

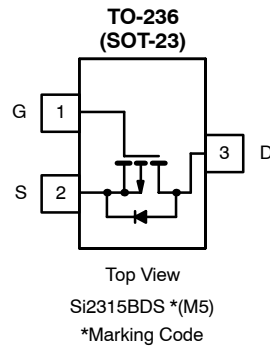


P-Channel 1.8-V (G-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.050 @ $V_{GS} = -4.5$ V	-3.85
	0.065 @ $V_{GS} = -2.5$ V	-3.4
	0.100 @ $V_{GS} = -1.8$ V	-2.7

TrenchFET[®]
Power MOSFETs
1.8-V Rated



Ordering Information: Si2315BDS-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}	-12		V
Gate-Source Voltage		V _{GS}	±8		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	-3.85	-3.0	A
	T _A = 70°C		-3.0	-2.45	
Pulsed Drain Current ^a		I _{DM}	-12		
Continuous Source Current (Diode Conduction) ^a		I _S	-1.0	-0.62	
Power Dissipation ^a	T _A = 25°C	P _D	1.19	0.75	W
	T _A = 70°C		0.76	0.48	
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	$t \leq 5$ sec.	R_{thJA}	85	105	$^\circ\text{C/W}$
	Steady State		130	166	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	60	75	

Notes

- a. Surface Mounted on FR4 Board.
b. $t \leq 5$ sec.

