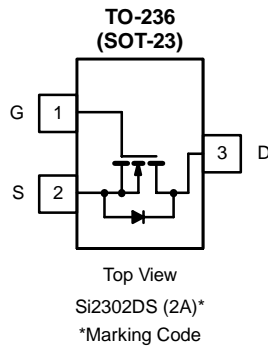




## N-Channel 1.25-W, 2.5-V MOSFET

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



Ordering Information: Si2302ADS-T1

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	5 sec	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	20		V	
Gate-Source Voltage	$V_{GS}$	$\pm 8$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	2.4	2.1	A
		$T_A = 70^\circ\text{C}$	1.9	1.7	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	10			
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	0.94	0.6		
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	0.9	0.7	W
		$T_A = 70^\circ\text{C}$	0.57	0.46	
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 <sup>a</sup>	$R_{thJA}$	$t \leq 5$ sec.	115	140	$^\circ\text{C/W}$
		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>

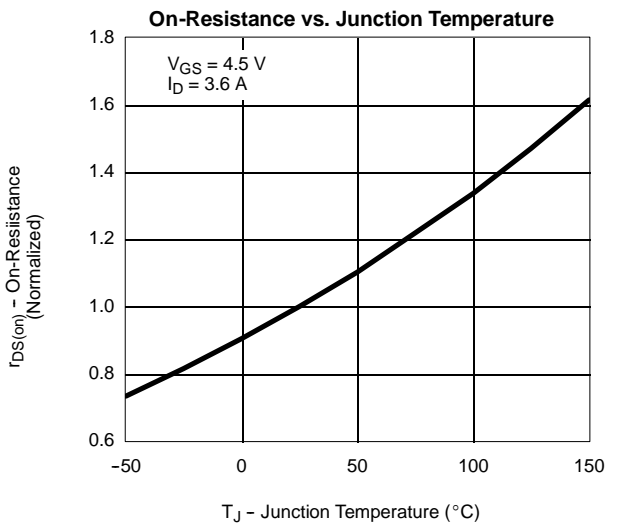
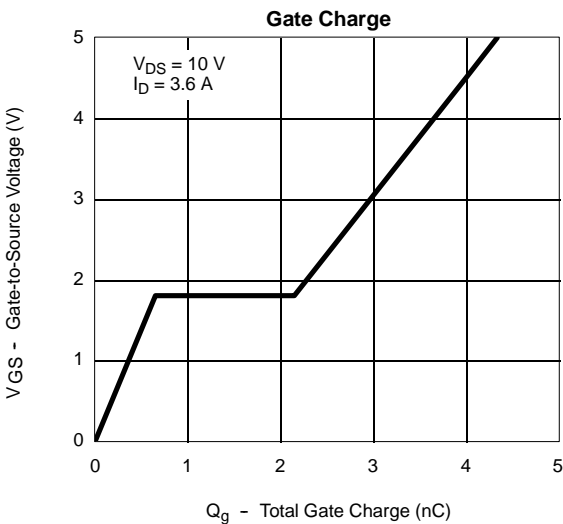
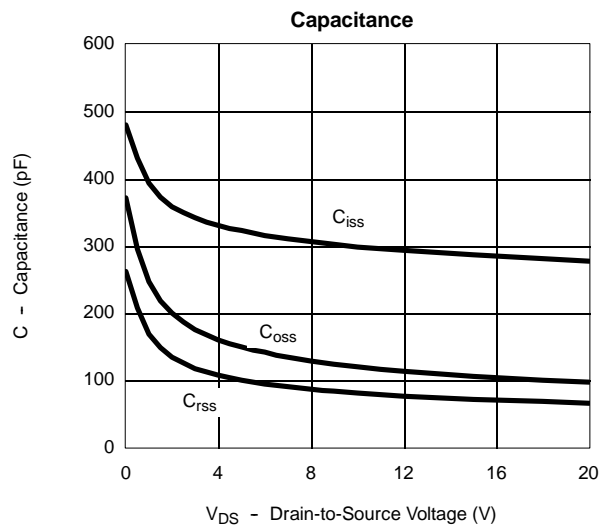
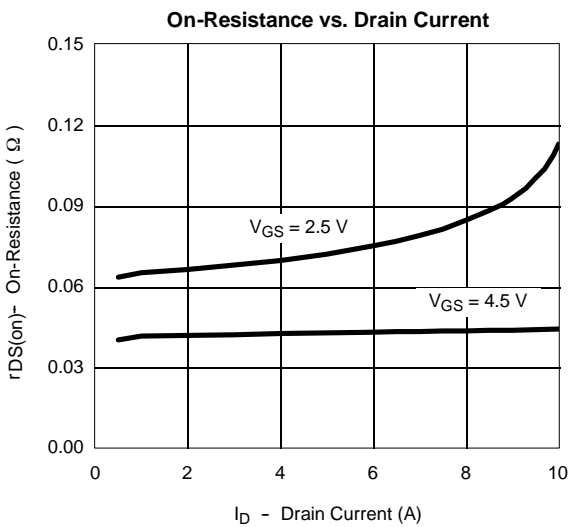
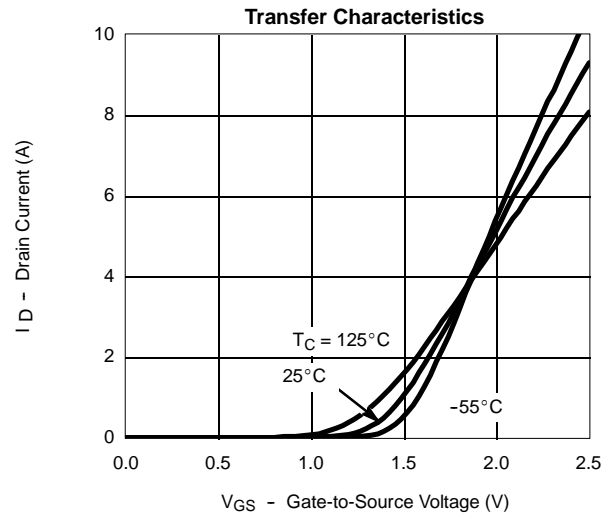
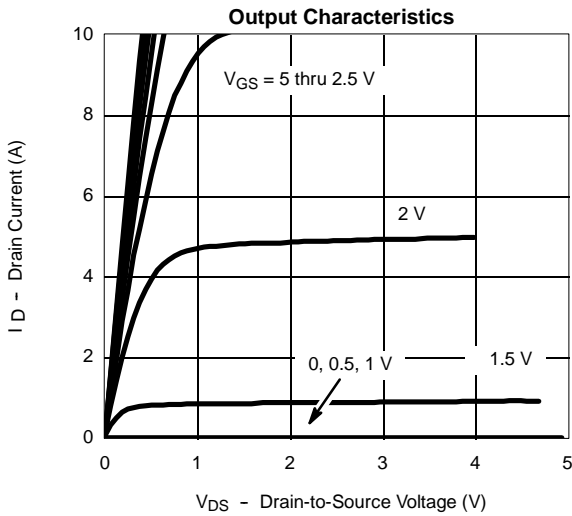
SPECIFICATIONS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\ \mu\text{A}$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 50\ \mu\text{A}$	0.65	0.95	1.2	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 4.5\text{ V}$	6			A
		$V_{DS} \geq 5\text{ V}, V_{GS} = 2.5\text{ V}$	4			
Drain-Source On-Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 3.6\text{ A}$		0.045	0.060 <sup>b</sup>	$\Omega$
		$V_{GS} = 2.5\text{ V}, I_D = 3.1\text{ A}$		0.070	0.115	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 5\text{ V}, I_D = 3.6\text{ A}$		8		S
Diode Forward Voltage	$V_{SD}$	$I_S = 0.94\text{ A}, V_{GS} = 0\text{ V}$		0.76	1.2	V
<b>Dynamic</b>						
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		$\mu\text{F}$
Output Capacitance	$C_{oss}$			120		
Reverse Transfer Capacitance	$C_{rss}$			80		
<b>Switching</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\text{ V}, R_L = 2.8\ \Omega$ $I_D \cong 3.6\text{ A}, V_{GEN} = 4.5\text{ V}, R_g = 6\ \Omega$		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:  $PW \leq 300\ \mu\text{s}$  duty cycle  $\leq 2\%$ .  
 b. Effective for production 10/04.



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

