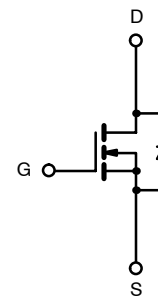
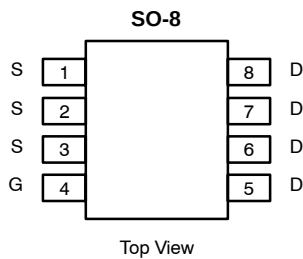


N-Channel Reduced Q_g , Fast Switching MOSFET

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

TrenchFET[®]
Power MOSFETs
High-Efficiency
PWM Optimized



N-Channel MOSFET

Ordering Information: Si4800BDY
Si4800BDY-T1 (with Tape and Reel)
Si4800BDY—E3 (Lead (Pb)-Free)
Si4800BDY-T1—E3 (Lead (Pb)-Free with Tape and Reel)

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}	± 25		
Continuous Drain Current (T _J = 150°C) ^{a, b}	T _A = 25°C	I _D	9	6.5	A
	T _A = 70°C		7.0	5.0	
Pulsed Drain Current (10 μs Pulse Width)		I _{DM}	40		
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	2.3		
Maximum Power Dissipation ^{a, b}	T _A = 25°C	P _D	2.5	1.3	W
	T _A = 70°C		1.6	0.8	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	−55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Limits		Unit
			Typ	Max	
Maximum Junction-to-Ambient ^a	t ≤ 10 sec	R _{thJA}	40	50	°C/W
	Steady-State		70	95	
Maximum Junction-to-Foot (Drain)	Steady-State	R _{thJF}	24	30	

Notes

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

MOSFET SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.8		1.8	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}, V_{GS} = 10\ \text{V}$	30			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 9\ \text{A}$		0.0155	0.0185	Ω
		$V_{GS} = 4.5\ \text{V}, I_D = 7\ \text{A}$		0.023	0.030	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\ \text{V}, I_D = 9\ \text{A}$		16		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 2.3\ \text{A}, V_{GS} = 0\ \text{V}$		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 15\ \text{V}, V_{GS} = 5.0\ \text{V}, I_D = 9\ \text{A}$		8.7	13	nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			3.5		
Gate Resistance	R_g		0.5	1.4	2.2	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$ $I_D \approx 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_g = 6\ \Omega$		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}	$I_F = 2.3\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		30	60	

