

N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
30	0.0030 at $V_{GS} = 10$ V	30	36
	0.0040 at $V_{GS} = 4.5$ V	27	

FEATURES

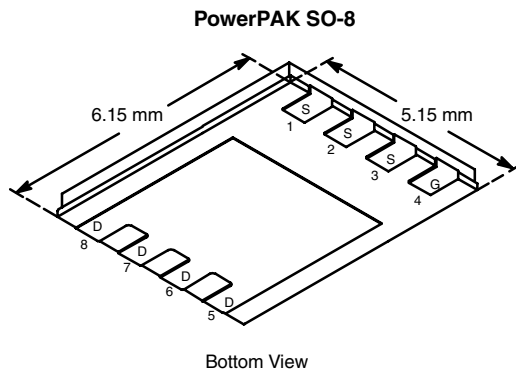
- Ultra-Low On-Resistance Using High Density TrenchFET[®] Gen II Power MOSFET Technology
- Q_g Optimized
- New Low Thermal Resistance PowerPAK[®] Package with Low 1.07-mm Profile
- 100 % R_g Tested
- 100 % UIS Tested



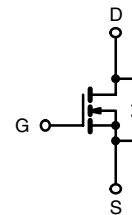
Available
RoHS*
COMPLIANT

APPLICATIONS

- Low-Side DC/DC Conversion
 - Notebook
 - Server
 - Workstation



Ordering Information: Si7336ADP-T1
Si7336ADP-T1 - E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$, unless otherwise noted			
Parameter	Symbol	Limits	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	$T_A = 25^\circ\text{C}$	30
		$T_A = 70^\circ\text{C}$	25
Pulsed Drain Current (10 μs Pulse Width)	I_{DM}	70	A
Continuous Source Current (Diode Conduction) ^a	I_S	4.5	
Avalanche Current	I_{AS}	50	
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	5.4
		$T_A = 70^\circ\text{C}$	3.4
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^\circ\text{C}$
Soldering Recommendations (Peak Temperature) ^{b, c}		260	

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	18	$^\circ\text{C}/\text{W}$
		Steady State	50	
Maximum Junction-to-Case (Drain)	R_{thJC}	1.0	1.5	

Notes:

- a. Surface Mounted on 1" x 1" FR4 Board.
 b. 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.
 c. Rework Conditions: manual soldering with a soldering iron is not recommended for leadless components.

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



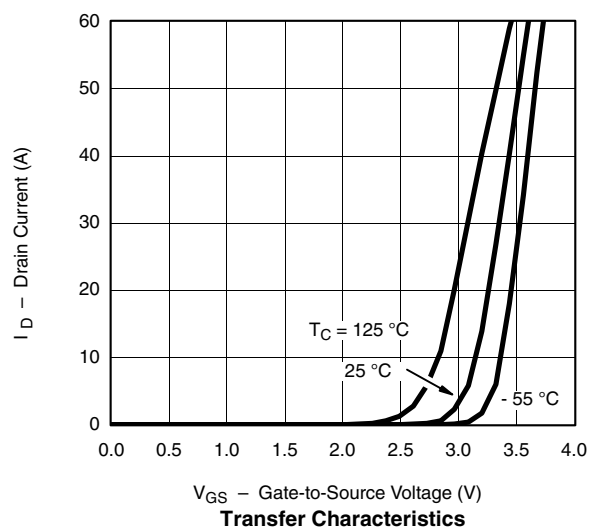
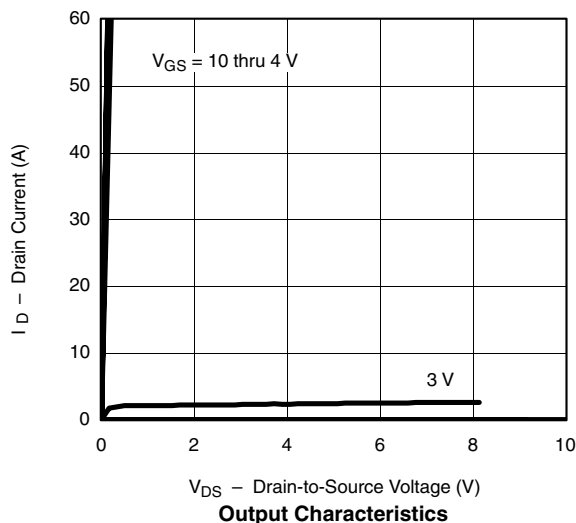
MOSFET SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0		3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	30			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 25\text{ A}$		0.0024	0.0030	Ω
		$V_{GS} = 4.5\text{ V}, I_D = 19\text{ A}$		0.0031	0.0040	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 25\text{ A}$		110		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 2.9\text{ A}, V_{GS} = 0\text{ V}$		0.72	1.1	V
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		5600		μF
Output Capacitance	C_{oss}			860		
Reverse Transfer Capacitance	C_{rss}			415		
Total Gate Charge	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$		36	50	nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			10		
Gate Resistance	R_g		0.6	1.3	2.0	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 15\text{ }\Omega$ $I_D \cong 1.0\text{ A}, V_{GEN} = 10\text{ V}, R_G = 6\text{ }\Omega$		24	35	ns
Rise Time	t_r			16	25	
Turn-Off Delay Time	$t_{d(off)}$			90	140	
Fall Time	t_f			32	50	
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = 2.9\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		45	

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.

