

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

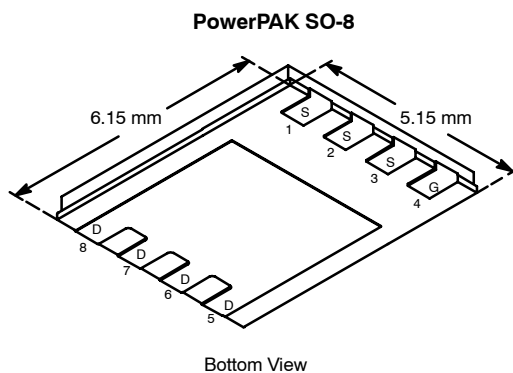
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-20	0.0073 @ $V_{GS} = -4.5$ V	-20
	0.0090 @ $V_{GS} = -2.5$ V	-18
	0.013 @ $V_{GS} = -1.8$ V	-15

FEATURES

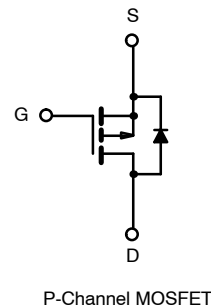
- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK® Package with Low 1.07-mm Profile

APPLICATIONS

- Battery Switch for Portable Devices



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	$t \leq 10$ sec	R_{thJA}	20	25	$^\circ\text{C/W}$
	Steady State		54	68	
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1.7	2.2	

Notes

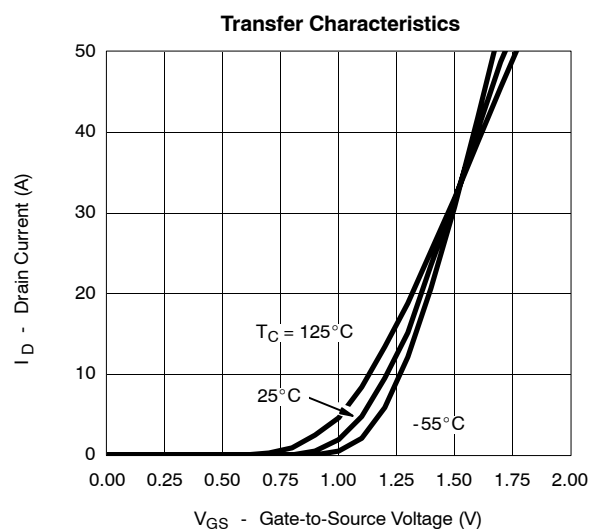
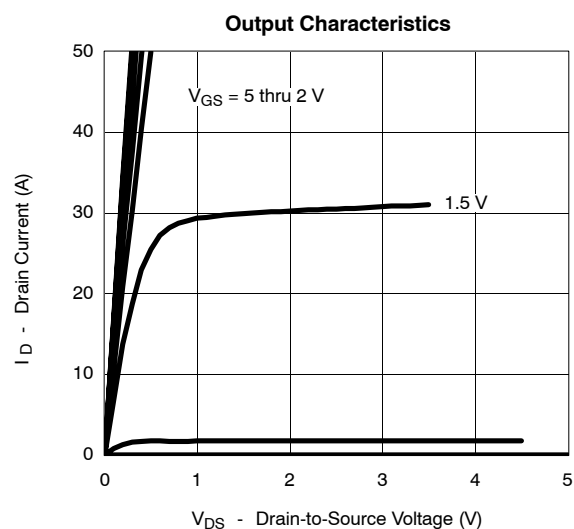
a. Surface Mounted on 1" x 1" FR4 Board.

