SiZ920DT

Vishay Siliconix

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	Ch-1	30			V
		V_{GS} = 0 V, I_D = 250 µA	Ch-2	30			
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = 250 µA	Ch-1		34		mV/°C
		I_D = 250 µA	Ch-2		31		
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	I_D = 250 µA	Ch-1		- 5.2		
		I_D = 250 µA	Ch-2		- 6.1		
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	Ch-1	1.2		2.5	V
		V_{DS} = V_{GS}, I_D = 250 µA	Ch-2	1		2.2	
Gate Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V	Ch-1			± 100	nA
			Ch-2			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V	Ch-1			1	µA
		V_{DS} = 30 V, V_{GS} = 0 V	Ch-2			1	
		V_{DS} = 30 V, V_{GS} = 0 V, T_J = 55 °C	Ch-1			5	
		V_{DS} = 30 V, V_{GS} = 0 V, T_J = 55 °C	Ch-2			5	
On-State Drain Current[b]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 10 V	Ch-1	20			A
		$V_{DS} \geq$ 5 V, V_{GS} = 10 V	Ch-2	25			
Drain-Source On-State Resistance[b]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 18.9 A	Ch-1		0.0059	0.0071	Ω
		V_{GS} = 10 V, I_D = 20 A	Ch-2		0.0025	0.0030	
		V_{GS} = 4.5 V, I_D = 16.9 A	Ch-1		0.0074	0.0089	
		V_{GS} = 4.5 V, I_D = 20 A	Ch-2		0.0029	0.0035	
Forward Transconductance[b]	g_{fs}	V_{DS} = 10 V, I_D = 18.9 A	Ch-1		66		S
		V_{DS} = 10 V, I_D = 20 A	Ch-2		140		
Dynamic[a]							
Input Capacitance	C_{iss}	Channel-1 V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	Ch-1		1260		pF
			Ch-2		3600		
Output Capacitance	C_{oss}		Ch-1		260		
		Channel-2 V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	Ch-2		660		
Reverse Transfer Capacitance	C_{rss}		Ch-1		115		
			Ch-2		305		
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 10 V, I_D = 18.9 A	Ch-1		22.3	35	nC
		V_{DS} = 15 V, V_{GS} = 10 V, I_D = 20 A	Ch-2		60	110	
		Channel-1 V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 18.9 A	Ch-1		10.5	16	
			Ch-2		29	51	
Gate-Source Charge	Q_{gs}		Ch-1		5.1		
		Channel-2 V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 20 A	Ch-2		10		
Gate-Drain Charge	Q_{gd}		Ch-1		2.8		
			Ch-2		9.5		
Gate Resistance	R_g	f = 1 MHz	Ch-1	0.3	1.6	3.2	Ω
			Ch-2	0.1	0.6	1.2	

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

For technical questions, contact: pmostechsupport@vishay.com
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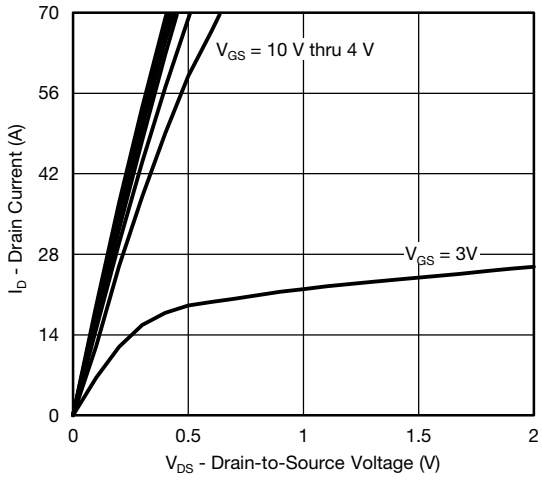
S12-0975-Rev. A, 30-Apr-12