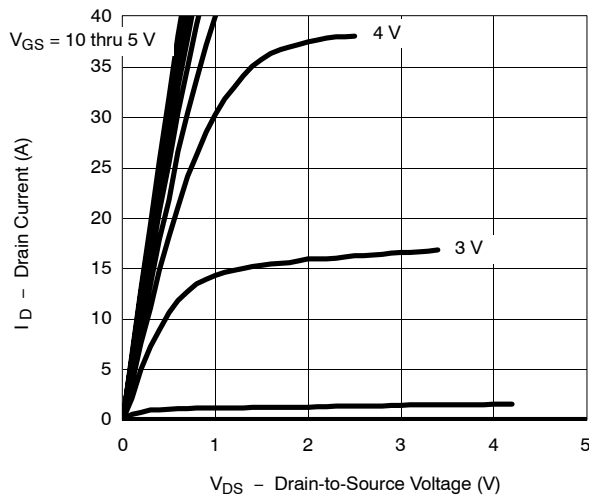
Notes

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

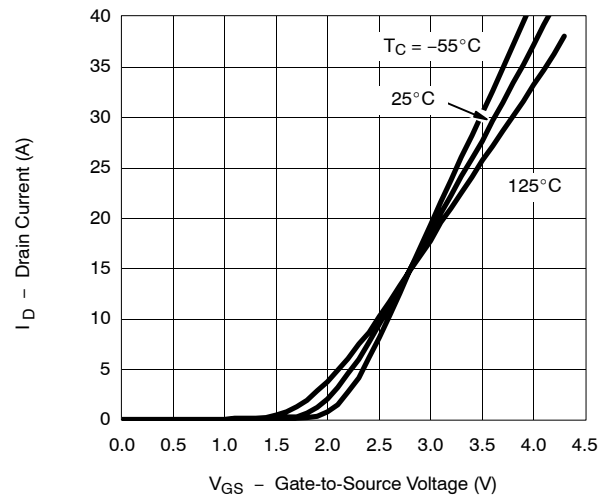


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

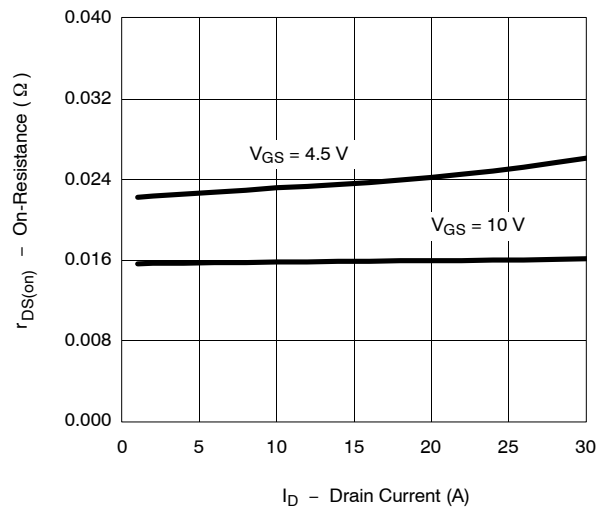
Output Characteristics



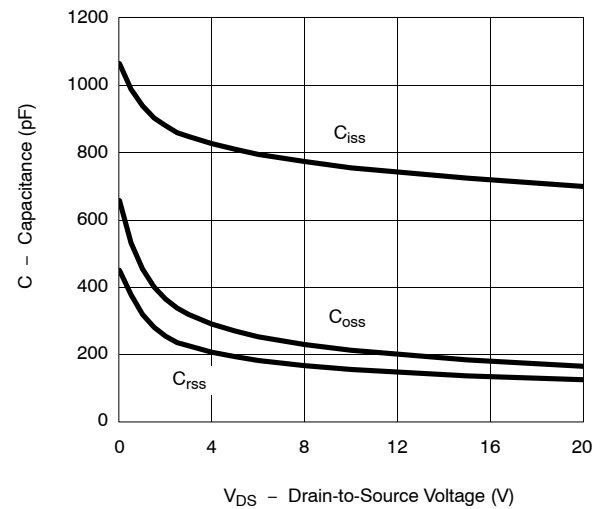
Transfer Characteristics



