

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

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
30	0.00325 at $V_{GS} = 10$ V	25	36
	0.0042 at $V_{GS} = 4.5$ V	22	

FEATURES

- Ultra Low On-Resistance Using High Density TrenchFET® Gen II Power MOSFET Technology
- Q_g Optimized
- 100 % R_g Tested

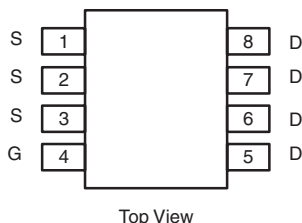


Available
RoHS*
COMPLIANT

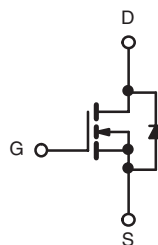
APPLICATIONS

- Synchronous Buck Low-Side
 - Notebook
 - Server
 - Workstation
- Synchronous Rectifier, POL

SO-8



Ordering Information: Si4336DY-T1
Si4336DY-T1-E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	10 sec	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	25	17	A
		20	13	
Pulsed Drain Current (10 μs Pulse Width)	I_{DM}	70		
Continuous Source Current (Diode Conduction) ^a	I_S	2.9	1.3	
Avalanche Current	I_{AS}	50		
Maximum Power Dissipation ^a	P_D	3.5	1.6	W
		2.2	1	
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}	29	35	$^\circ\text{C}/\text{W}$
		67	80	
Maximum Junction-to-Foot (Drain)	R_{thJF}	13	16	

Notes:

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

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

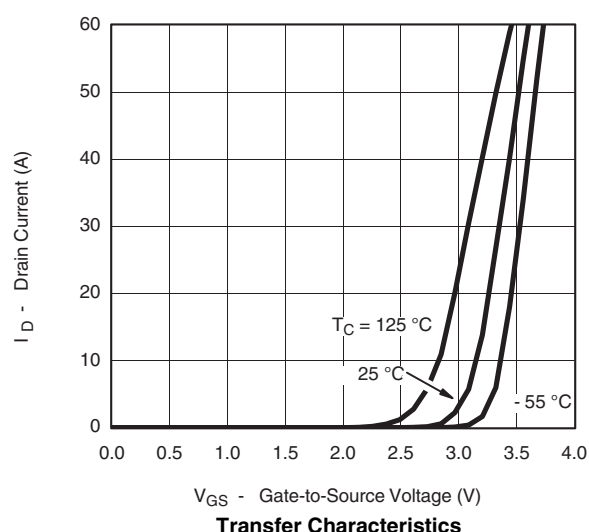
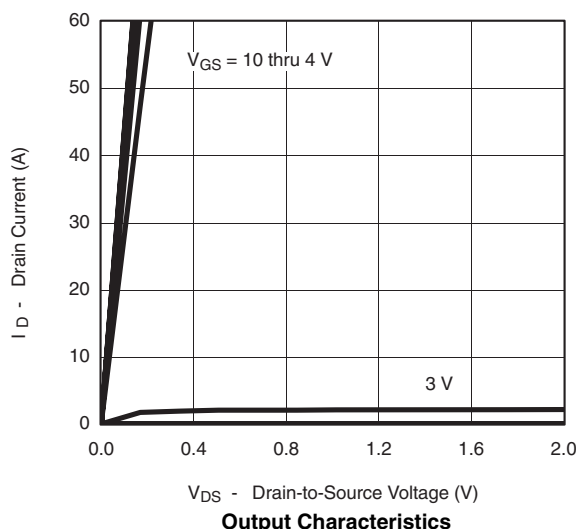
SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	1.0		3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$			± 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	$r_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 25\text{ A}$		0.0026	0.00325	Ω
		$V_{GS} = 4.5\text{ V}$, $I_D = 22\text{ A}$		0.0033	0.0042	
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		pF
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		0.8	1.3	2.0	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}$, $R_L = 15\text{ }\Omega$ $I_D \cong 1\text{ A}$, $V_{GEN} = 10\text{ V}$, $R_g = 6\text{ }\Omega$		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	70	

Notes:

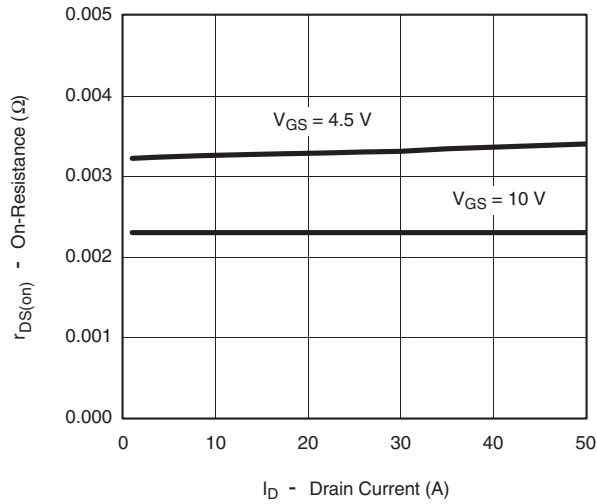
a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

b. Guaranteed by design, not subject to production testing.

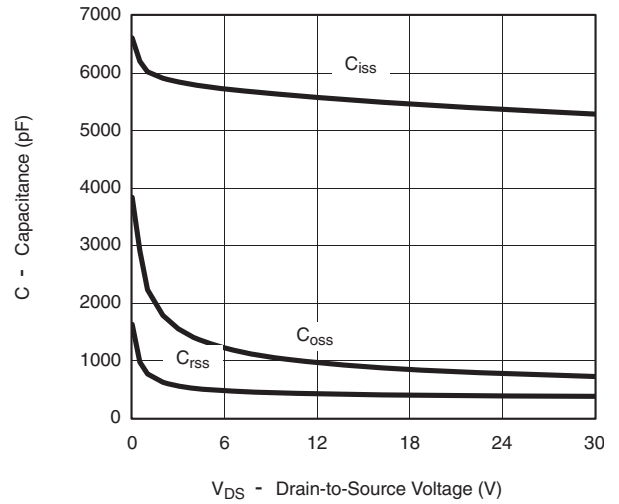
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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

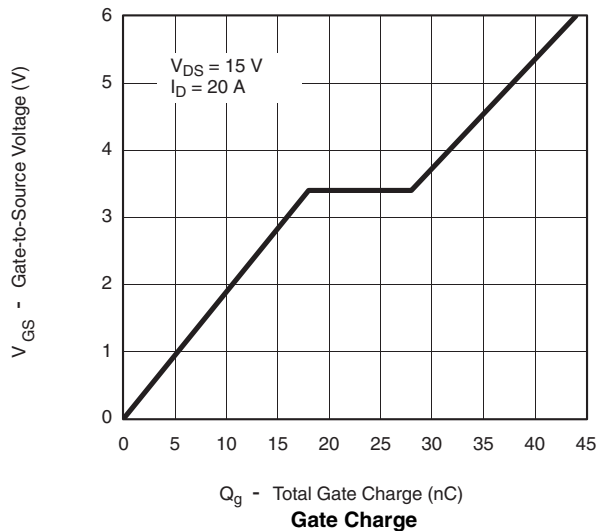
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



