

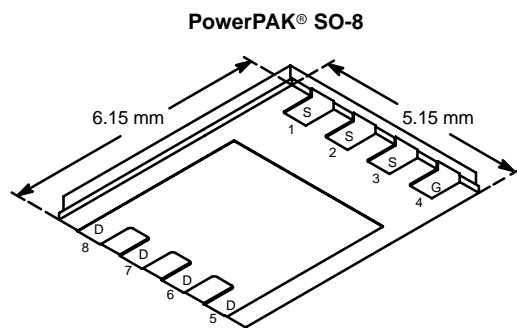


N-Channel 30-V (D-S) Fast Switching MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.0075 @ $V_{GS} = 10$ V	19
	0.010 @ $V_{GS} = 4.5$ V	17

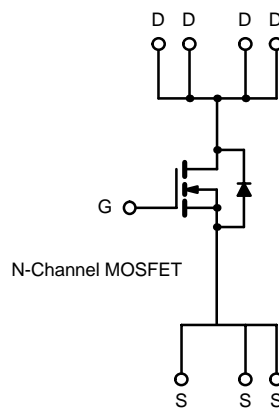
FEATURES

- TrenchFET® Power MOSFET
- High-Efficiency PWM Optimized
- 100% R_g Tested



Bottom View

Ordering Information: Si7446DP-T1



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}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	19	12	A
	$T_A = 70^\circ\text{C}$		15	9	
Pulsed Drain Current		I_{DM}	50		
Continuous Source Current (Diode Conduction) ^a		I_S	4.3	1.6	
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	5.2	1.9	W
	$T_A = 70^\circ\text{C}$		3.3	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 ^a	$t \leq 10$ sec	R_{thJA}	19	24	$^\circ\text{C/W}$
	Steady State		52	65	
Maximum Junction-to-Case (Drain)		R_{thJC}	1.5	1.8	

Notes

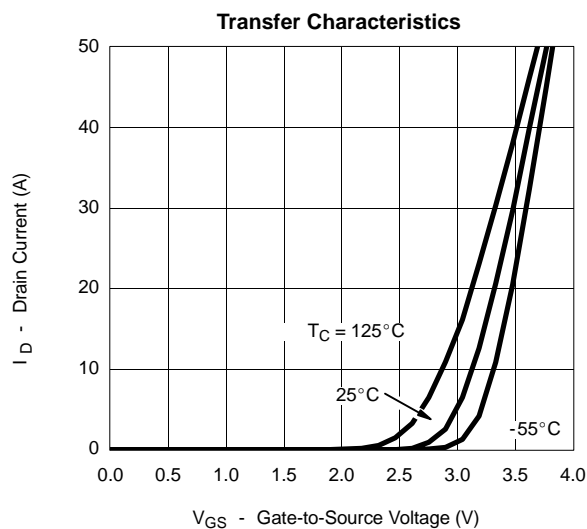
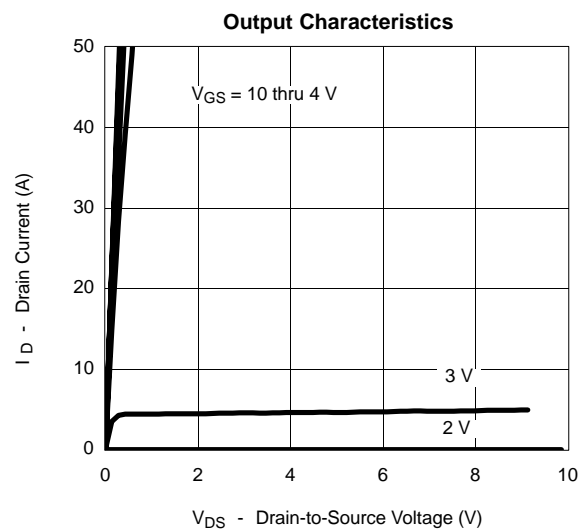
a. Surface Mounted on 1" x 1" FR4 Board.

