

N-Channel 200-V (D-S) Fast Switching MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
200	0.24 at $V_{GS} = 10$ V	2.8
	0.26 at $V_{GS} = 6$ V	2.7

FEATURES

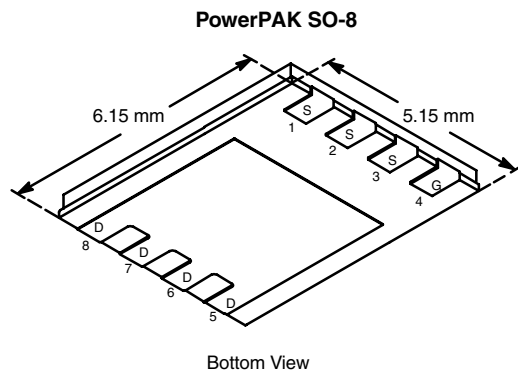
- TrenchFET[®] Power MOSFET
- New Low Thermal Resistance PowerPAK[®] Package with Low 1.07-mm Profile
- PWM Optimized For Fast Switching



RoHS*
COMPLIANT

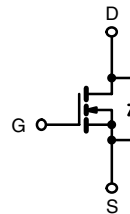
APPLICATIONS

- Primary Side Switch



Bottom View

Ordering Information: Si7464DP-T1
Si7464DP-T1—E3 (Lead (Pb)-free)



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}	200		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150$ °C) ^a	I_D	$T_A = 25$ °C	2.8	1.8	A
		$T_A = 70$ °C	2.2	1.5	
Continuous Source Current	I_S	3.5	1.5		
Pulsed Drain Current	I_{DM}	8			
Avalanche Current ^b	I_{AS}	3		mJ	
Single Avalanche Energy ^b	E_{AS}	0.45			
Maximum Power Dissipation ^a	P_D	$T_A = 25$ °C	4.2	1.8	W
		$T_A = 70$ °C	2.6	1.1	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150		°C	
Soldering Recommendations (Peak Temperature) ^{c,d}		260			

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	25	30	°C/W
		Steady State	60	70	
Maximum Junction-to-Case (Drain)	R_{thJC}	2.9	3.5		

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Guaranteed by design, not subject to production testing.
- See Solder Profile (<http://www.vishay.com/ppg?73257>). The PowerPAK SO-8 is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework Conditions: manual soldering with a soldering iron is not recommended for leadless components.

* Pb containing terminations are not RoHS compliant, exemptions may apply.



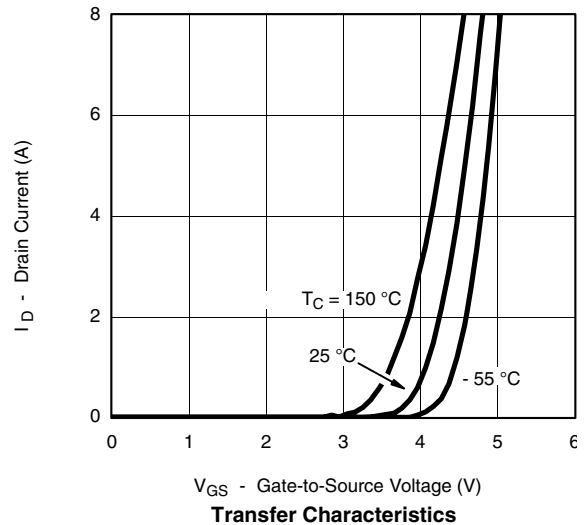
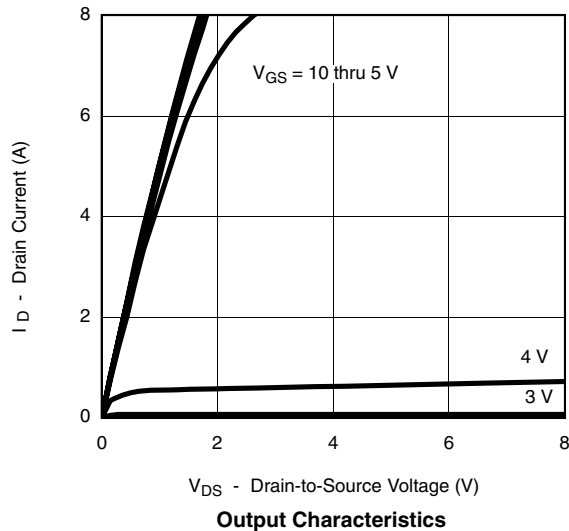
SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2		4	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 200\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 200\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	8			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 2.8\text{ A}$		0.195	0.24	Ω
		$V_{GS} = 6\text{ V}, I_D = 2.7\text{ A}$		0.210	0.26	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 2.8\text{ A}$		8		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 3.5\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 100\text{ V}, V_{GS} = 10\text{ V}, I_D = 2.8\text{ A}$		12	18	nC
Gate-Source Charge	Q_{gs}		2.5			
Gate-Drain Charge	Q_{gd}		3.8			
Gate Resistance	R_g			2.5		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 100\text{ V}, R_L = 100\text{ }\Omega$ $I_D \cong 1\text{ A}, V_{GEN} = 10\text{ V}, R_G = 6\text{ }\Omega$		10	15	ns
Rise Time	t_r		12	20		
Turn-Off Delay Time	$t_{d(off)}$		15	25		
Fall Time	t_f		15	25		
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 3.5\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		60	90	

