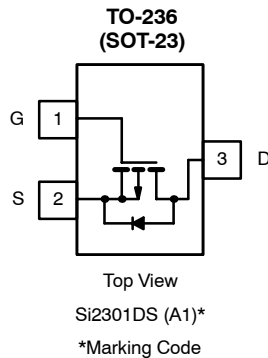




P-Channel 1.25-W, 2.5-V MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-20	0.130 @ $V_{GS} = -4.5$ V	-2.3
	0.190 @ $V_{GS} = -2.5$ V	-1.9



Ordering Information: Si2301DS-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	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	-2.3	A
	$T_A = 70^\circ\text{C}$		-1.5	
Pulsed Drain Current ^a		I_{DM}	-10	
Continuous Source Current (Diode Conduction) ^b		I_S	-1.6	W
Power Dissipation ^b	$T_A = 25^\circ\text{C}$	P_D	1.25	
	$T_A = 70^\circ\text{C}$		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient ^b	R_{thJA}	100	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^c		166	

Notes

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

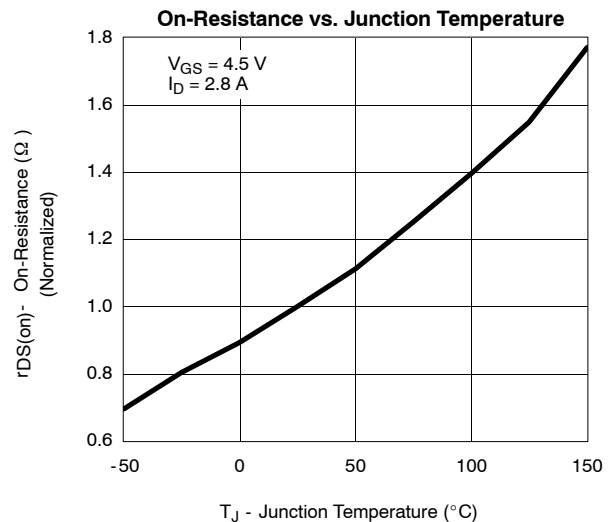
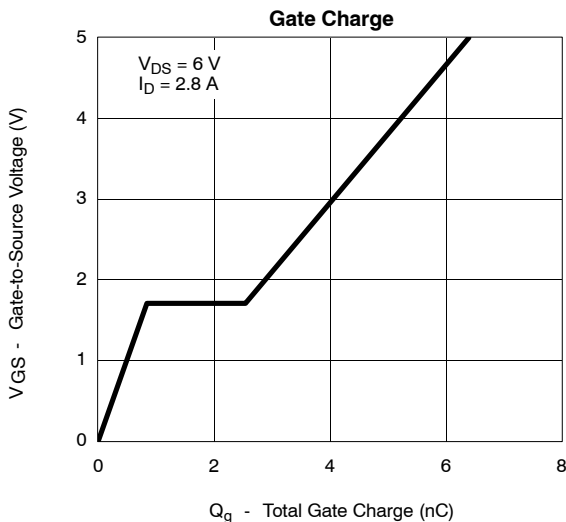
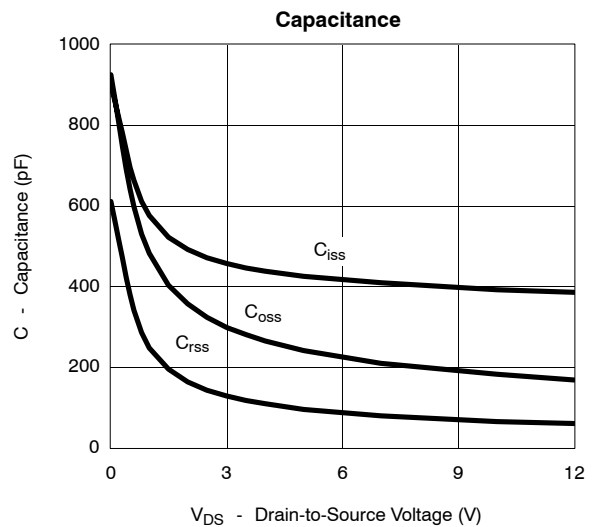
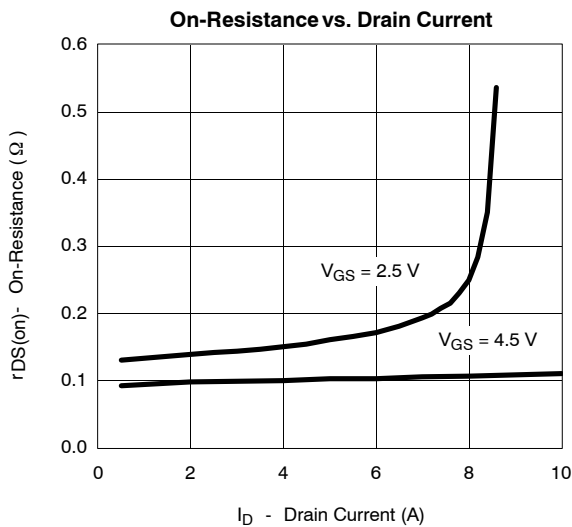
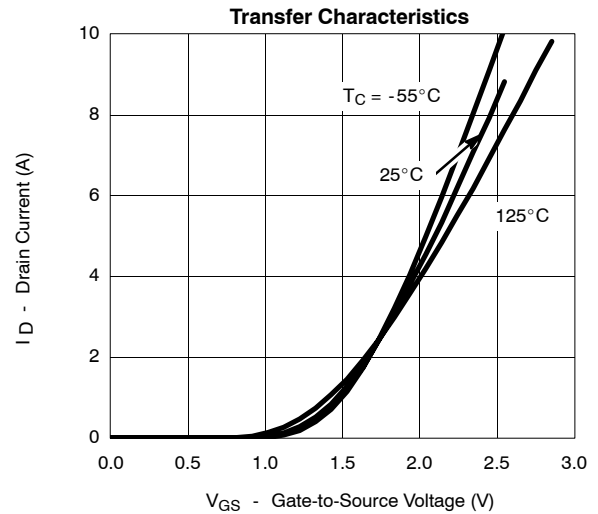
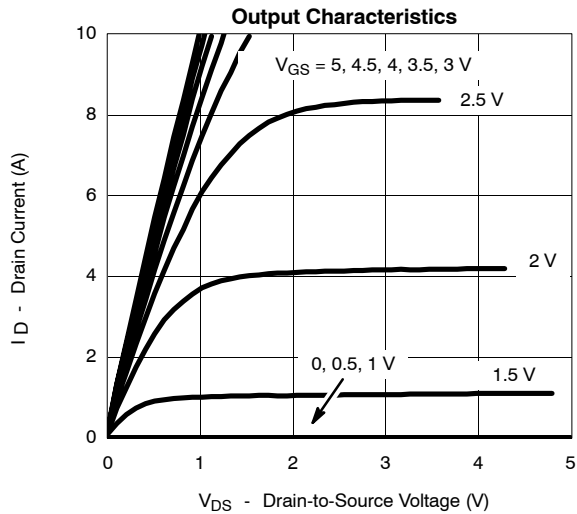
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

