

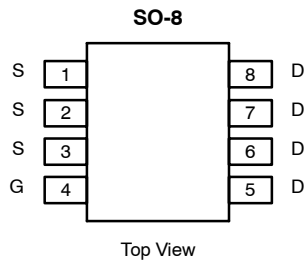


## N-Channel 30-V (D-S) MOSFET

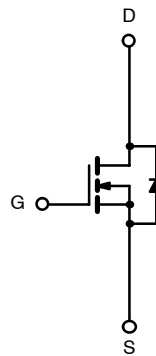
### PRODUCT SUMMARY

$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.022 @ $V_{GS} = 10$ V	8.4
	0.030 @ $V_{GS} = 4.5$ V	7.2

**TrenchFET<sup>®</sup>**  
Power MOSFETs



Ordering Information: Si4802DY  
Si4802DY-T1 (with Tape and Reel)



N-Channel MOSFET

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>	30		V
Gate-Source Voltage		V <sub>GS</sub>	± 20		
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	T <sub>A</sub> = 25°C	I <sub>D</sub>	8.4	6.1	A
	T <sub>A</sub> = 70°C		6.7	4.9	
Pulsed Drain Current		I <sub>DM</sub>	20		
Continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	2.1	1.1	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25°C	P <sub>D</sub>	2.5	1.3	W
	T <sub>A</sub> = 70°C		1.6	0.8	
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>	$t \leq 10$ sec	$R_{thJA}$	40	50	$^\circ\text{C/W}$
	Steady State		80	95	
Maximum Junction-to-Foot (Drain)	Steady State	$R_{thJF}$	20	25	

Notes

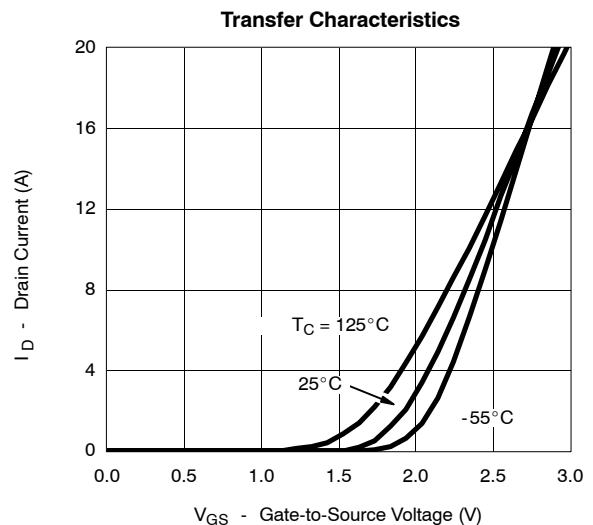
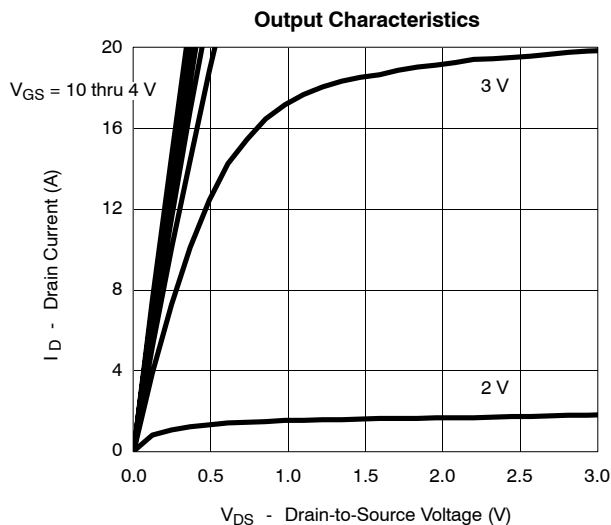
a. Surface Mounted on 1" x 1" FR4 Board.