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)							
Parameter	**Symbol**	**Test Conditions**		**Min.**	**Typ.**	**Max.**	**Unit**
Dynamic[a]							
Turn-On Delay Time	$t_{d(on)}$	Channel-1 V_{DD} = 15 V, R_L = 1.5 Ω $I_D \cong$ 10 A, V_{GEN} = 4.5 V, R_g = 1 Ω	Ch-1		15	23	ns
			Ch-2		30	60	
Rise Time	t_r		Ch-1		18	30	
			Ch-2		35	70	
Turn-Off Delay Time	$t_{d(off)}$	Channel-2 V_{DD} = 15 V, R_L = 1.5 Ω $I_D \cong$ 10 A, V_{GEN} = 4.5 V, R_g = 1 Ω	Ch-1		15	23	
			Ch-2		35	70	
Fall Time	t_f		Ch-1		10	20	
			Ch-2		12	25	
Turn-On Delay Time	$t_{d(on)}$	Channel-1 V_{DD} = 15 V, R_L = 1.5 Ω $I_D \cong$ 10 A, V_{GEN} = 10 V, R_g = 1 Ω	Ch-1		4	8	
			Ch-2		12	25	
Rise Time	t_r		Ch-1		11	25	
			Ch-2		12	25	
Turn-Off Delay Time	$t_{d(off)}$	Channel-2 V_{DD} = 15 V, R_L = 1.5 Ω $I_D \cong$ 10 A, V_{GEN} = 10 V, R_g = 1 Ω	Ch-1		18	30	
			Ch-2		35	70	
Fall Time	t_f		Ch-1		8	16	
			Ch-2		10	20	
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C	Ch-1			40	A
			Ch-2			40	
Pulse Diode Forward Current[a]	I_{SM}		Ch-1			70	
			Ch-2			120	
Body Diode Voltage	V_{SD}	I_S = 10 A, V_{GS} = 0 V	Ch-1		0.8	1.2	V
		I_S = 10 A, V_{GS} = 0 V	Ch-2		0.8	1.2	
Body Diode Reverse Recovery Time	t_{rr}	Channel-1 I_F = 10 A, dI/dt = 100 A/µs, T_J = 25 °C	Ch-1		17	30	ns
			Ch-2		36	70	
Body Diode Reverse Recovery Charge	Q_{rr}		Ch-1		10	20	nC
			Ch-2		36	70	
Reverse Recovery Fall Time	t_a	Channel-2 I_F = 10 A, dI/dt = 100 A/µs, T_J = 25 °C	Ch-1		10		ns
			Ch-2		20		
Reverse Recovery Rise Time	t_b		Ch-1		7		
			Ch-2		16		

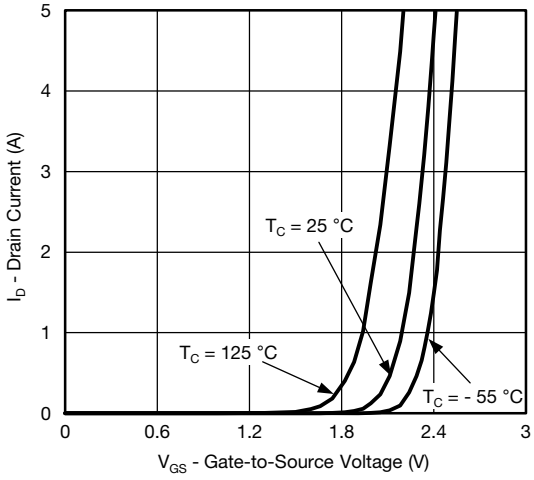
Notes:
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

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.

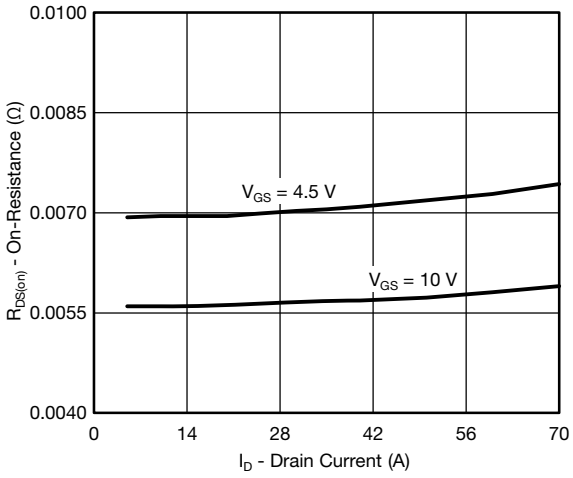
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



