



Dual P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.023 @ $V_{GS} = -10$ V	-10.2
	0.035 @ $V_{GS} = -4.5$ V	-8.1

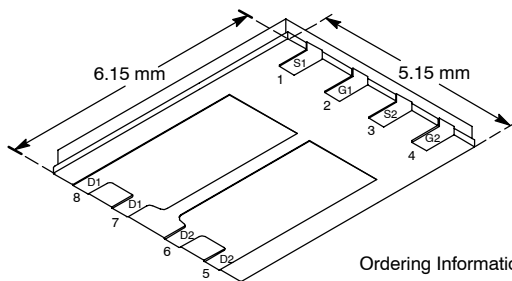
FEATURES

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

APPLICATIONS

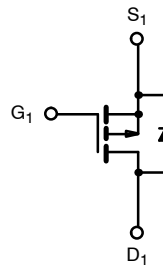
- Load Switch
 - Notebook PCs
 - Desktop PCs
 - Game Stations
- Battery Switch

PowerPAK SO-8

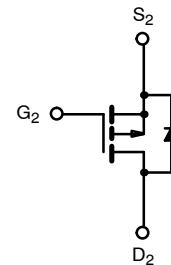


Ordering Information: Si7991DP-T1

Bottom View



P-Channel MOSFET



P-Channel MOSFET

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	I_D	$T_A = 25^\circ\text{C}$	-10.2	-6.6	A
		$T_A = 70^\circ\text{C}$	-8.2	-5.3	
Pulsed Drain Current	I_{DM}	-30			
continuous Source Current (Diode Conduction) ^a	I_S	-2.9	-1.2		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	3.5	1.4	W
		$T_A = 70^\circ\text{C}$	2.2	0.9	
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	R_{thJA}	$t \leq 10$ sec	28	35	$^\circ\text{C/W}$
		Steady State	60	85	
Maximum Junction-to-Case (Drain)	R_{thJC}	3	3.7		

Notes

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

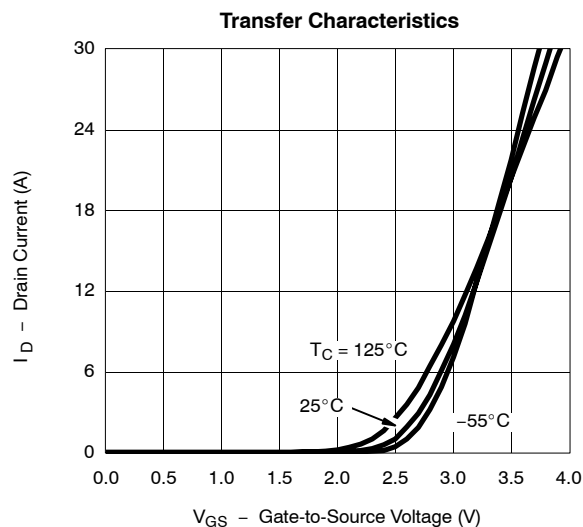
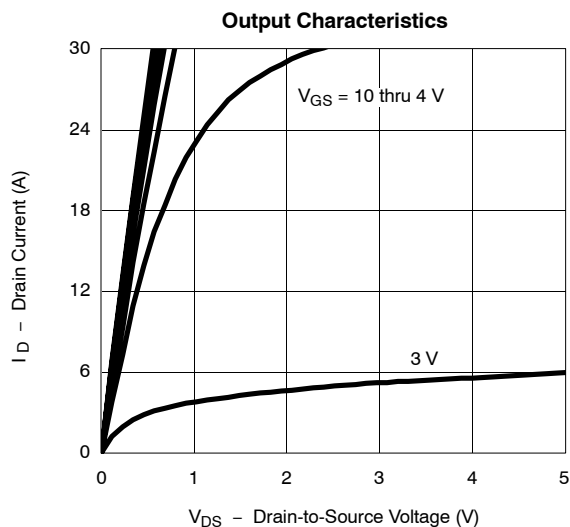
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1		-3	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} = -30 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -30 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 = -10.0 A		0.019	0.023	Ω
		V _{GS} = -4.5 V, I _D = -8.2 A		0.027	0.035	
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -10.0 A		22		S
Diode Forward Voltage ^a	V _{SD}	I _S = -2.9 A, V _{GS} = 0 V		-0.8	-1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -10 V, I _D = -10.0 A		38	57	nC
Gate-Source Charge	Q _{gs}			6.3		
Gate-Drain Charge	Q _{gd}			9.7		
Gate Resistance	R _g	f = 1 MHz		10		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		10	15	ns
Rise Time	t _r			15	25	
Turn-Off Delay Time	t _{d(off)}			130	200	
Fall Time	t _f			70	105	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -2.9 A, di/dt = 100 A/μs		45	70	

