N-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.0055 @ V_{GS} = 10 V	20
	0.0085 @ V_{GS} = 4.5 V	16

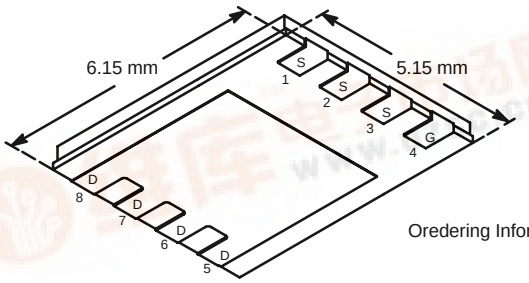
FEATURES

- TrenchFET® Power MOSFET
- Low r_{DS} x Q_g Figure of Merit
- Optimized For High Frequency Conversion

APPLICATIONS

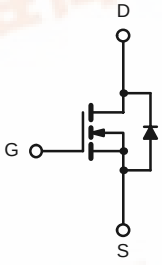
- Low-Side MOSFET in Synchronous Buck DC/DC Converters in Desktops
- Low Output Voltage Synchronous Rectifier

PowerPAK™ SO-8



Bottom View

Oredering Information: Si7368DP-T1



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±16		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	20	13	A
	T_A = 70°C		17	10	
Pulsed Drain Current (10 µs Pulse Width)		I_{DM}	50		
Continuous Source Current (Diode Conduction)[a]		I_S	4.1	1.4	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	5	1.7	W
	T_A = 70°C		3.2	1.1	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 10 sec	R_{thJA}	20	25	°C/W
	Steady State		53	70	
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	3.4	4.5	

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

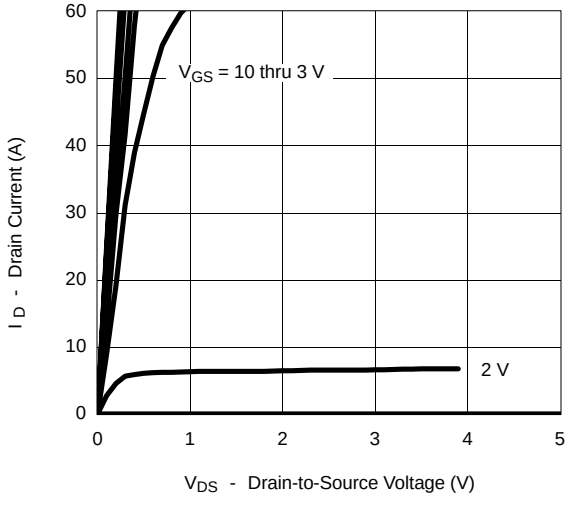
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	0.7		1.8	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±16 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16 V, V_{GS} = 0 V			1	µA
		V_{DS} = 16 V, V_{GS} = 0 V, T_J = 55°C			5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 10 V	30			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A		0.0043	0.0055	Ω
		V_{GS} = 4.5 V, I_D = 16 A		0.0065	0.0085	
Forward Transconductance[a]	g_{fs}	V_{DS} = 6 V, I_D = 20 A		48		S
Diode Forward Voltage[a]	V_{SD}	I_S = 4.5 A, V_{GS} = 0 V		0.7	1.1	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 20 A		17	25	nC
Gate-Source Charge	Q_{gs}			4.5		
Gate-Drain Charge	Q_{gd}			4.5		
Gate Resistance	R_g			1.5		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 10 Ω I_D ≅ 1 A, V_{GEN} = 10 V, R_G = 6 Ω		22	35	ns
Rise Time	t_r			20	30	
Turn-Off Delay Time	$t_{d(off)}$			65	100	
Fall Time	t_f			17	30	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 4.1 A, di/dt = 100 A/µs		40	80	