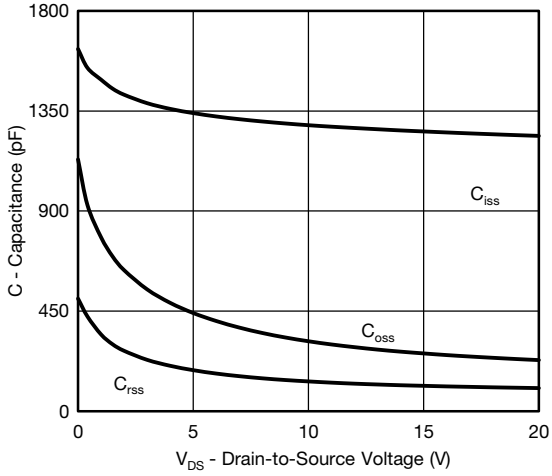
Output Characteristics



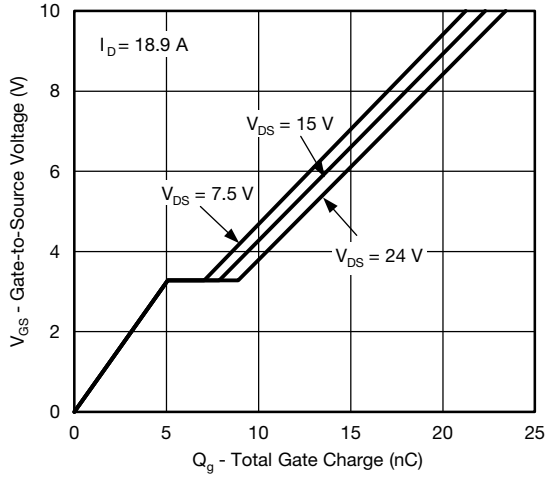
Transfer Characteristics



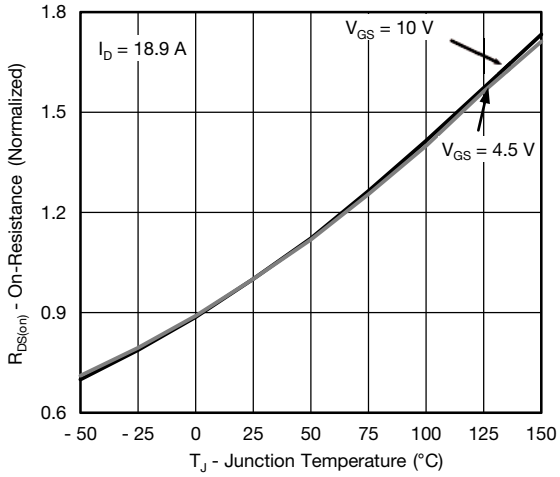
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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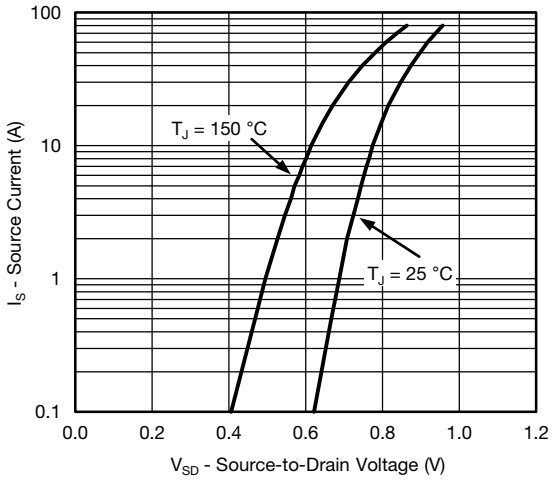
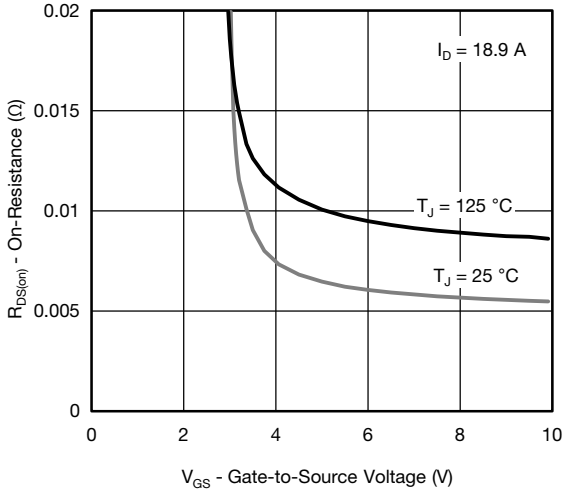
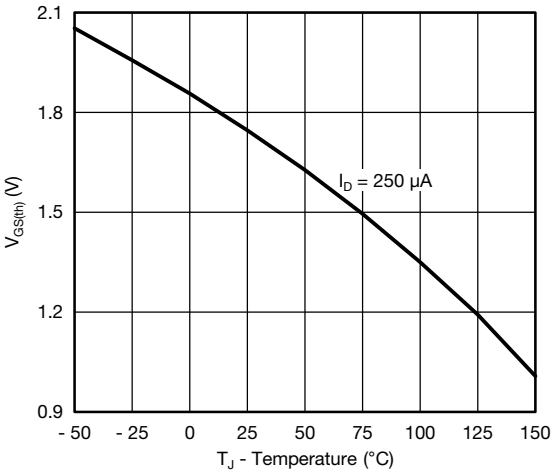
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