Notes

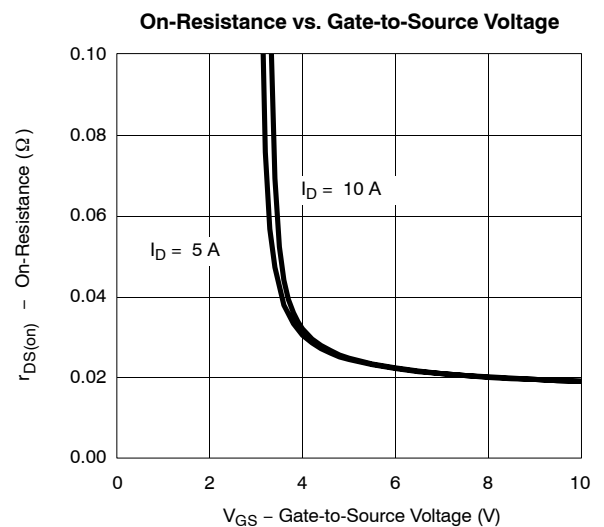
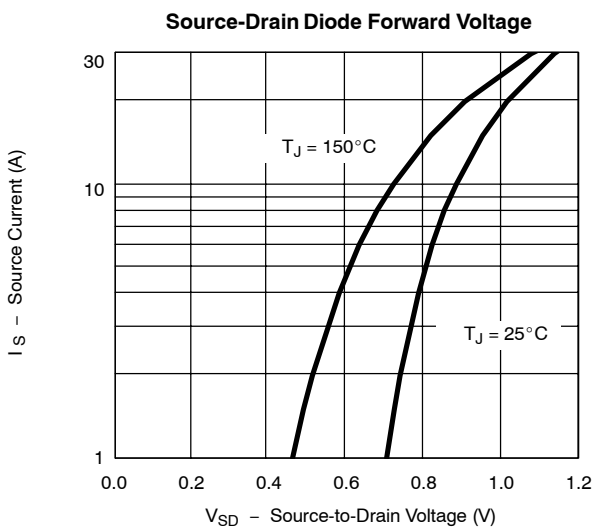
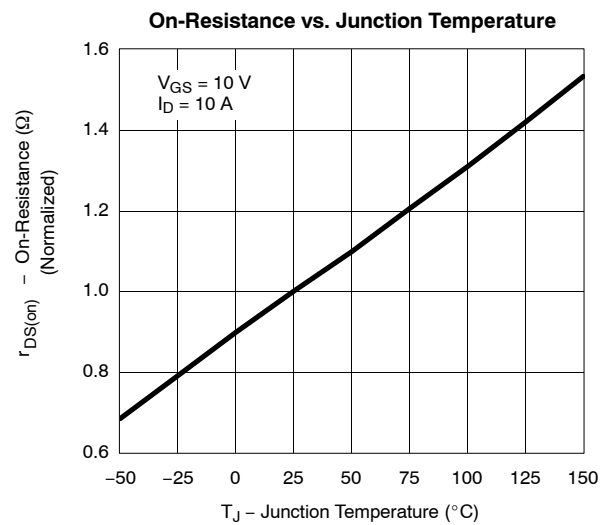
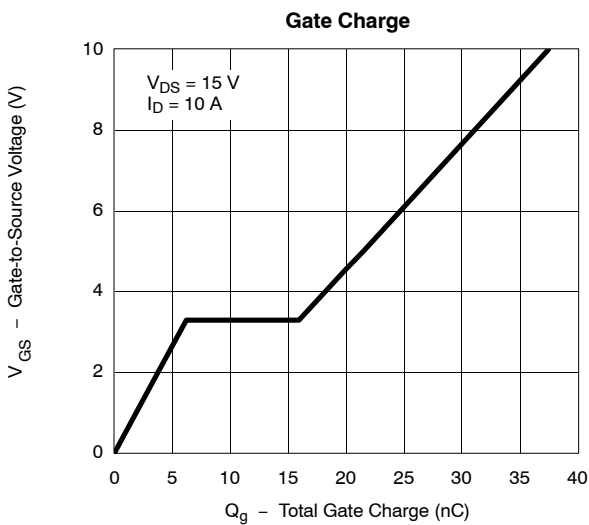
