

N-Channel 2.5-V (G-S) MOSFET

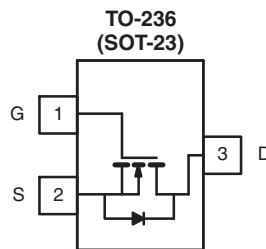
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
20	0.060 at $V_{GS} = 4.5$ V	2.4
	0.115 at $V_{GS} = 2.5$ V	2.0

FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE
Available



Top View
Si2302ADS (2A)*
* Marking Code

Ordering Information: Si2302ADS-T1-E3 (Lead (Pb)-free)
Si2302ADS-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)					
Parameter	Symbol	5 s	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	2.1	A
		$T_A = 70$ °C	1.9	1.7	
Pulsed Drain Current ^a	I_{DM}	10			
Continuous Source Current (Diode Conduction) ^a	I_S	0.94	0.6		
Power Dissipation ^a	P_D	$T_A = 25$ °C	0.9	0.7	W
		$T_A = 70$ °C	0.57	0.46	
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}	$t \leq 5$ s	115	140	°C/W
		Steady State	140	175	

Notes:

a. Surface mounted on FR4 board.

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

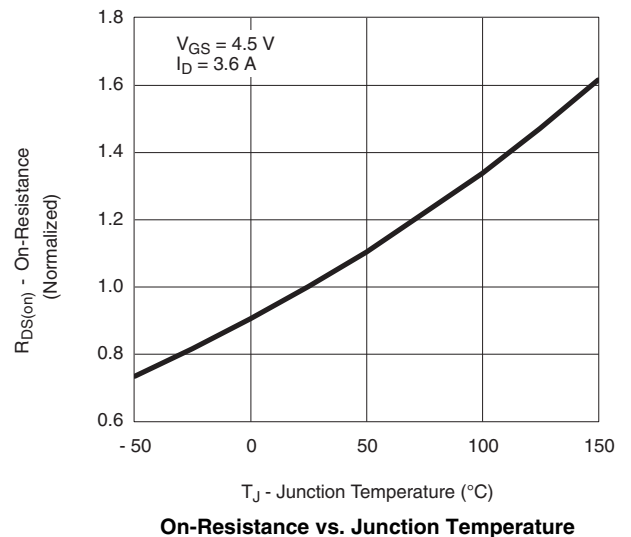
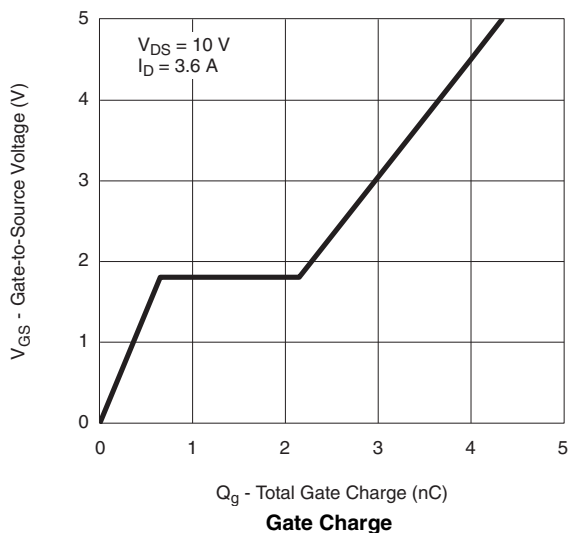
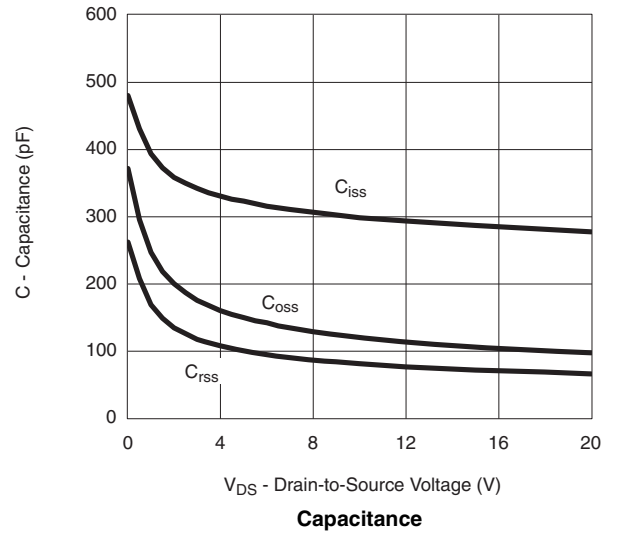
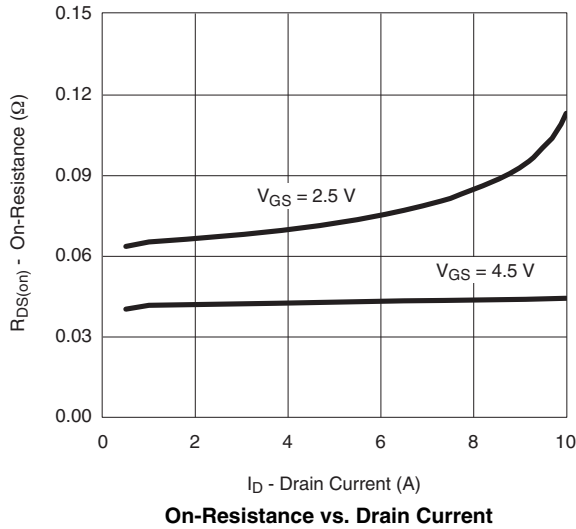
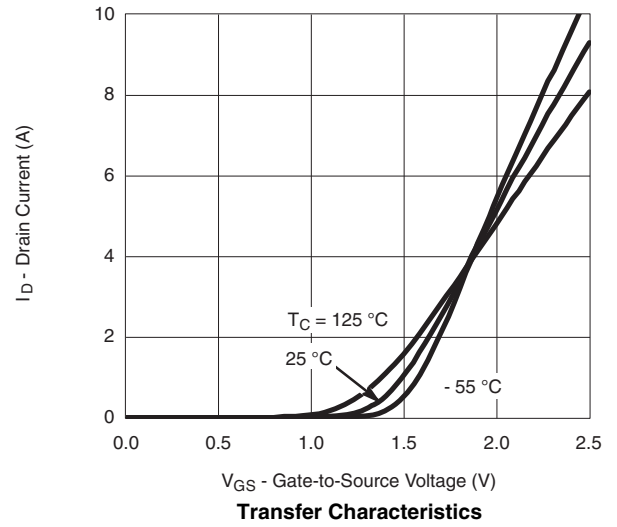
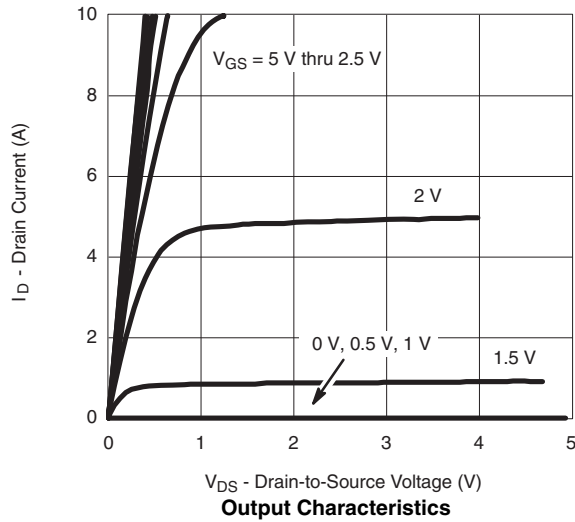
SPECIFICATIONS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\text{ }\mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 50\text{ }\mu\text{A}$	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}	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$			0.1	μA
		$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			2.0	
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		
Gate Resistance	R_g	$f = 1\text{ MHz}$	0.5	1	2	Ω
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:

