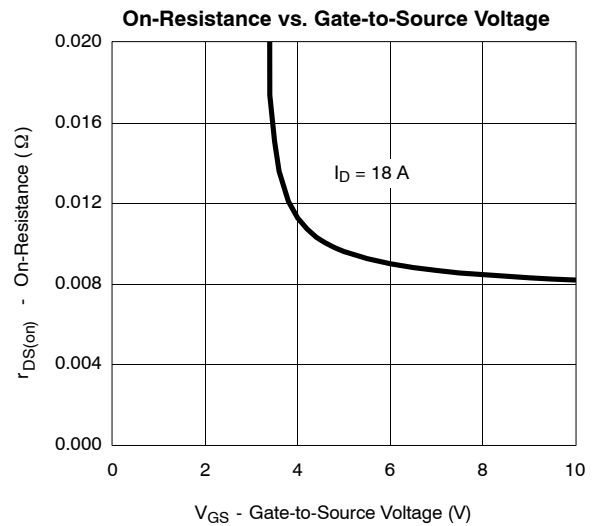
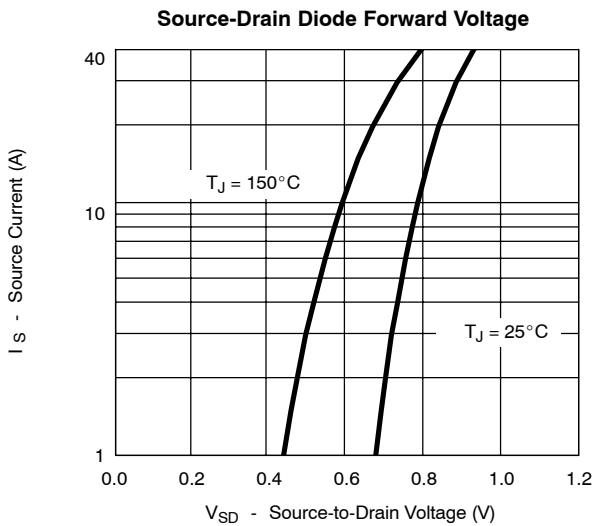
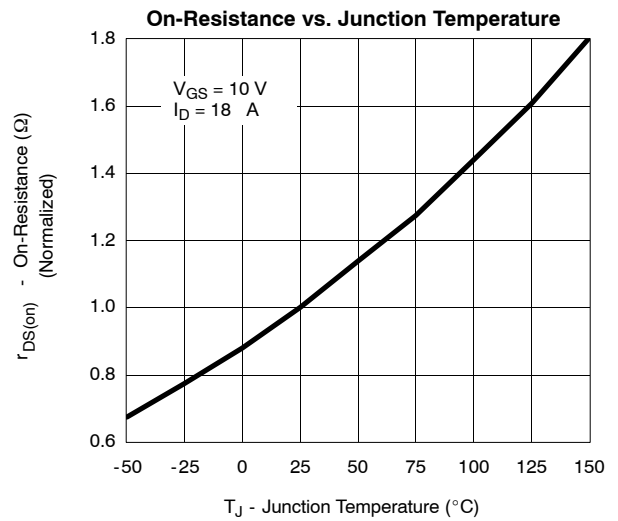
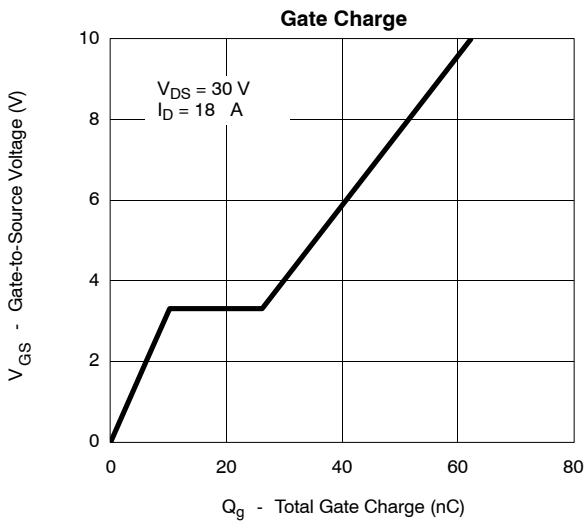
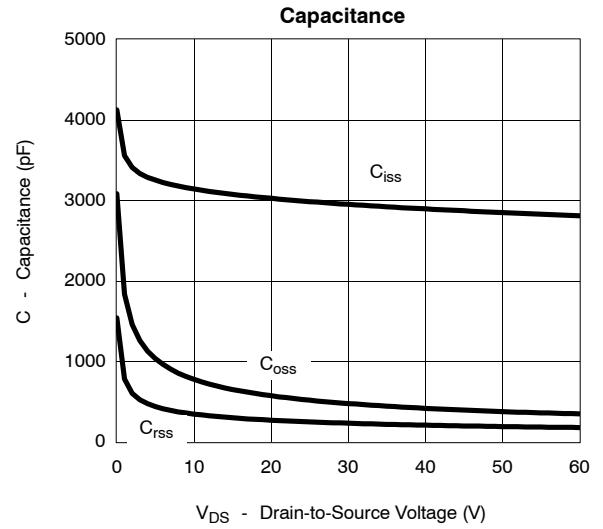
