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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-20	0.0073 @ V_{GS} = -4.5 V	-20
	0.0090 @ V_{GS} = -2.5 V	-18
	0.013 @ V_{GS} = -1.8 V	-15

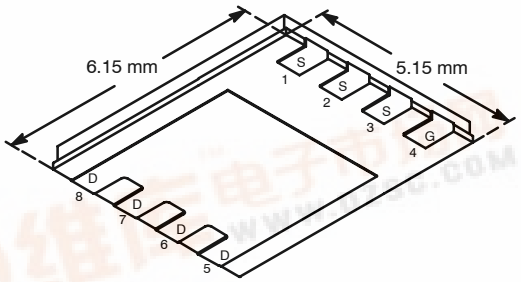
FEATURES

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

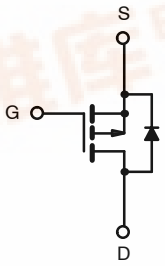
APPLICATIONS

- Battery Switch for Portable Devices

PowerPAK SO-8



Bottom View



P-Channel MOSFET

Ordering Information: Si7485DP-T1

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}	±8		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	-20	-12.5	A
	T_A = 70°C		-16.5	-9.5	
Pulsed Drain Current		I_{DM}	-50		
continuous Source Current (Diode Conduction)[a]		I_S	-4.5	-1.6	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	5	1.8	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		54	68	
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1.7	2.2	

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

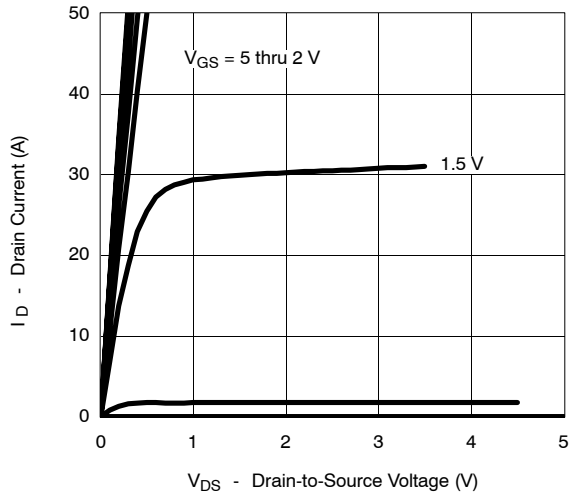
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -1 mA	-0.4		-0.9	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 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 = 70°C			-10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≤ -5 V, V_{GS} = -4.5 V	-40			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -20 A		0.006	0.0073	Ω
		V_{GS} = -2.5 V, I_D = -18 A		0.0074	0.0090	
		V_{GS} = -1.8 V, I_D = -15 A		0.0106	0.013	
Forward Transconductance[a]	g_{fs}	V_{DS} = -15 V, I_D = -20 A		80		S
Diode Forward Voltage[a]	V_{SD}	I_S = -4.5 A, V_{GS} = 0 V		-0.62	-1.1	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -5 V, I_D = -20 A		99	150	nC
Gate-Source Charge	Q_{gs}			11.5		
Gate-Drain Charge	Q_{gd}			29		
Gate-Resistance	R_G			2.4		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 10 Ω I_D ≅ -1 A, V_{GEN} = -4.5 V, R_G = 6 Ω		80	120	ns
Rise Time	t_r			140	210	
Turn-Off Delay Time	$t_{d(off)}$			360	540	
Fall Time	t_f			170	260	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = -2.9 A, di/dt = 100 A/µs		55	80	

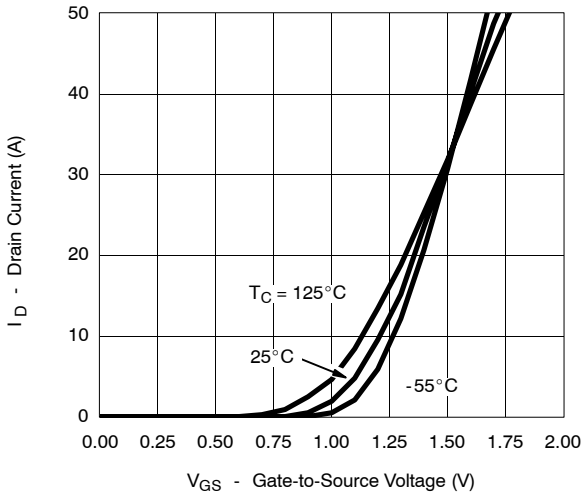
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