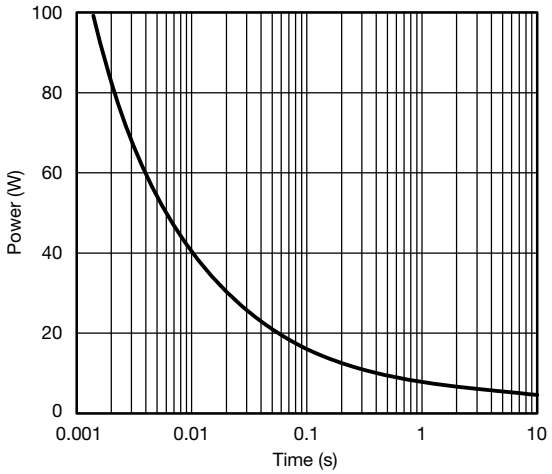
Source-Drain Diode Forward Voltage



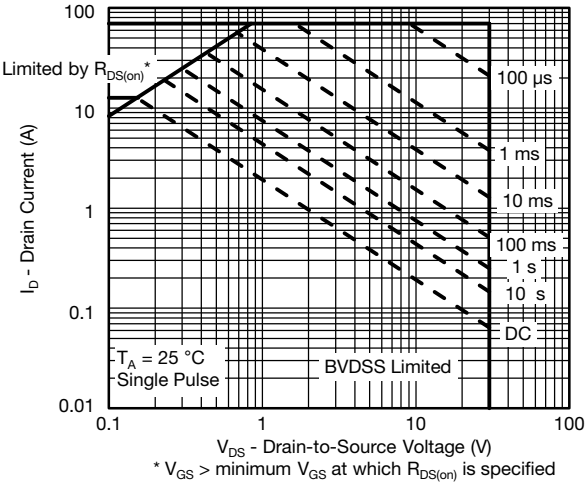
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