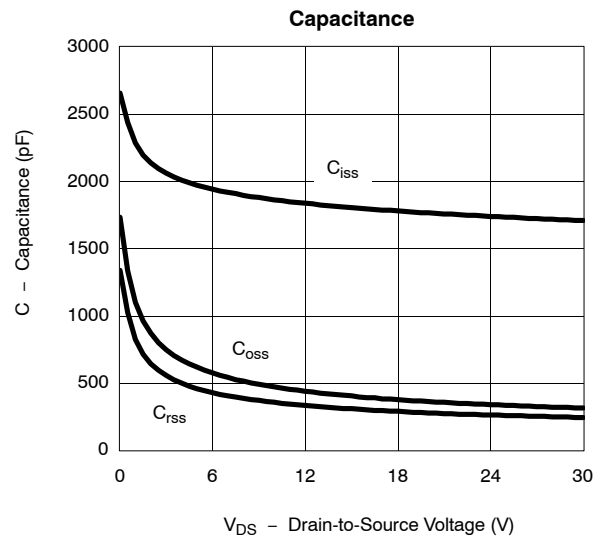
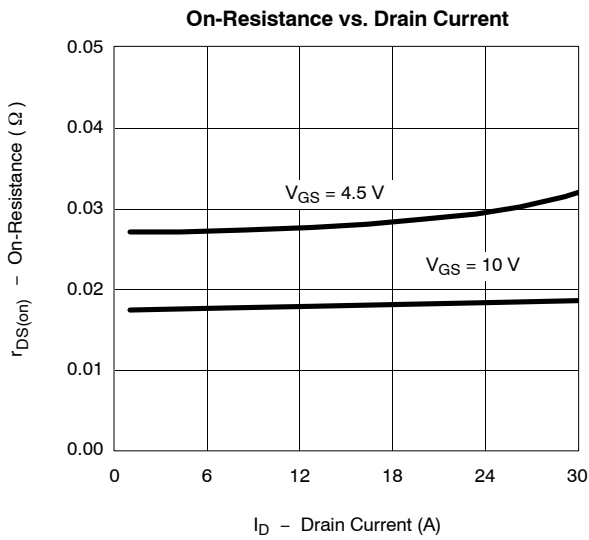
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