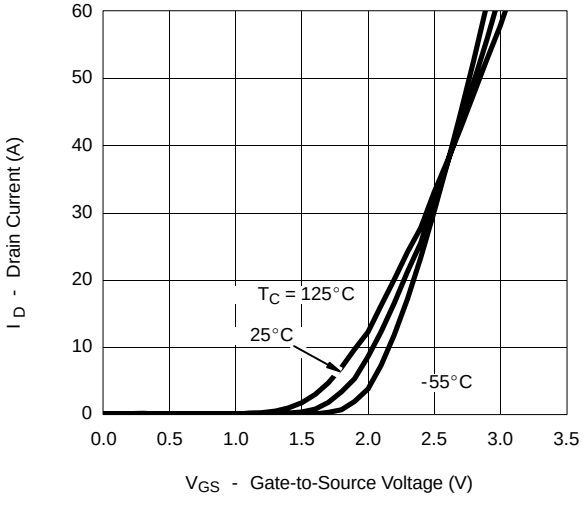
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

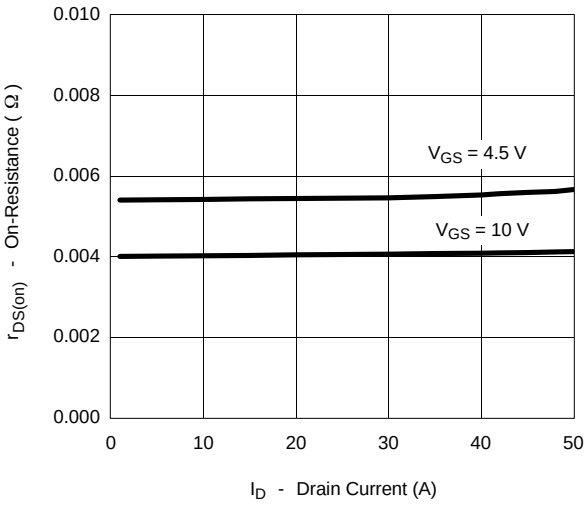


Transfer Characteristics

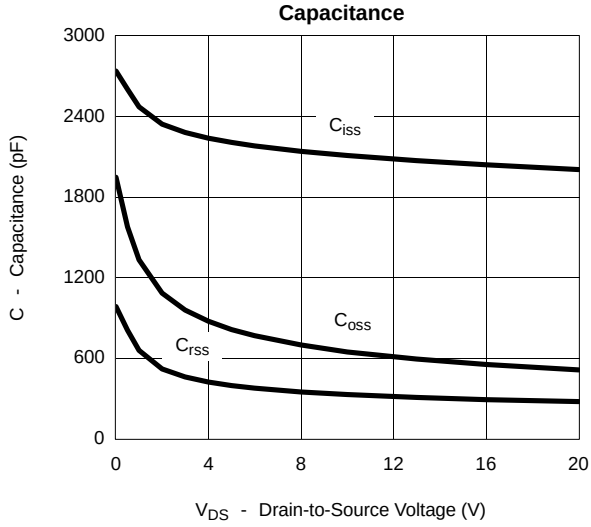


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