MOSFET SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

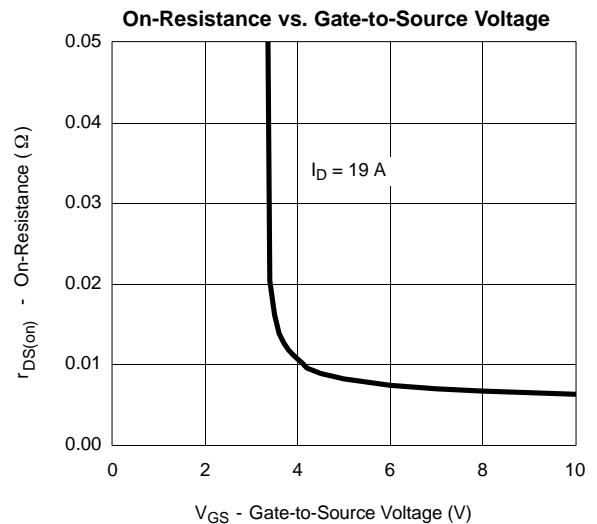
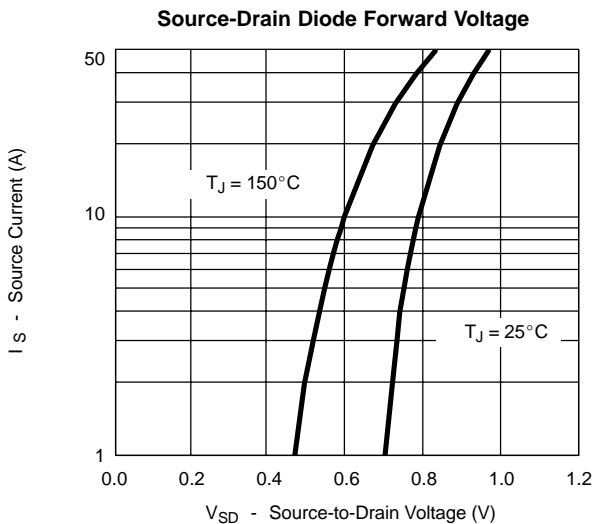
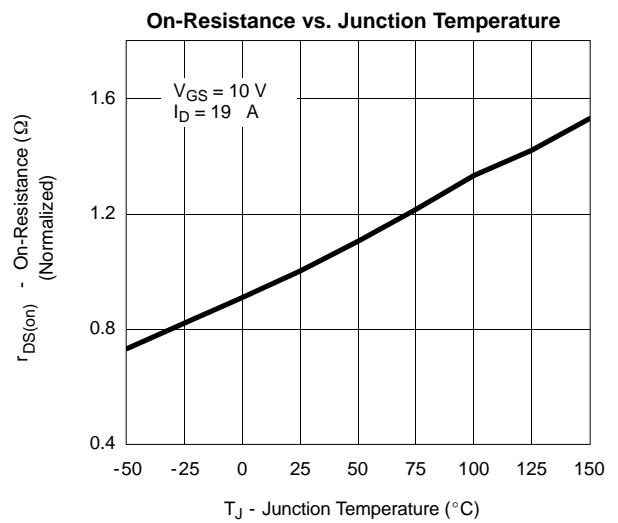
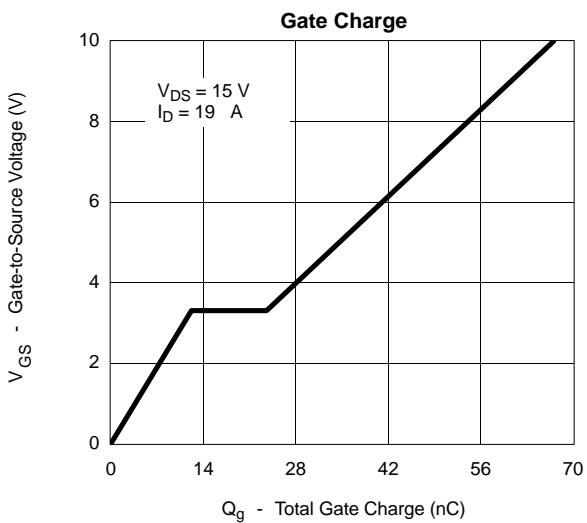
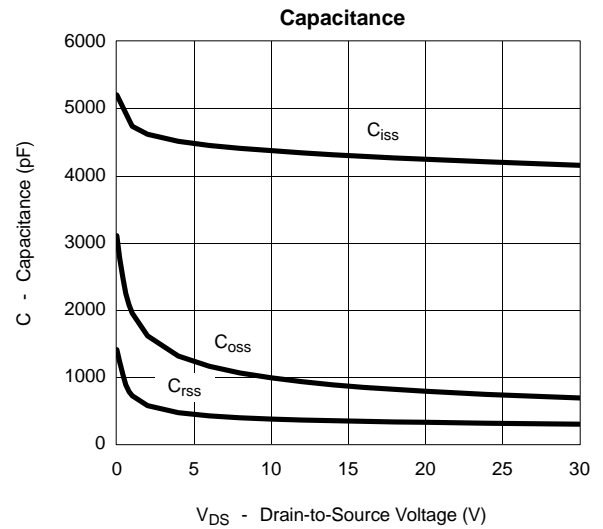
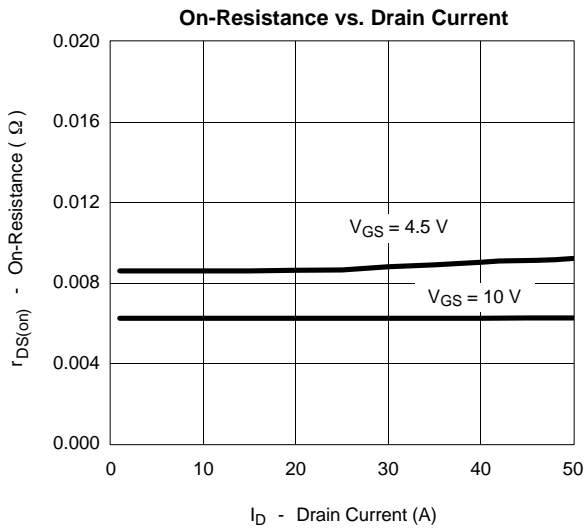
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55 °C			5	
On-State Drain Current ^{NO TAG}	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	40			A
Drain-Source On-State Resistance ^{NO TAG}	r _{DS(on)}	V _{GS} = 10 V, I _D = 19 A		0.0062	0.0075	Ω
		V _{GS} = 4.5 V, I _D = 17 A		0.0083	0.010	
Forward Transconductance ^{NO TAG}	g _{fs}	V _{DS} = 15 V, I _D = 19 A		60		S
Diode Forward Voltage ^{NO TAG}	V _{SD}	I _S = 4.3 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^{NO TAG}						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5.0 V, I _D = 19 A		36	45	nC
Gate-Source Charge	Q _{gs}			14		
Gate-Drain Charge	Q _{gd}			12		
Gate-Resistance	R _g		0.5	2.4	3.1	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		20	30	ns
Rise Time	t _r			16	25	
Turn-Off Delay Time	t _{d(off)}			120	180	
Fall Time	t _f			43	65	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 2.3 A, di/dt = 100 A/μs		50	80	

