

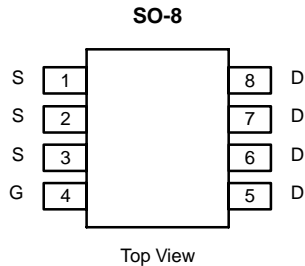


## P-Channel 1.8-V (G-S) MOSFET

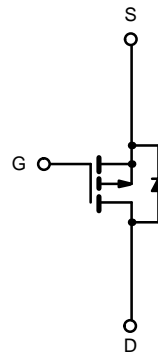
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
-20	0.017 @ V <sub>GS</sub> = -4.5 V	-9.9
	0.023 @ V <sub>GS</sub> = -2.5 V	-8.5
	0.032 @ V <sub>GS</sub> = -1.8 V	-7.2

### FEATURES

- TrenchFET® Power MOSFETS



Ordering Information: Si4403BDY  
Si4403BDY-T1 (with Tape and Reel)



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	V <sub>DS</sub>	-20		V	
Gate-Source Voltage	V <sub>GS</sub>	±8			
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	-9.9	-7.3	A
		T <sub>A</sub> = 70°C	-7.9	-5.8	
Pulsed Drain Current	I <sub>DM</sub>	-30			
continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	-2.3	-1.3		
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	2.5	1.35	W
		T <sub>A</sub> = 70°C	1.6	0.87	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	t ≤ 10 sec	43	50	°C/W
		Steady State	71	92	
Maximum Junction-to-Foot (Drain)	R <sub>thJF</sub>	19	25		

Notes

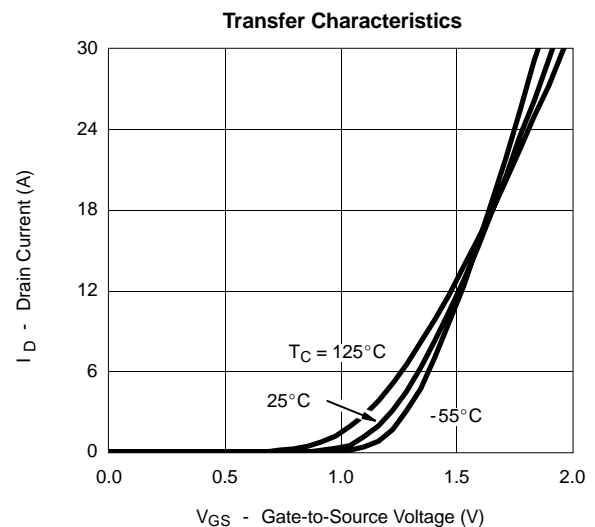
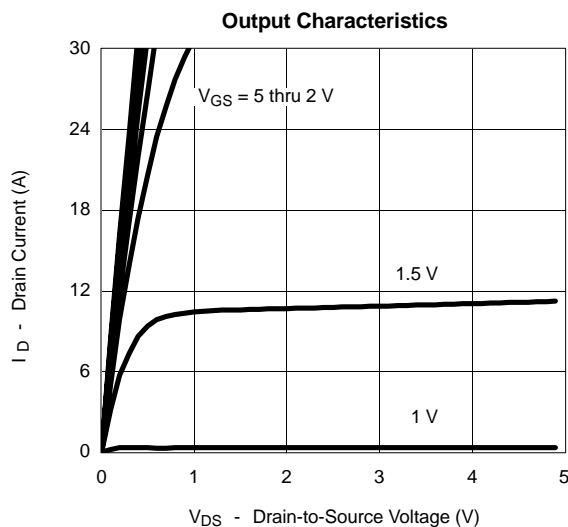
a Surface Mounted on 1" x 1" FR4 Board.

**SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

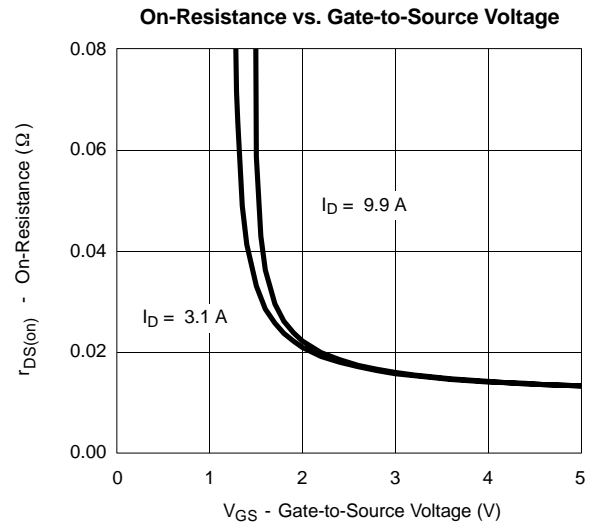
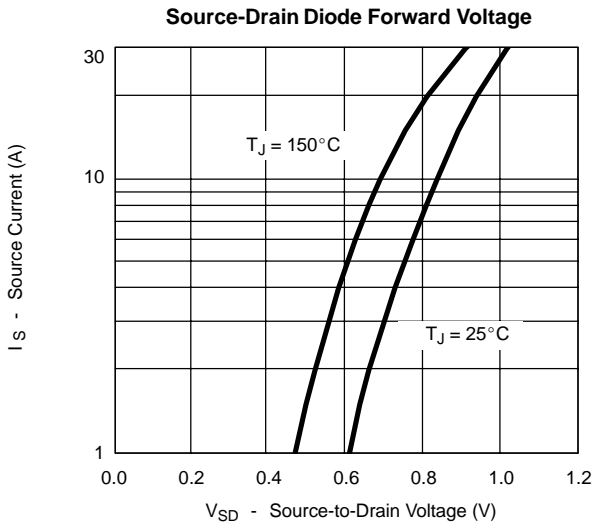
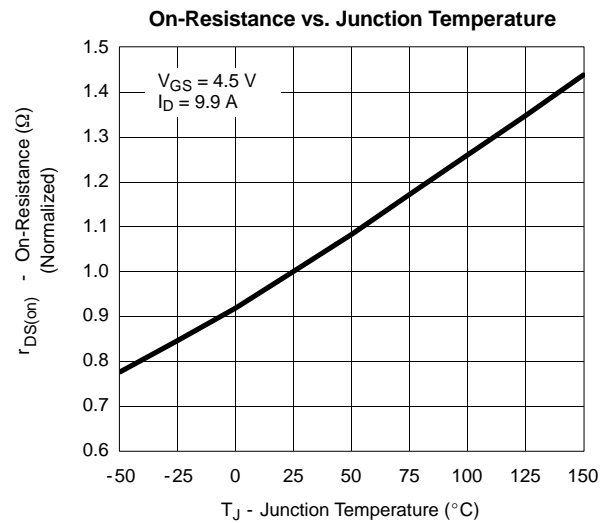
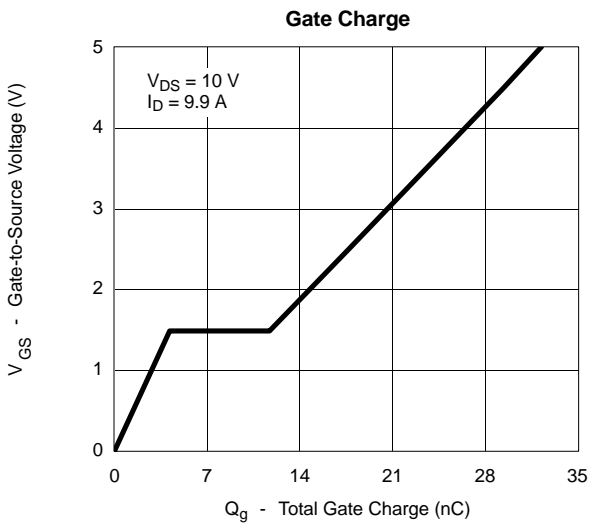
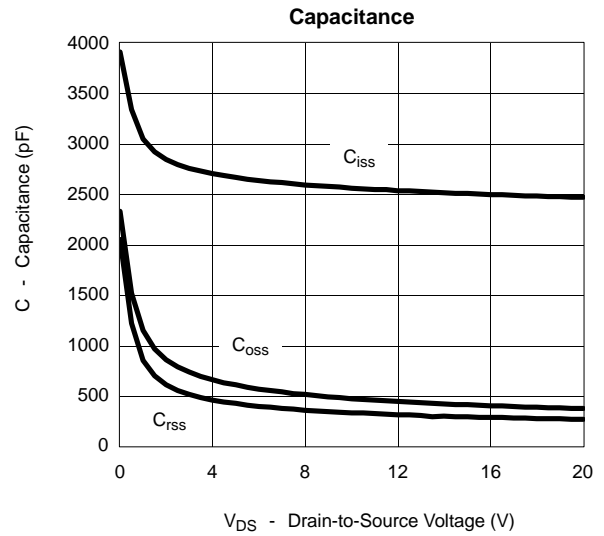
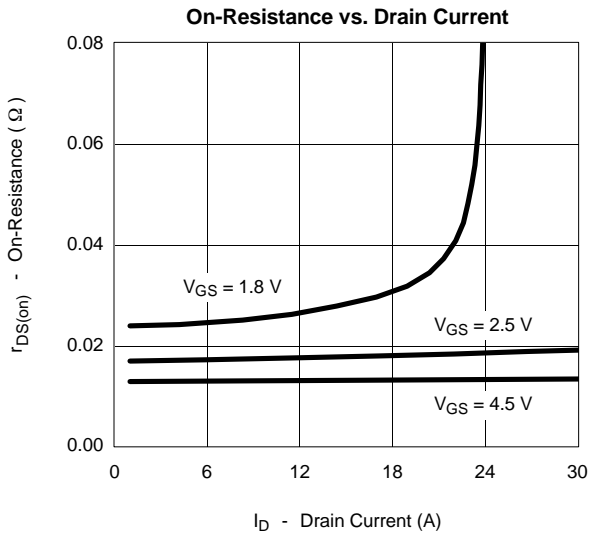
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -350 \mu\text{A}$	-0.45		-1.0	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 8 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	20			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -9.9 \text{ A}$		0.014	0.017	$\Omega$
		$V_{GS} = -2.5 \text{ V}, I_D = -8.5 \text{ A}$		0.018	0.023	
		$V_{GS} = -1.8 \text{ V}, I_D = -3.1 \text{ A}$		0.024	0.032	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15 \text{ V}, I_D = -9.9 \text{ A}$		36		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -2.3 \text{ A}, V_{GS} = 0 \text{ V}$		-0.8	-1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -10 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -9.9 \text{ A}$		33	50	nC
Gate-Source Charge	$Q_{gs}$		4.2			
Gate-Drain Charge	$Q_{gd}$		7.6			
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 \text{ V}, R_L = 15 \Omega$ $I_D \cong -1 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$		25	40	ns
Rise Time	$t_r$			45	70	
Turn-Off Delay Time	$t_{d(off)}$			150	225	
Fall Time	$t_f$			70	110	
Source-Drain Reverse Recovery Time	$t_{rr}$		$I_F = -2.3 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		40	