Notes

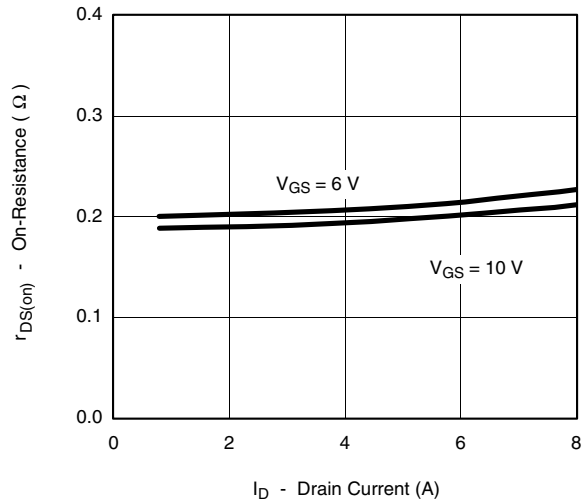
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

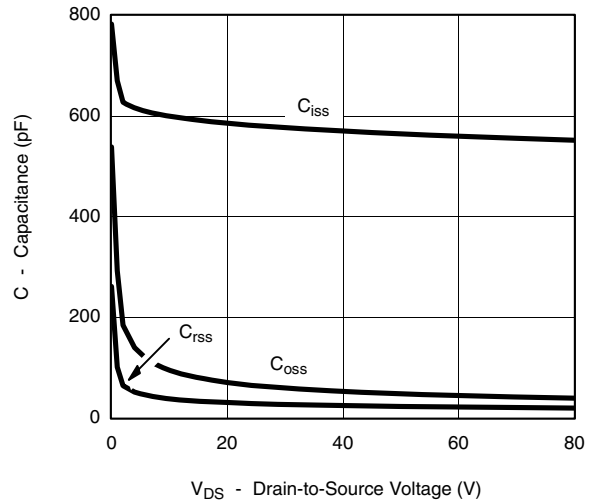
TYPICAL CHARACTERISTICS $25\text{ }^\circ\text{C}$, unless noted