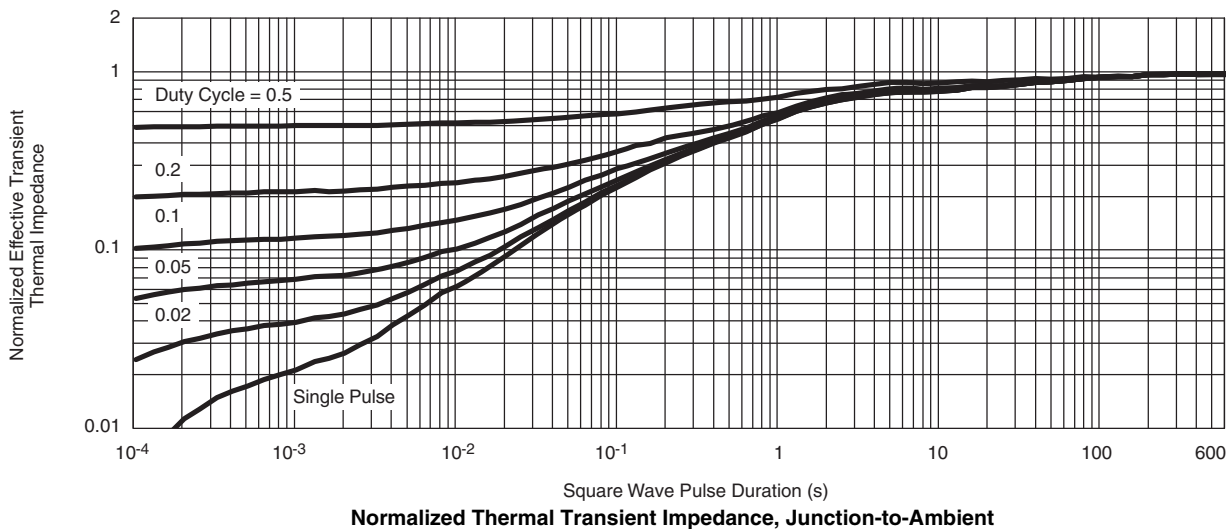
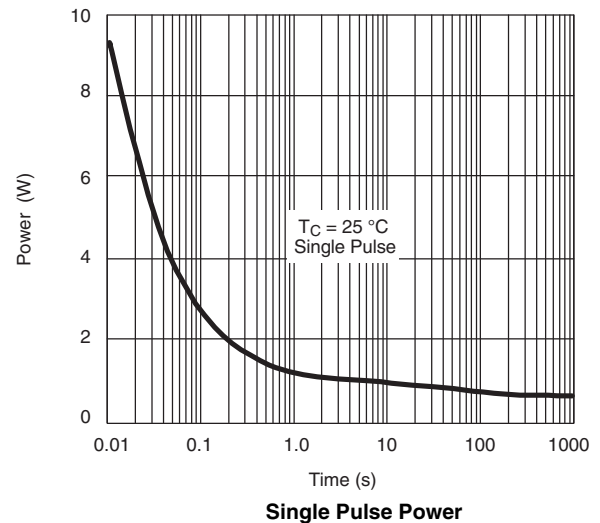
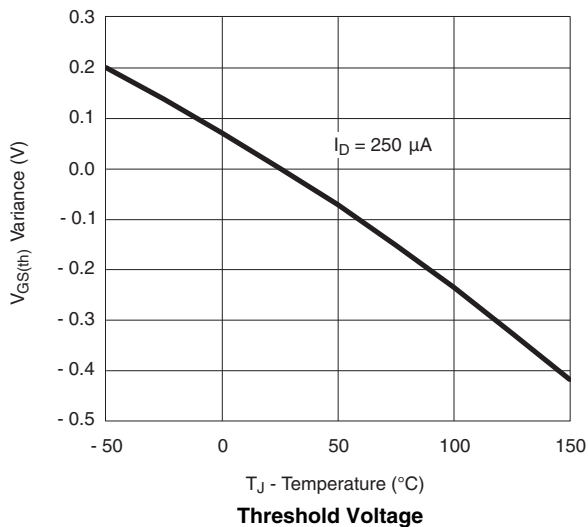
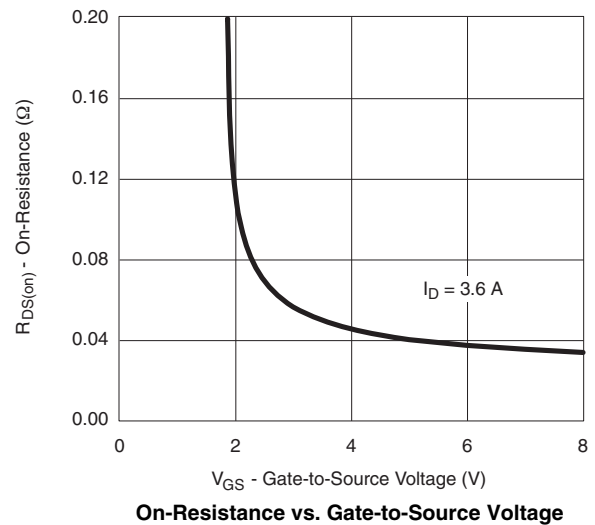
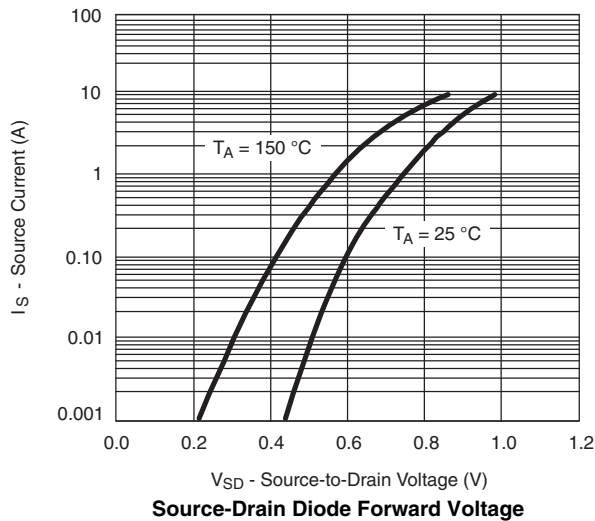
- a. Pulse test; $PW \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
b. Effective for production 10/04.

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 otherwise noted)



TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?71831.

SOT-23 (TO-236): 3-LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A ₁	0.01	0.10	0.0004	0.004
A ₂	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E ₁	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e ₁	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L ₁	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°

ECN: S-03946-Rev. K, 09-Jul-01
 DWG: 5479

RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads
Dimensions in Inches/(mm)

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