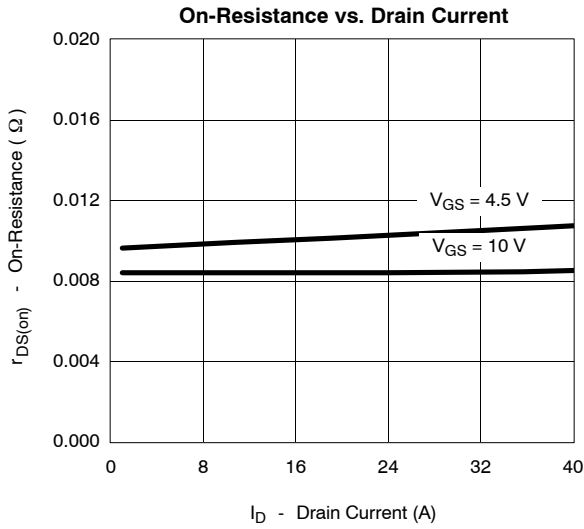
## Notes

- Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

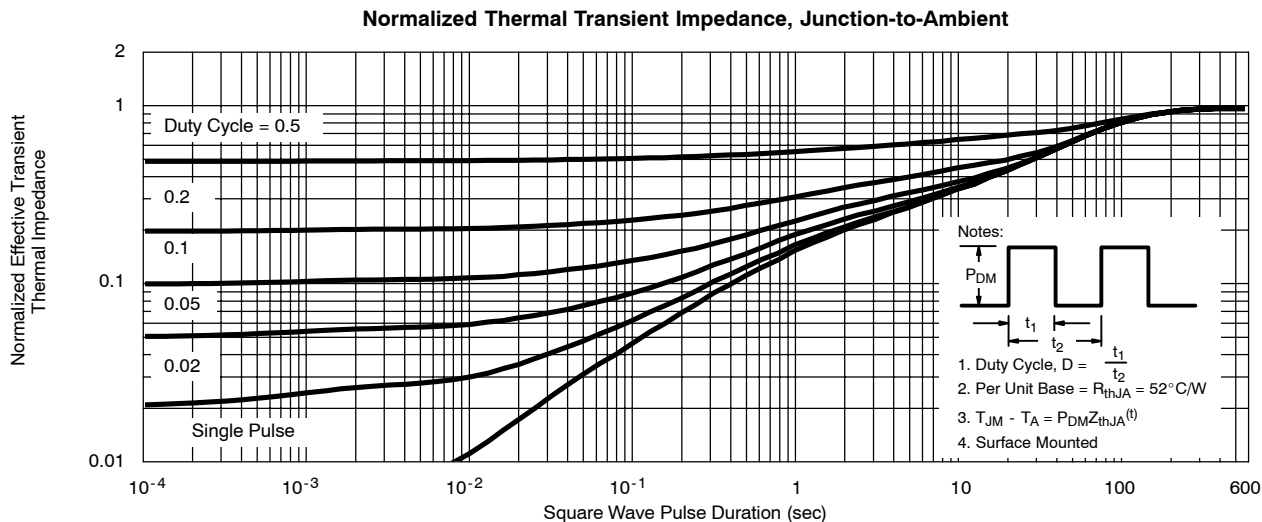
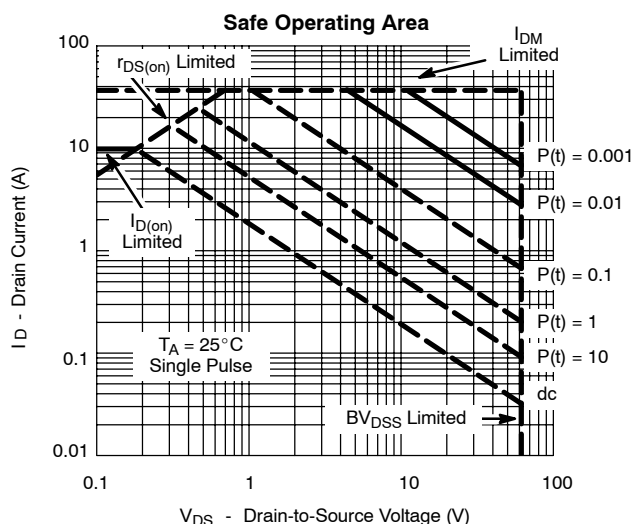
