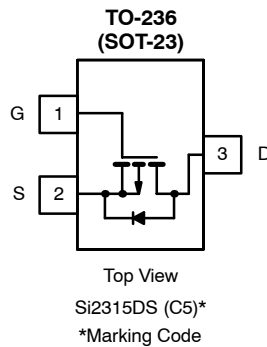




## P-Channel 1.25-W, 1.8-V (G-S) MOSFET

**TrenchFET<sup>®</sup>**  
Power MOSFETs  
**1.8-V Rated**

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-12	0.055 @ $V_{GS} = -4.5$ V	$\pm 3.5$
	0.075 @ $V_{GS} = -2.5$ V	$\pm 3$
	0.118 @ $V_{GS} = -1.8$ V	$\pm 2$



Ordering Information: Si2315DS-T1

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		$V_{DS}$	-12	V
Gate-Source Voltage		$V_{GS}$	$\pm 8$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$I_D$	$\pm 3.5$	A
	$T_A = 70^\circ\text{C}$		$\pm 2.8$	
Pulsed Drain Current		$I_{DM}$	$\pm 12$	
Continuous Source Current (Diode Conduction) <sup>a, b</sup>		$I_S$	-1.6	
Maximum Power Dissipation <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$P_D$	1.25	W
	$T_A = 70^\circ\text{C}$		0.8	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 5$ sec	$R_{thJA}$		100	$^\circ\text{C/W}$
	Steady State		130		

