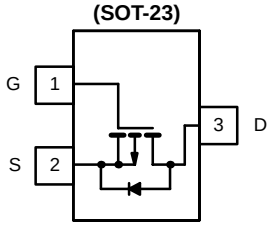
P-Channel 1.25-W, 1.8-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.050 @ V_{GS} = -4.5 V	-3.2
	0.065 @ V_{GS} = -2.5 V	-2.8
	0.100 @ V_{GS} = -1.8 V	-2.6

TrenchFET® Power MOSFETs
1.8-V Rated

TO-236
(SOT-23)



Top View
Si2315BDS *(M5)
*Marking Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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	-3.2	-2.8	A
	T_A= 70°C		-2.4	-2.1	
Pulsed Drain Current[a]		I_{DM}	-12		
Continuous Source Current (Diode Conduction)[a]		I_S	-0.65	-0.45	
Power Dissipation[a]	T_A= 25°C	P_D	0.77	0.57	W
	T_A= 70°C		0.42	0.31	
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 ≤ 5 sec.	R_{thJA}	115	140	°C/W
	Steady State		140	175	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	60	75	

Notes
a. Surface Mounted on FR4 Board.
b. t ≤ 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)

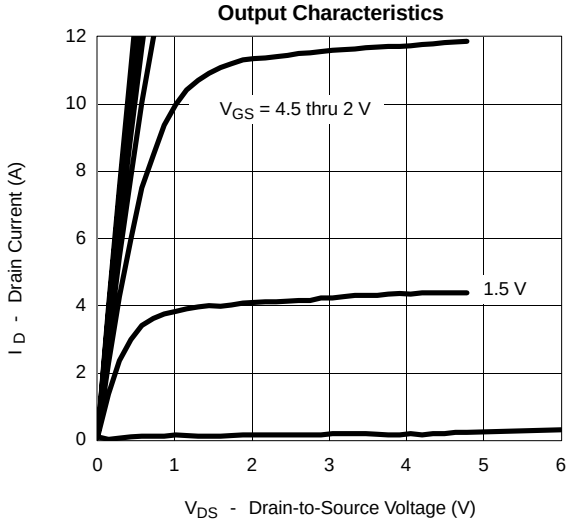
Parameter	Symbol	Test Conditions	Limits Min	Limits Typ	Limits Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = -10 μA	-12			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-0.45		-0.90	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -9.6 V, V_{GS} = 0 V			-1	μA
		V_{DS} = -9.6 V, V_{GS} = 0 V, T_J = 55°C			-10	μA
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			A
Drain-Source On-Resistance[a]	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -3.2 A		0.040	0.050	Ω
		V_{GS} = -2.5 V, I_D = -2.8 A		0.050	0.065	Ω
		V_{GS} = -1.8 V, I_D = -2.6 A		0.071	0.100	Ω
Forward Transconductance[a]	g_{fs}	V_{DS} = -5 V, I_D = -3.2 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 ≅ -3.2 A		8	15	nC
Gate-Source Charge	Q_{gs}			1.1		nC
Gate-Drain Charge	Q_{gd}			2.3		nC
Input Capacitance	C_{iss}	V_{DS} = -6 V, V_{GS} = 0, f = 1 MHz		715		pF
Output Capacitance	C_{oss}			275		pF
Reverse Transfer Capacitance	C_{rss}			200		pF
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	ns
Turn-Off Time	$t_{d(off)}$			50	70	ns
	t_f			50	75	ns

Notes

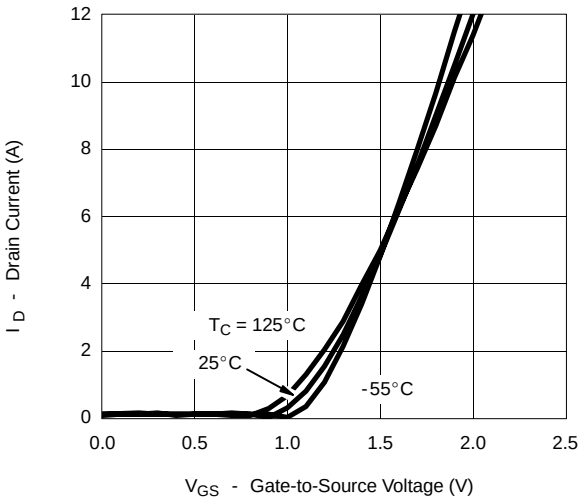
a. For DESIGN AID ONLY, not subject to production testing.
b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
c. Switching time is essentially independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