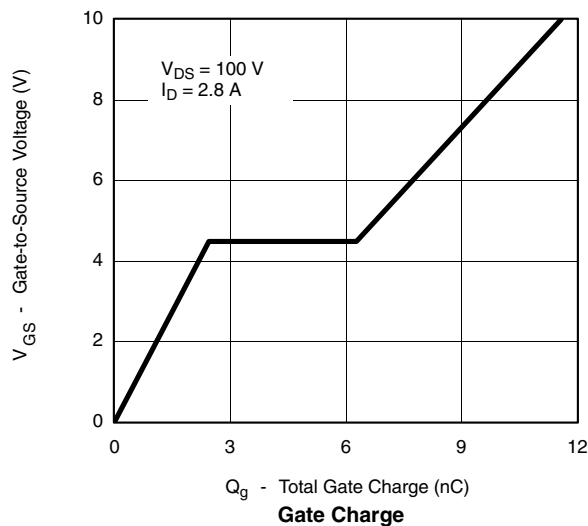
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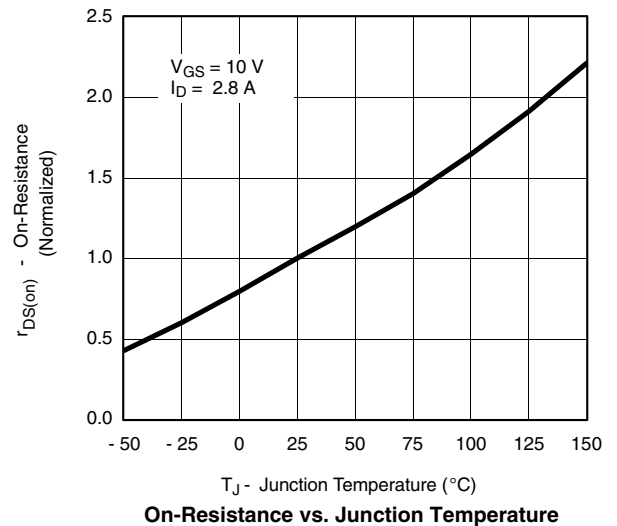
On-Resistance vs. Drain Current