**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>



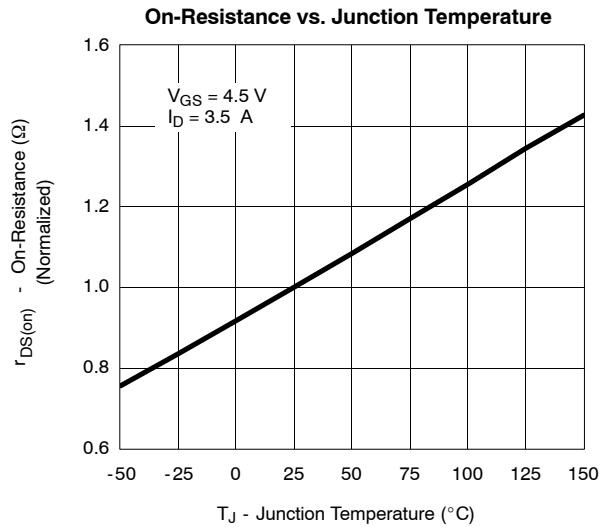
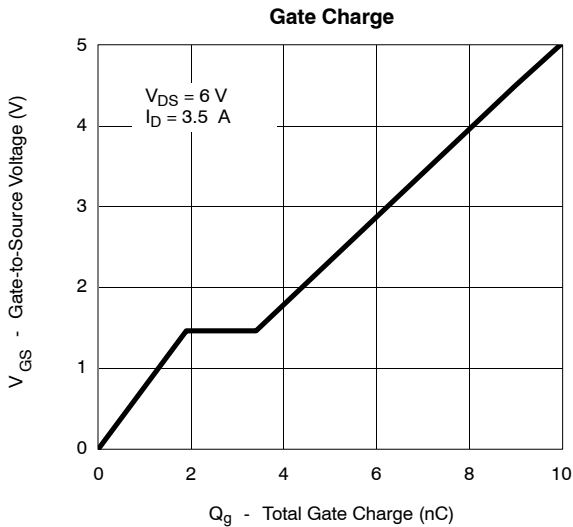
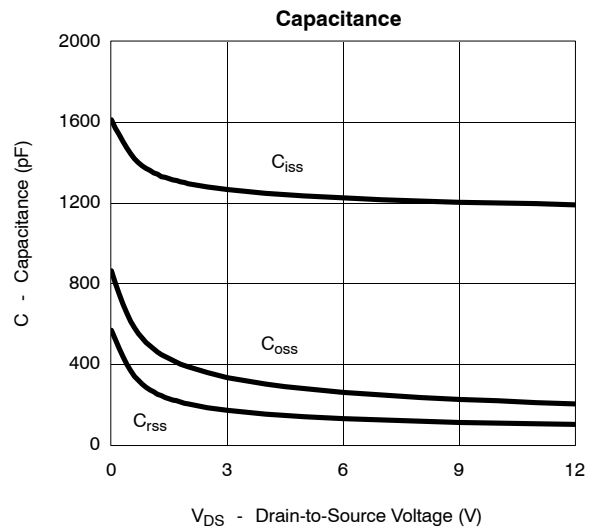
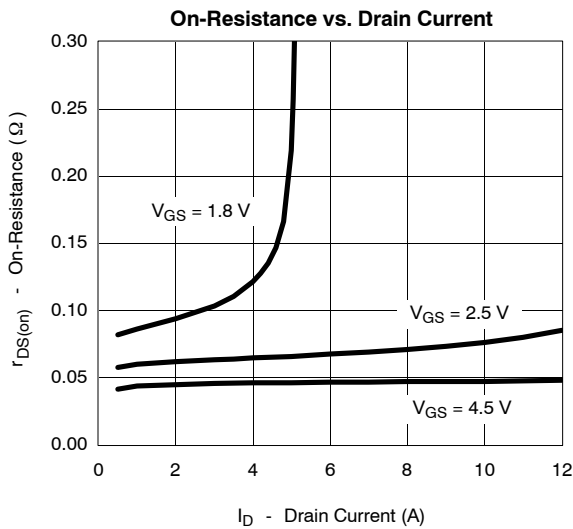
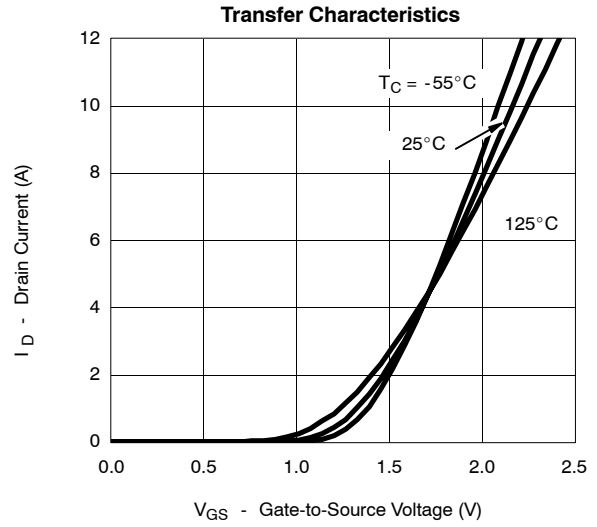
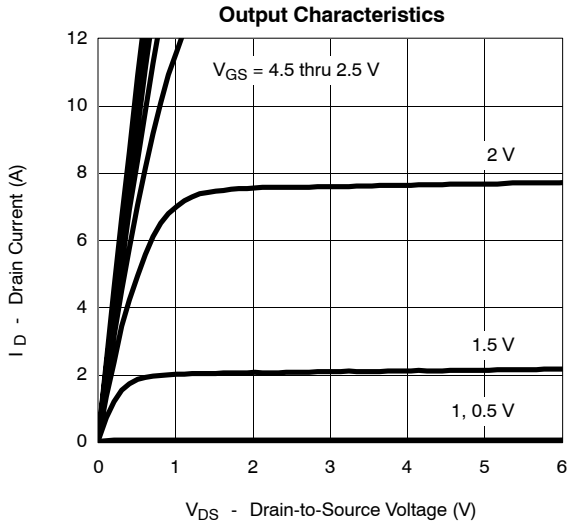
<b>SPECIFICATIONS (T<sub>J</sub> = 25 ° C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -10 μA	-12			V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.45			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			-10	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	-6			A
		V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -2.5 V	-3			
Drain-Source On-Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3.5 A		0.045	0.055	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -3 A		0.063	0.075	
		V <sub>GS</sub> = -1.8 V, I <sub>D</sub> = -2 A		0.093	0.118	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5 V, I <sub>D</sub> = -3.5 A		7		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = -1.6 A, V <sub>GS</sub> = 0 V			-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -6 V, V <sub>GS</sub> = -4.5 V I <sub>D</sub> ≅ -3.5 A		9	15	nC
Gate-Source Charge	Q <sub>gs</sub>			1.9		
Gate-Drain Charge	Q <sub>gd</sub>			1.5		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -6 V, V <sub>GS</sub> = 0, f = 1 MHz		1225		pF
Output Capacitance	C <sub>oss</sub>			260		
Reverse Transfer Capacitance	C <sub>rss</sub>			130		
<b>Switching<sup>b</sup></b>						
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -6 V, R <sub>L</sub> = 6 Ω I <sub>D</sub> ≅ -1.0 A, V <sub>GEN</sub> = -4.5 V R <sub>G</sub> = 6 Ω		13.0	20	ns
	t <sub>r</sub>			15	25	
Turn-Off Time	t <sub>d(off)</sub>			50	70	
	t <sub>f</sub>			19	35	

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)**



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