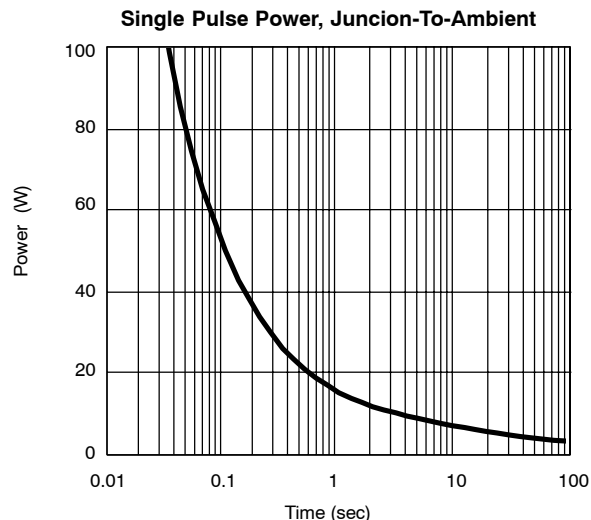
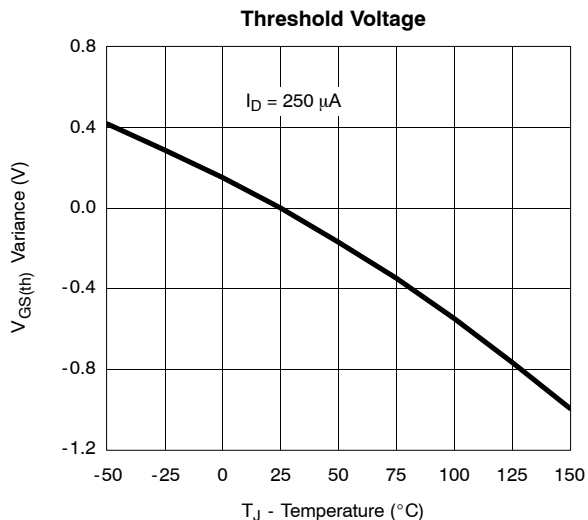
**TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$  UNLESS NOTED)**



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