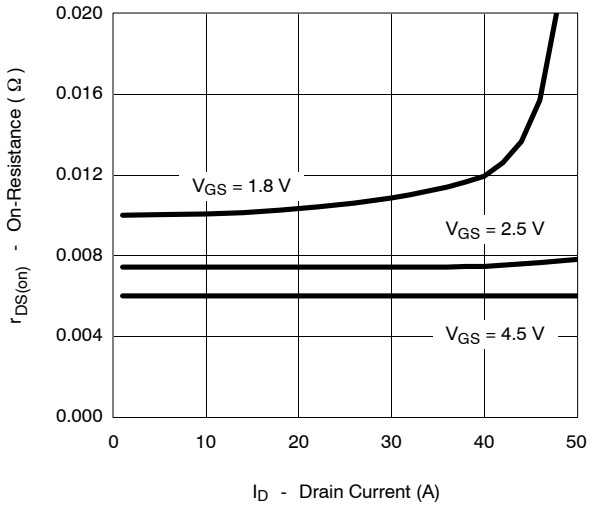


Transfer Characteristics

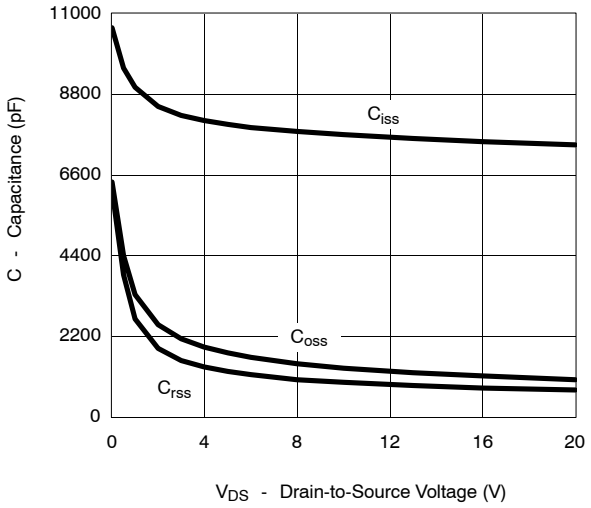


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

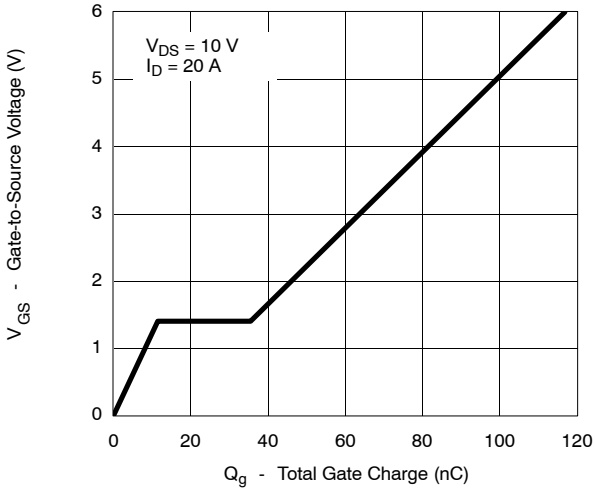