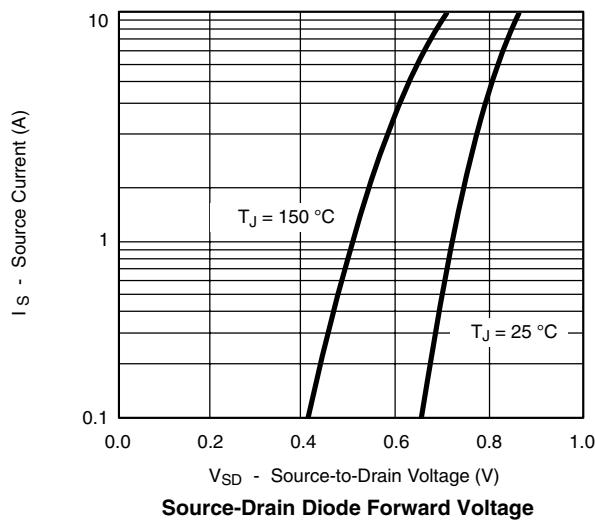
Capacitance



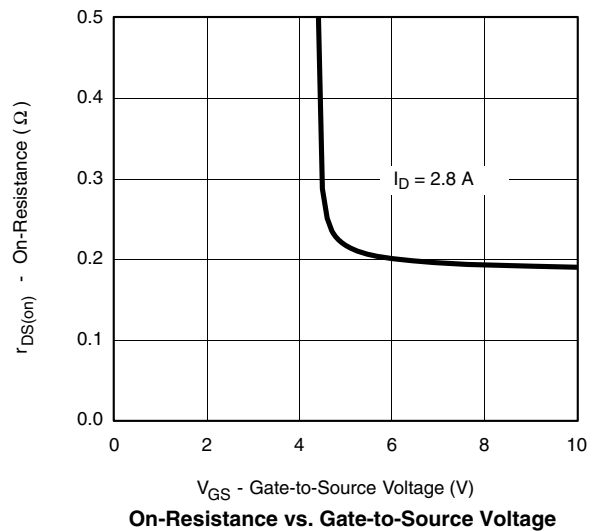
Gate Charge



On-Resistance vs. Junction Temperature

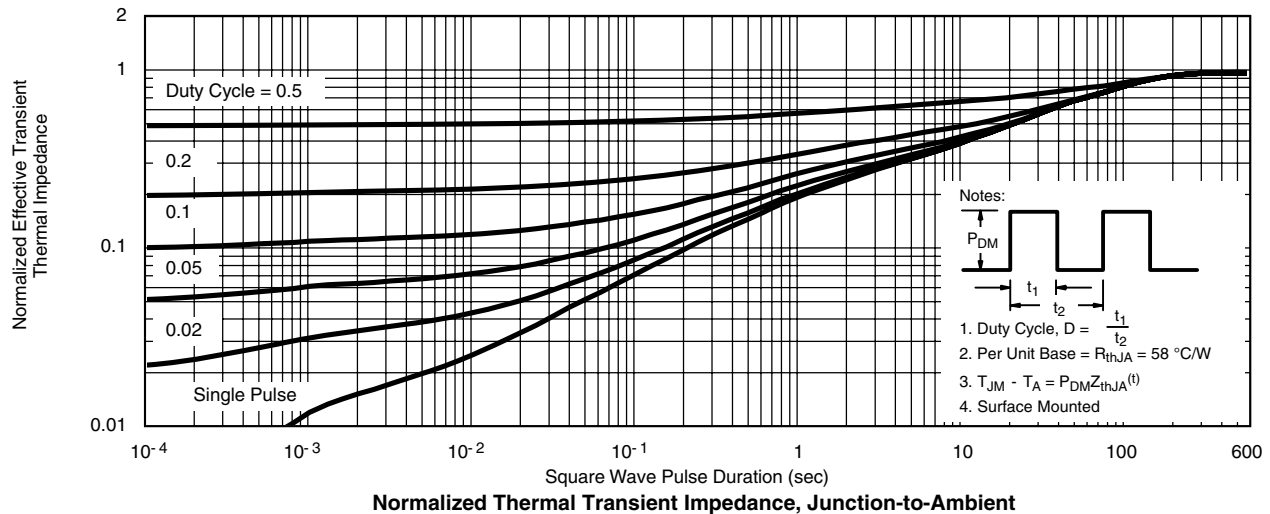
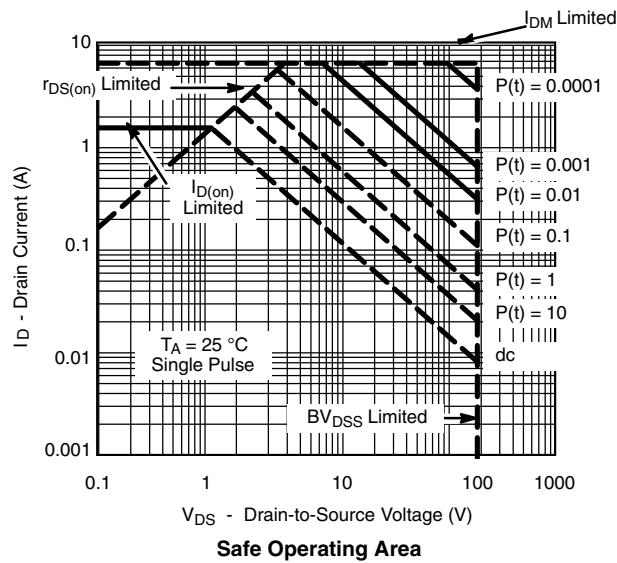
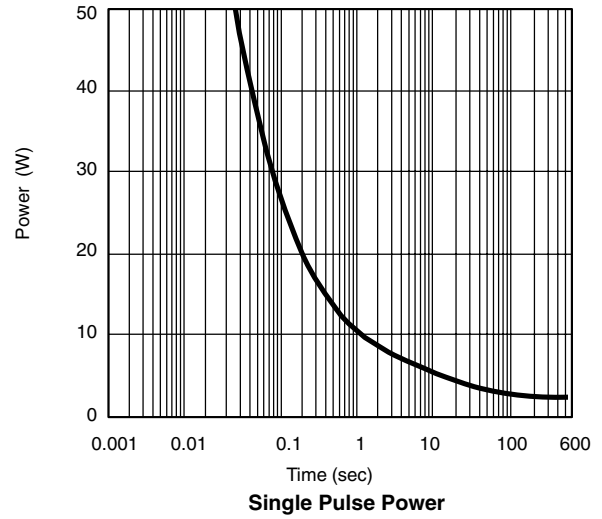
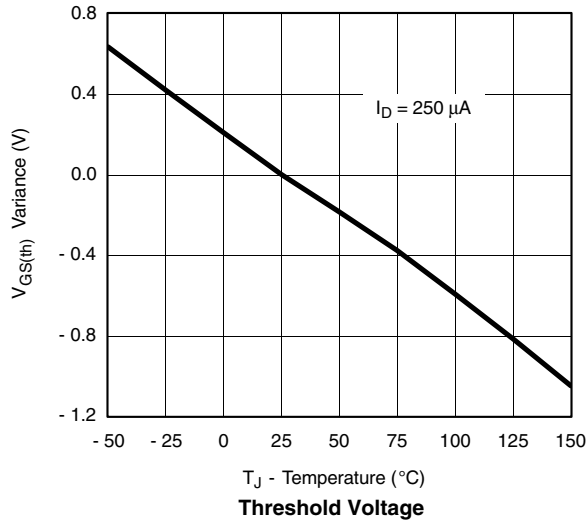