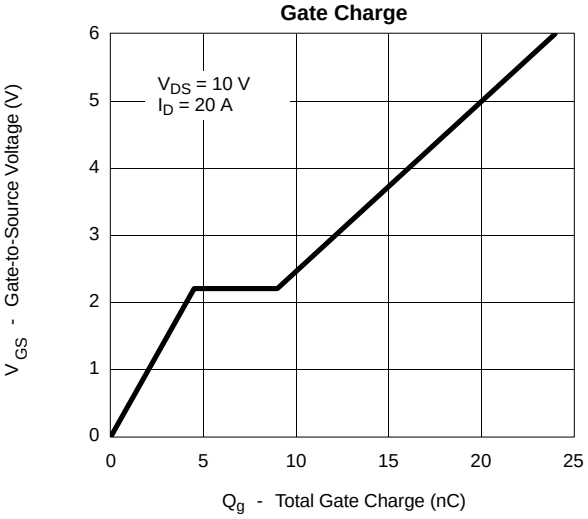
On-Resistance vs. Drain Current



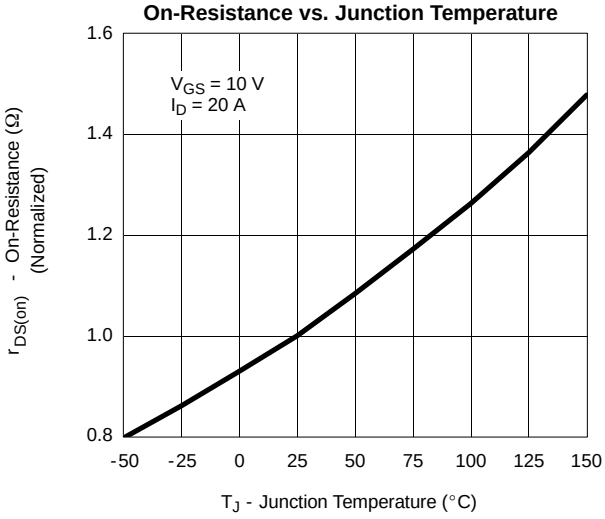
Capacitance



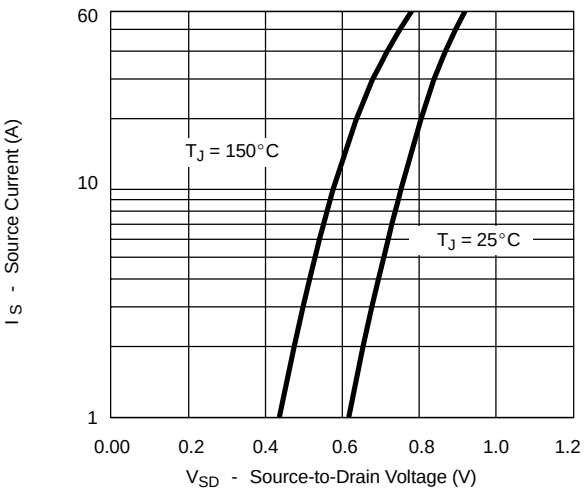
Gate Charge



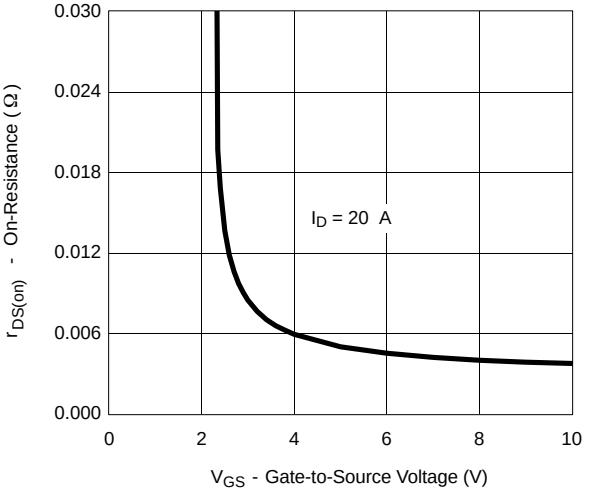
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