## Notes

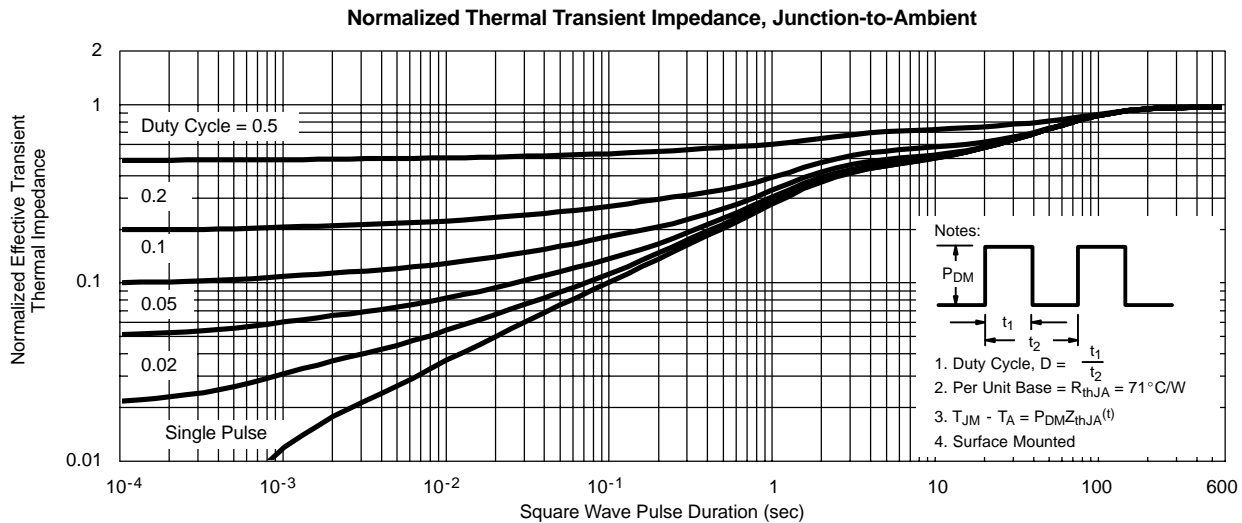
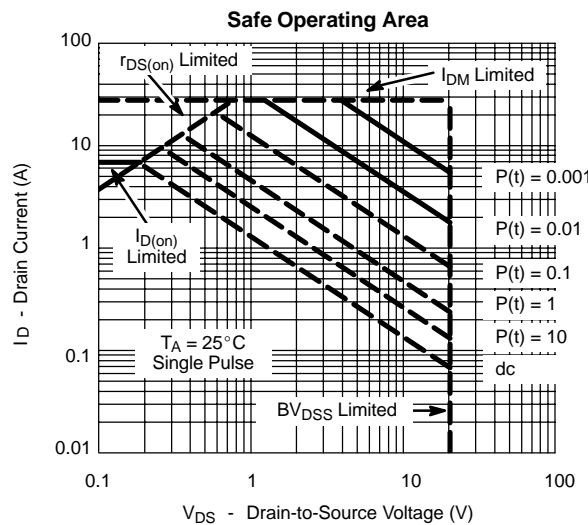
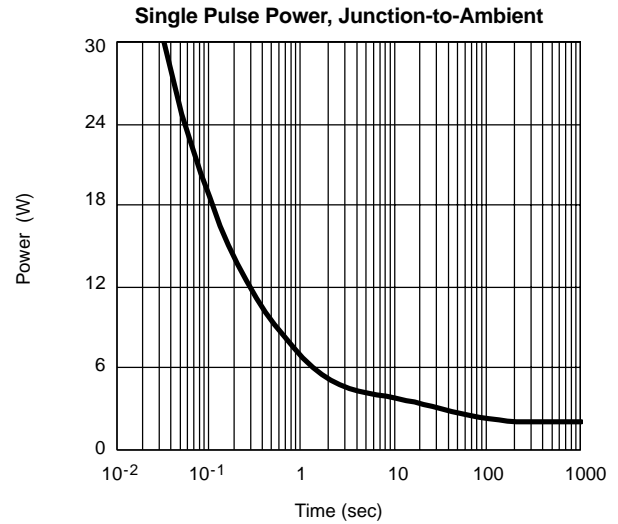
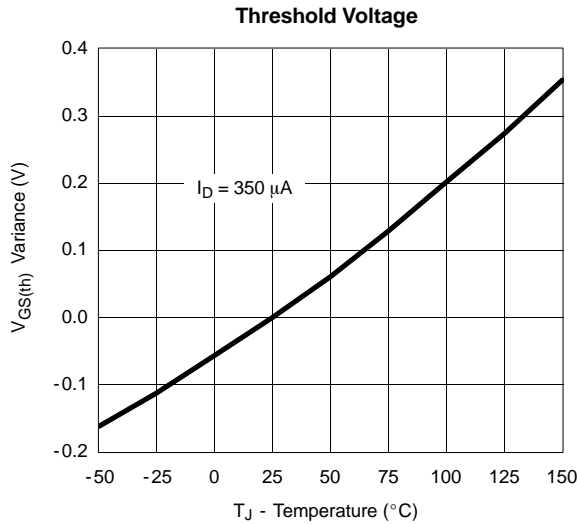
- a Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
b Guaranteed by design, not subject to production testing.

**TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$  UNLESS NOTED)**

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



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





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

