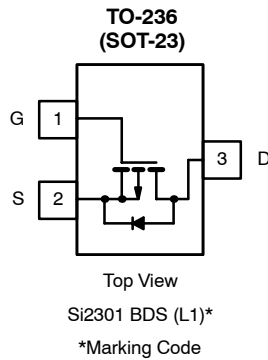




P-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^b
-20	0.100 @ $V_{GS} = -4.5$ V	-2.4
	0.150 @ $V_{GS} = -2.5$ V	-2.0



Ordering Information: Si2301BDS-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}	± 8		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^b	$T_A = 25^\circ\text{C}$	I_D	-2.4	-2.2	A
	$T_A = 70^\circ\text{C}$		-1.9	-1.8	
Pulsed Drain Current ^a		I_{DM}	-10		
Continuous Source Current (Diode Conduction) ^b		I_S	-0.72	-0.6	
Power Dissipation ^b	$T_A = 25^\circ\text{C}$	P_D	0.9	0.7	W
	$T_A = 70^\circ\text{C}$		0.57	0.45	
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 ^b	R_{thJA}	120	145	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^c		140	175	

Notes

- a. Pulse width limited by maximum junction temperature.
- b. Surface Mounted on FR4 Board, $t \leq 5$ sec.
- c. Surface Mounted on FR4 Board.

