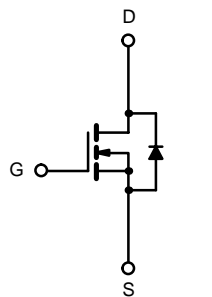
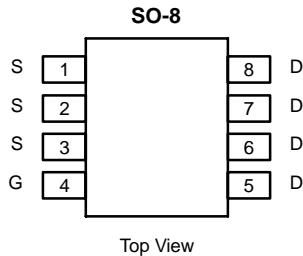




N-Channel Reduced Q_g , Fast Switching MOSFET

TrenchFET[®]
Power MOSFETs
High-Efficiency
PWM Optimized

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.0185 @ $V_{GS} = 10$ V	9
	0.030 @ $V_{GS} = 4.5$ V	7



Ordering Information: Si4800BDY
Si4800BDY-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}	30		V
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^{a, b}	I_D	$T_A = 25^\circ\text{C}$	9	6.5
		$T_A = 70^\circ\text{C}$	7.0	5.0
Pulsed Drain Current (10 μs Pulse Width)	I_{DM}	40		A
Continuous Source Current (Diode Conduction) ^{a, b}	I_S	2.3		
Maximum Power Dissipation ^{a, b}	P_D	$T_A = 25^\circ\text{C}$	2.5	1.3
		$T_A = 70^\circ\text{C}$	1.6	0.8
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Limits		Unit
		Typ	Max	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	40	50
		Steady-State	70	95
Maximum Junction-to-Foot (Drain)	R_{thJF}	24	30	$^\circ\text{C/W}$

Notes

- a. Surface Mounted on FR4 Board.
- b. $t \leq 10$ sec.

MOSFET 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 μA	0.8		1.8	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55° C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 9 A		0.0155	0.0185	Ω
		V _{GS} = 4.5 V, I _D = 7 A		0.023	0.030	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 9 A		16		S
Diode Forward Voltage ^a	V _{SD}	I _S = 2.3 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5.0 V, I _D = 9 A		8.7	13	nC
Gate-Source Charge	Q _{gs}			1.5		
Gate-Drain Charge	Q _{gd}			3.5		
Gate Resistance	R _G		0.5	1.2	2.0	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D = 1 A, V _{GEN} = 10 V, R _G = 6 Ω		7	15	ns
Rise Time	t _r			12	20	
Turn-Off Delay Time	t _{d(off)}			32	50	
Fall Time	t _f			14	25	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 2.3 A, di/dt = 100 A/μs		30	60	