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.8			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}$			1	$\mu\text{A}$
		$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$			5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}, V_{GS} = 10\ \text{V}$	20			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 8.4\ \text{A}$		0.018	0.022	$\Omega$
		$V_{GS} = 4.5\ \text{V}, I_D = 7.2\ \text{A}$		0.024	0.030	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 15\ \text{V}, I_D = 8.4\ \text{A}$		22		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = 2.1\ \text{A}, V_{GS} = 0\ \text{V}$		0.8	1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15\ \text{V}, V_{GS} = 10\ \text{V}, I_D = 8.4\ \text{A}$		13	20	nC
Gate-Source Charge	$Q_{gs}$			2		
Gate-Drain Charge	$Q_{gd}$			2.7		
Gate Resistance	$R_g$		0.5		3.2	$\Omega$
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_G = 6\ \Omega$		8	16	ns
Rise Time	$t_r$			10	20	
Turn-Off Delay Time	$t_{d(off)}$			21	40	
Fall Time	$t_f$			10	20	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 2.1\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		40	80	

## Notes

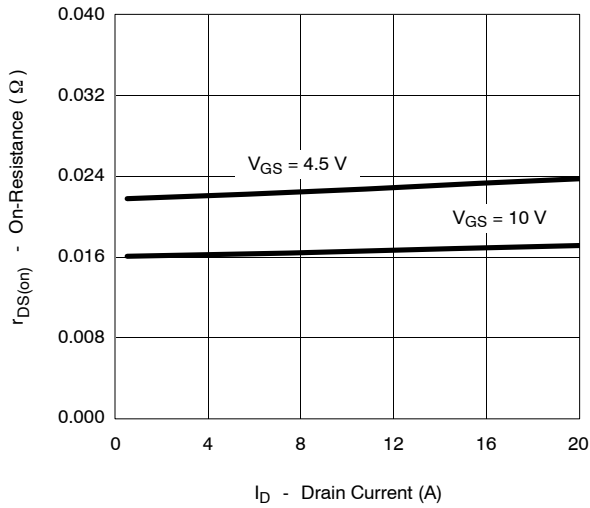
- a. Pulse test; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
b. Guaranteed by design, not subject to production testing.