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			
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		0.105	0.130	Ω
		V _{GS} = -2.5 V, I _D = -2.0 A		0.145	0.190	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -2.8 A		6.5		S
Diode Forward Voltage	V _{SD}	I _S = -1.6 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		5.8	10	nC
Gate-Source Charge	Q _{gs}			0.85		
Gate-Drain Charge	Q _{gd}			1.70		
Input Capacitance	C _{iss}	V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz		415		pF
Output Capacitance	C _{oss}			223		
Reverse Transfer Capacitance	C _{rss}			87		
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		13.0	25	ns
	t _r			36.0	60	
Turn-Off Time	t _{d(off)}			42	70	
	t _f			34	60	

Notes

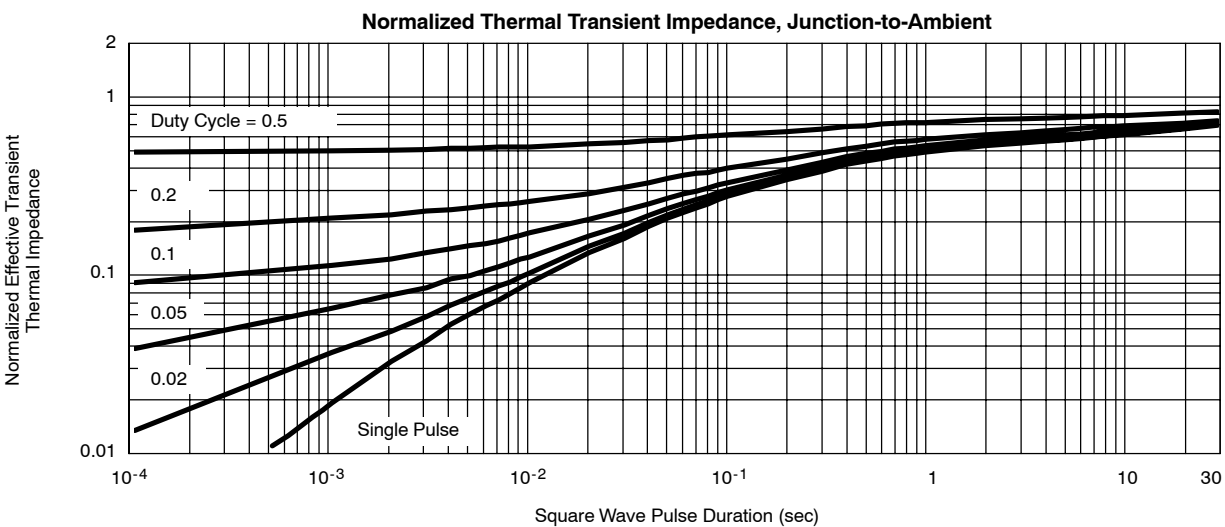
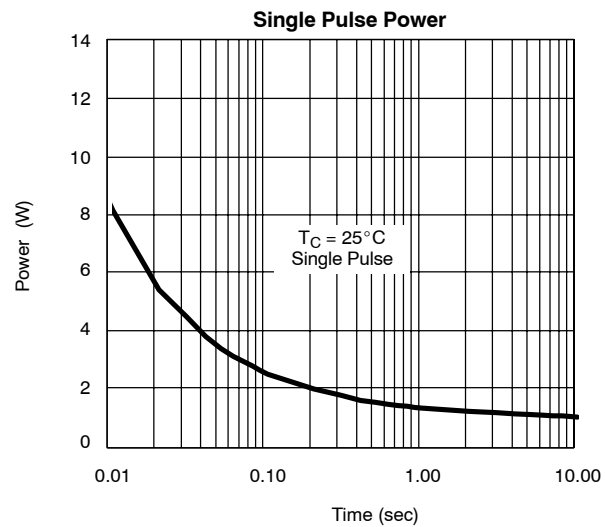
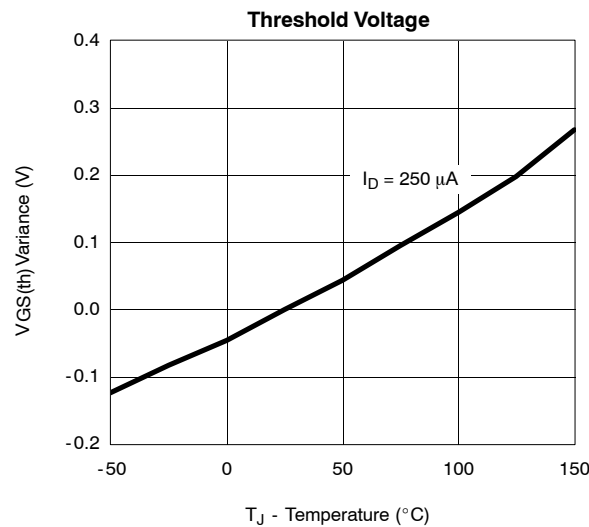
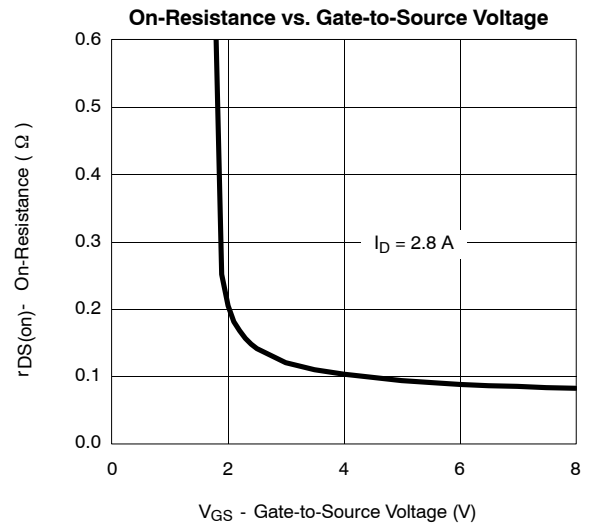
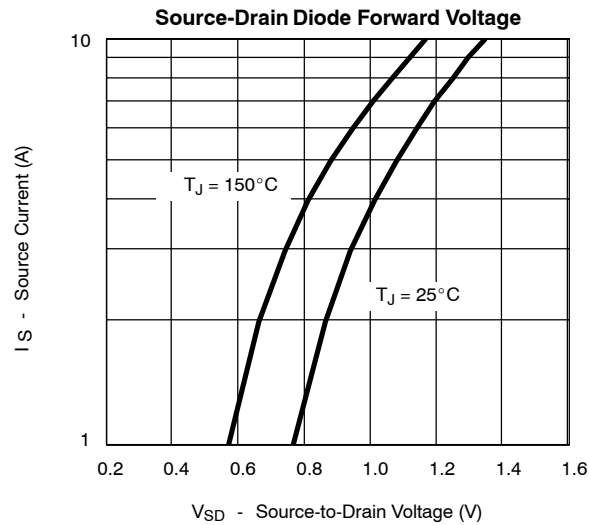
- a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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