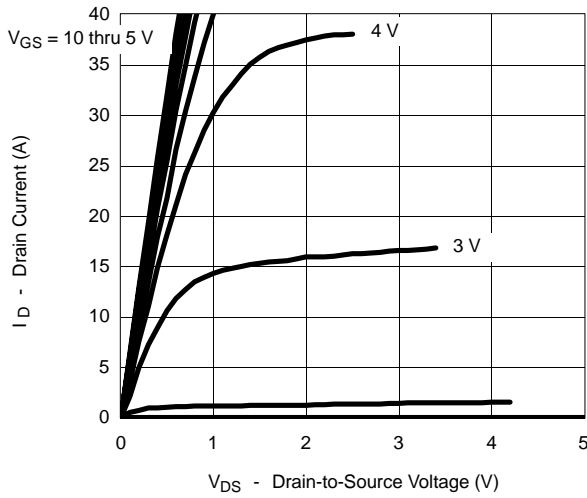
Notes

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

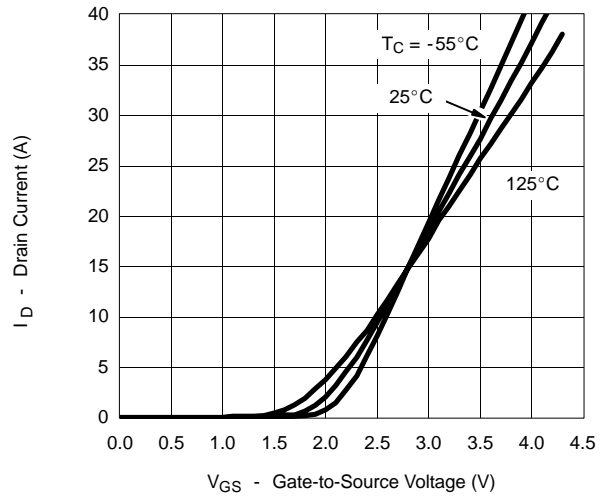


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

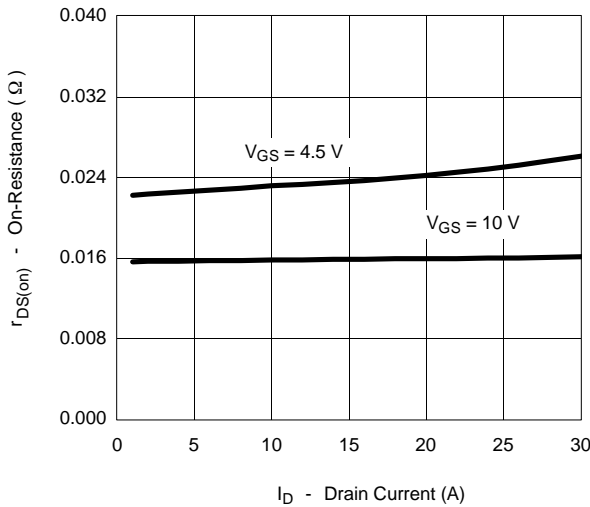
Output Characteristics



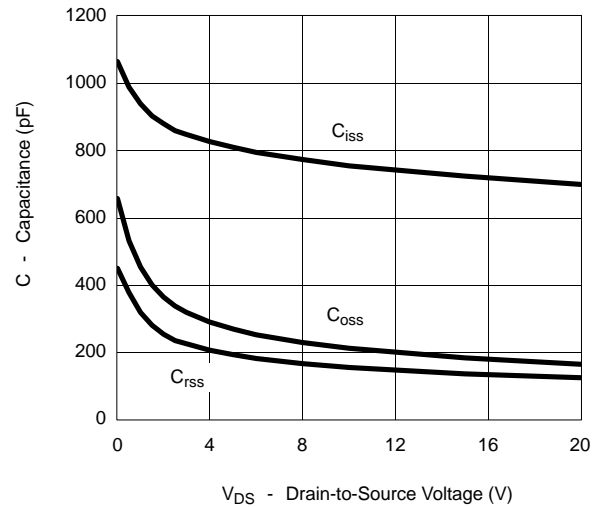
Transfer Characteristics



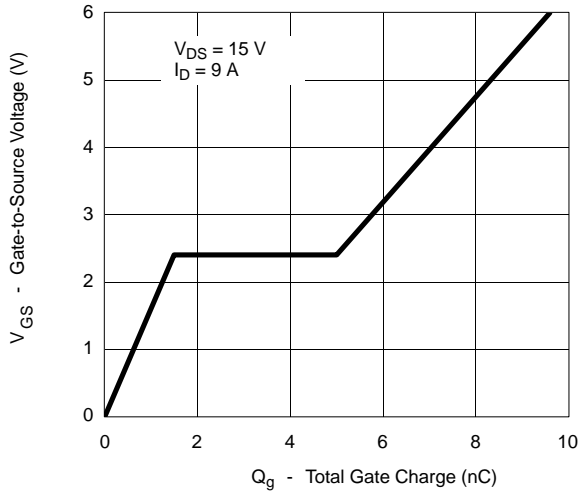
On-Resistance vs. Drain Current



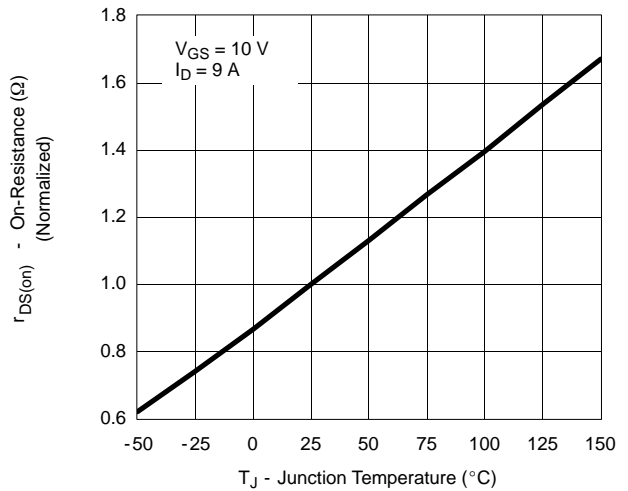
Capacitance