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

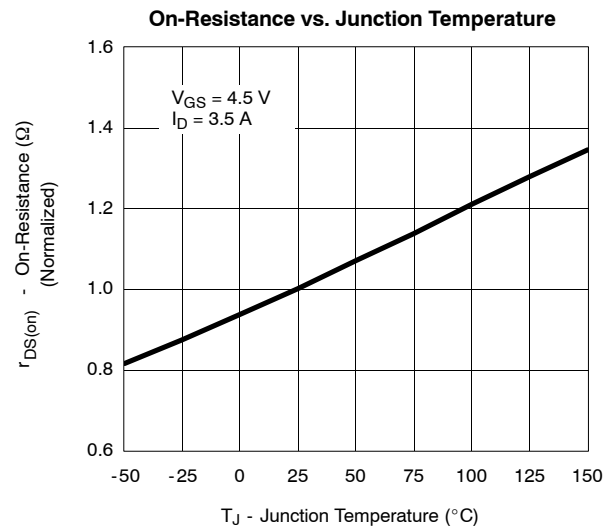
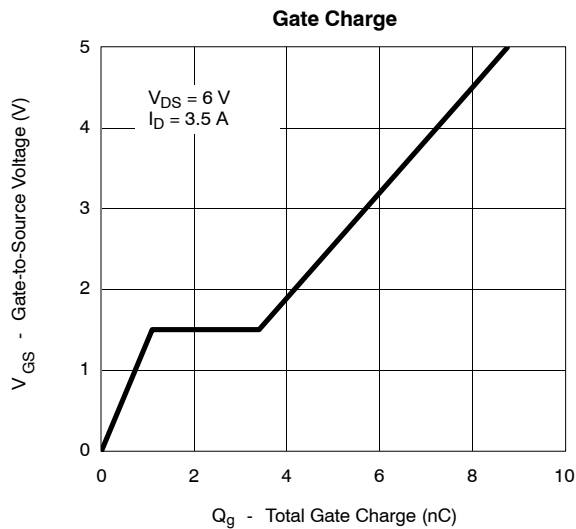
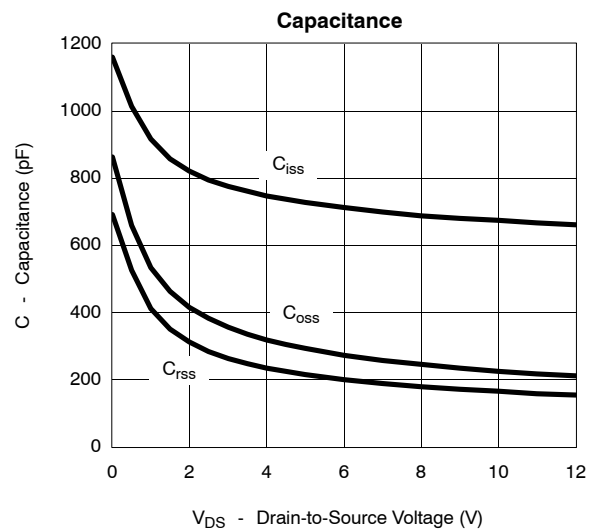
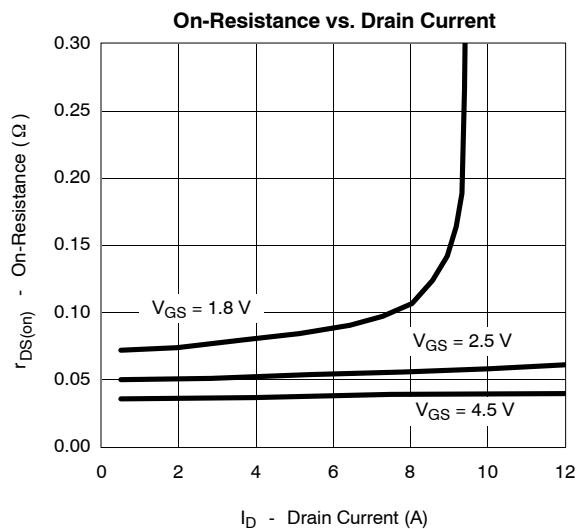
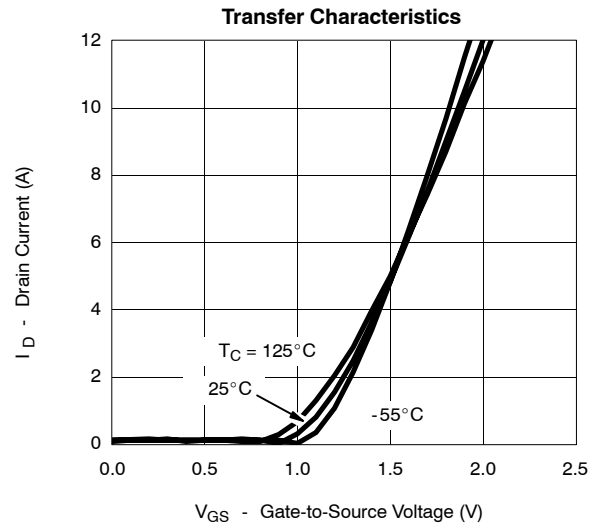
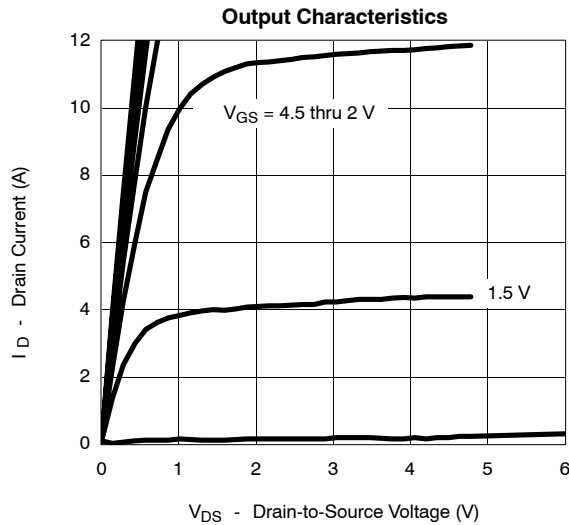
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -10 μA	-12			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.45		-0.90	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -12 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -12 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 = -3.85 A		0.040	0.050	Ω
		V _{GS} = -2.5 V, I _D = -3.4 A		0.050	0.065	
		V _{GS} = -1.8 V, I _D = -2.7 A		0.071	0.100	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -3.85 A		7		S
Diode Forward Voltage	V _{SD}	I _S = -1.6 A, V _{GS} = 0 V			-1.2	V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -6 V, V _{GS} = -4.5 V I _D ≅ -3.85 A		8	15	nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			2.3		
Input Capacitance	C _{iss}	V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz		715		pF
Output Capacitance	C _{oss}			275		
Reverse Transfer Capacitance	C _{rss}			200		
Switching ^b						
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		15	20	ns
	t _r			35	50	
Turn-Off Time	t _{d(off)}			50	70	
	t _f			50	75	