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

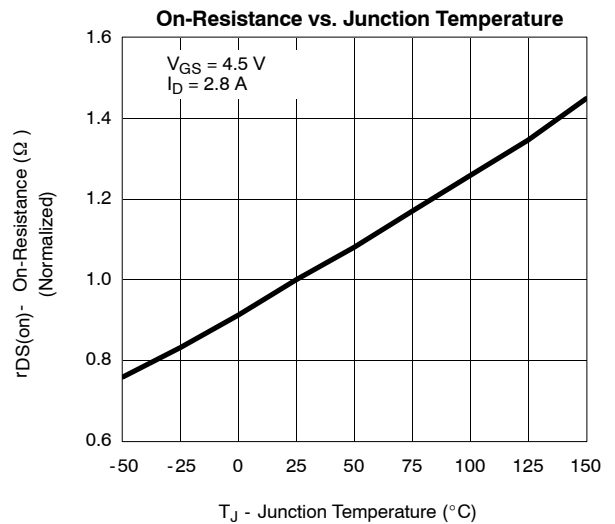
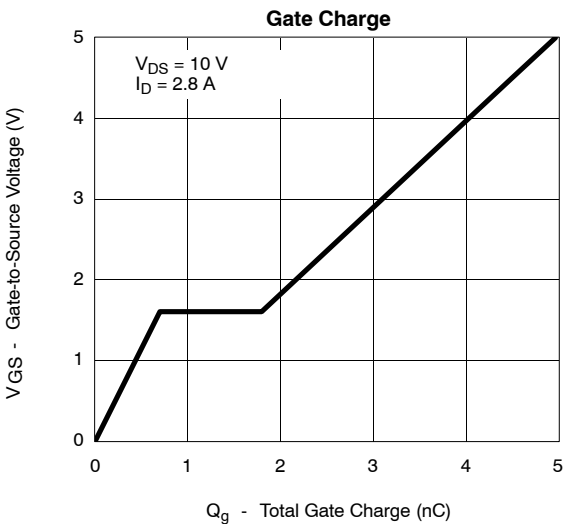
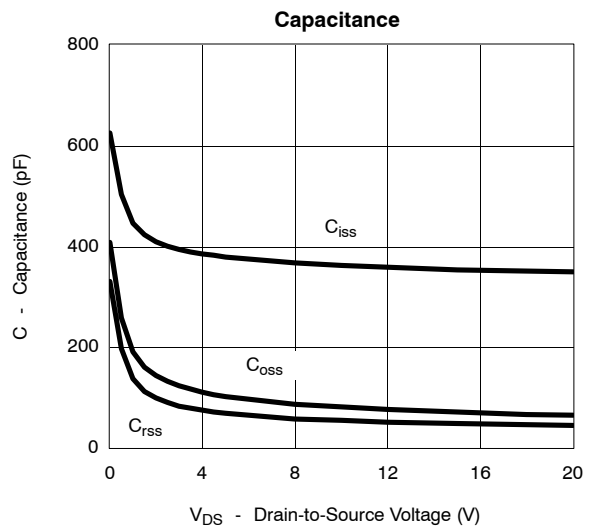
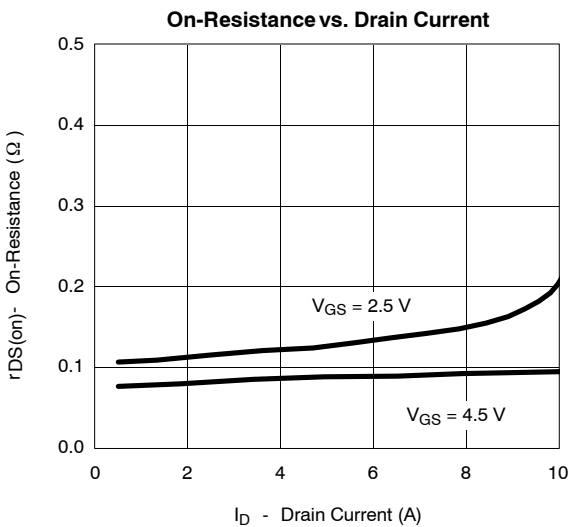
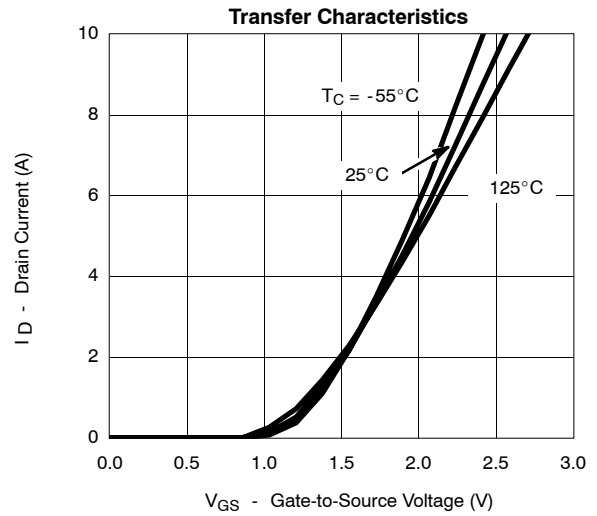
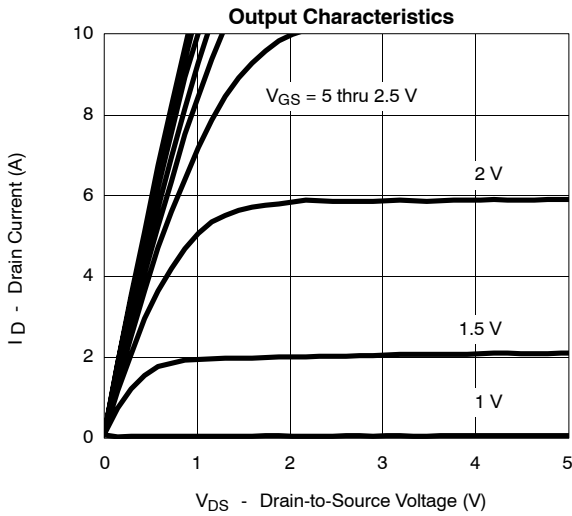
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -250 μA	-20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.45		-0.95	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -20 V, V _{GS} = 0 V, T _J = 55 °C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -4.5 V	-6			A
		V _{DS} ≤ -5 V, V _{GS} = -2.5 V	-3			
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -2.8 A		0.080	0.100	Ω
		V _{GS} = -2.5 V, I _D = -2.0 A		0.110	0.150	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -2.8 A		6.5		S
Diode Forward Voltage	V _{SD}	I _S = -0.75 A, V _{GS} = 0 V		-0.80	-1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -6 V, V _{GS} = -4.5 V I _D ≅ -2.8 A		4.5	10	nC
Gate-Source Charge	Q _{gs}			0.7		
Gate-Drain Charge	Q _{gd}			1.1		
Input Capacitance	C _{iss}	V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz		375		pF
Output Capacitance	C _{oss}			95		
Reverse Transfer Capacitance	C _{rss}			65		
Switching^c						
Turn-On Time	t _{d(on)}	V _{DD} = -6 V, R _L = 6 Ω I _D ≅ -1.0 A, V _{GEN} = -4.5 V R _G = 6 Ω		20	30	ns
	t _r			40	60	
Turn-Off Time	t _{d(off)}			30	45	
	t _f			20	30	

