

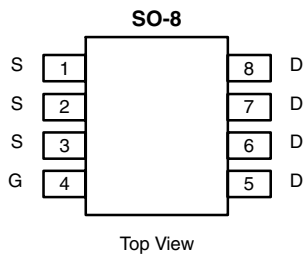


## N-Channel 20-V (D-S) MOSFET

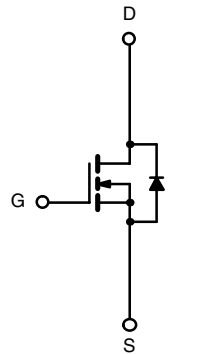
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
20	0.005 @ $V_{GS} = 4.5$ V	21
	0.0075 @ $V_{GS} = 2.5$ V	17

### FEATURES

- TrenchFET® Power MOSFET
- 100%  $R_g$  Tested



Ordering Information: Si4876DY  
Si4876DY-T1 (with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	20		V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>LEERER MERKER</sup>	$I_D$	$T_A = 25^\circ\text{C}$	21	14	A
		$T_A = 85^\circ\text{C}$	15	10	
Pulsed Drain Current	$I_{DM}$	50			
Avalanche Current	$I_{AS}$	42			
Single Avalanche Energy	$E_{AS}$	88		mJ	
Continuous Source Current (Diode Conduction) <sup>LEERER MERKER</sup>		$I_S$	3	1.3	mS
Maximum Power Dissipation <sup>LEERER MERKER</sup>	$P_D$	$T_A = 25^\circ\text{C}$	3.6	1.6	W
		$T_A = 85^\circ\text{C}$	1.9	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>LEERER MERKER</sup>	$R_{thJA}$	$t \leq 10$ sec	29	35	$^\circ\text{C/W}$
		Steady State	67	80	
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	13	16		

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

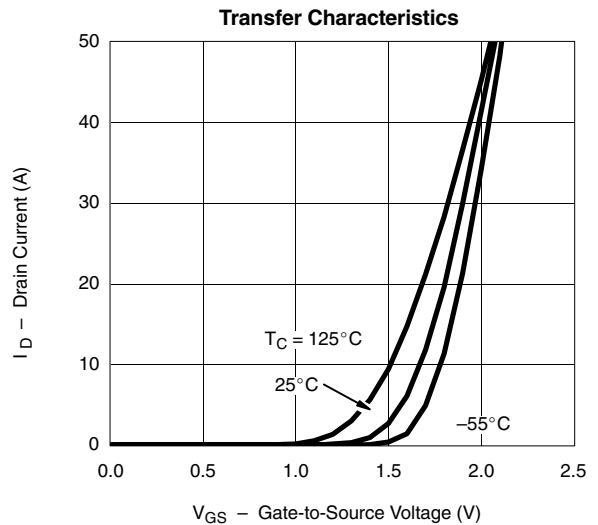
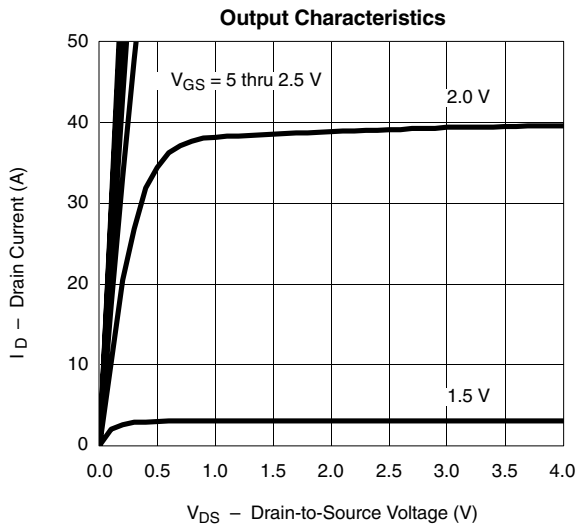


SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.6			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C			20	
On-State Drain Current <sup>LEERER MERKER</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 4.5 V	50			A
Drain-Source On-State Resistance <sup>LEERER MERKER</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 21 A		0.0037	0.005	Ω
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 17 A		0.0058	0.0075	
Forward Transconductance <sup>LEERER MERKER</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 21 A		17		S
Diode Forward Voltage <sup>LEERER MERKER</sup>	V <sub>SD</sub>	I <sub>S</sub> = 3 A, V <sub>GS</sub> = 0 V		0.8	1.2	V
<b>Dynamic<sup>LEERER MERKER</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 21 A		55	80	nC
Gate-Source Charge	Q <sub>gs</sub>			13		
Gate-Drain Charge	Q <sub>gd</sub>			11		
Gate Resistance	R <sub>g</sub>		2.0	2.7	4.6	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω		40	60	ns
Rise Time	t <sub>r</sub>			30	45	
Turn-Off Delay Time	t <sub>d(off)</sub>			175	260	
Fall Time	t <sub>f</sub>			70	105	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 3 A, di/dt = 100 A/μs		56	85	