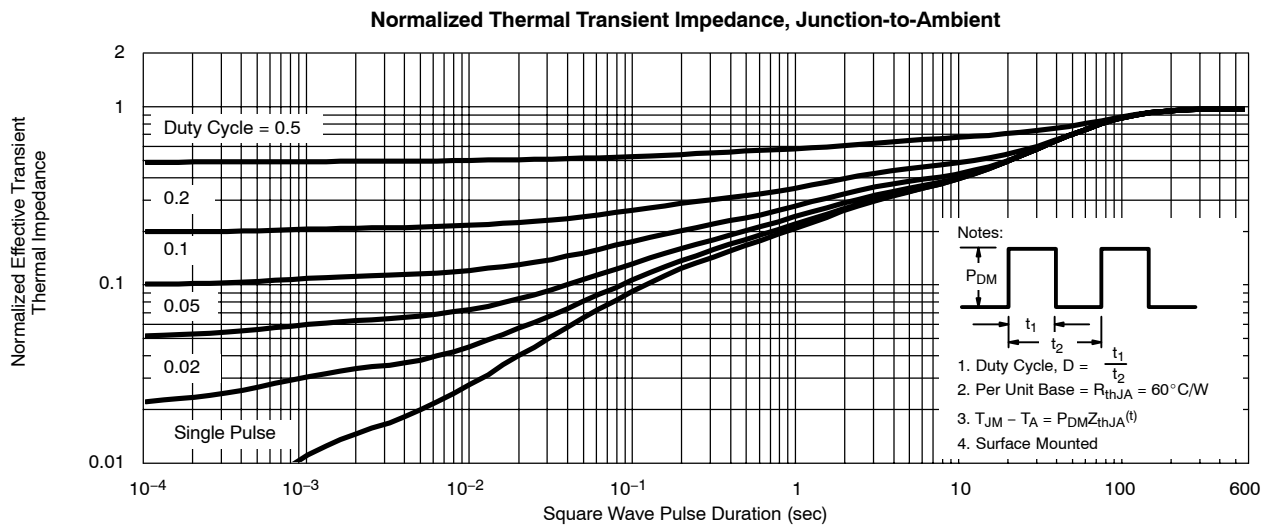
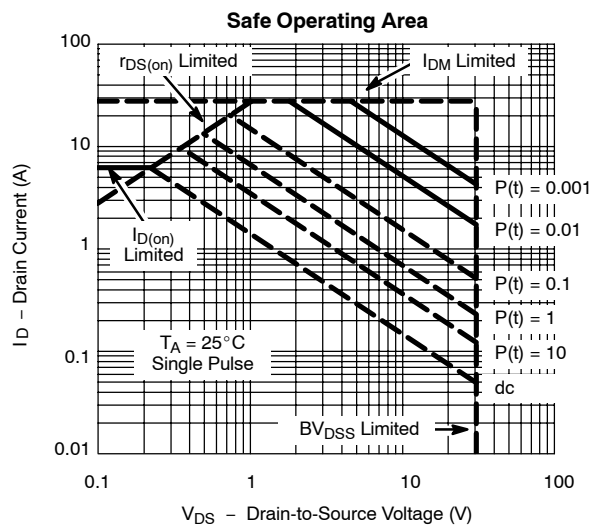
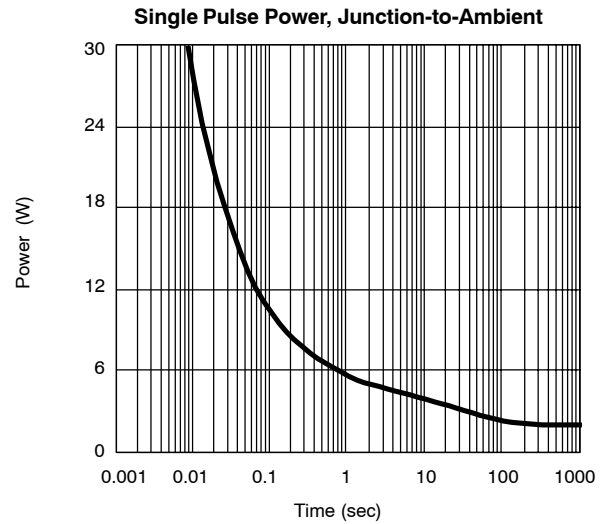
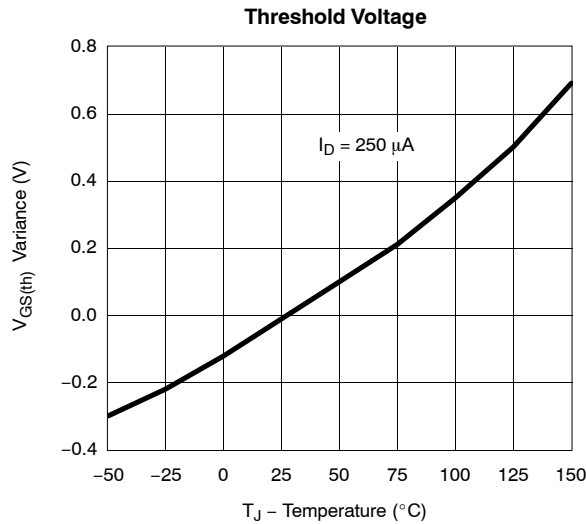




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