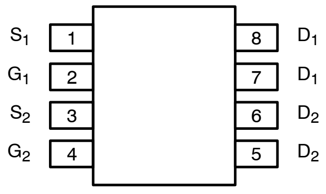
Dual N-Channel 30-V (D-S) MOSFET

TrenchFET® Power MOSFETs

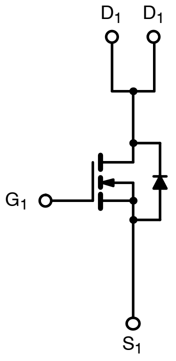
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.022 @ V_{GS} = 10 V	7.5
	0.030 @ V_{GS} = 4.5 V	6.5

SO-8

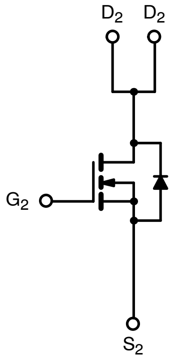


Top View

Ordering Information: Si4804DY
Si4804DY-T1 (with Tape and Reel)



N-Channel MOSFET



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	7.5	5.7	A
	T_A = 70°C		6.0	4.6	
Pulsed Drain Current		I_{DM}	20		
Continuous Source Current (Diode Conduction)[a]		I_S	1.7	0.9	A
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	1.1	W
	T_A = 70°C		1.3	0.7	
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 ≤ 10 sec	R_{thJA}	52	62.5	°C/W
	Steady State		93	110	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	35	40	

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

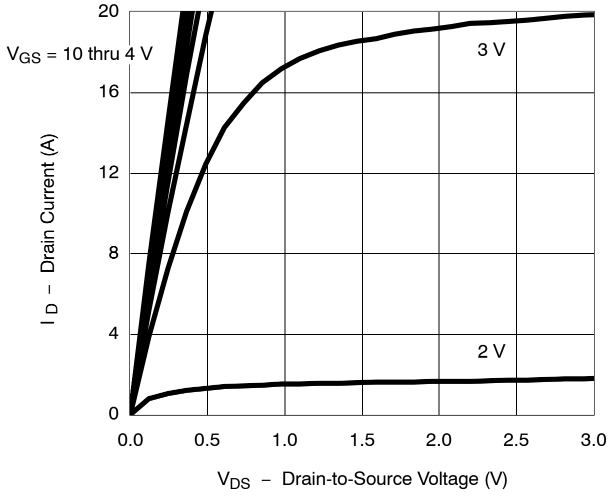
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu A$	0.8			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ V$, $V_{GS} = \pm 20\ V$			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\ V$, $V_{GS} = 0\ V$			1	µA
		$V_{DS} = 30\ V$, $V_{GS} = 0\ V$, $T_J = 55°C$			5	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \geq 5\ V$, $V_{GS} = 10\ V$	20			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	$V_{GS} = 10\ V$, $I_D = 7.5\ A$		0.018	0.022	Ω
		$V_{GS} = 4.5\ V$, $I_D = 6.5\ A$		0.024	0.030	
Forward Transconductance[a]	g_{fs}	$V_{DS} = 15\ V$, $I_D = 7.5\ A$		22		S
Diode Forward Voltage[a]	V_{SD}	$I_S = 1.7\ A$, $V_{GS} = 0\ V$		0.8	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	$V_{DS} = 15\ V$, $V_{GS} = 10\ V$, $I_D = 7.5\ A$		13	20	nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			2.7		
Gate Resistance	R_G		0.5	1.9	4	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ V$, $R_L = 15\ \Omega$ $I_D \cong 1\ A$, $V_{GEN} = 10\ V$, $R_G = 6\ \Omega$		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}	$I_F = 1.7\ A$, di/dt = 100 A/µs		40	80	

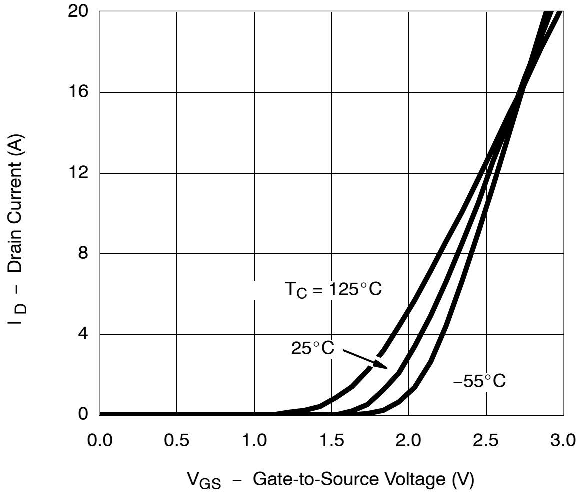
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