Notes

- a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
 b. For DESIGN AID ONLY, not subject to production testing.
 c. Switching time is essentially independent of operating temperature. • FaxBack 408-970-5600

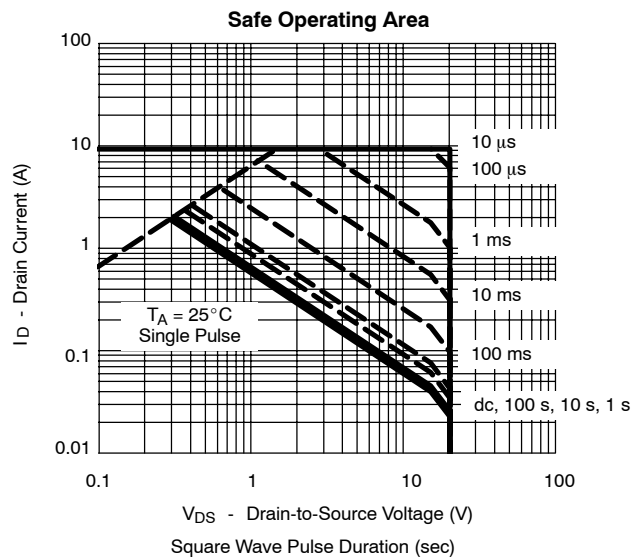
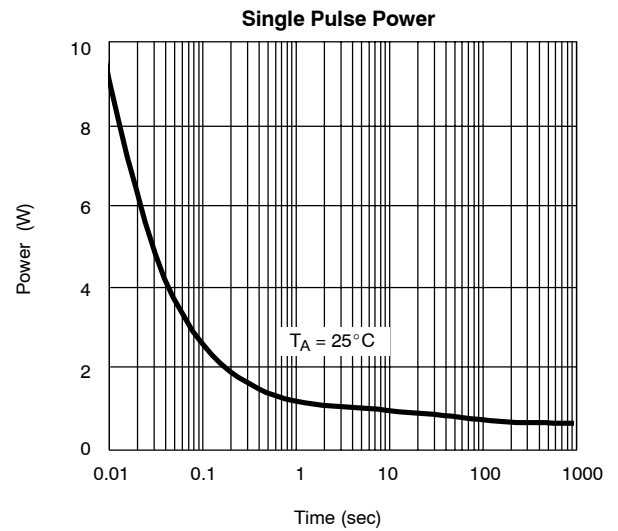
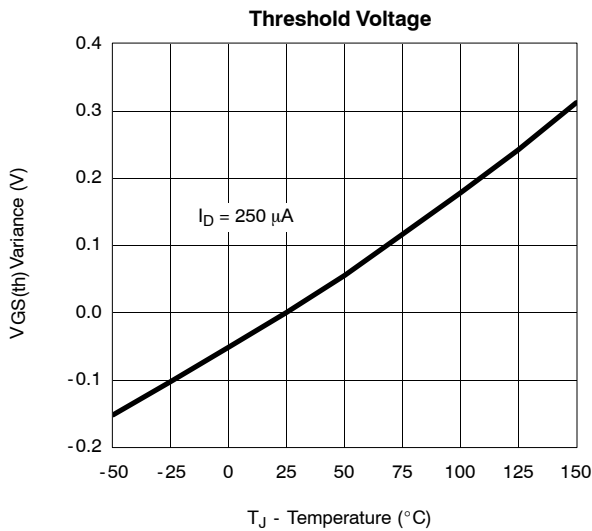
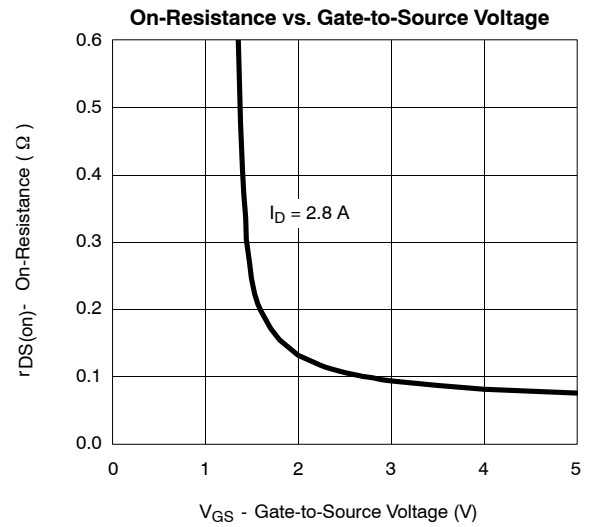
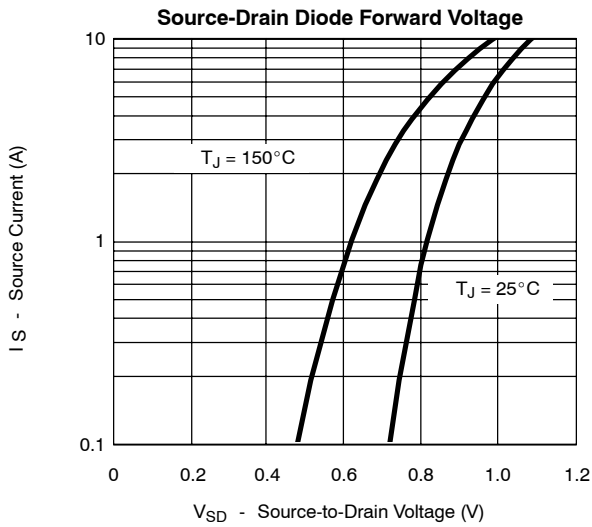


