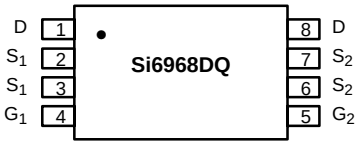
N-Channel 2.5-V (G-S) Battery Switch

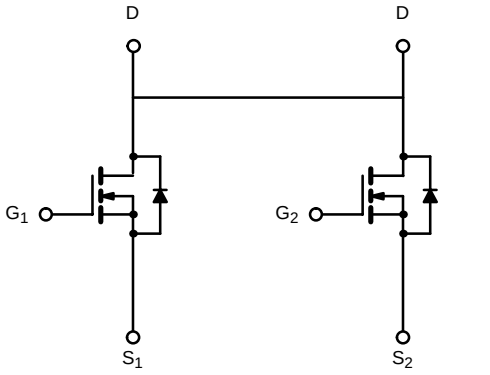
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(ON)}$ (Ω)	I_D (A)
20	0.022 @ V_{GS} = 4.5 V	±6.5
	0.030 @ V_{GS} = 2.5 V	±5.5

2.5-V Rated

TSSOP-8



Top View



N-Channel MOSFET N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current (T_J = 150°C)[A, B]	T_A = 25°C	I_D	±6.4	A
	T_A = 70°C		±5.1	
Pulsed Drain Current		I_{DM}	±30	
Continuous Source Current (Diode Conduction)[A, B]		I_S	1.5	
Maximum Power Dissipation[A, B]	T_A = 25°C	P_D	1.5	W
	T_A = 70°C		0.96	
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}		83	°C/W
	Steady State	R_{thJA}	85		

Notes
A. Surface Mounted on FR4 Board.
B. t ≤ 10 sec.

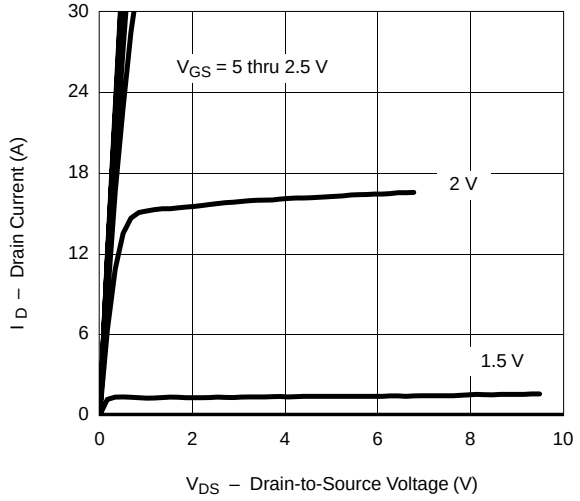
Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70757.

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	0.6			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	µA
		V_{DS} = 20 V, V_{GS} = 0 V, T_J = 70°C			5	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 4.5 V	30			A
Drain-Source On-State Resistance[A]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 6.5 A		0.017	0.022	Ω
		V_{GS} = 2.5 V, I_D = 5.5 A		0.022	0.030	
Forward Transconductance[A]	g_{fs}	V_{DS} = 10 V, I_D = 6.5 A		30		S
Diode Forward Voltage[A]	V_{SD}	I_S = 1.5 A, V_{GS} = 0 V		0.66	1.2	V
DYNAMIC[B]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 10 V, I_D = 6.5 A		16	30	nC
Gate-Source Charge	Q_{gs}			3.4		
Gate-Drain Charge	Q_{gd}			4.0		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 10 Ω I_D ≅ 1 A, V_{GEN} = 4.5 V, R_G = 6 Ω		20	40	ns
Rise Time	t_r			48	80	
Turn-Off Delay Time	$t_{d(off)}$			90	180	
Fall Time	t_f			55	110	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.5 A, di/dt = 100 A/µs		40	70	

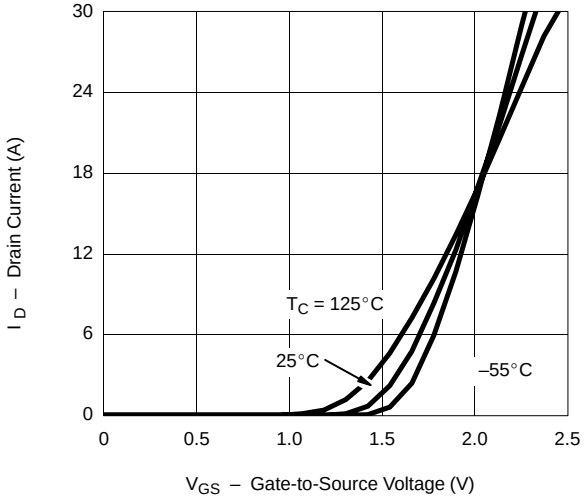
Notes
A. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
B. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS OTHERWISE NOTED)