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

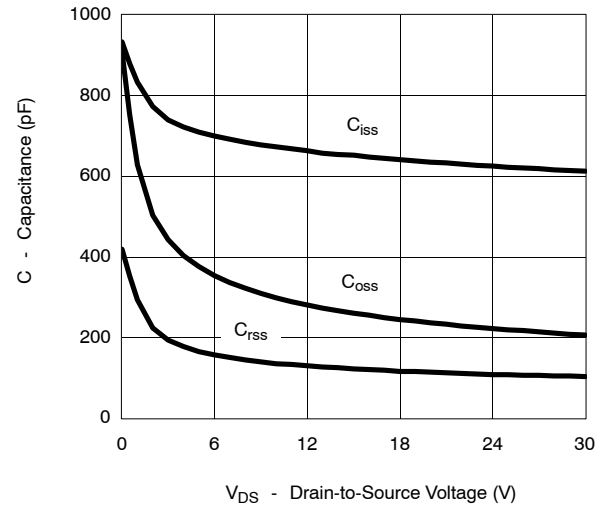


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

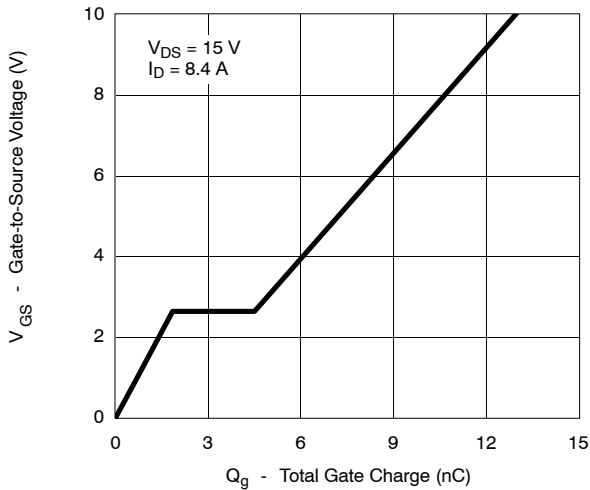
**On-Resistance vs. Drain Current**



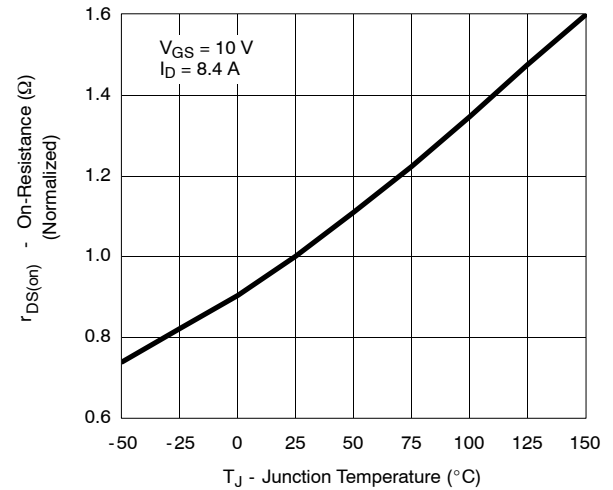
**Capacitance**



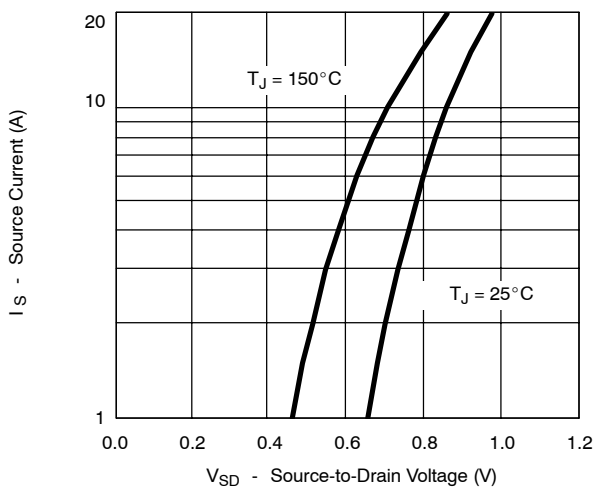
**Gate Charge**



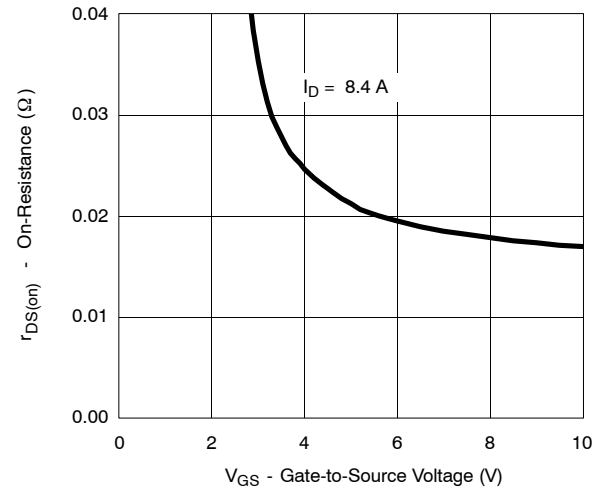
**On-Resistance vs. Junction Temperature**