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

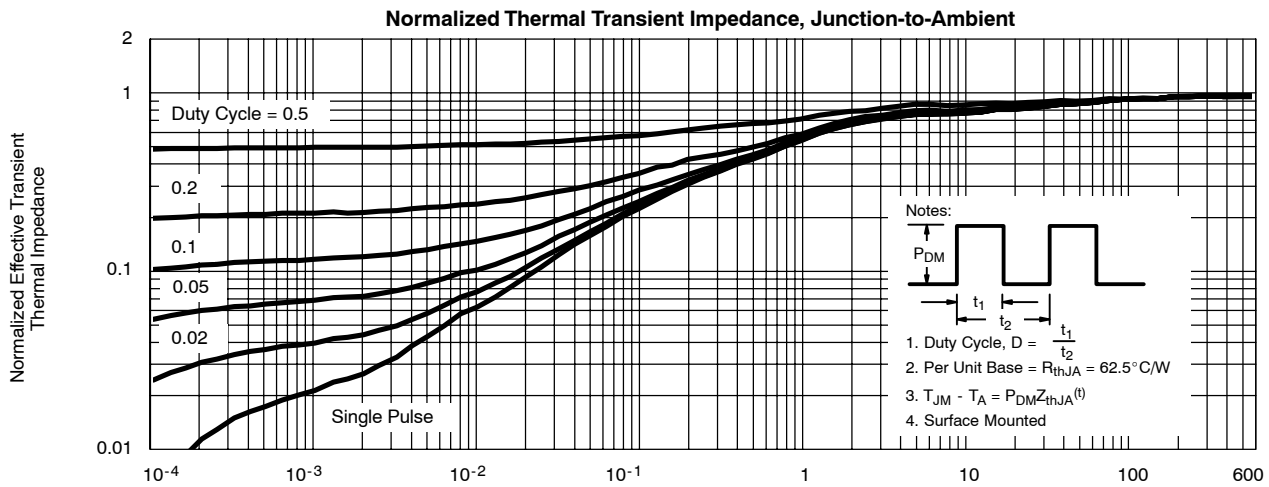




TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



Square Wave Pulse Duration (sec)