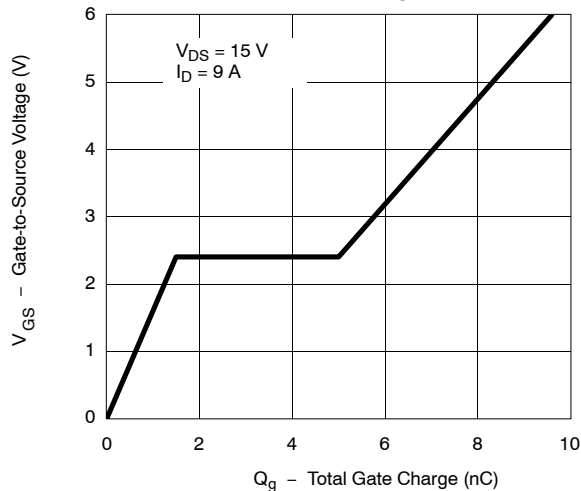
On-Resistance vs. Drain Current



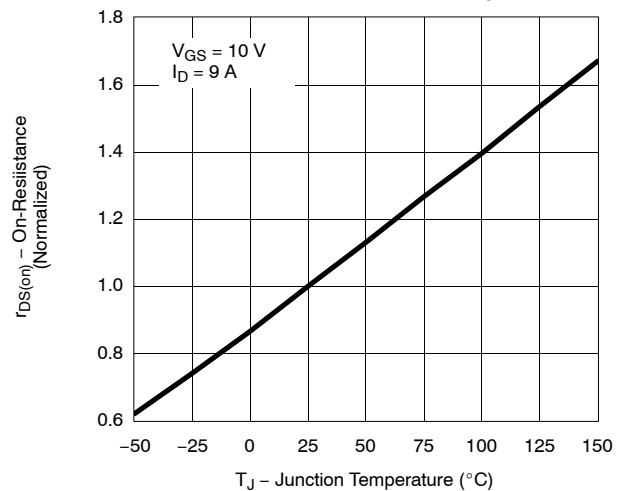
Capacitance



Gate Charge

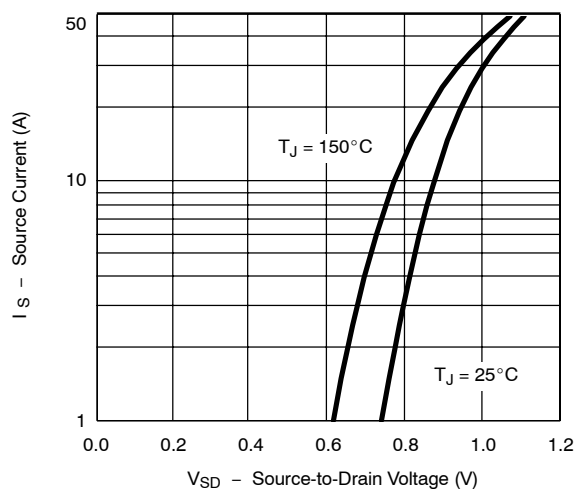


On-Resistance vs. Junction Temperature

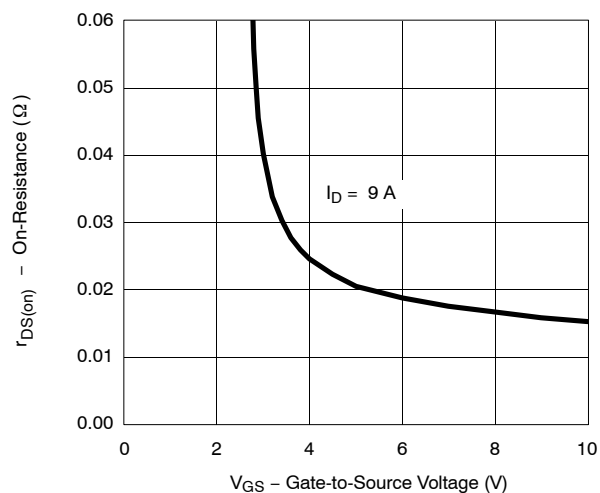


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

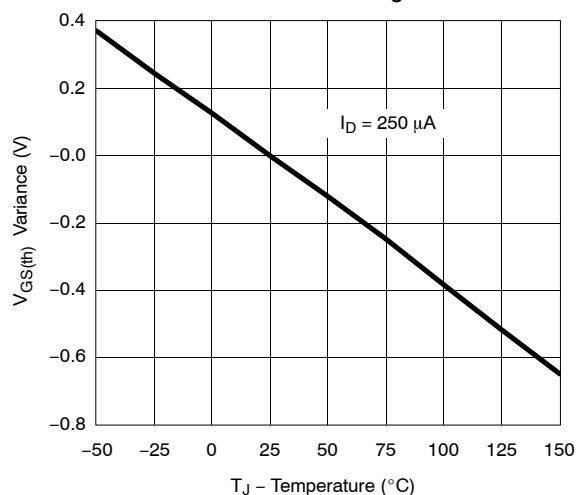