Source-Drain Diode Forward Voltage



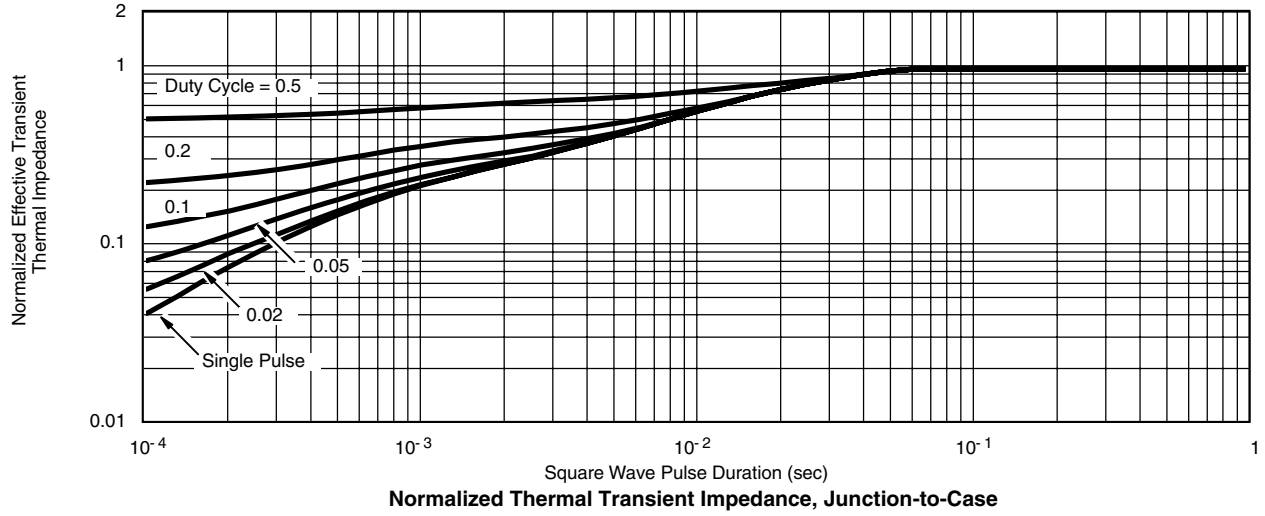
On-Resistance vs. Gate-to-Source Voltage

TYPICAL CHARACTERISTICS 25 °C, unless noted





TYPICAL CHARACTERISTICS 25 °C, unless noted



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