Notes

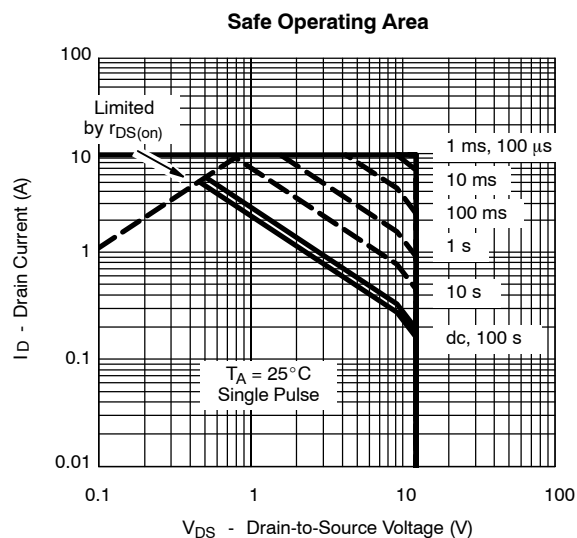
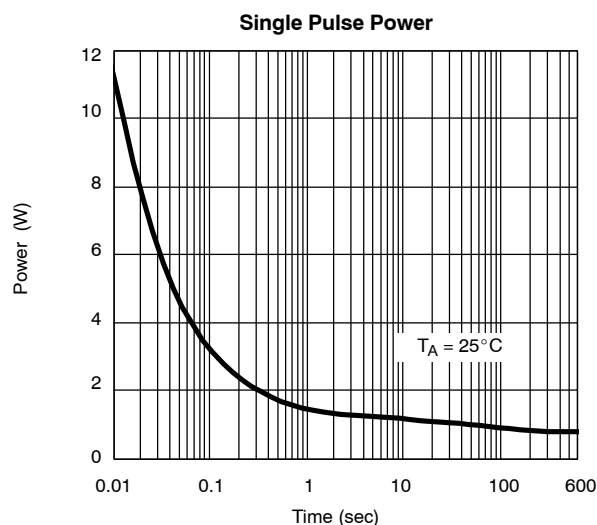
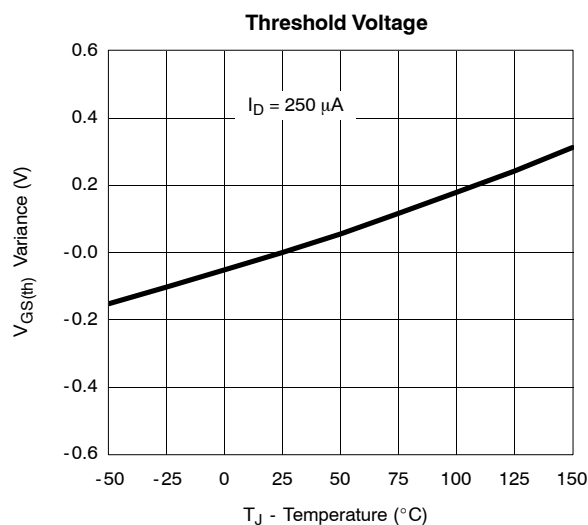
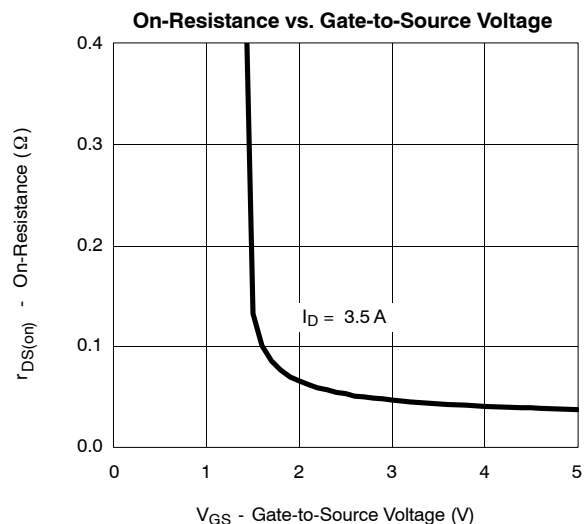
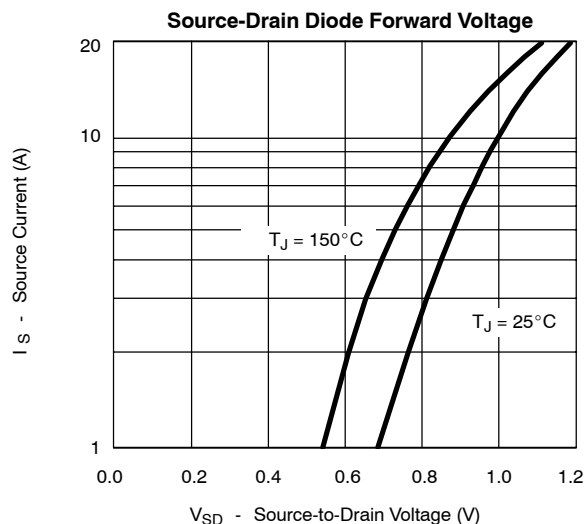
- For DESIGN AID ONLY, not subject to production testing.
- Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
- Switching time is essentially independent of operating temperature.



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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