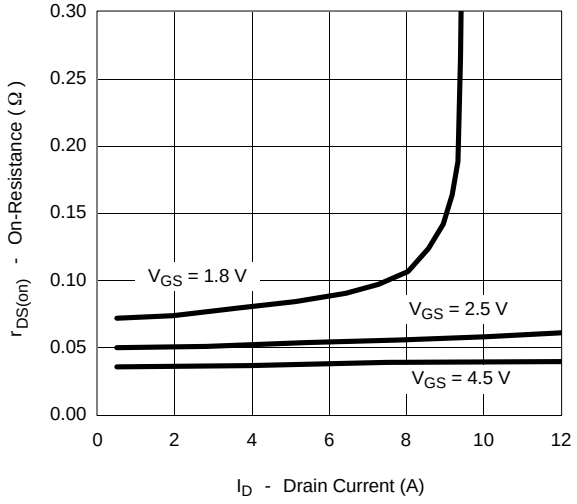
Output Characteristics



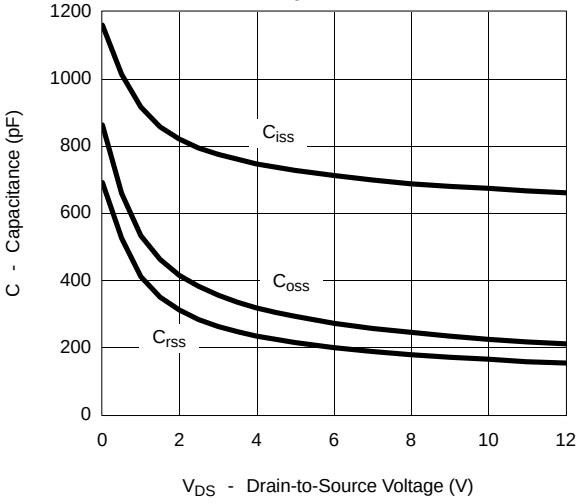
Transfer Characteristics



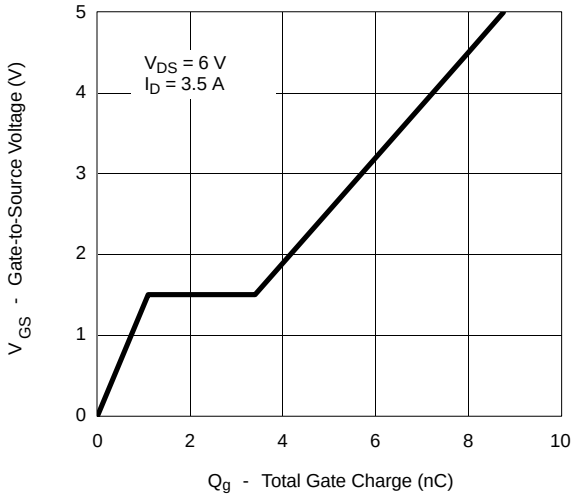
On-Resistance vs. Drain Current



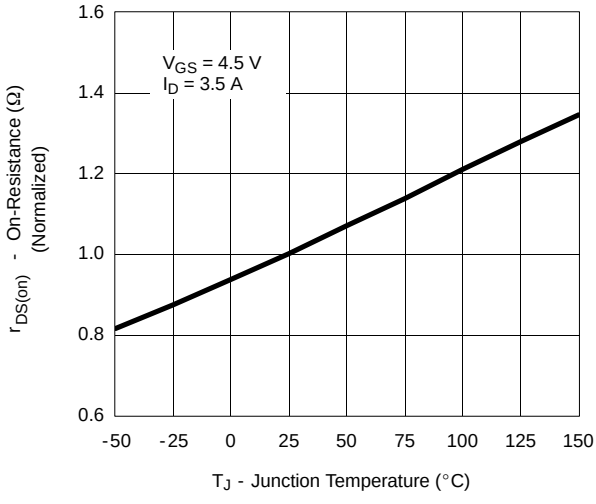
Capacitance



Gate Charge

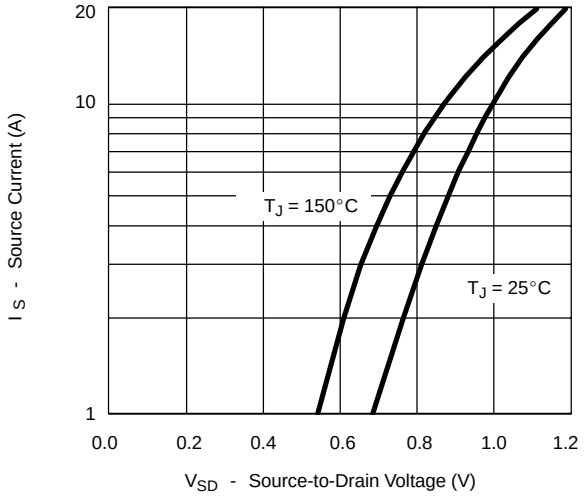


On-Resistance vs. Junction Temperature

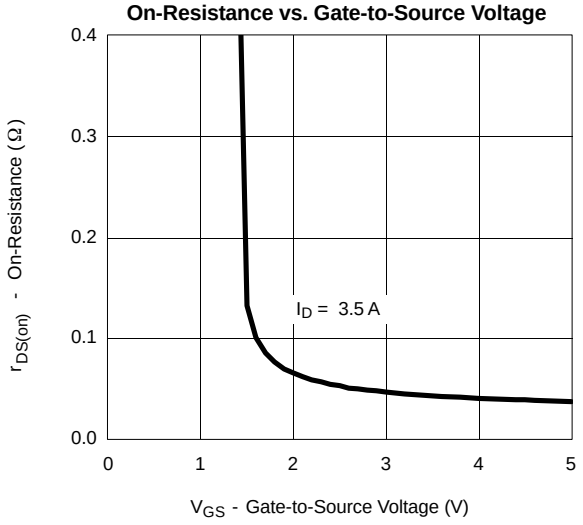