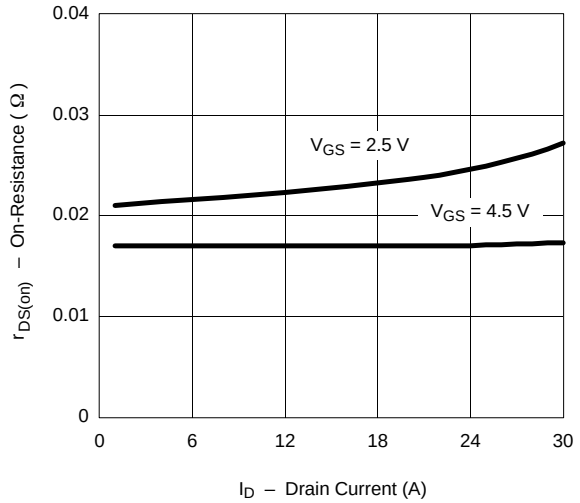
Output Characteristics



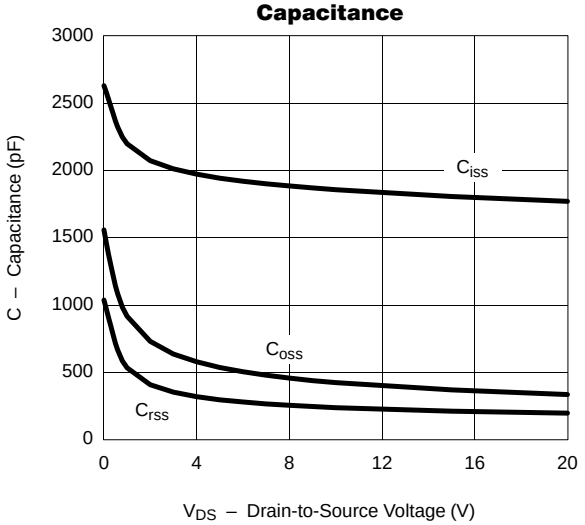
Transfer Characteristics



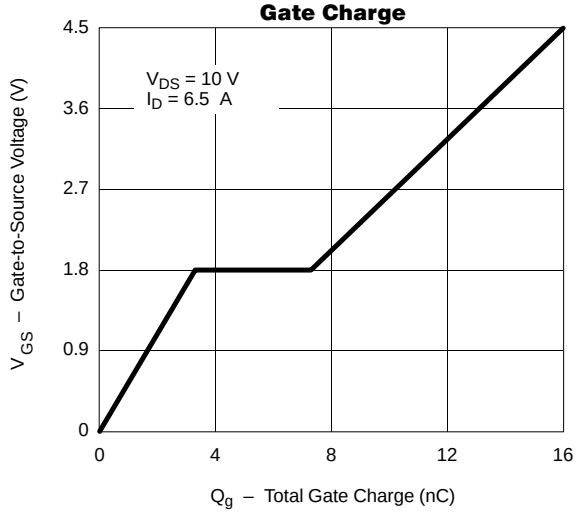
On-Resistance vs. Drain Current



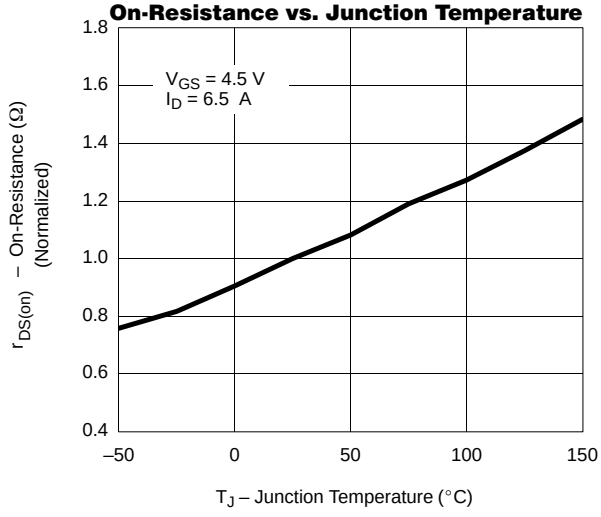
Capacitance



Gate Charge

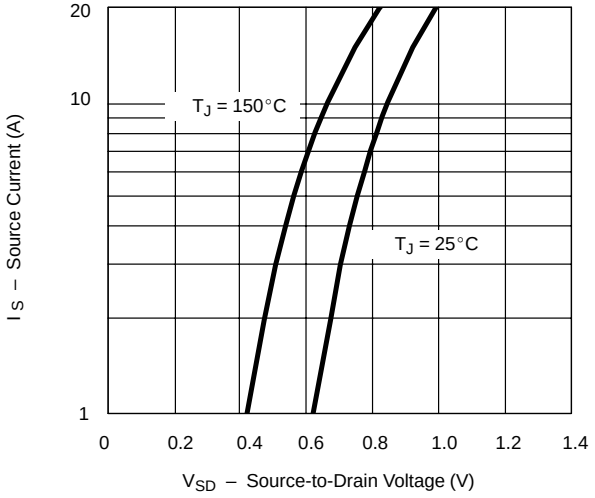


On-Resistance vs. Junction Temperature