Notes

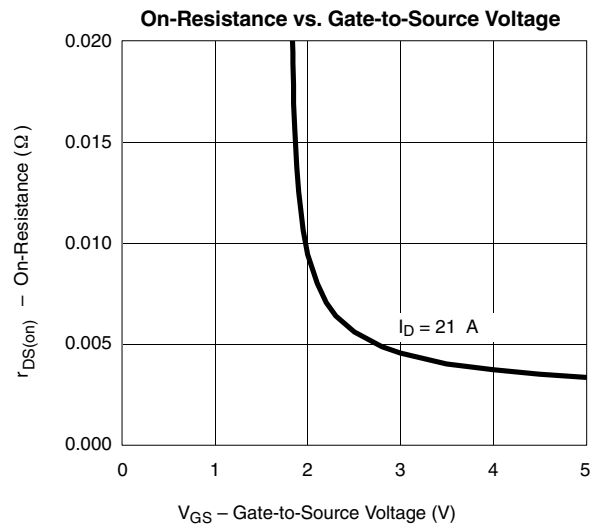
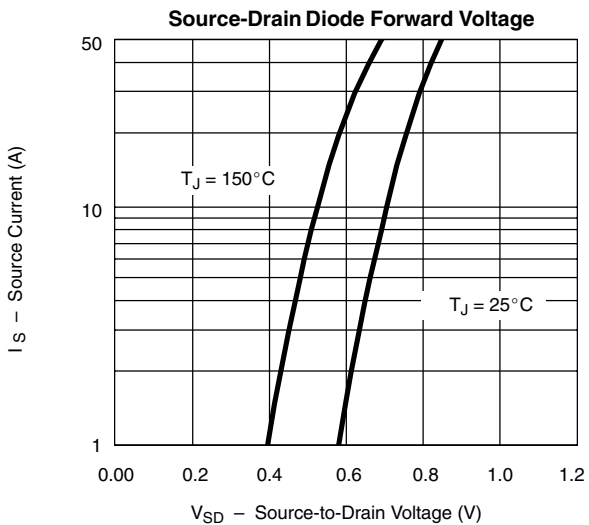
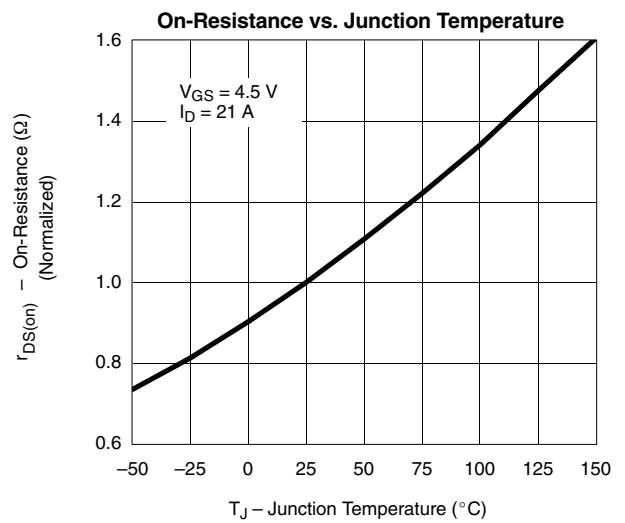
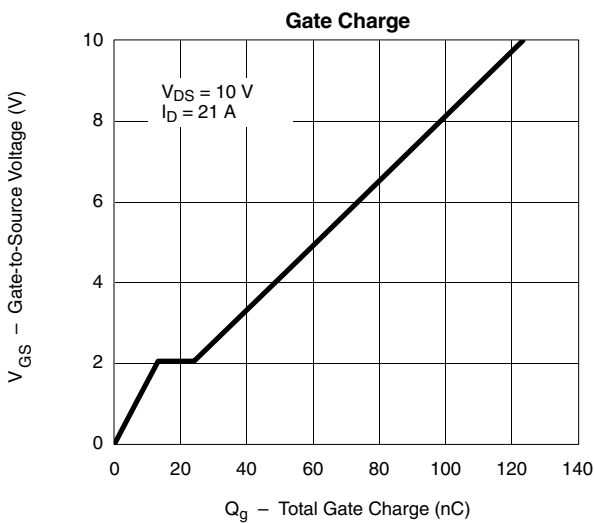
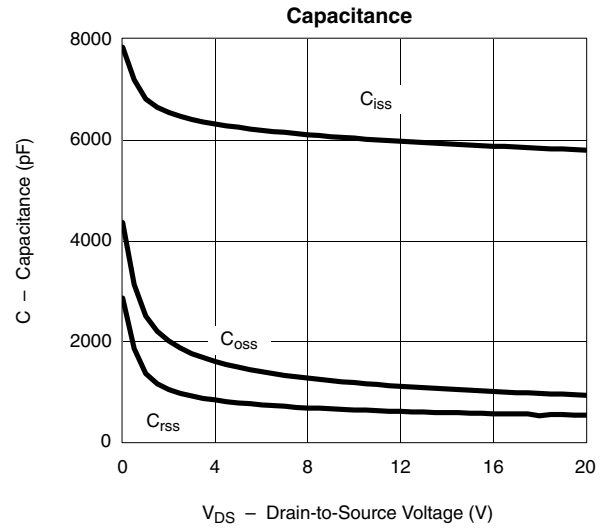
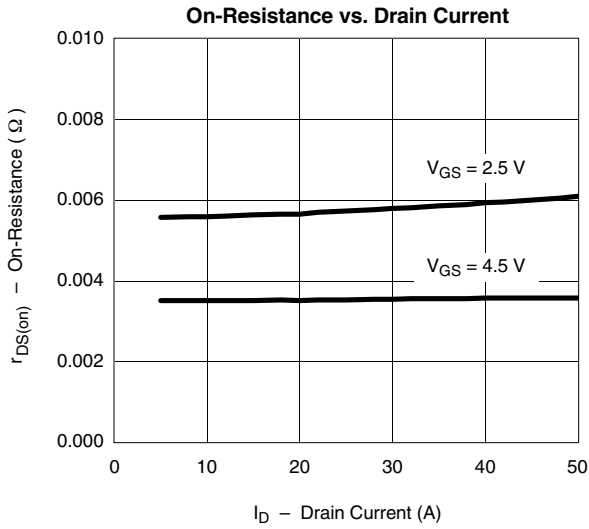
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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