Gate Charge

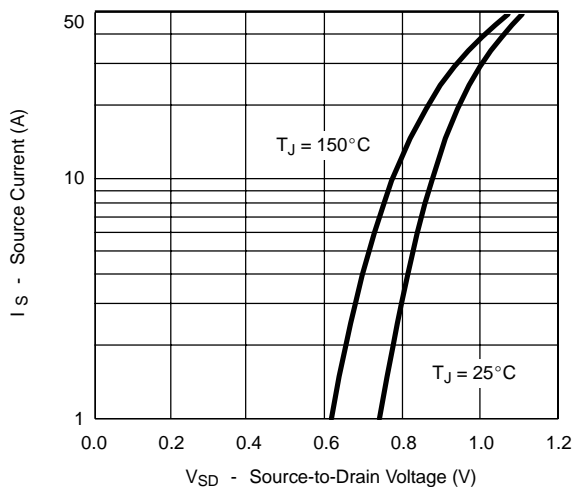


On-Resistance vs. Junction Temperature

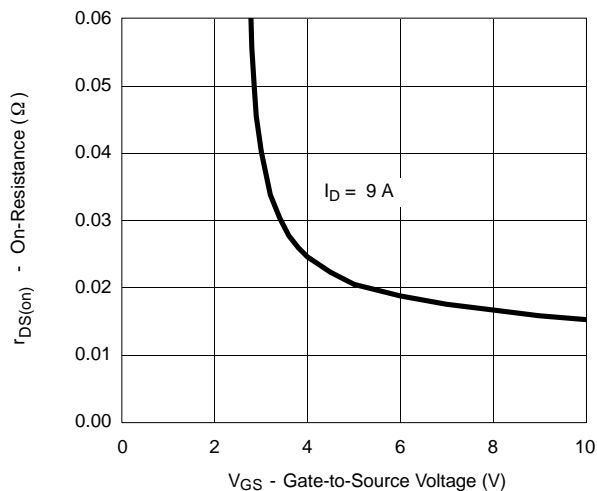


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

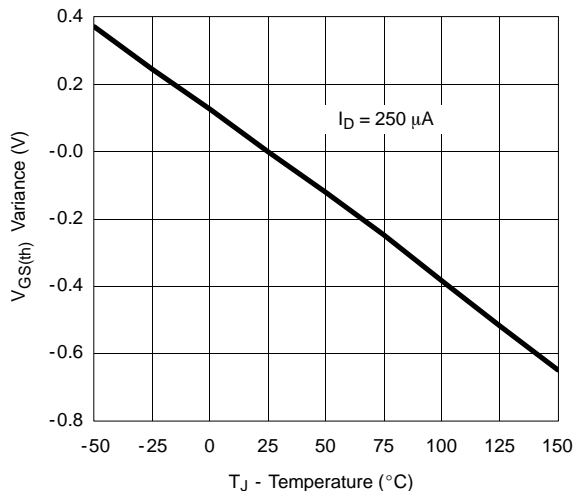
Source-Drain Diode Forward Voltage



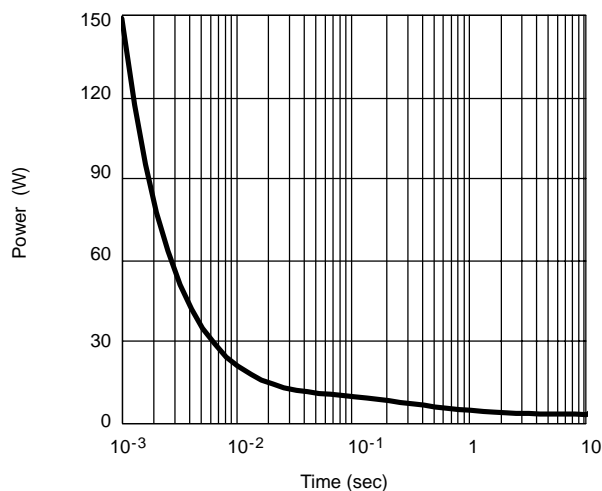
On-Resistance vs. Gate-to-Source Voltage



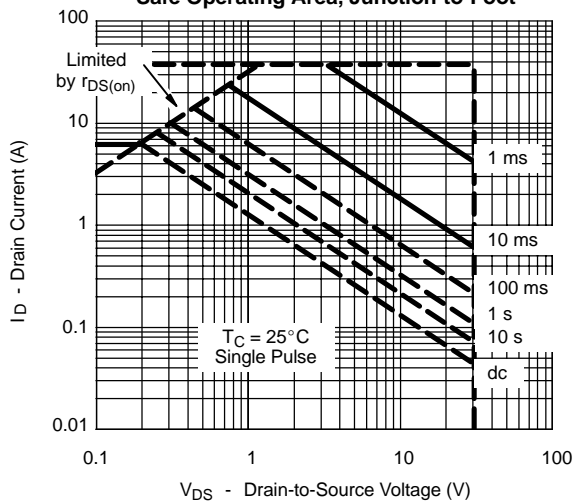
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