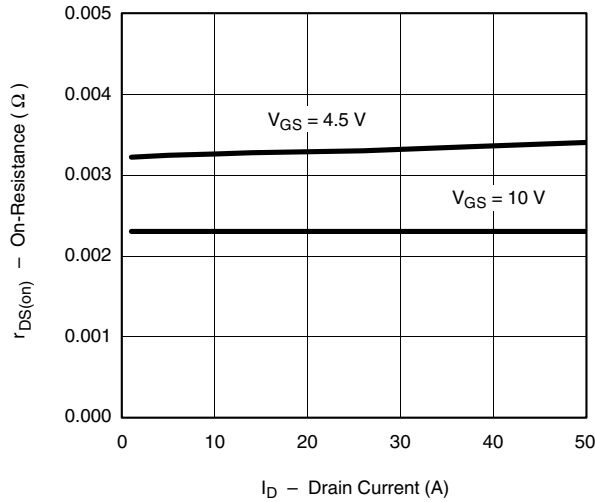
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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

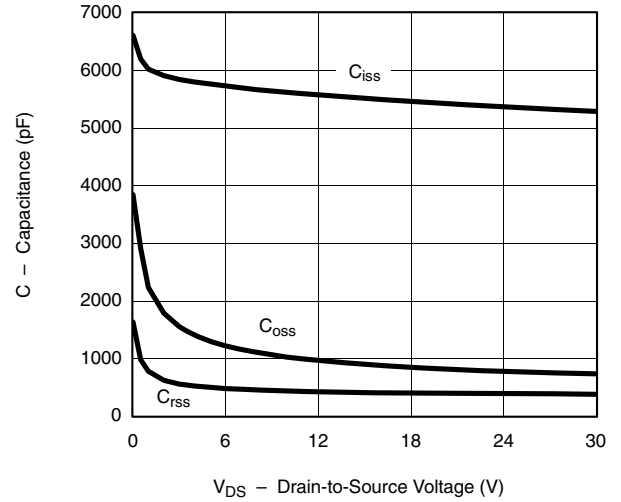




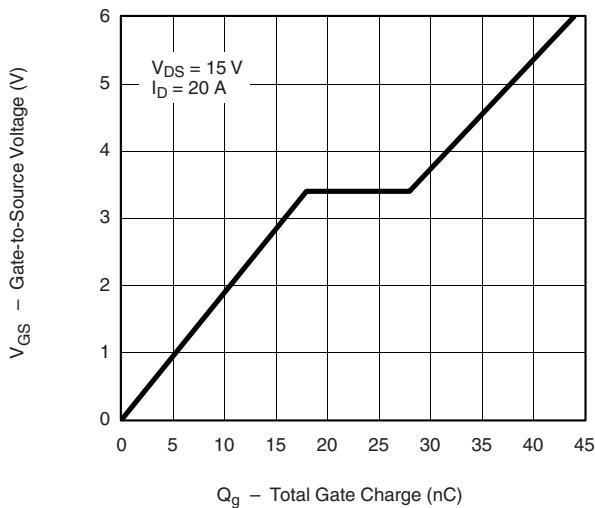
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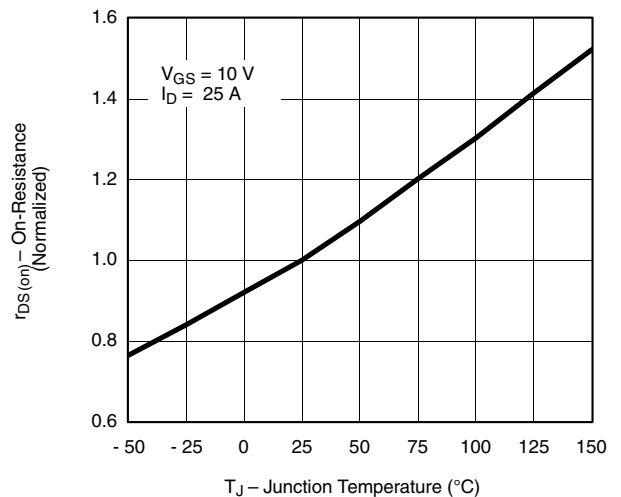
On-Resistance vs. Drain Current



