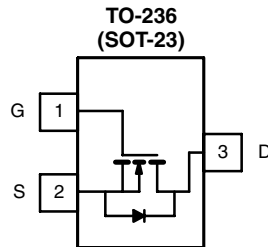


N-Channel 1.25-W, 2.5-V MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.060 at $V_{GS} = 4.5$ V	2.4
	0.115 at $V_{GS} = 2.5$ V	2.0



RoHS*
COMPLIANT



Si2302ADS (2A)*
*Marking Code

Ordering Information: Si2302ADS-T1
Si2302ADS-T1-E3 (Lead (Pb)-free)

ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted				
Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	V_{DS}	20		V
Gate-Source Voltage	V_{GS}	± 8		
Continuous Drain Current ($T_J = 150$ °C) ^a	I_D	$T_A = 25$ °C	2.4	A
		$T_A = 70$ °C	1.9	
Pulsed Drain Current ^a	I_{DM}	10		A
Continuous Source Current (Diode Conduction) ^a	I_S	0.94	0.6	
Power Dissipation ^a	P_D	$T_A = 25$ °C	0.9	W
		$T_A = 70$ °C	0.57	
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	R_{thJA}	$t \leq 5$ sec	115	140	°C/W
		Steady State	140	175	

Notes:

a. Surface Mounted on FR4 board.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