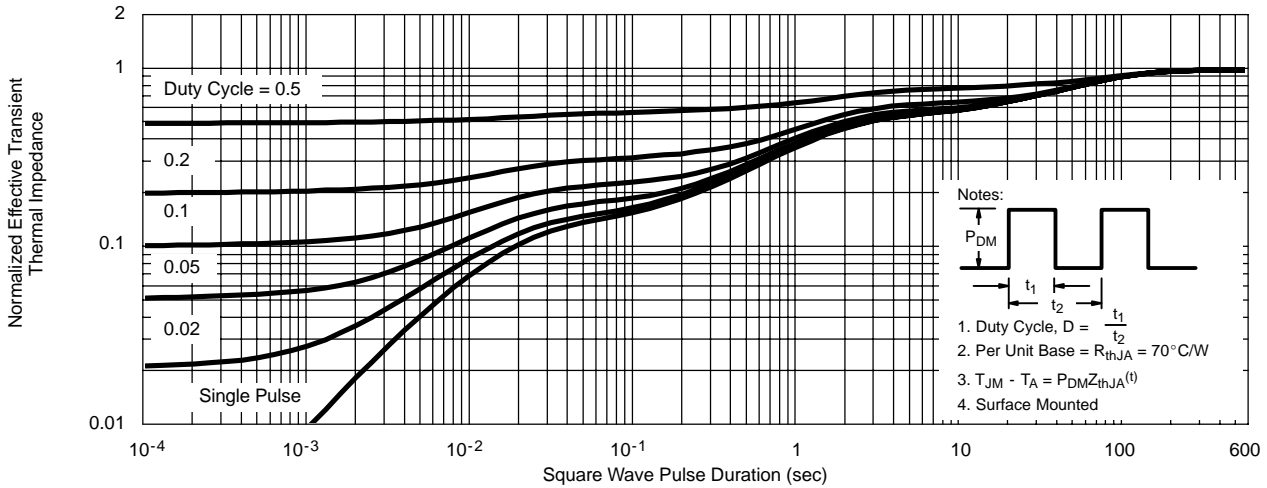
Safe Operating Area, Junction-to-Foot



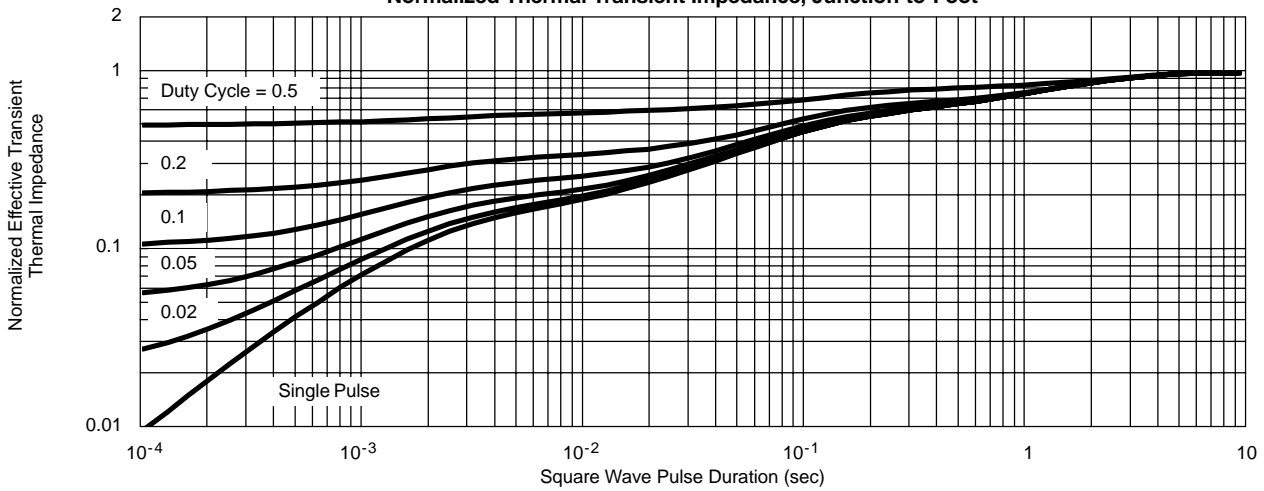


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



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