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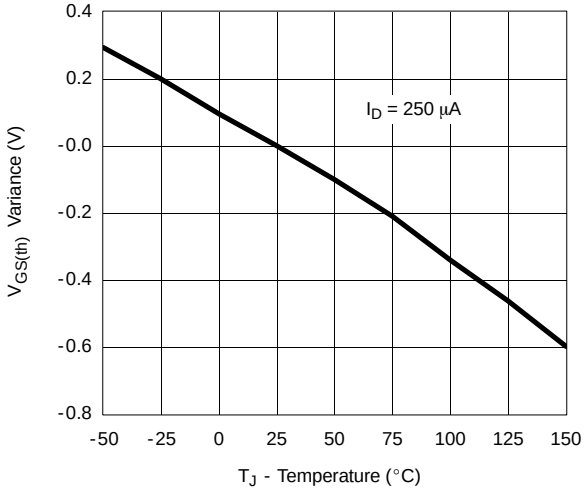
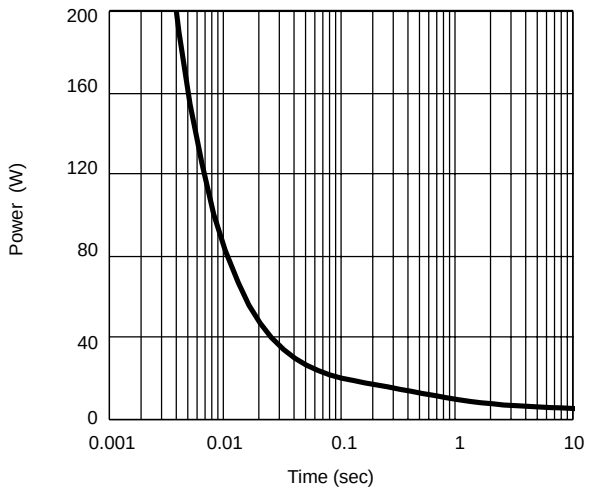
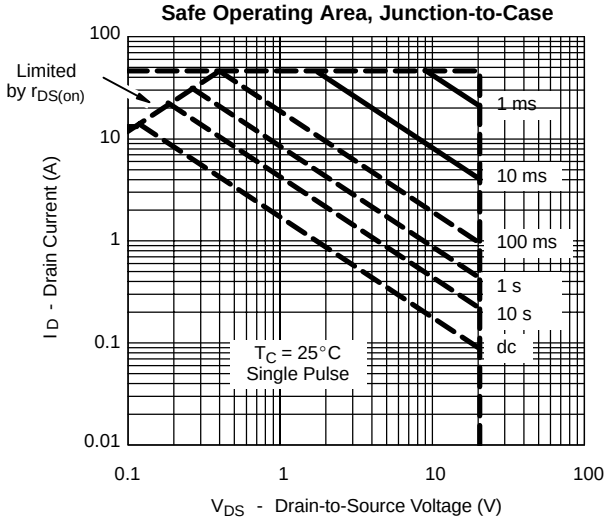
Threshold Voltage



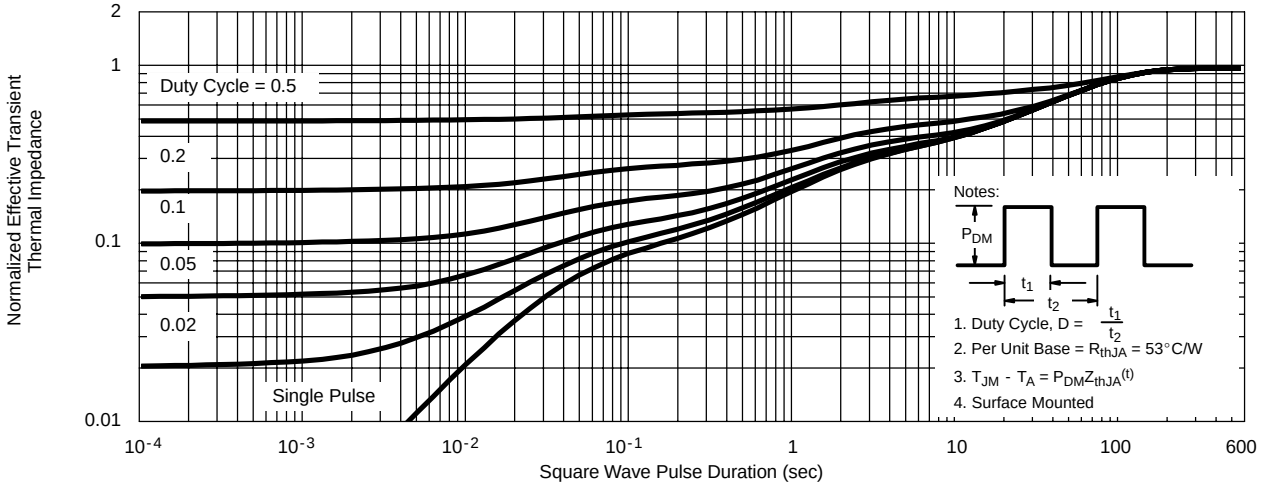
Single Pulse Power



Safe Operating Area, Junction-to-Case



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)