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

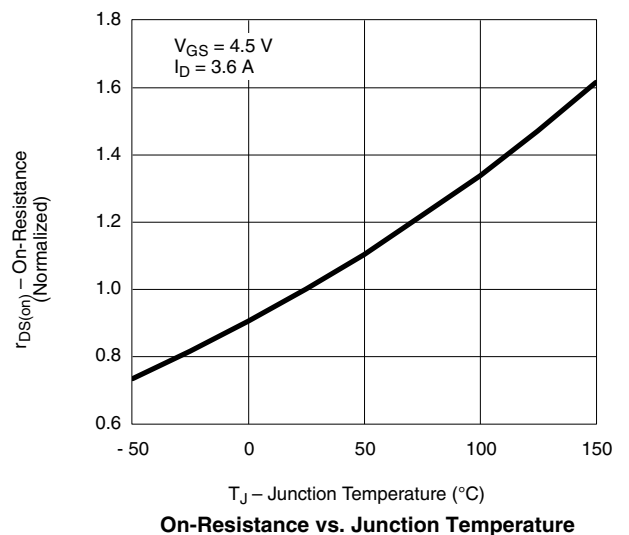
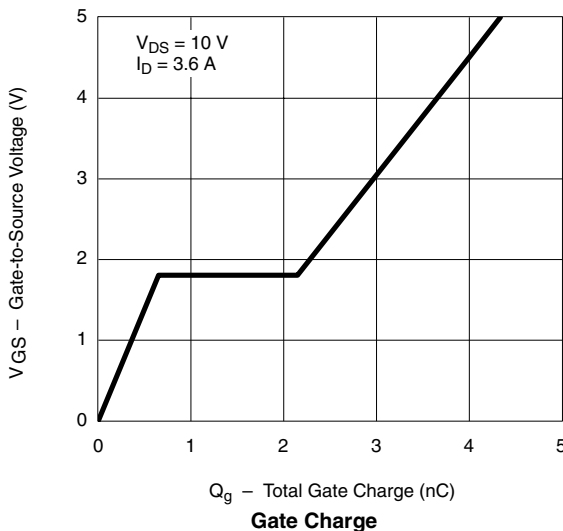
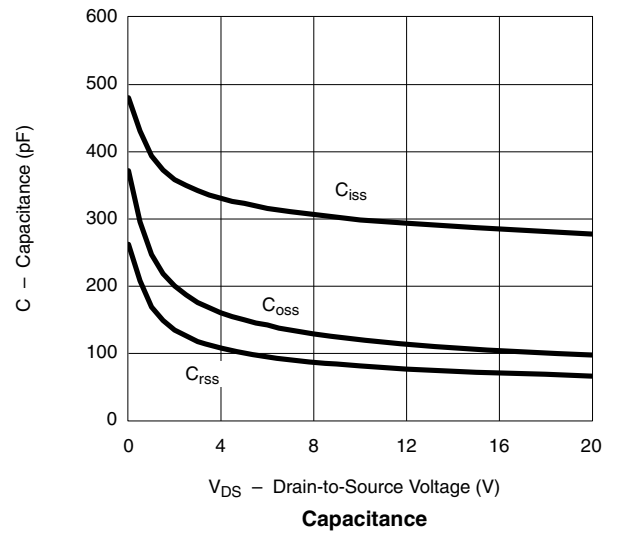
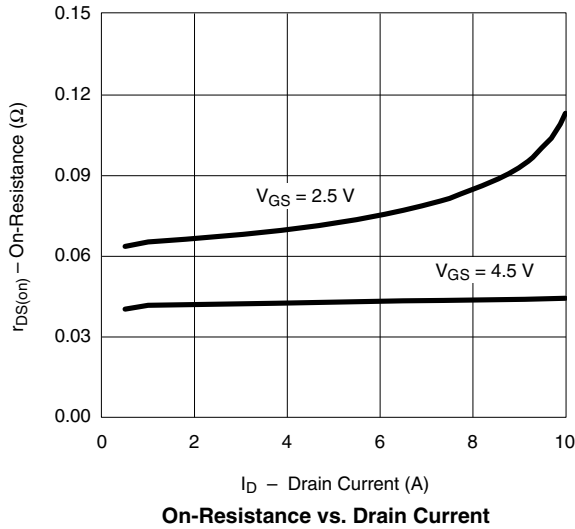
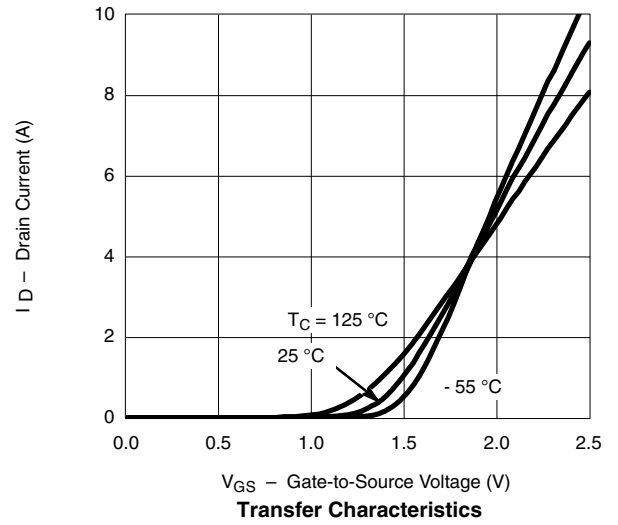
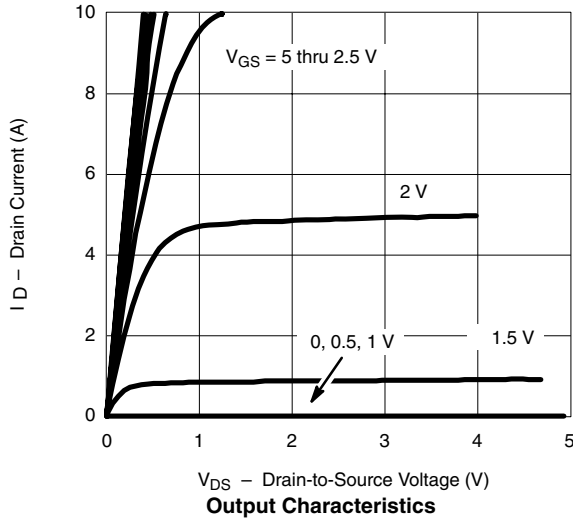
SPECIFICATIONS $T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$, $I_D = 10\text{ }\mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 50\text{ }\mu\text{A}$	0.65	0.95	1.2	
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}	$V_{DS} = 20\text{ V}$, $V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 20\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 55\text{ }^\circ\text{C}$			10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}$, $V_{GS} = 4.5\text{ V}$	6			A
		$V_{DS} \geq 5\text{ V}$, $V_{GS} = 2.5\text{ V}$	4			
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = 4.5\text{ V}$, $I_D = 3.6\text{ A}$		0.045	0.060 ^b	Ω
		$V_{GS} = 2.5\text{ V}$, $I_D = 3.1\text{ A}$		0.070	0.115	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 5\text{ V}$, $I_D = 3.6\text{ A}$		8		S
Diode Forward Voltage	V_{SD}	$I_S = 0.94\text{ A}$, $V_{GS} = 0\text{ V}$		0.76	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = 10\text{ V}$, $V_{GS} = 4.5\text{ V}$, $I_D = 3.6\text{ A}$		4.0	10	nC
Gate-Source Charge	Q_{gs}			0.65		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	$V_{DS} = 10\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$		300		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			80		
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\text{ V}$, $R_L = 2.8\text{ }\Omega$ $I_D \cong 3.6\text{ A}$, $V_{GEN} = 4.5\text{ V}$, $R_g = 6\text{ }\Omega$		7	15	ns
Rise Time	t_r			55	80	
Turn-Off Delay Time	$t_{d(off)}$			16	60	
Fall Time	t_f			10	25	