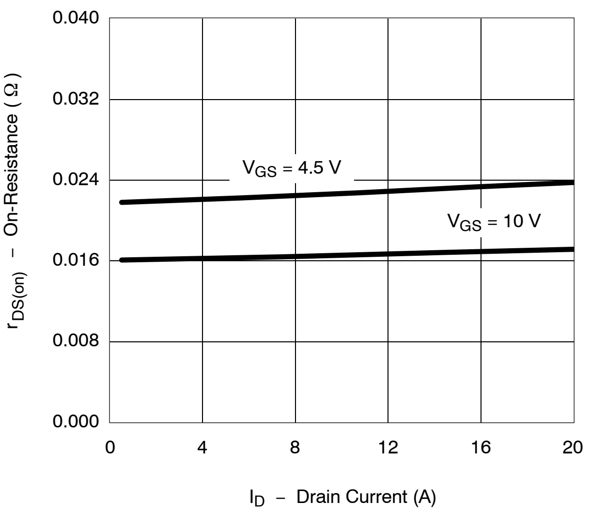


Transfer Characteristics

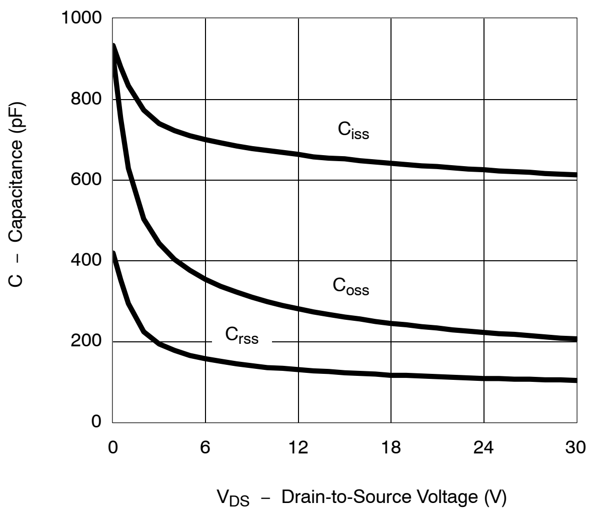


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

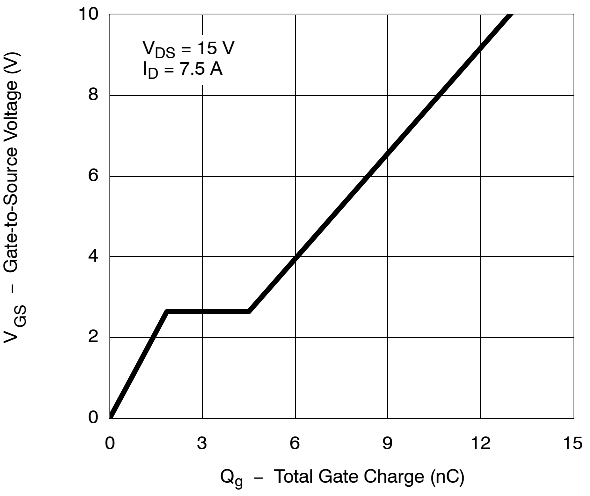
On-Resistance vs. Drain Current



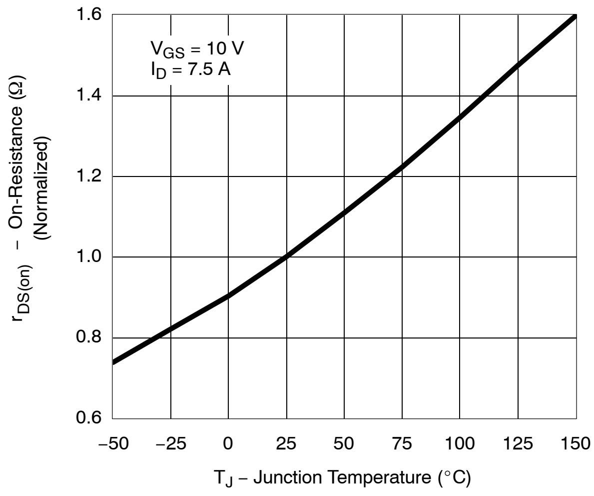
Capacitance



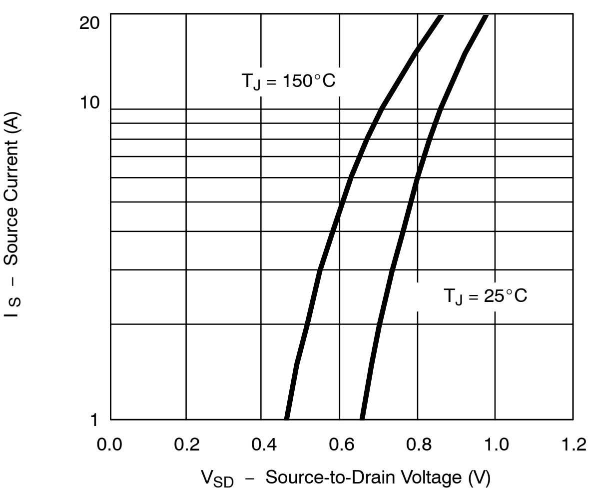
Gate Charge