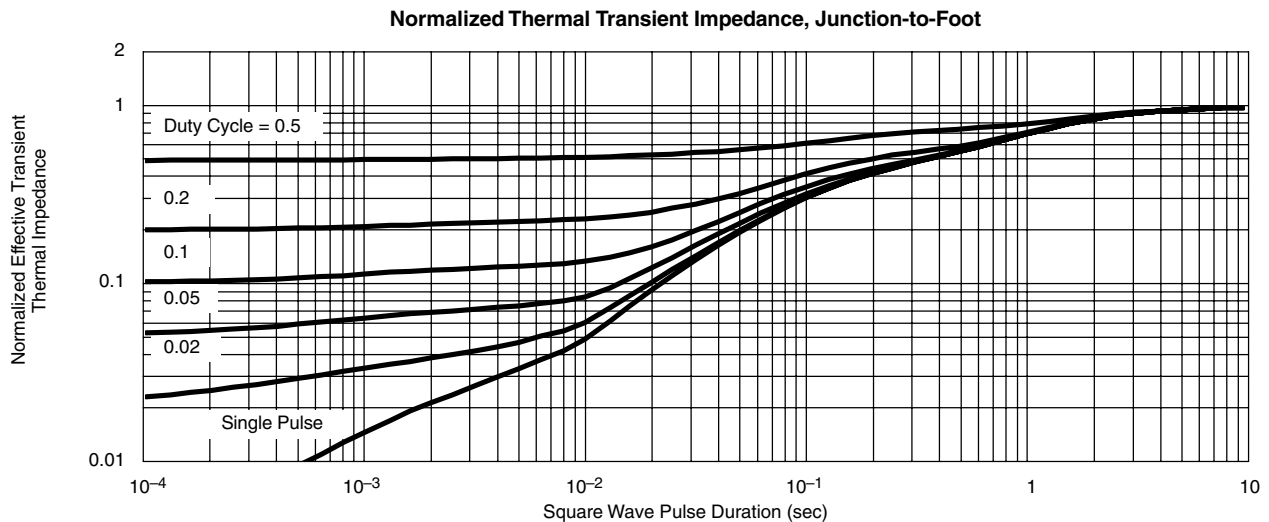
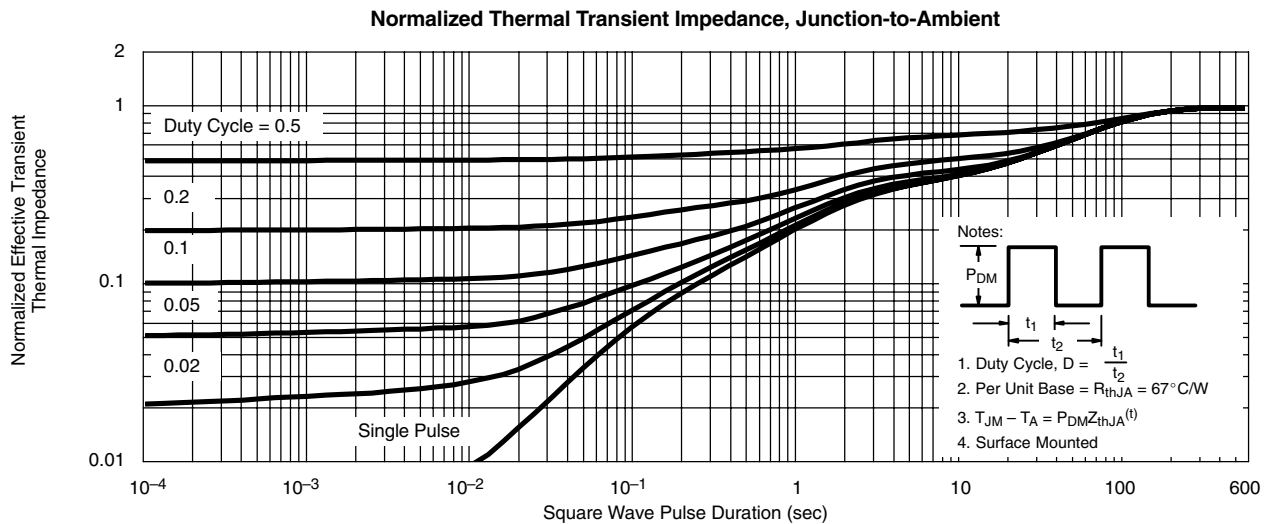
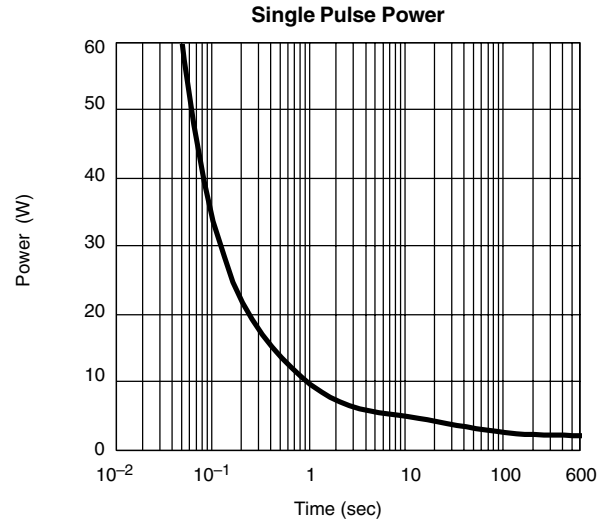
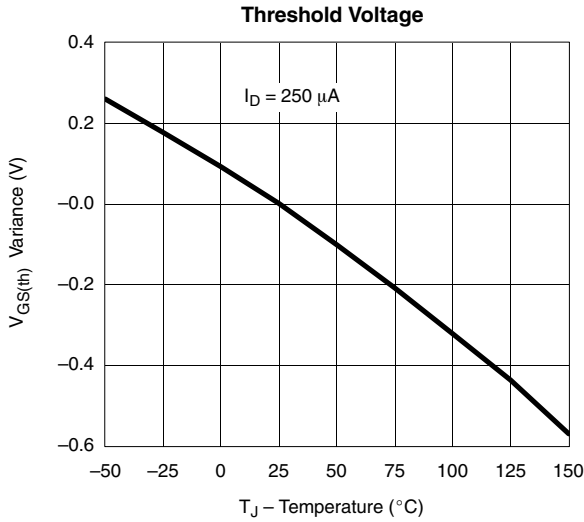


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