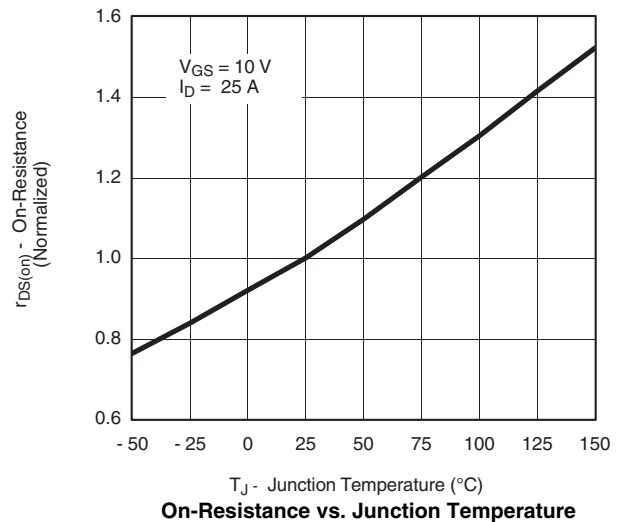
On-Resistance vs. Drain Current



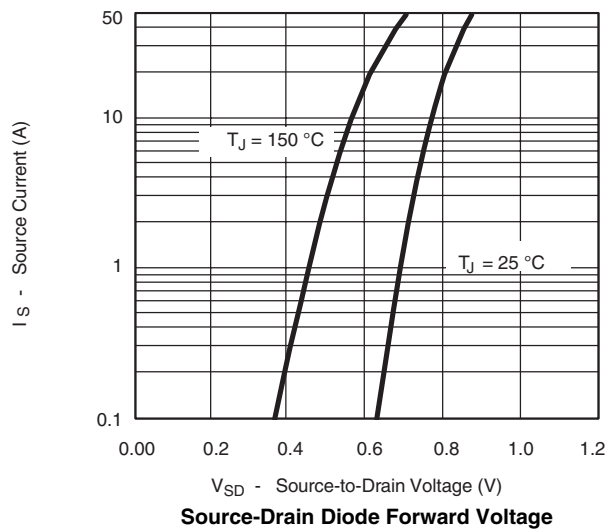
Capacitance



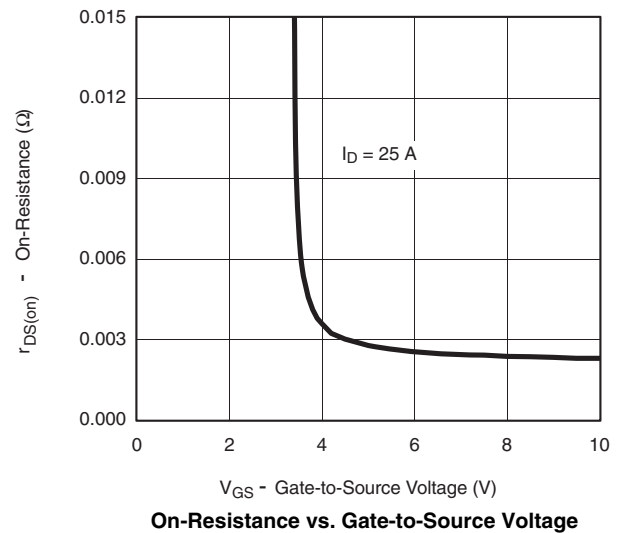
Gate Charge



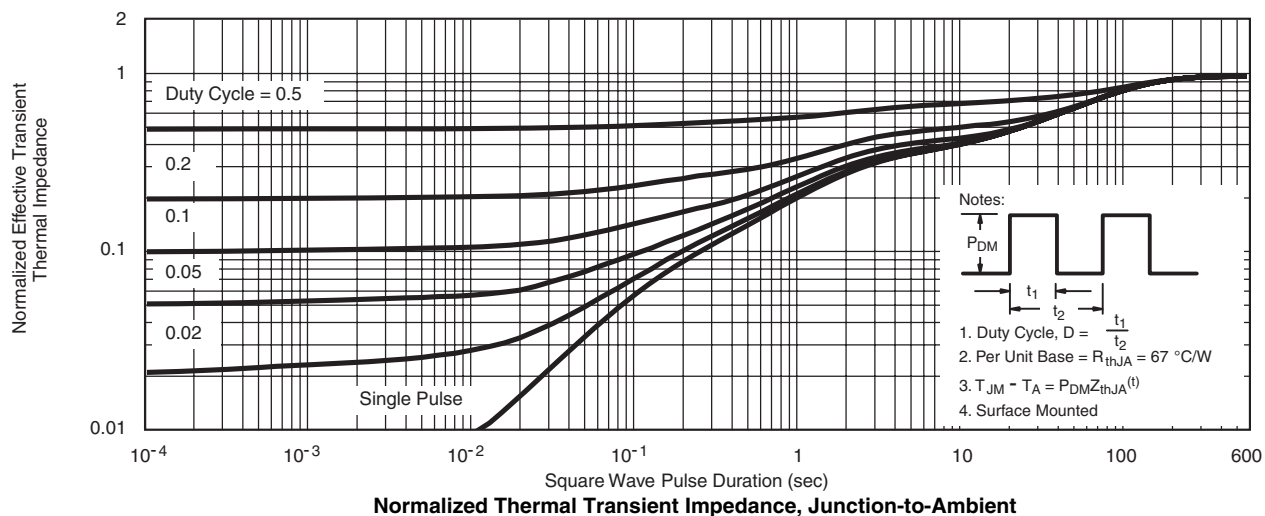
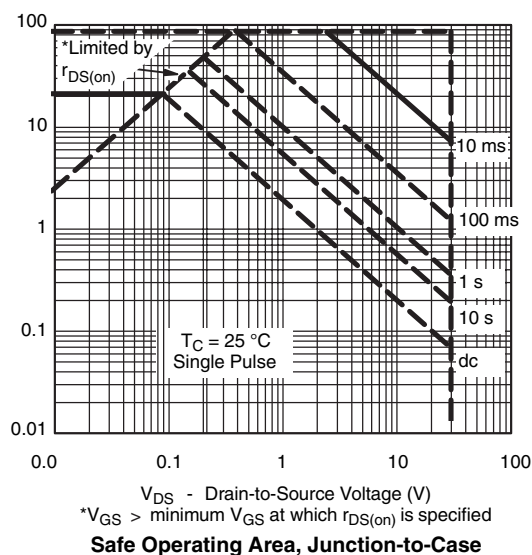
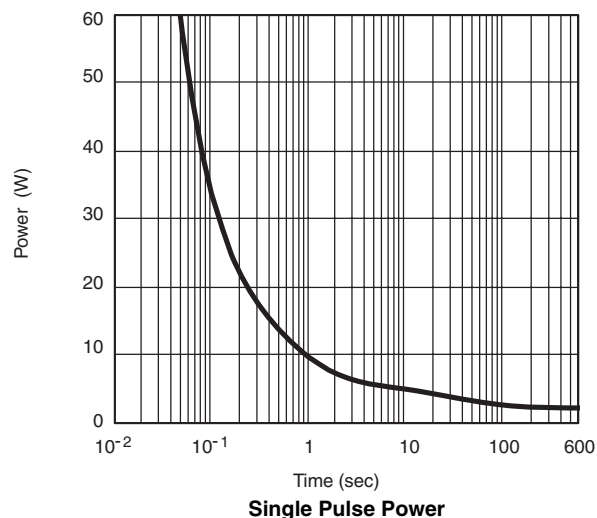
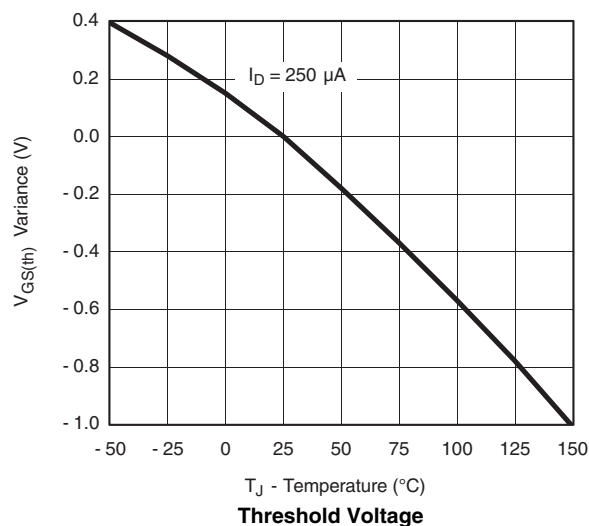
On-Resistance vs. Junction Temperature