Source-Drain Diode Forward Voltage



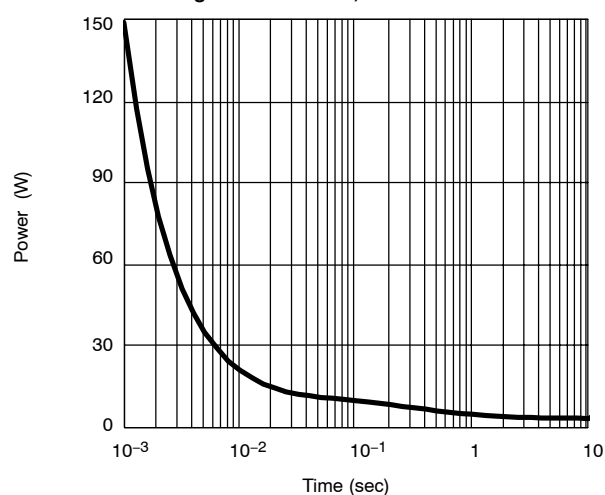
On-Resistance vs. Gate-to-Source Voltage



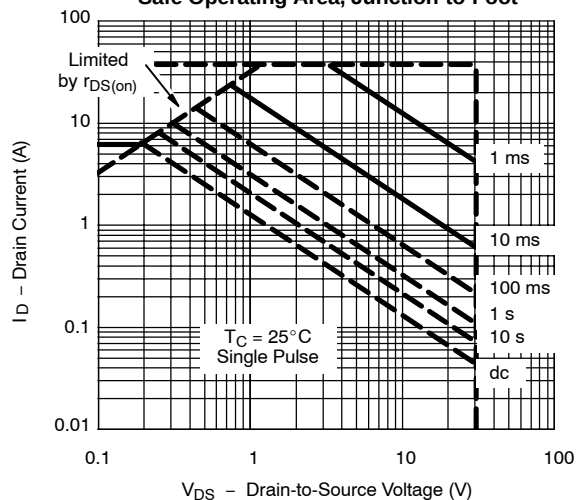
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



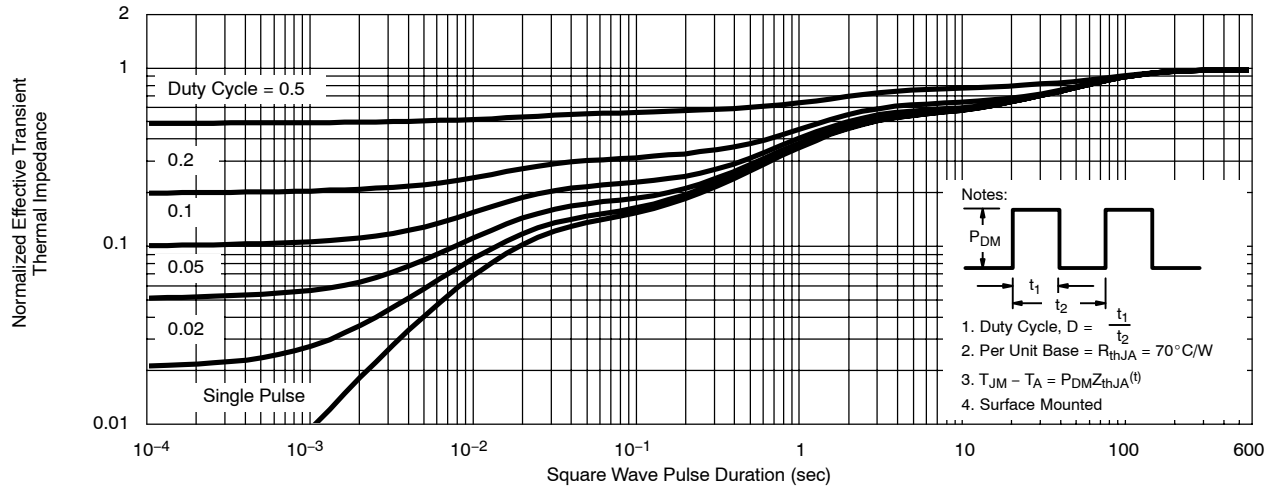
Safe Operating Area, Junction-to-Foot





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