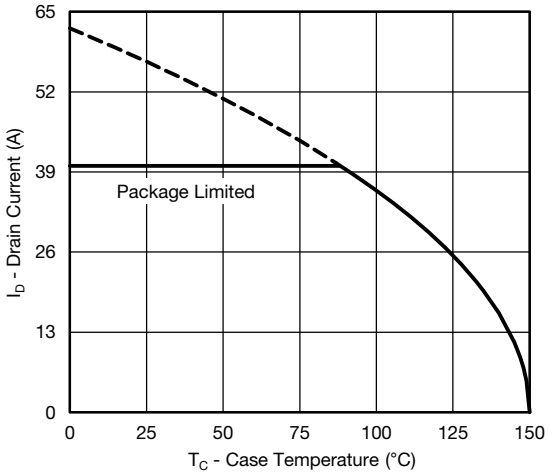


Single Pulse Power

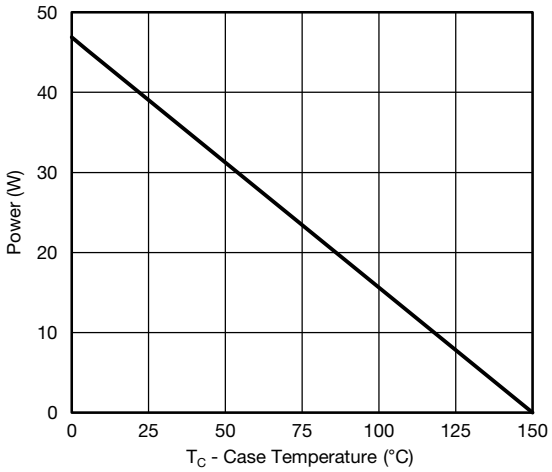


Safe Operating Area, Junction-to-Ambient

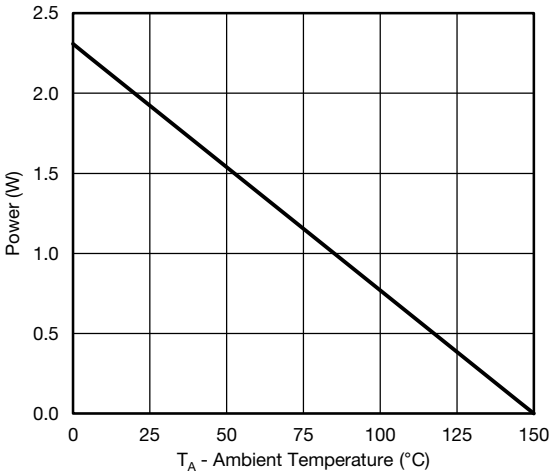
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*



Power, Junction-to-Case



Power, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J(max)}$ = 150 °C, using junction-to-case 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.

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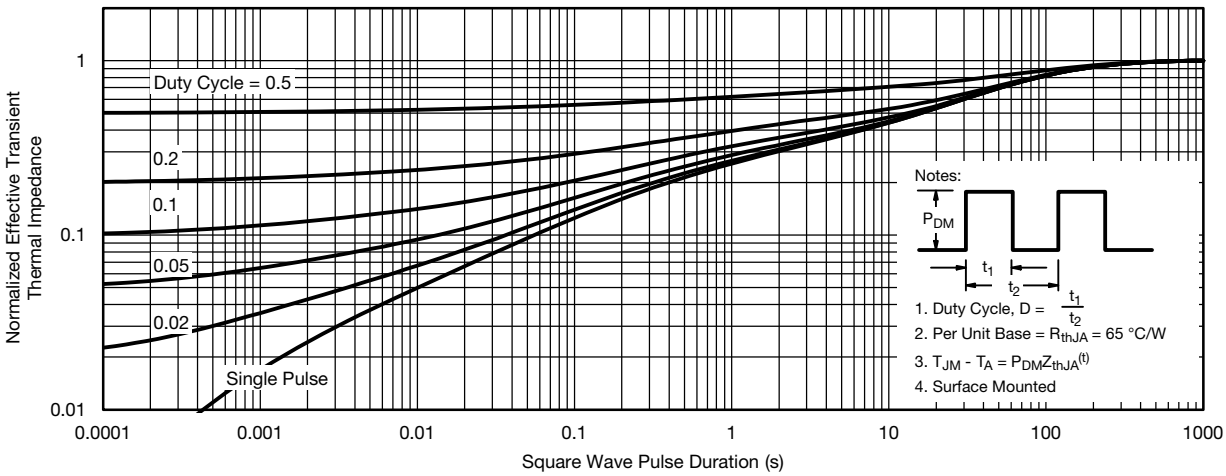
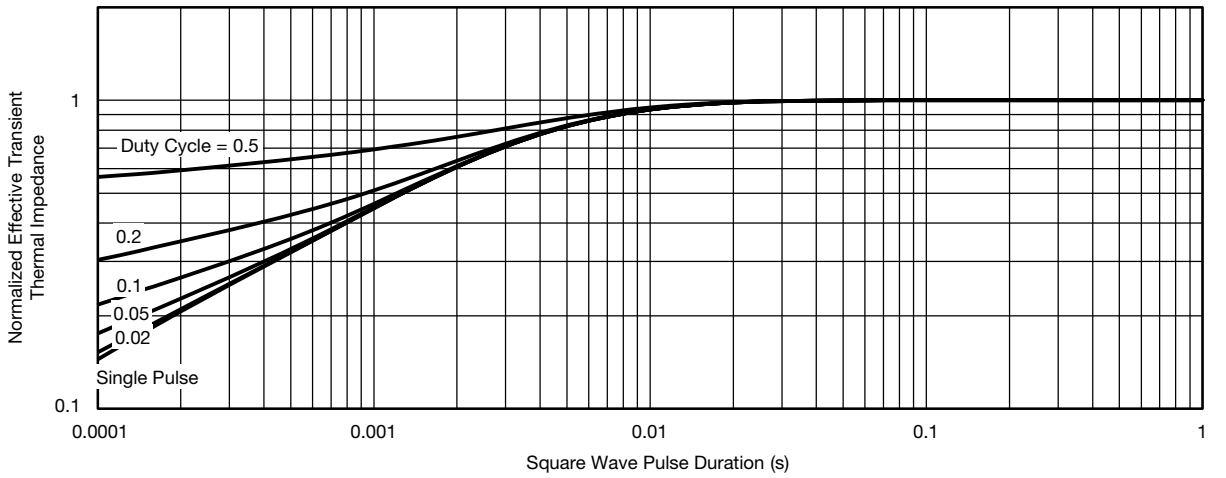
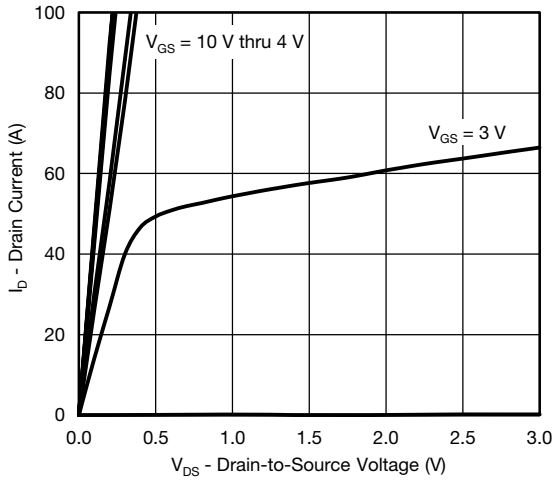