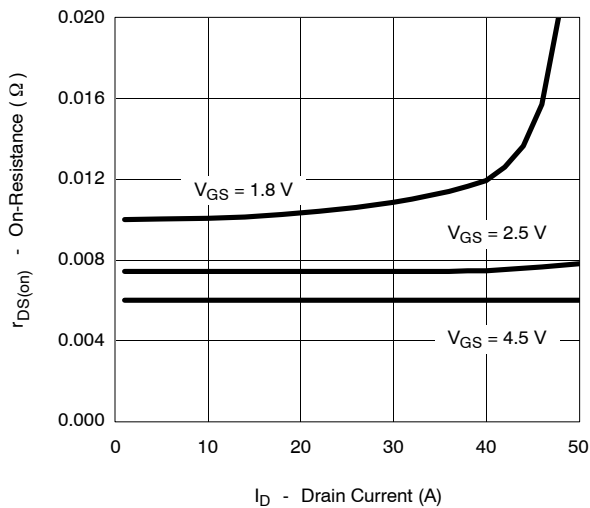
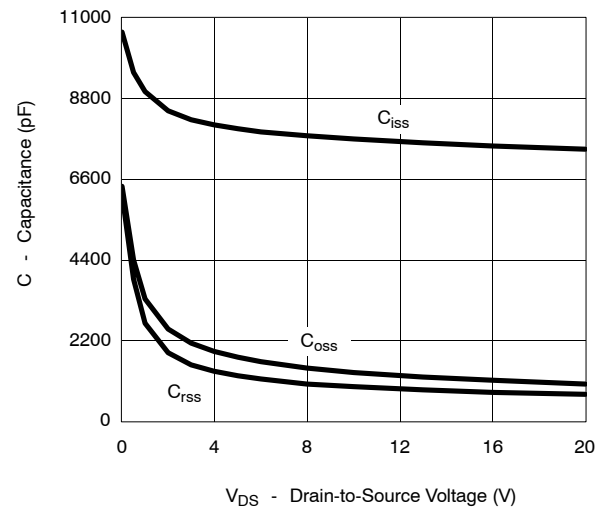
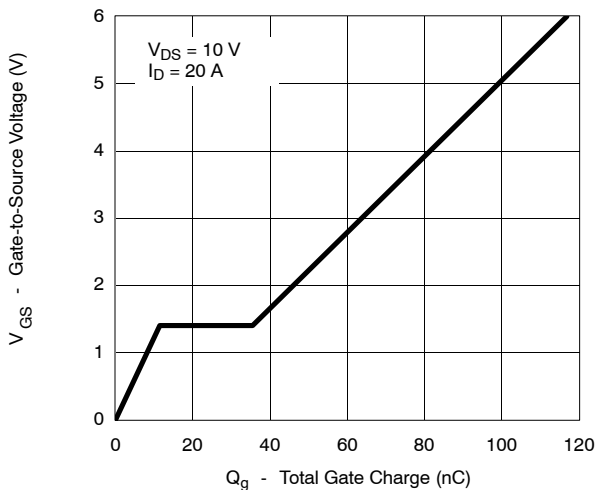
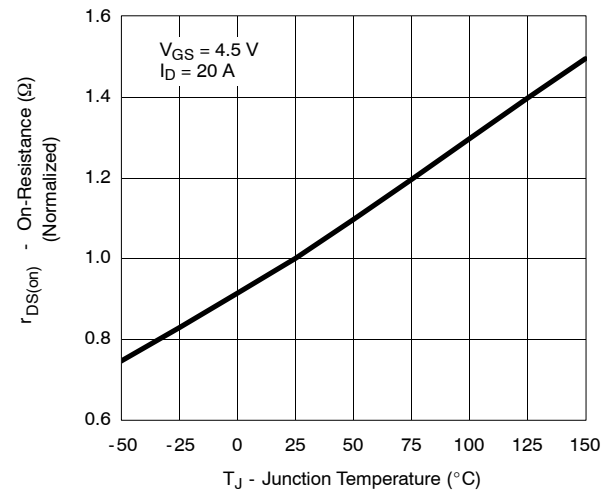
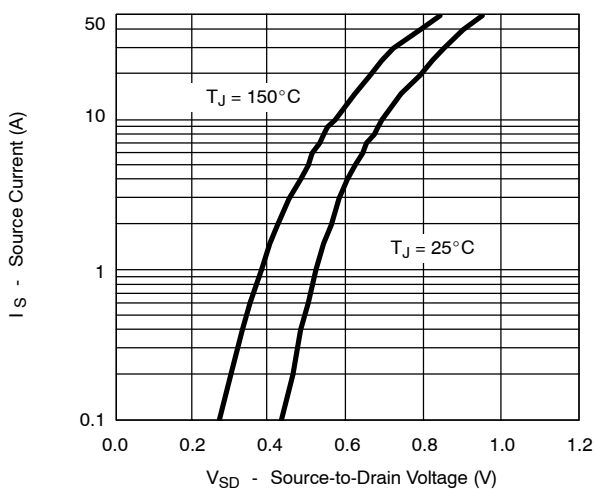
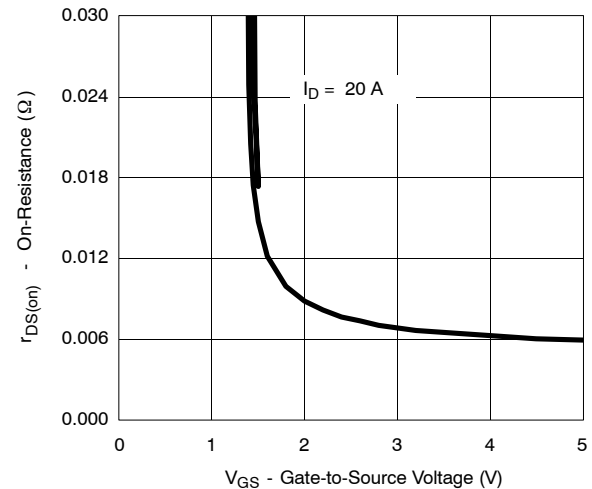
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