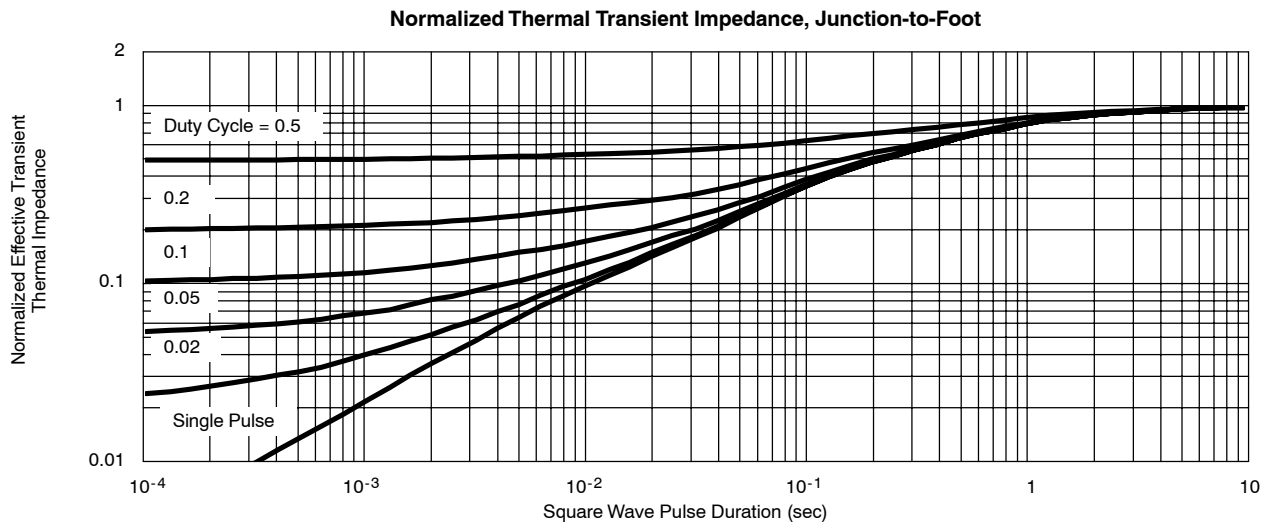
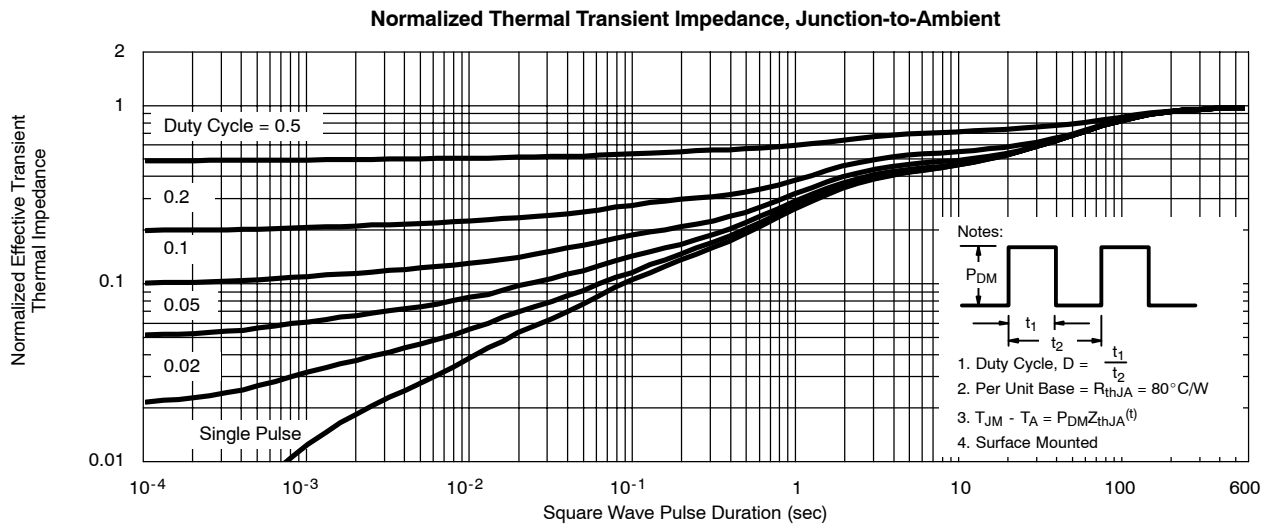
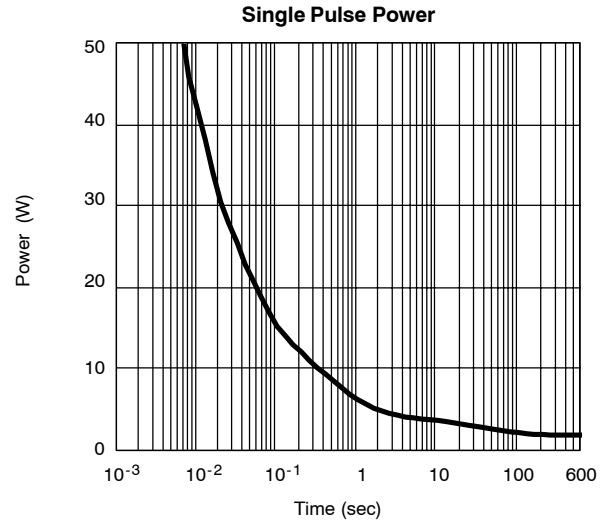
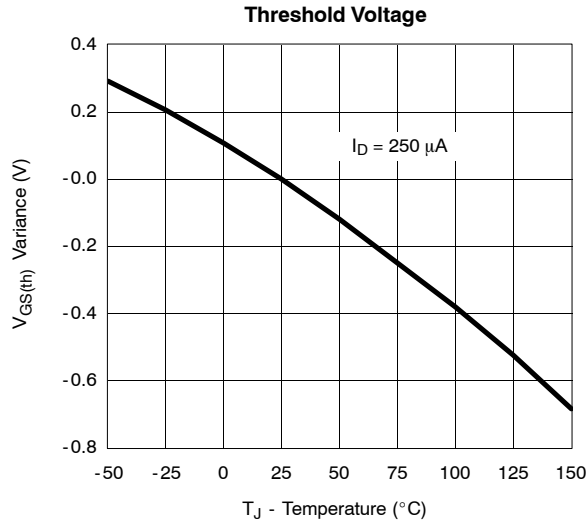
**Source-Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**



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





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