On-Resistance vs. Drain Current



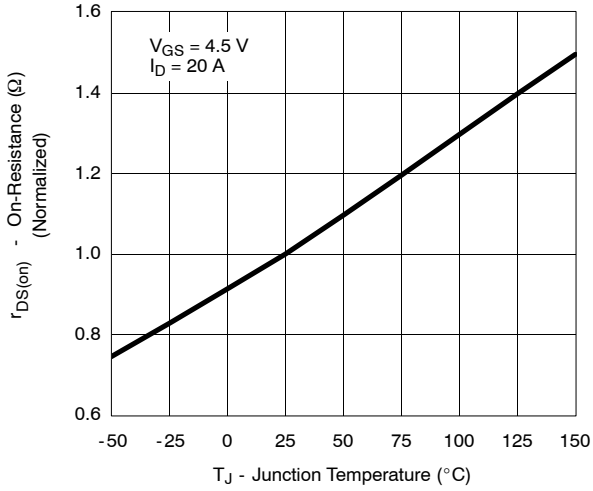
Capacitance



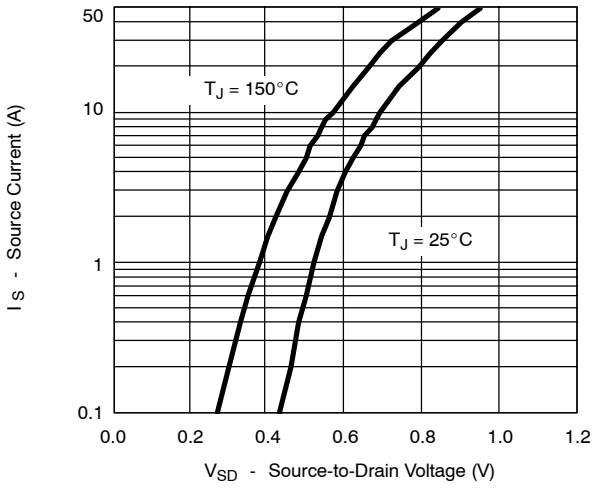
Gate Charge



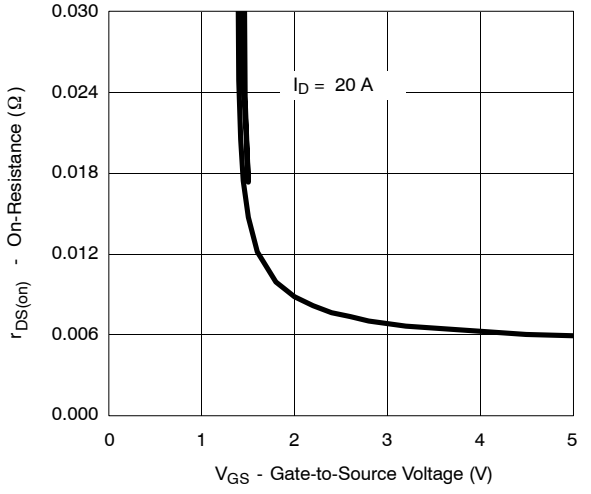
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