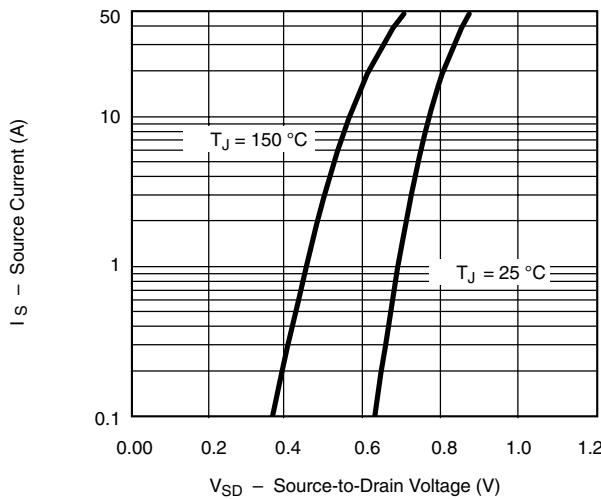
Capacitance



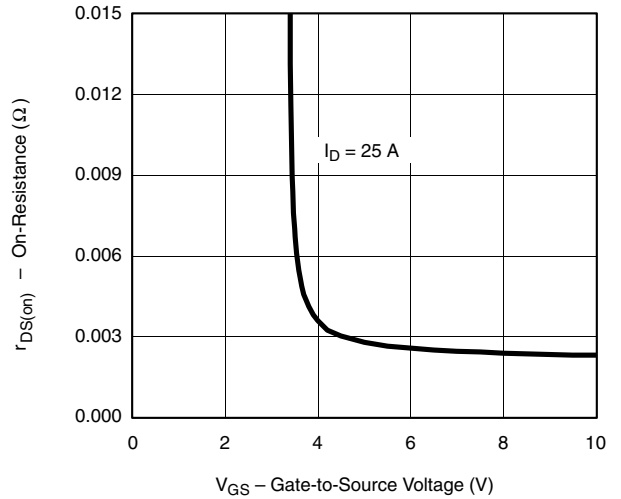
Gate Charge



On-Resistance vs. Junction Temperature



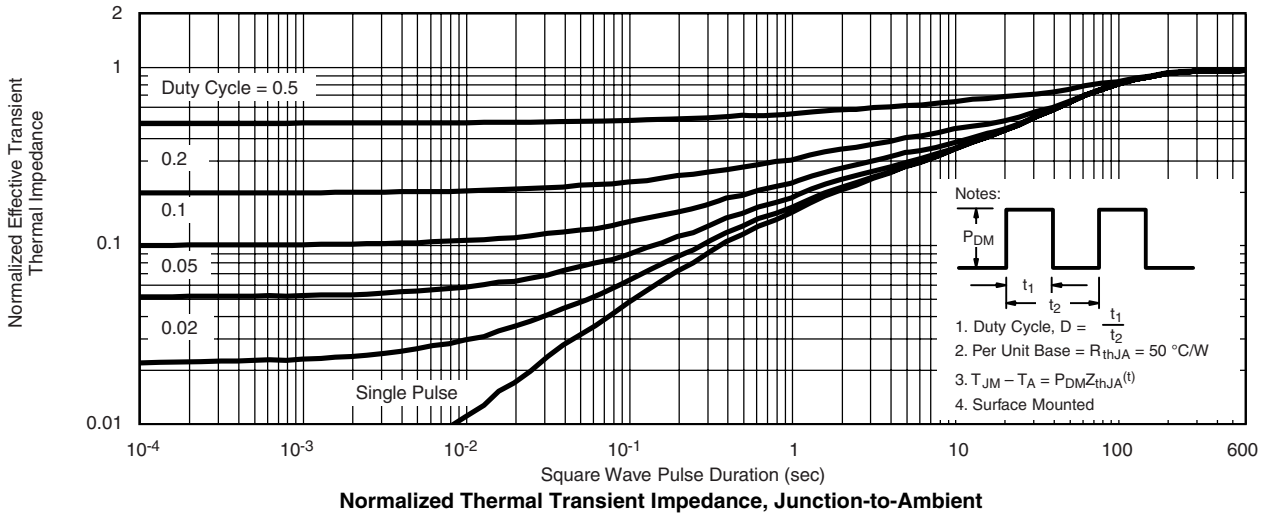
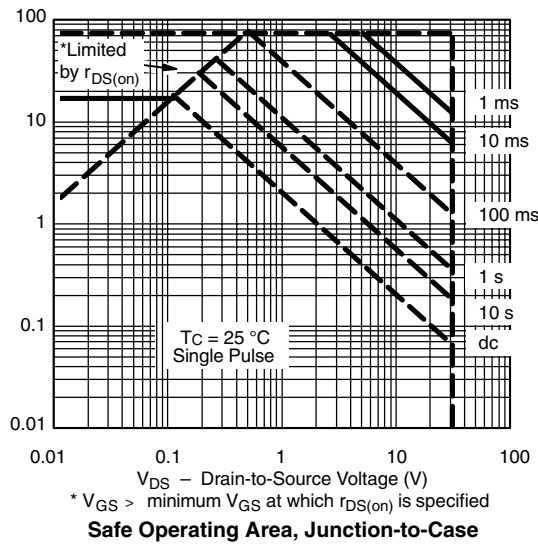
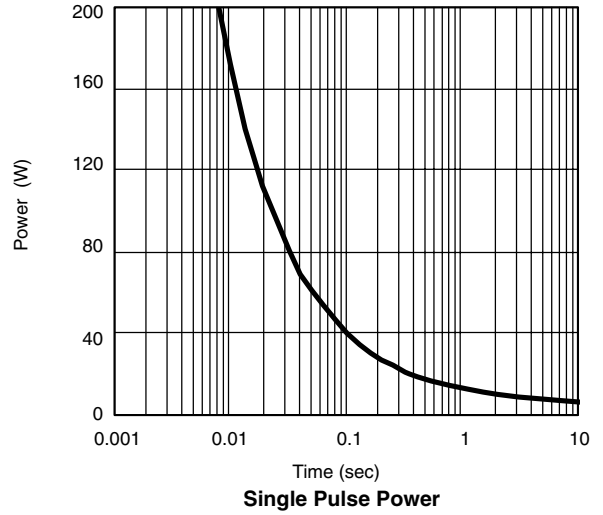
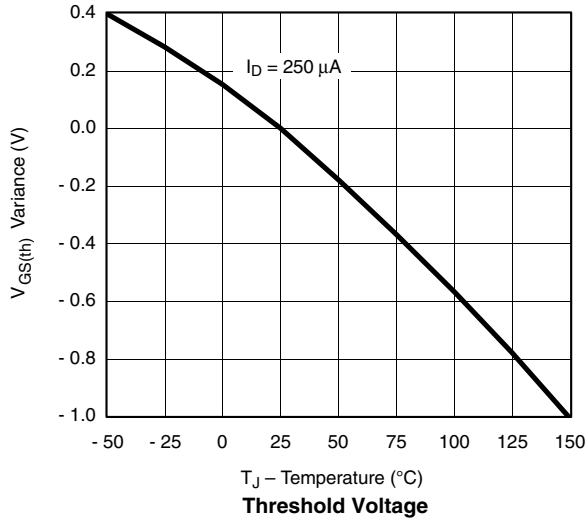
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