Notes

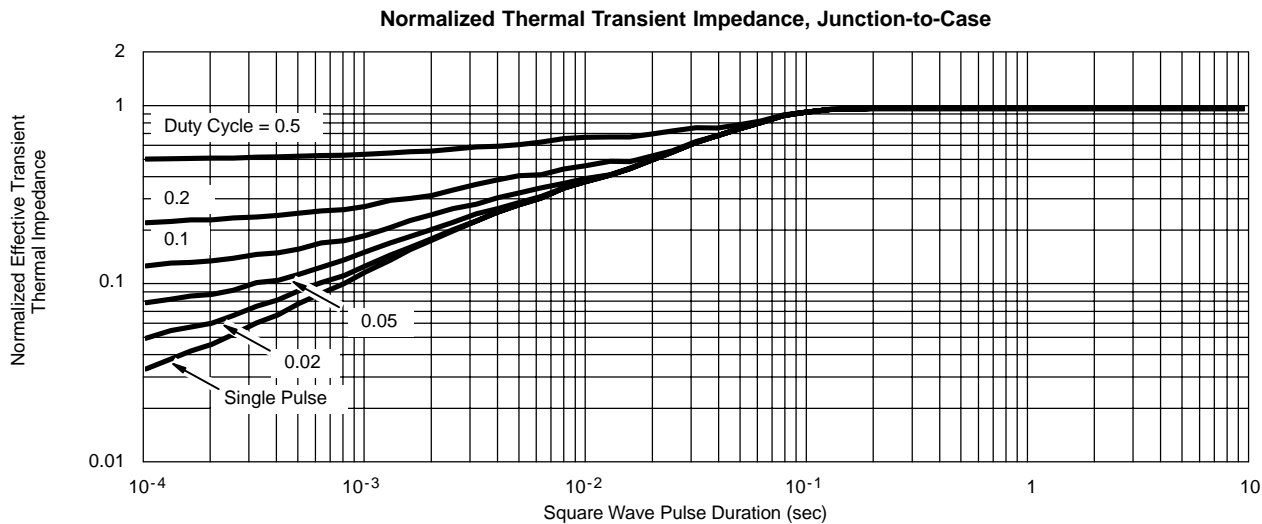
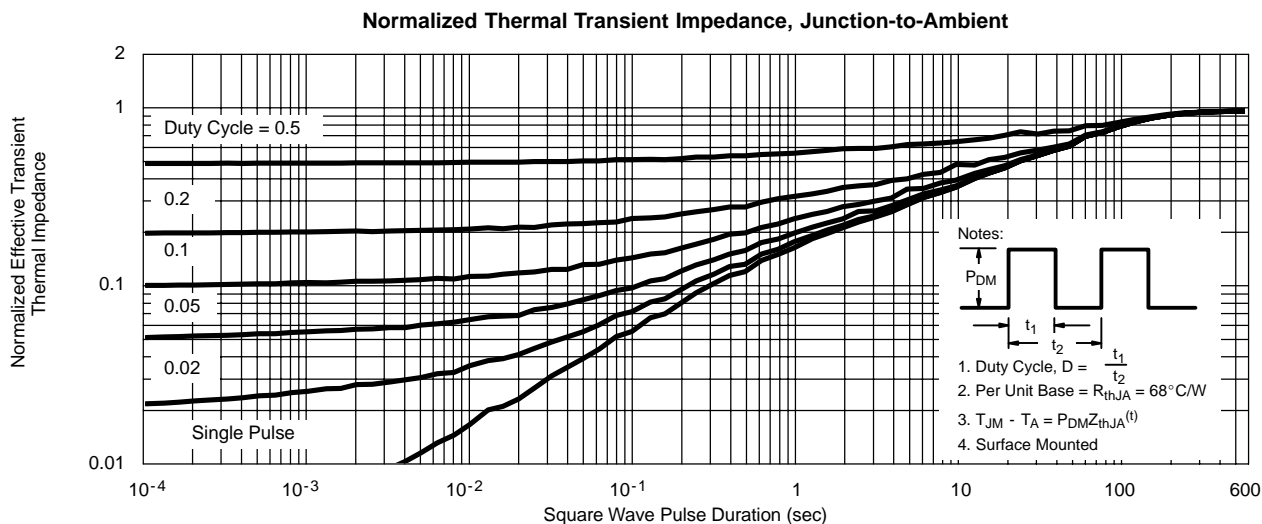
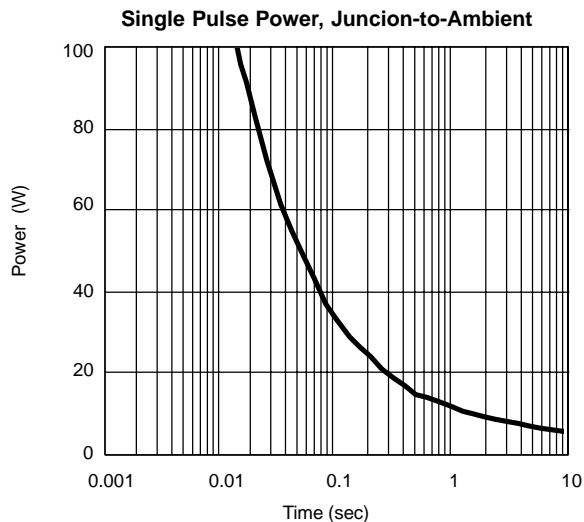
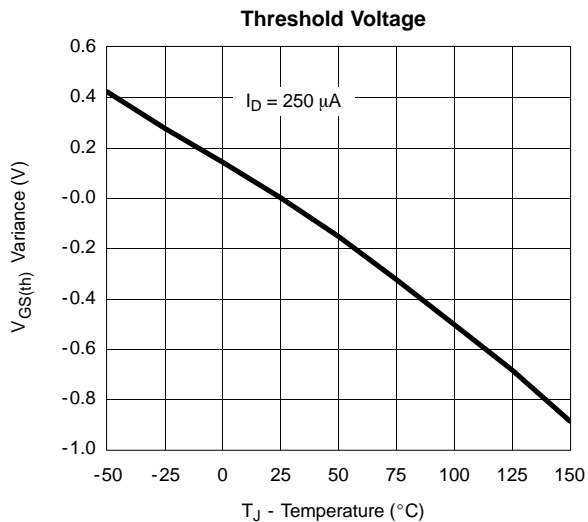
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

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