

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

PRODUCT SUMMARY

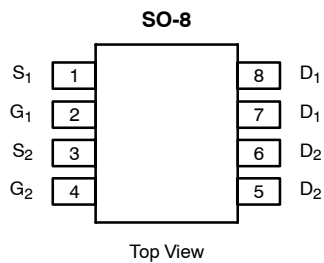
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.022 @ V _{GS} = 10 V	7.5
	0.030 @ V _{GS} = 4.5 V	6.5

FEATURES

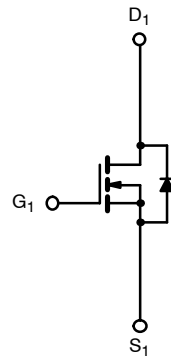
- Trench FET Power MOSFET
- PWM Optimized

APPLICATIONS

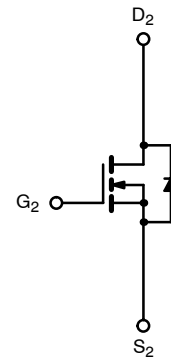
- Symmetrical Buck-Boost DC/DC Converter



Ordering Information: Si4804BDY
Si4804BDY-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	I _D	T _A = 25°C	7.5	A
		T _A = 70°C	6.0	
Pulsed Drain Current	I _{DM}	30		A
Continuous Source Current (Diode Conduction) ^a	I _S	1.7	0.9	
Maximum Power Dissipation ^a	P _D	T _A = 25°C	2.0	W
		T _A = 70°C	1.3	
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	R _{thJA}	t ≤ 10 sec	52	°C/W
		Steady-State	93	
Maximum Junction-to-Foot (Drain)	R _{thJF}	35	40	

Notes

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

MOSFET SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED).						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.8		3.0	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} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 85 °C			15	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	20			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 7.5 A		0.017	0.022	Ω
		V _{GS} = 4.5 V, I _D = 6.5 A		0.024	0.030	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 7.5 A		19		S
Diode Forward Voltage ^b	V _{SD}	I _S = 1 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^a						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 7.5 A		7	11	nC
Gate-Source Charge	Q _{gs}			2.9		
Gate-Drain Charge	Q _{gd}			2.5		
Gate Resistance	R _G		0.5	1.5	2.6	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		9	15	ns
Rise Time	t _r			10	17	
Turn-Off Delay Time	t _{d(off)}			19	30	
Fall Time	t _f			9	15	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.7 A, di/dt = 100 A/μs	Ch-1	35	55	

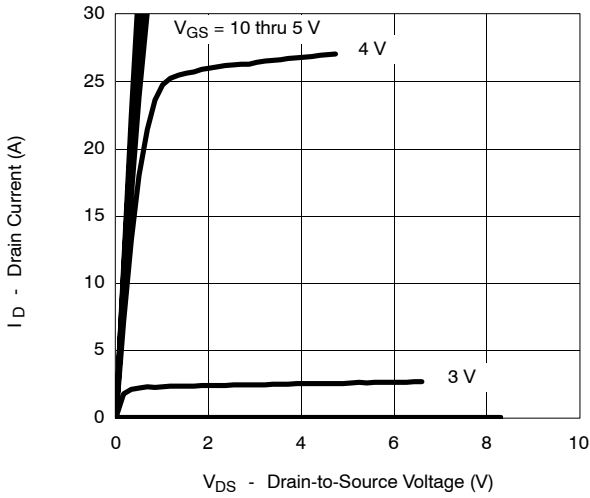
Notes

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

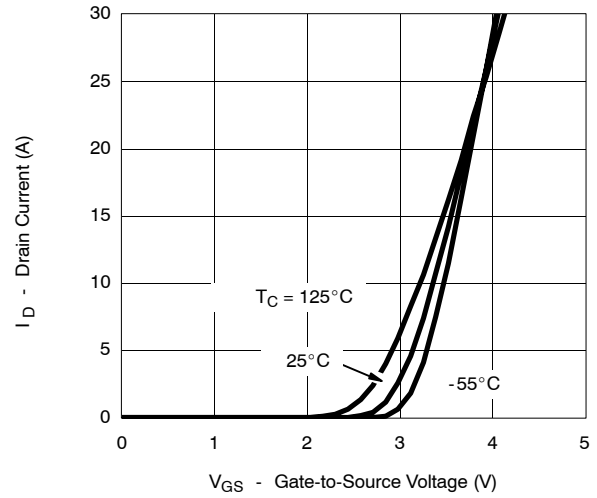


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET

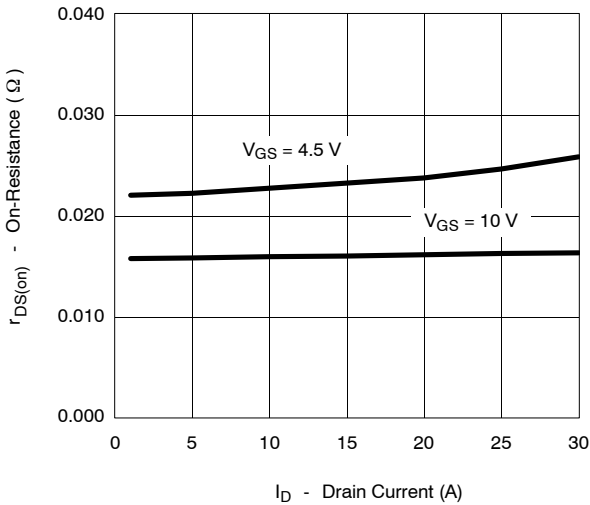
Output Characteristics



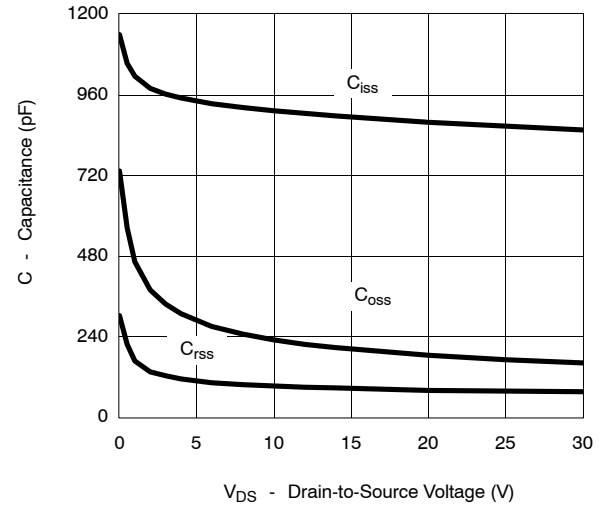
Transfer Characteristics



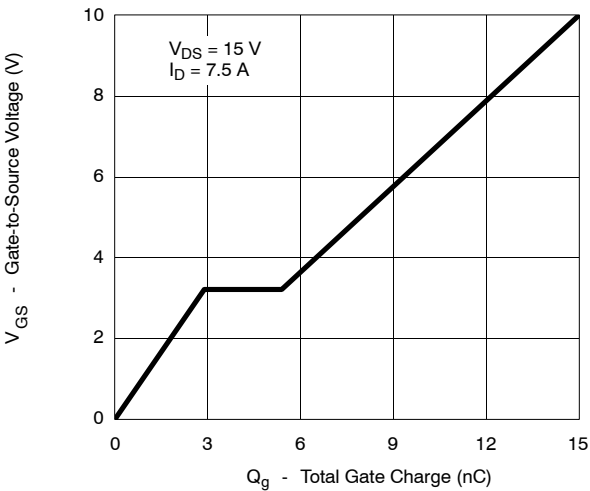
On-Resistance vs. Drain Current



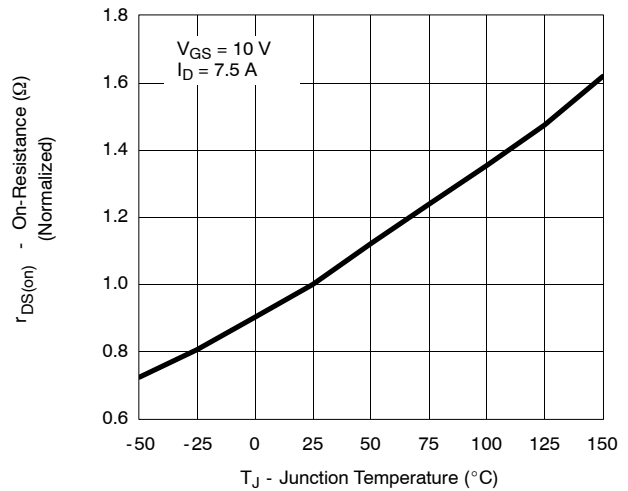
Capacitance



Gate Charge

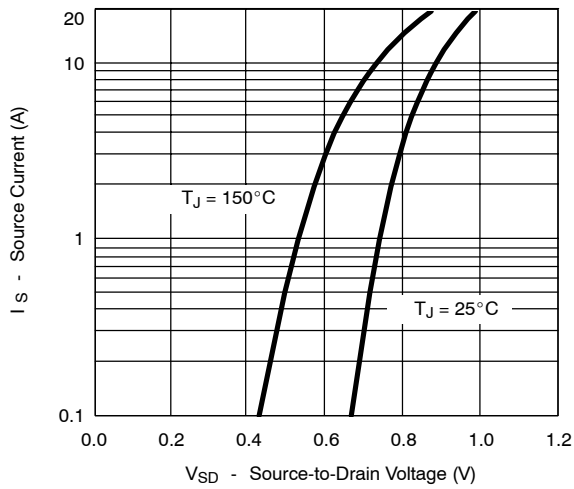


On-Resistance vs. Junction Temperature

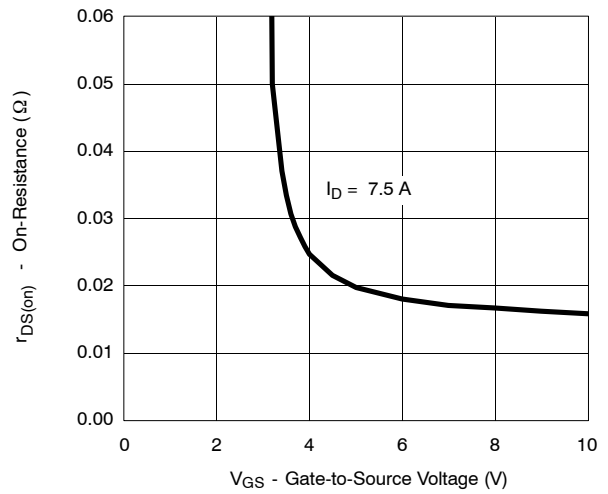


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) MOSFET

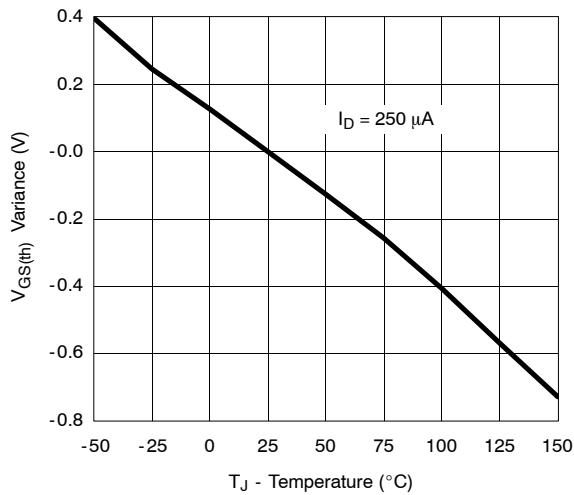
Source-Drain Diode Forward Voltage



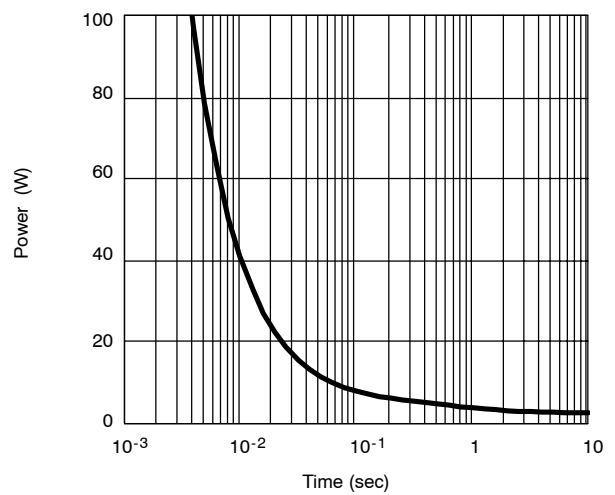
On-Resistance vs. Gate-to-Source Voltage



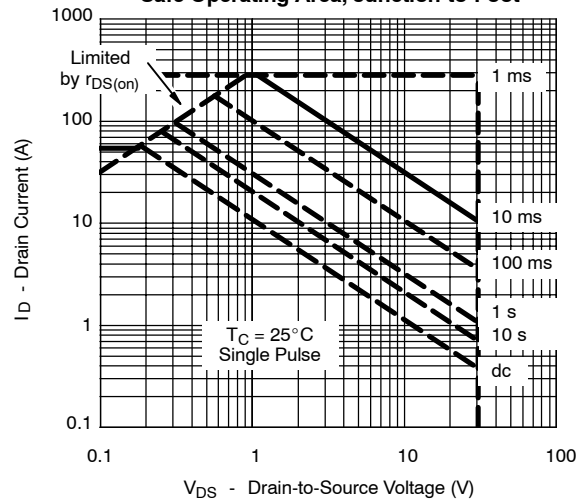
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



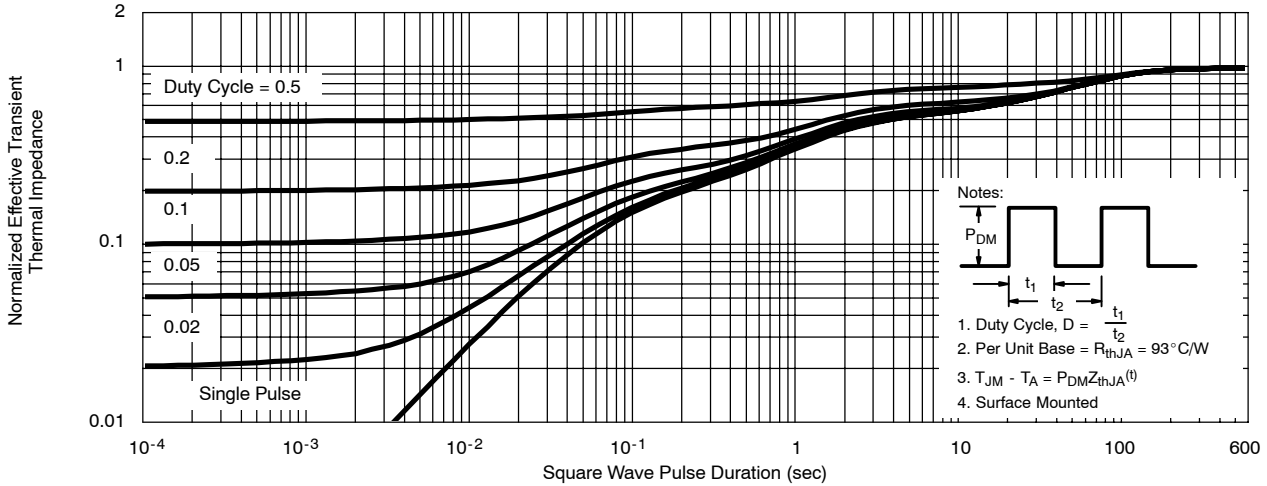
Safe Operating Area, Junction-to-Foot





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

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