Notes:

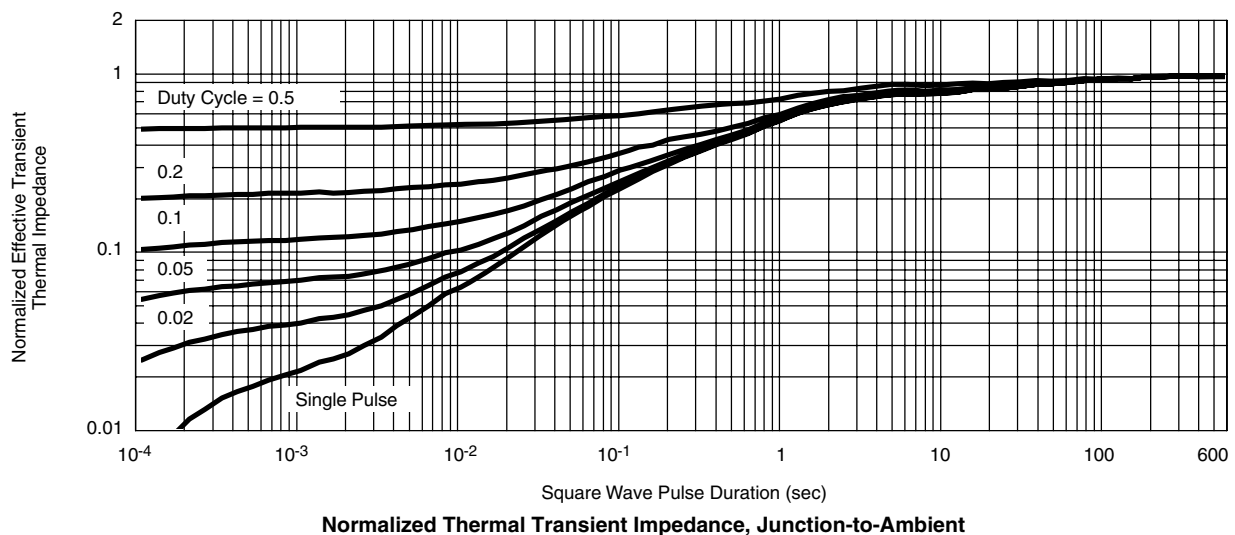
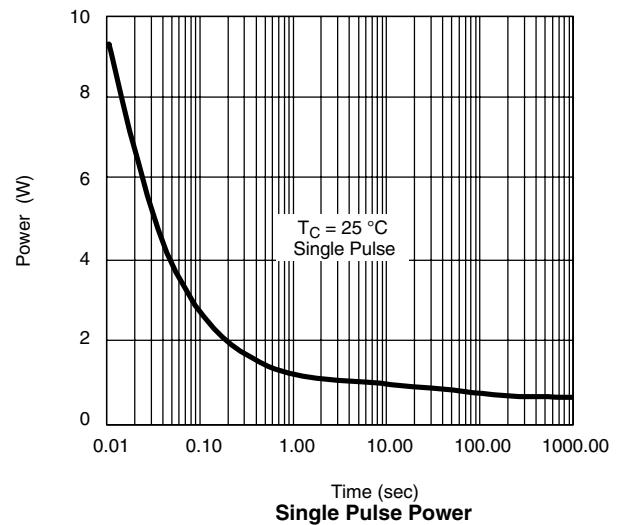
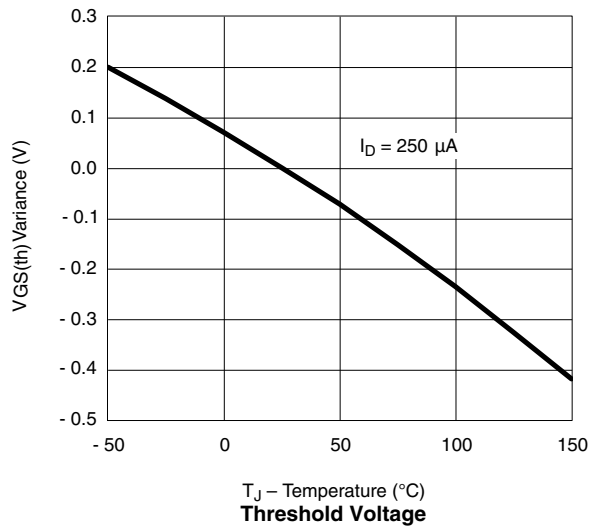
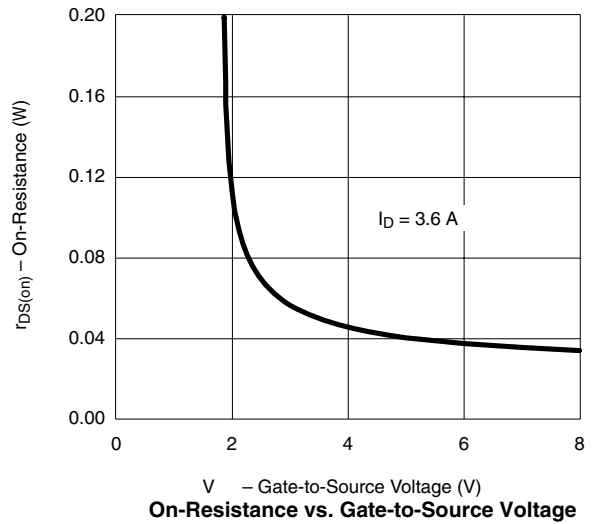
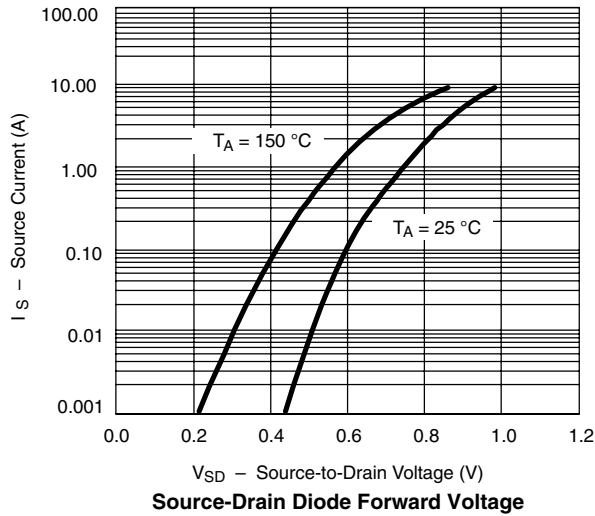
- a. Pulse test; $PW \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
b. Effective for production 10/04.

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 $T_A = 25\text{ }^\circ\text{C}$, unless noted



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





Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.