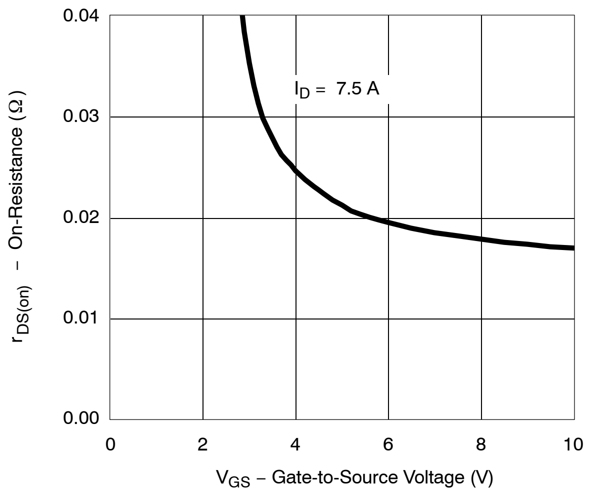
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

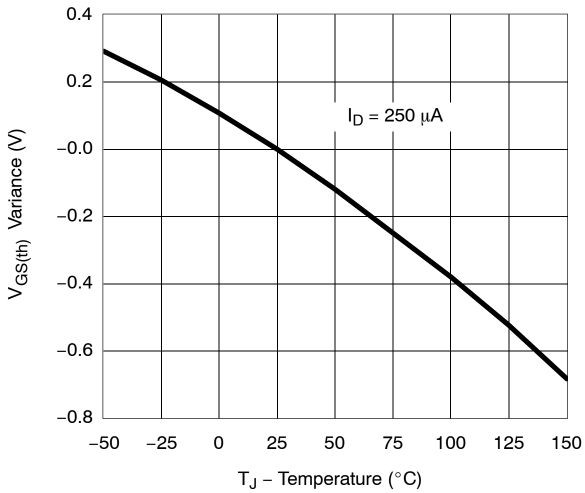


On-Resistance vs. Gate-to-Source Voltage

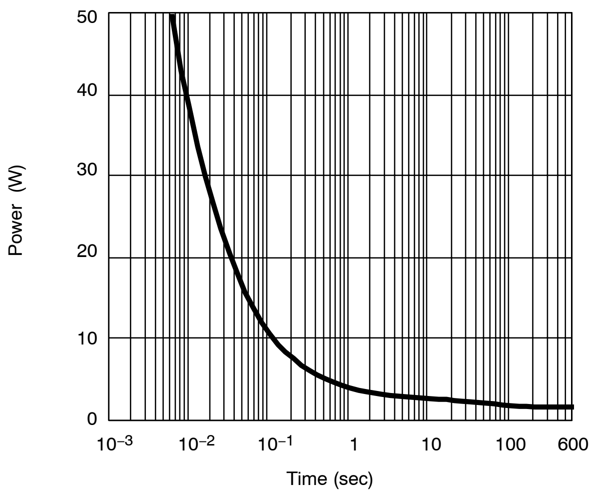


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

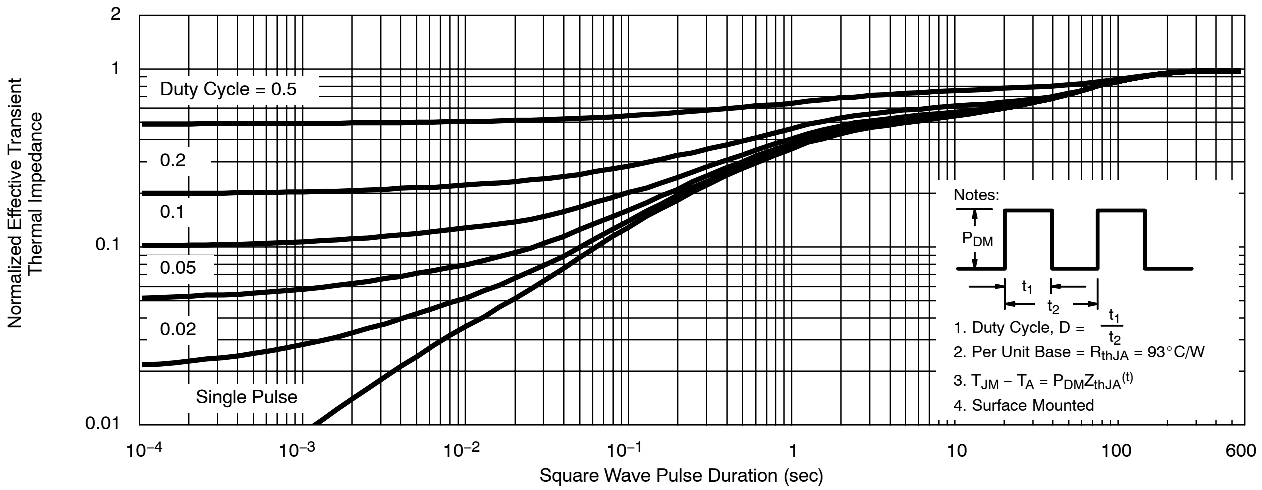
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot