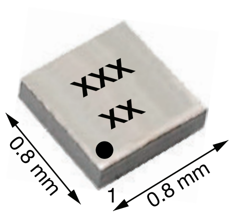
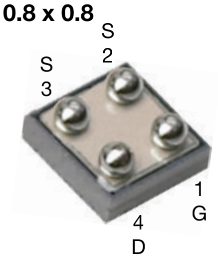
N-Channel 8 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A) [a]	Q_g (TYP.)
8	0.054 at V_{GS} = 4.5 V	3.5	4.3 nC
	0.060 at V_{GS} = 2.5 V	3.3	
	0.068 at V_{GS} = 1.8 V	3.1	
	0.086 at V_{GS} = 1.5 V	2.3	
	0.135 at V_{GS} = 1.2 V	1	

MICRO FOOT® 0.8 x 0.8



Backside View



Bump Side View

Marking Code: xx = AB
xxx = Date/Lot traceability code

Ordering Information:
Si8802DB-T2-E1 (lead (Pb)-free and halogen-free)

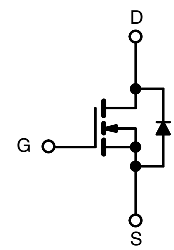
FEATURES

- TrenchFET® power MOSFET
- Small 0.8 mm x 0.8 mm outline area
- Low 0.4 mm max. profile
- Low On-resistance
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
HALOGEN FREE

APPLICATIONS

- Load switch with low voltage drop
- Load switch for 1.2 V, 1.5 V, 1.8 V power lines
- Smart phones, tablet PCs, portable media players



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)				
PARAMETER		**SYMBOL**	**LIMIT**	**UNIT**
Drain-Source Voltage		V_{DS}	8	V
Gate-Source Voltage		V_{GS}	± 5	
Continuous Drain Current (T_J = 150 °C)	T_A = 25 °C	I_D	3.5 [a]	A
	T_A = 70 °C		2.8 [a]	
	T_A = 25 °C		3 [b]	
	T_A = 70 °C		2.4 [b]	
Pulsed Drain Current (t = 300 μs)		I_{DM}	15	
Continuous Source-Drain Diode Current	T_A = 25 °C	I_S	0.7 [a]	
	T_A = 25 °C		0.4 [b]	
Maximum Power Dissipation	T_A = 25 °C	P_D	0.9 [a]	W
	T_A = 70 °C		0.6 [a]	
	T_A = 25 °C		0.5 [b]	
	T_A = 70 °C		0.3 [b]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	°C
Soldering Recommendations (Peak Temperature) [c]			260	

THERMAL RESISTANCE RATINGS					
PARAMETER		**SYMBOL**	**TYPICAL**	**MAXIMUM**	**UNIT**
Maximum Junction-to-Ambient [a, d]	t ≤ 5 s	R_{thJA}	105	135	°C/W
Maximum Junction-to-Ambient [b, e]			200	260	

Notes

a. Surface mounted on 1" x 1" FR4 board with full copper, t = 5 s.
b. Surface mounted on 1" x 1" FR4 board with minimum copper, t = 5 s.
c. Refer to IPC/JEDEC® (J-STD-020), no manual or hand soldering.
d. Maximum under steady state conditions is 185 °C/W.
e. Maximum under steady state conditions is 330 °C/W.

For technical questions, contact: pmostechsupport@vishay.com

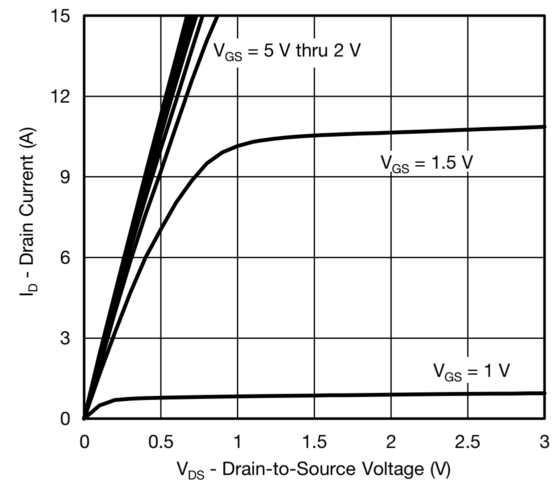
SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	8	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = 250 µA	-	7	-	mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	-2.1	-	
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	0.35	-	0.7	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 5 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 8 V, V_{GS} = 0 V	-	-	1	µA
		V_{DS} = 8 V, V_{GS} = 0 V, T_J = 55 °C	-	-	10	
On-State Drain Current [a]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 4.5 V	10	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 1 A	-	0.044	0.054	Ω
		V_{GS} = 2.5 V, I_D = 1 A	-	0.049	0.060	
		V_{GS} = 1.8 V, I_D = 0.5 A	-	0.055	0.068	
		V_{GS} = 1.5 V, I_D = 0.2 A	-	0.060	0.086	
		V_{GS} = 1.2 V, I_D = 0.1 A	-	0.080	0.135	
Forward Transconductance [a]	g_{fs}	V_{DS} = 4 V, I_D = 1 A	-	13	-	S
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS} = 4 V, V_{GS} = 4.5 V, I_D = 1 A	-	4.3	6.5	nC
Gate-Source Charge	Q_{gs}		-	0.44	-	
Gate-Drain Charge	Q_{gd}		-	0.72	-	
Gate Resistance	R_g	f = 1 MHz	-	3.5	-	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 4 V, R_L = 4 Ω $I_D \cong$ 1 A, V_{GEN} = 4.5 V, R_g = 1 Ω	-	5	10	ns
Rise Time	t_r		-	15	30	
Turn-Off Delay Time	$t_{d(off)}$		-	22	40	
Fall Time	t_f		-	7	15	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_A = 25 °C	-	-	0.7	A
Pulse Diode Forward Current	I_{SM}		-	-	15	
Body Diode Voltage	V_{SD}	I_S = 1 A, V_{GS} = 0 V	-	0.7	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = 1 A, di/dt = 100 A/µs, T_J = 25 °C	-	20	40	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	5	10	nC
Reverse Recovery Fall Time	t_a		-	14	-	ns
Reverse Recovery Rise Time	t_b		-	60	-	

Notes

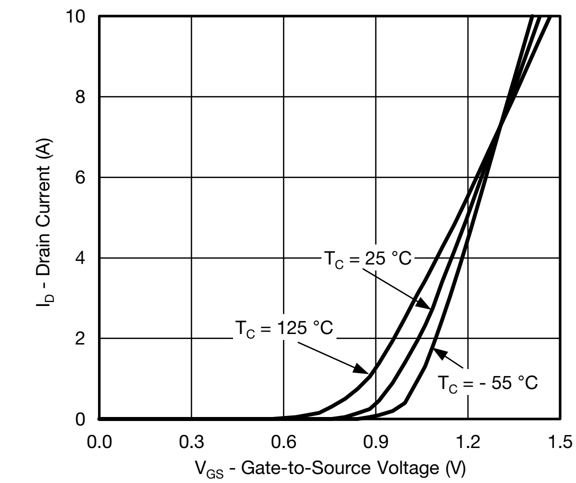
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

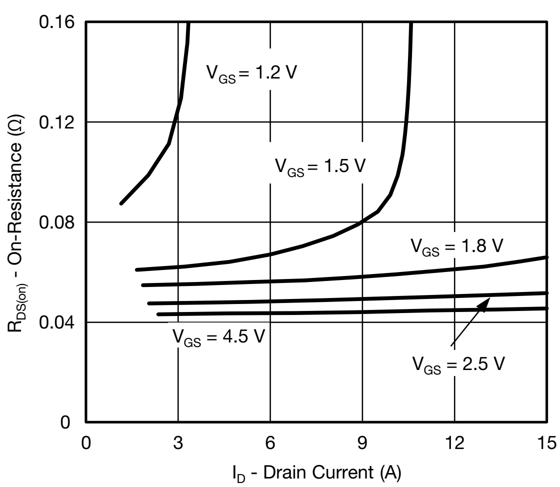
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



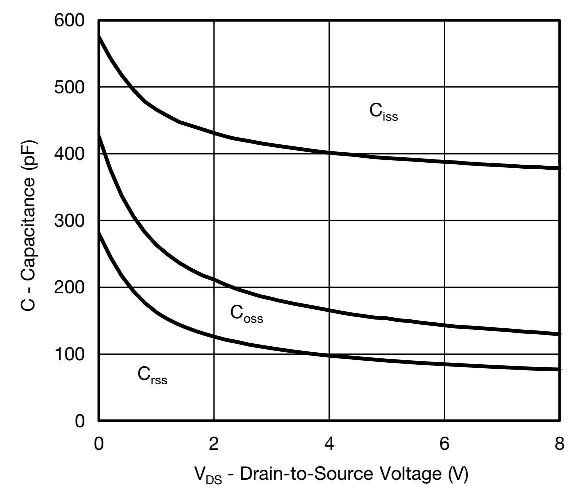
Output Characteristics



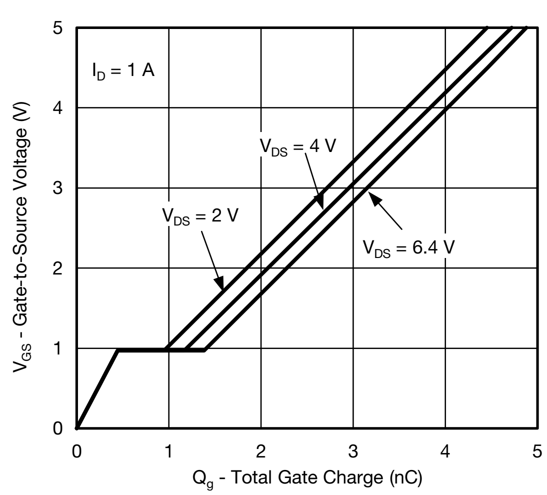
Transfer Characteristics



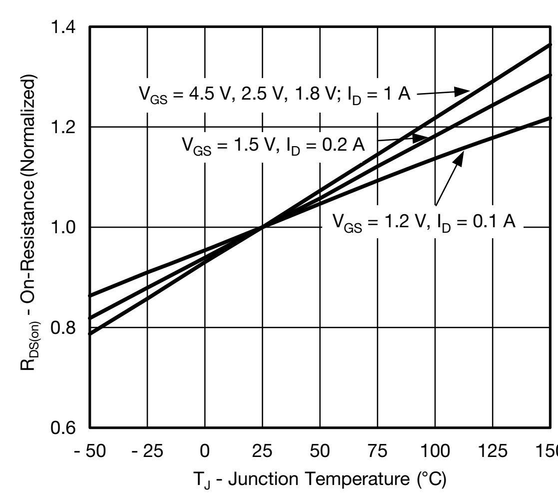
On-Resistance vs. Drain Current



Capacitance

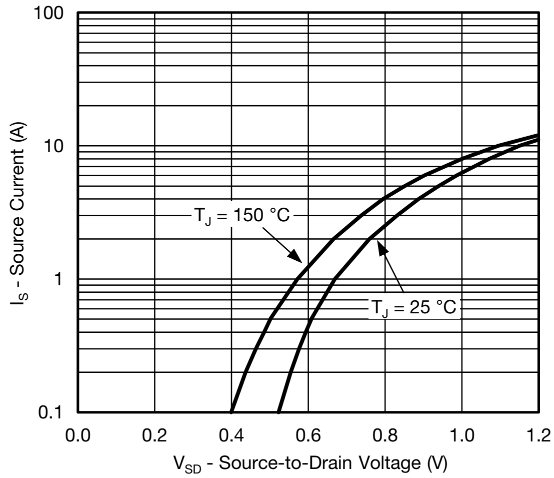


Gate Charge

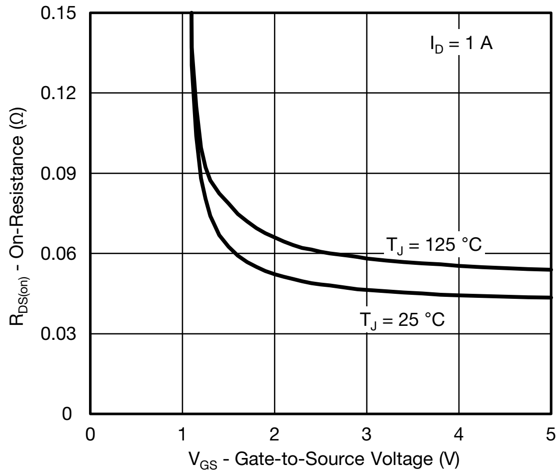


On-Resistance vs. Junction Temperature

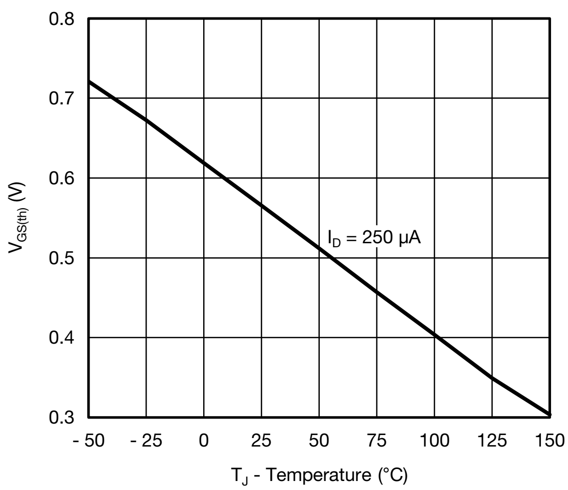
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



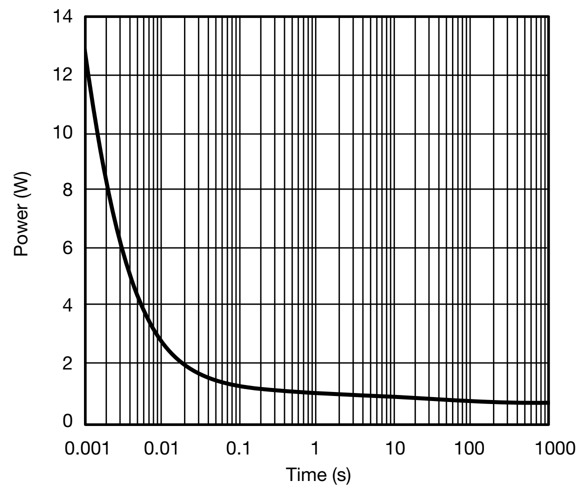
Source-Drain Diode Forward Voltage



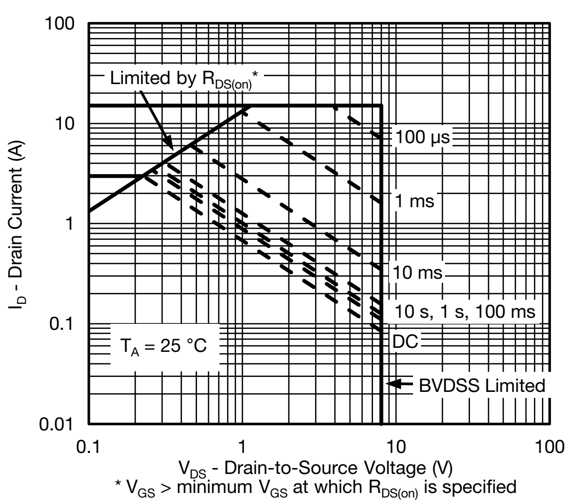
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

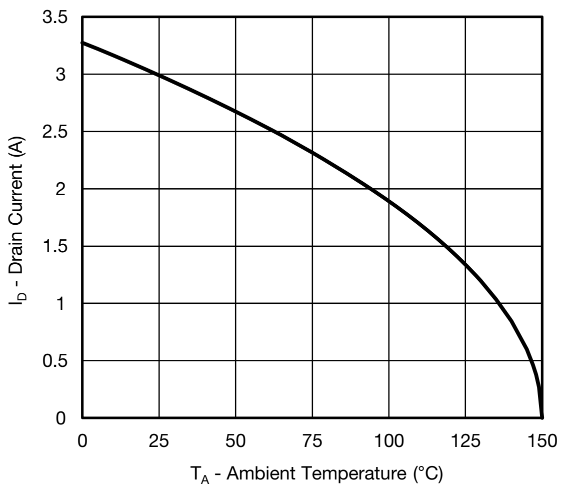


Single Pulse Power (Junction-to-Ambient)

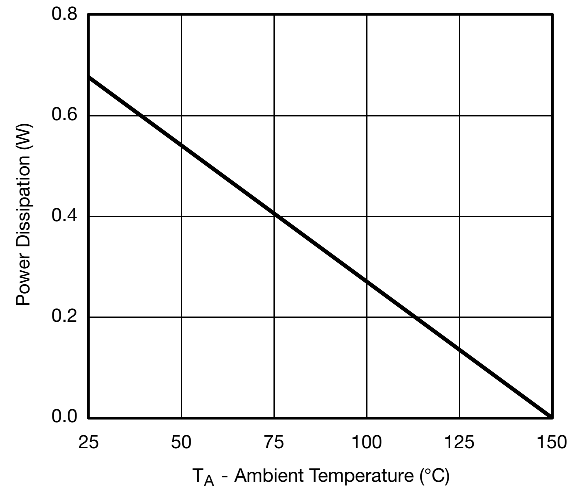


Safe Operating Area, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*



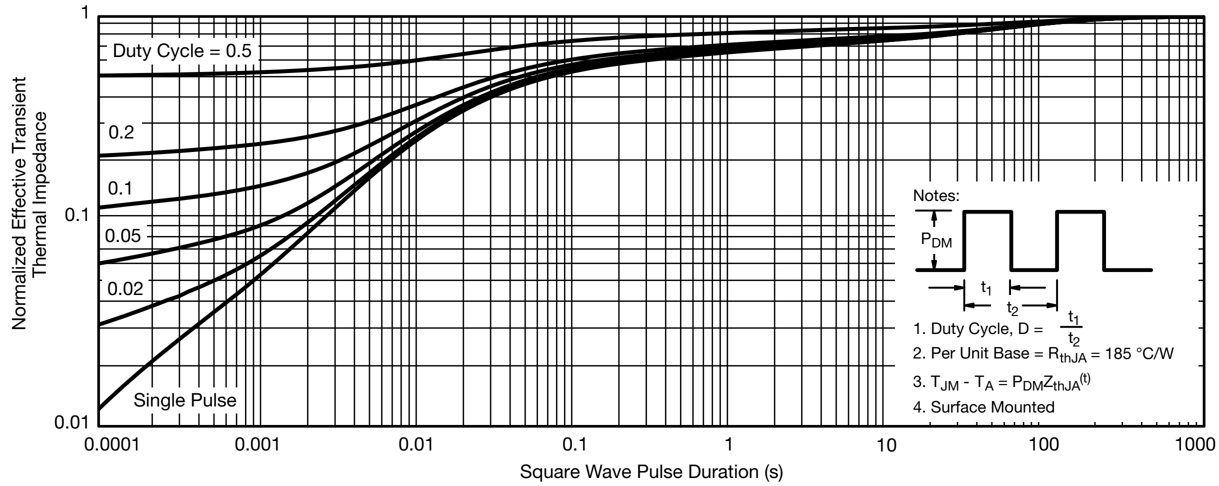
Power Derating

Note

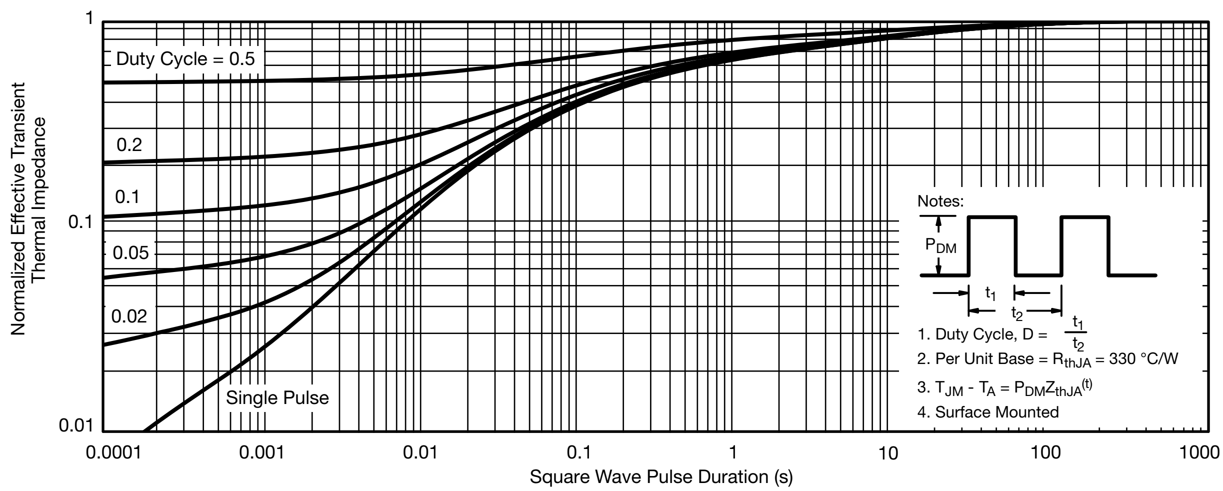
When mounted on 1" x 1" FR4 with full copper.

* The power dissipation P_D is based on $T_{J\ (max.)}$ = 150 °C,n using junction-to-ambient thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient (On 1" x 1" FR4 Board with Maximum Copper)



Normalized Thermal Transient Impedance, Junction-to-Ambient (On 1" x 1" FR4 Board with Minimum Copper)

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