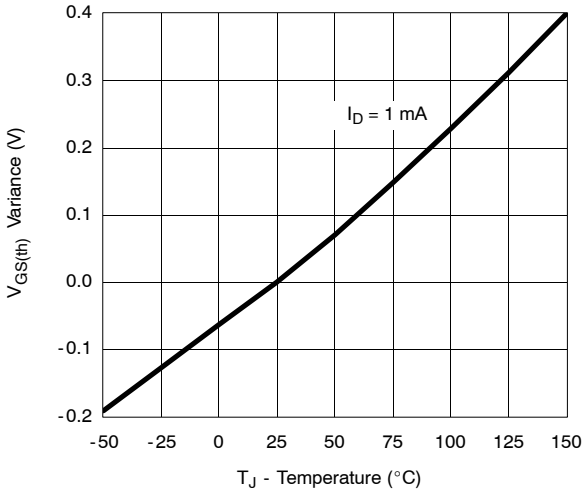


On-Resistance vs. Gate-to-Source Voltage

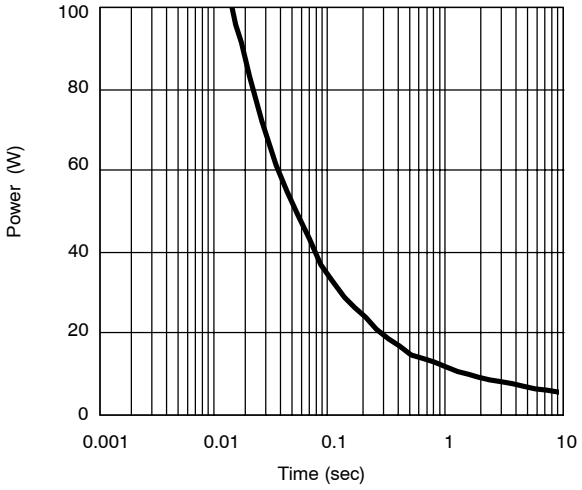


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

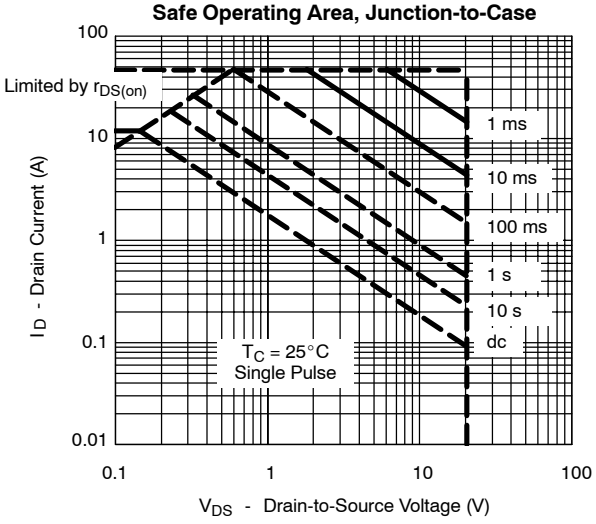
Threshold Voltage



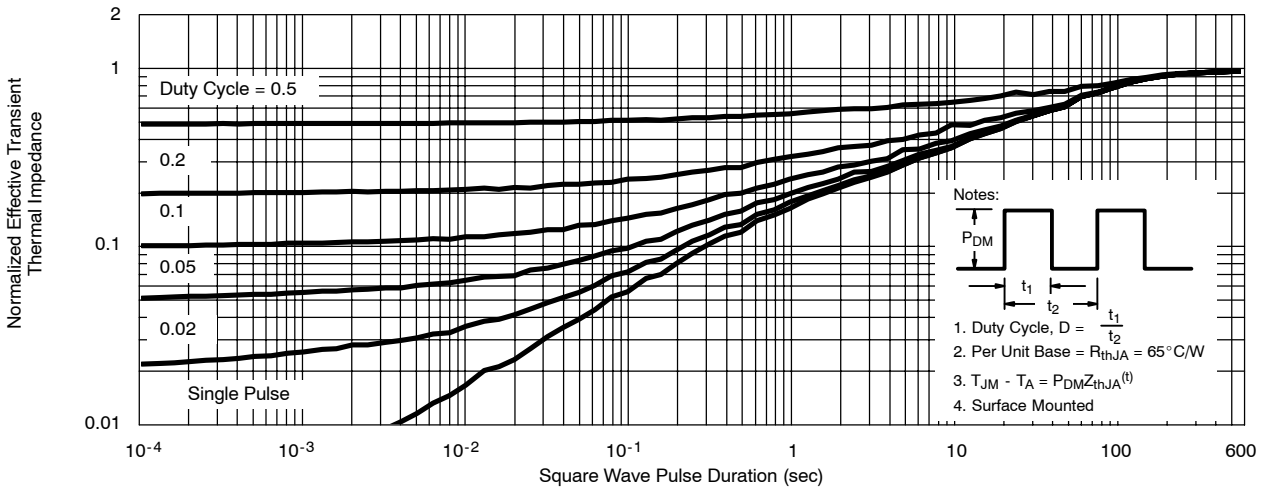
Single Pulse Power, Juncion-To-Ambient



Safe Operating Area, Junction-to-Case



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)