Normalized Thermal Transient Impedance, Junction-to-Ambient

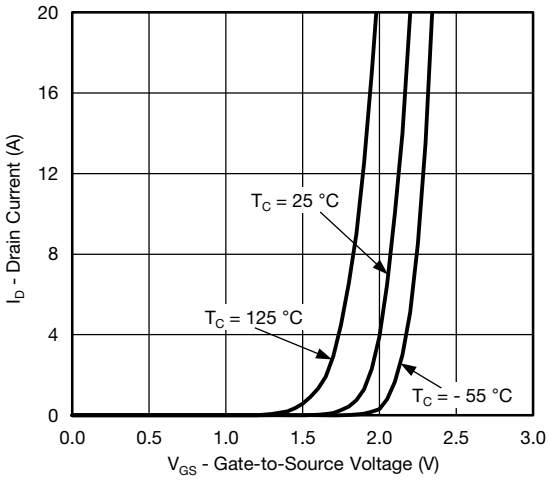


Normalized Thermal Transient Impedance, Junction-to-Case

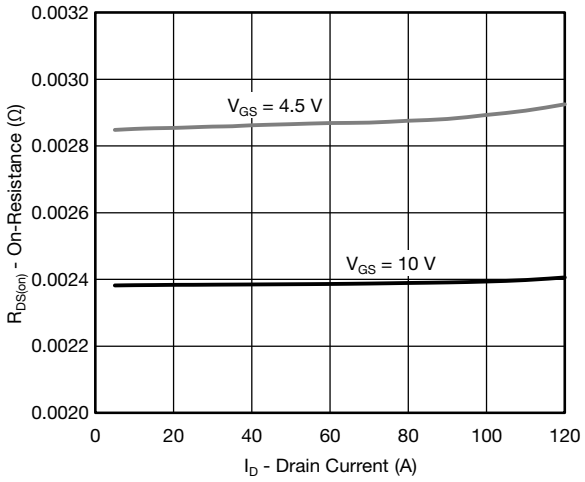
CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