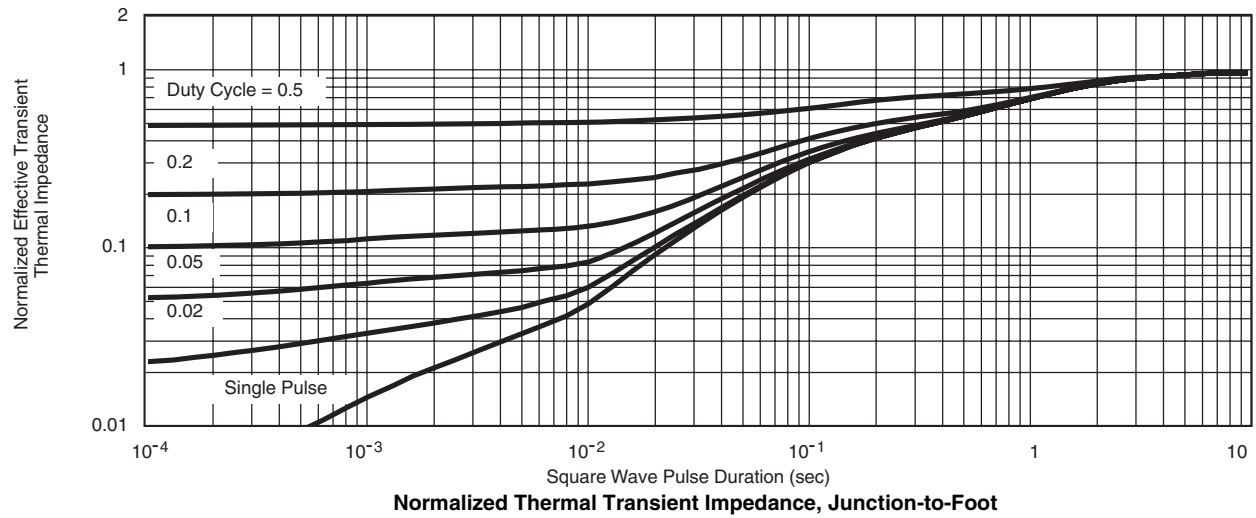
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

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