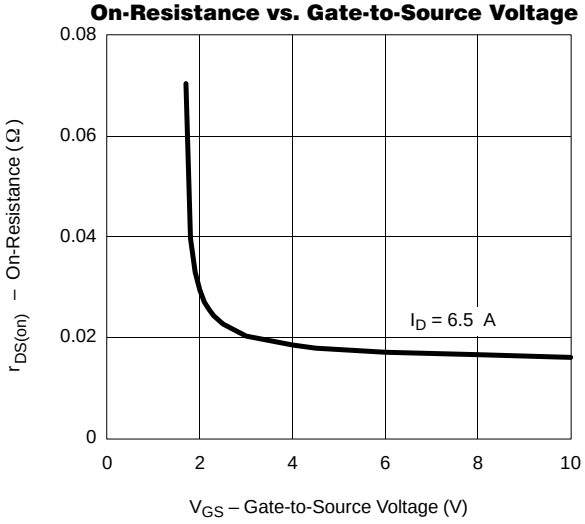


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

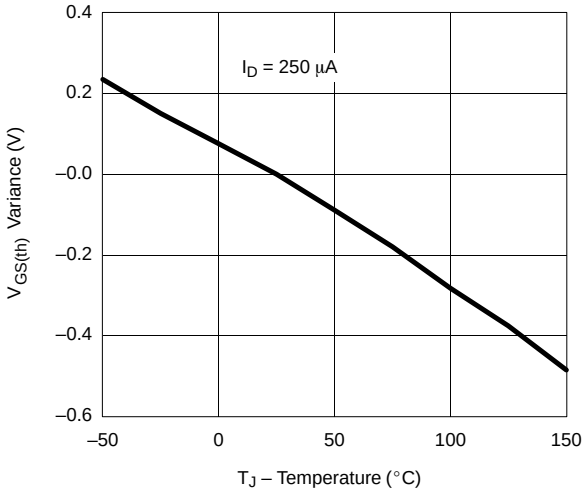
Source-Drain Diode Forward Voltage



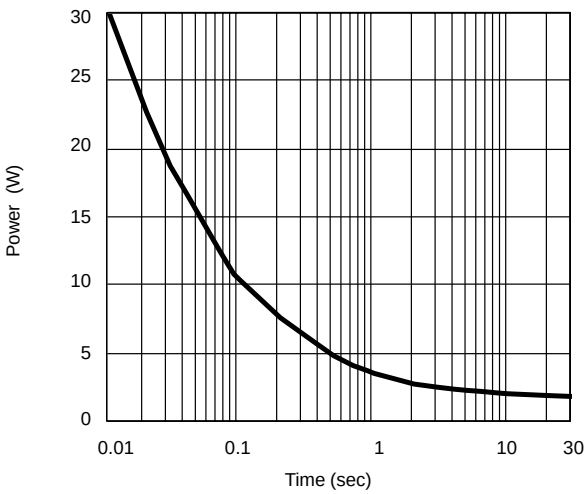
On-Resistance vs. Gate-to-Source Voltage



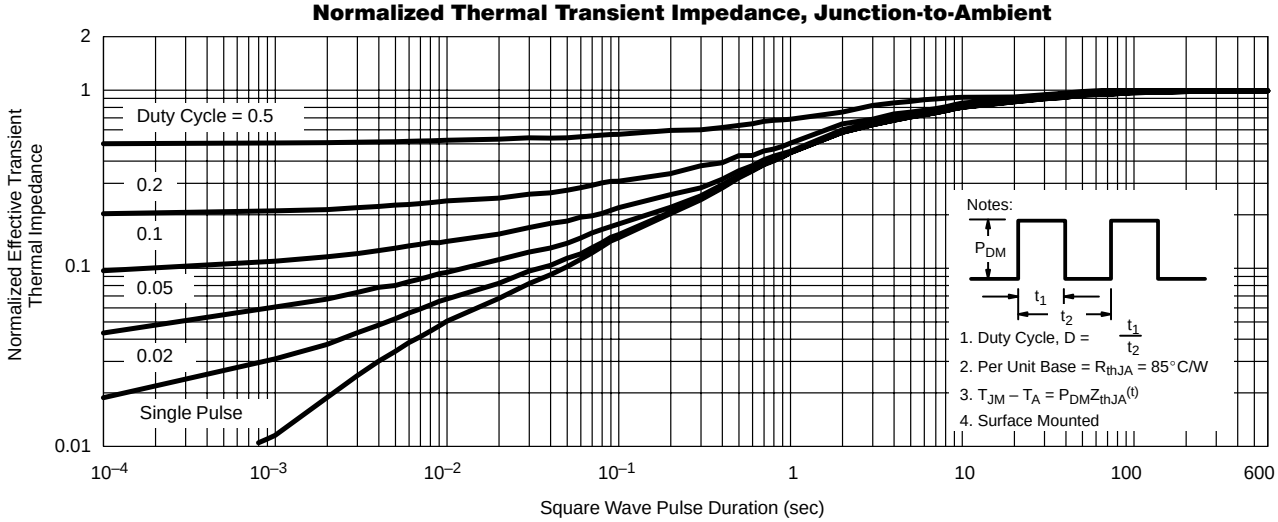
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.