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

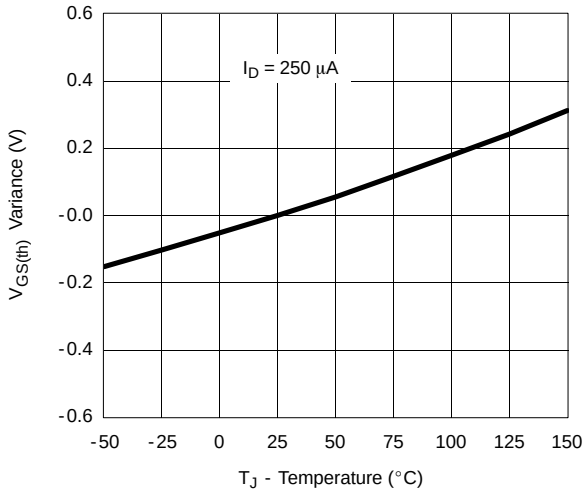
Source-Drain Diode Forward Voltage



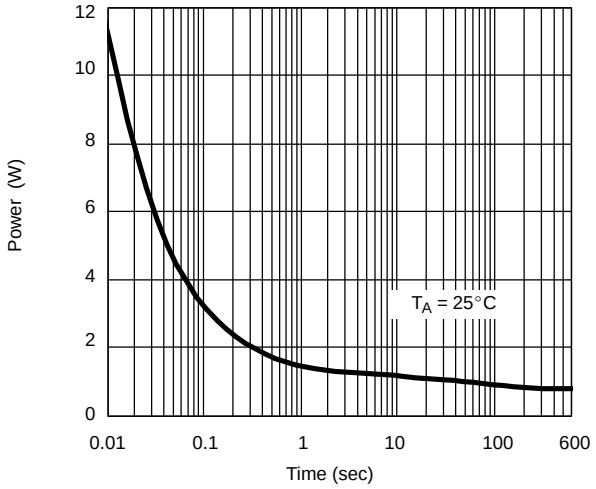
On-Resistance vs. Gate-to-Source Voltage



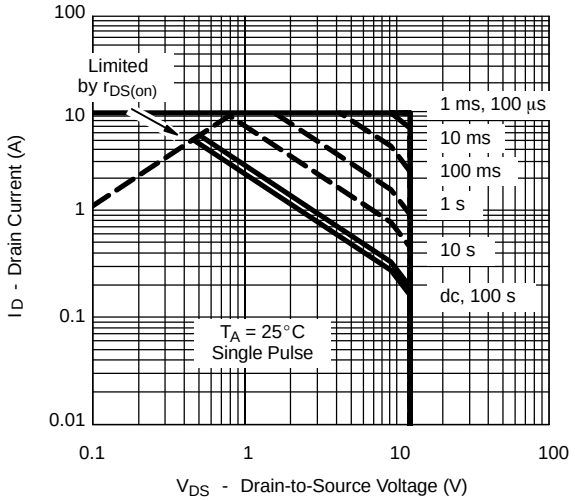
Threshold Voltage



Single Pulse Power



Safe Operating Area



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)