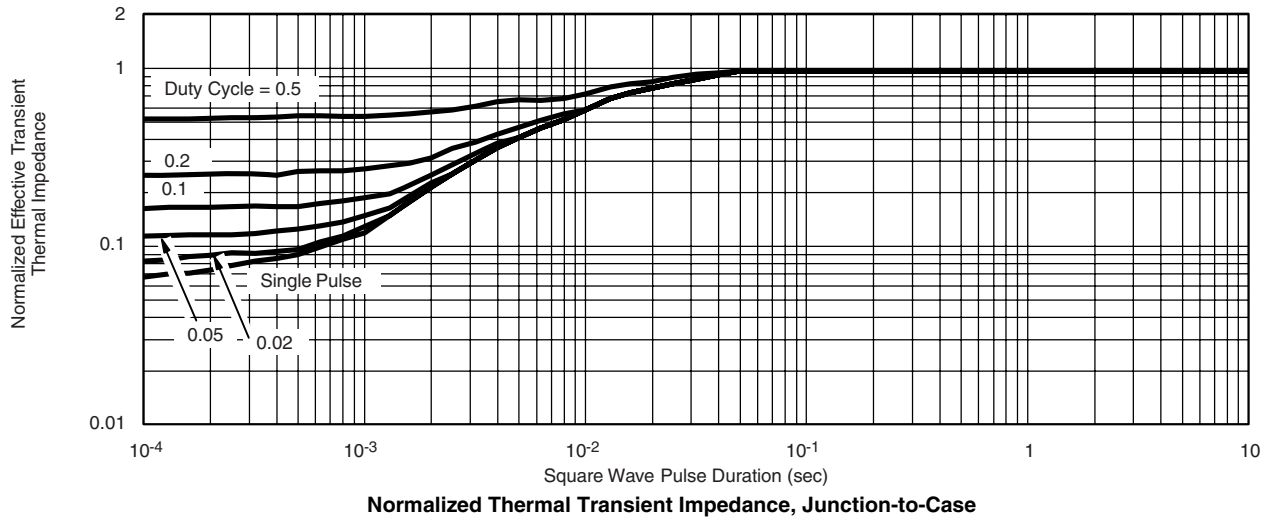


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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