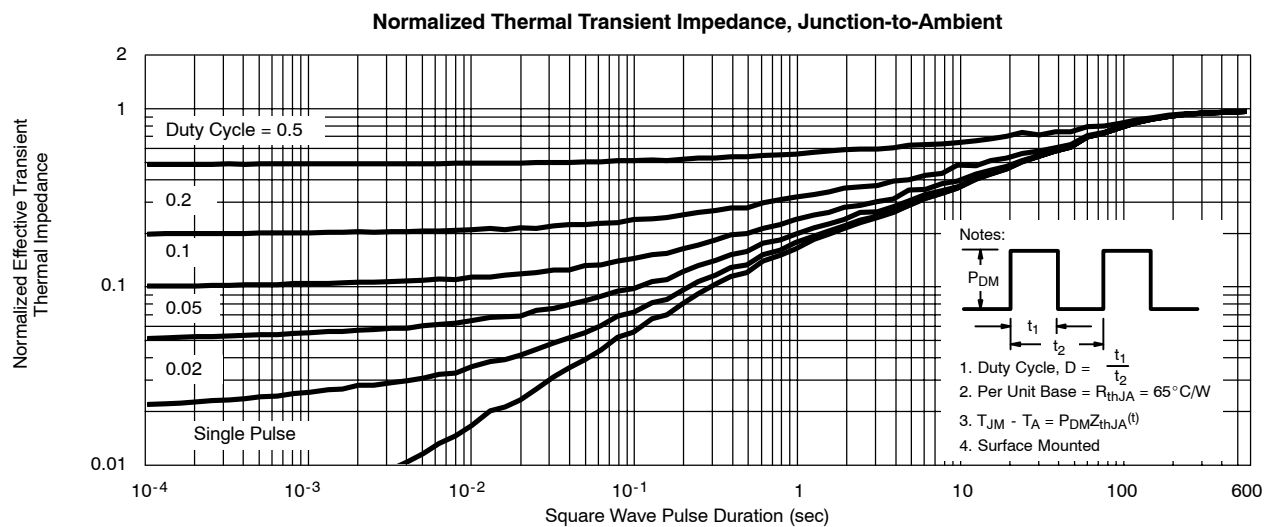
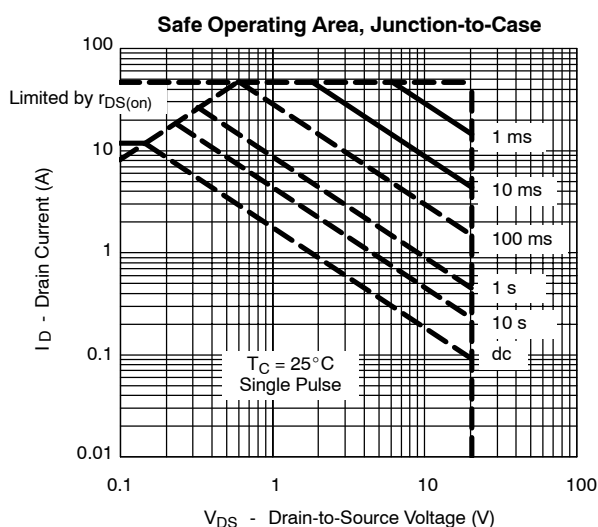
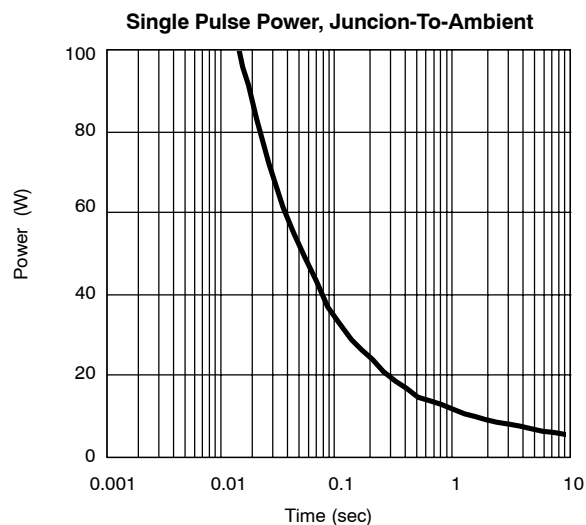
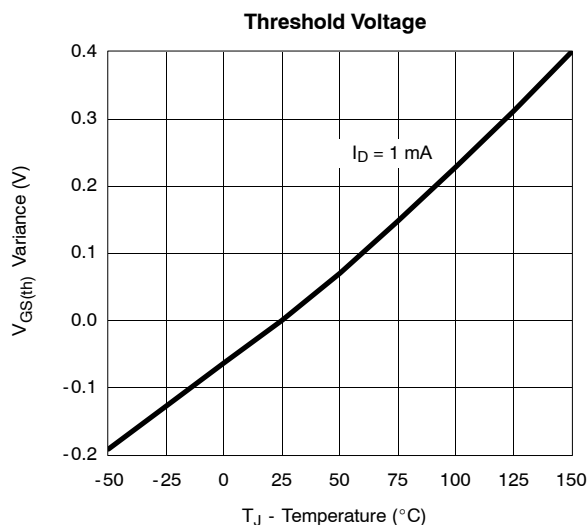
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -1\text{ mA}$	-0.4		-0.9	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16\text{ V}$, $V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -16\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 70^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}$, $V_{GS} = -4.5\text{ V}$	-40			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -4.5\text{ V}$, $I_D = -20\text{ A}$		0.006	0.0073	Ω
		$V_{GS} = -2.5\text{ V}$, $I_D = -18\text{ A}$		0.0074	0.0090	
		$V_{GS} = -1.8\text{ V}$, $I_D = -15\text{ A}$		0.0106	0.013	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}$, $I_D = -20\text{ A}$		80		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -4.5\text{ A}$, $V_{GS} = 0\text{ V}$		-0.62	-1.1	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -10\text{ V}$, $V_{GS} = -5\text{ V}$, $I_D = -20\text{ A}$		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	$t_{d(on)}$	$V_{DD} = -10\text{ V}$, $R_L = 10\text{ }\Omega$ $I_D \cong -1\text{ A}$, $V_{GEN} = -4.5\text{ V}$, $R_G = 6\text{ }\Omega$		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}	$I_F = -2.9\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$		55	80	

Notes

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

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

**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)




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