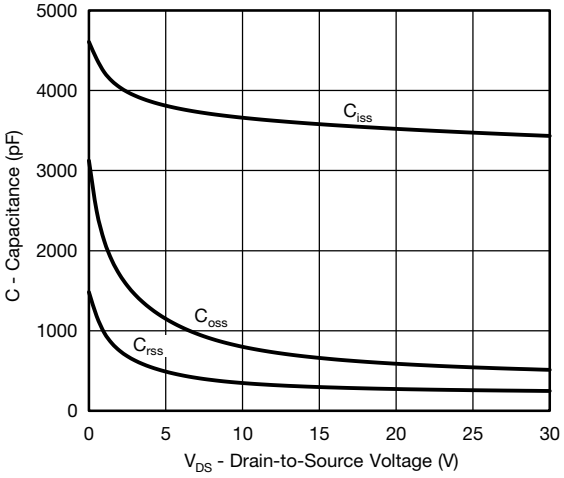
Output Characteristics



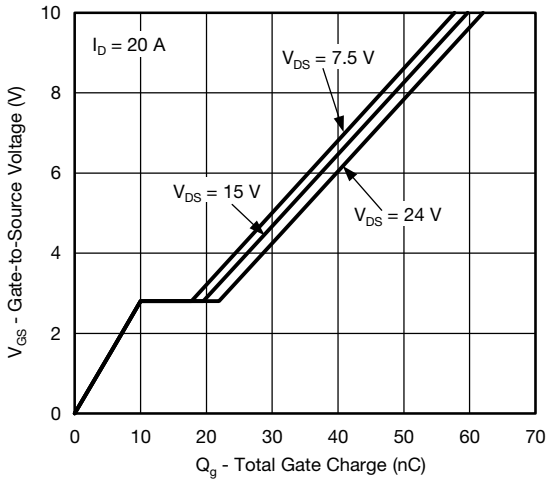
Transfer Characteristics



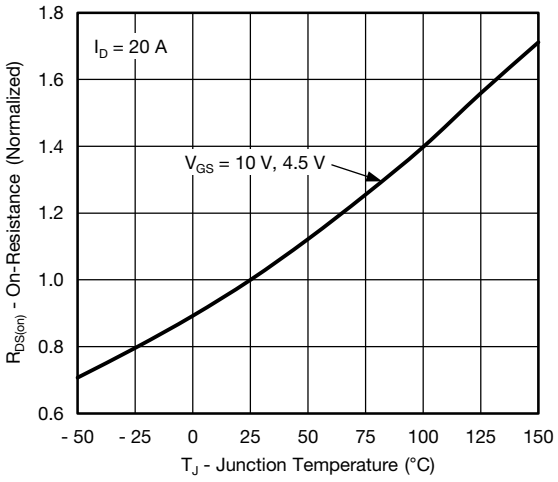
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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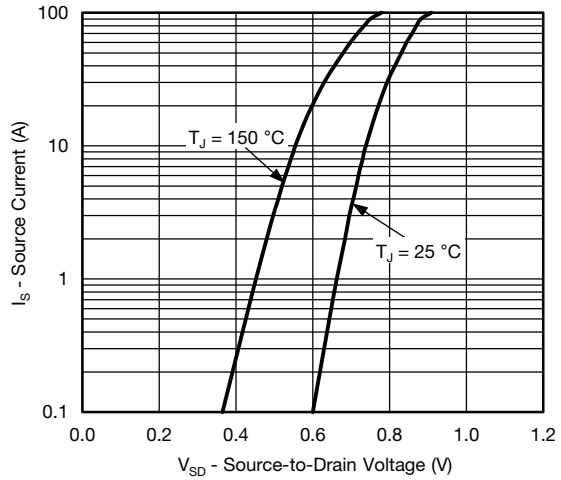
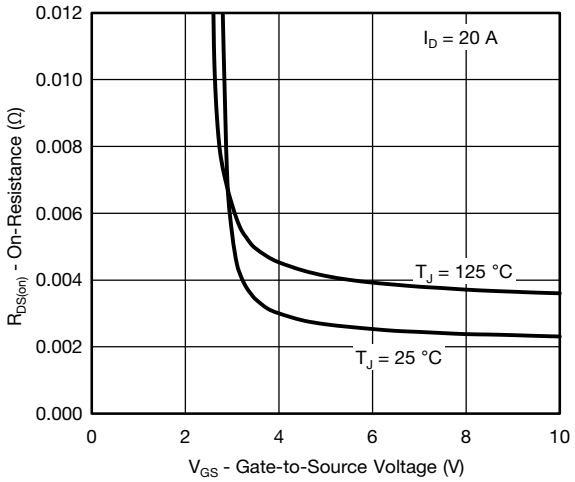
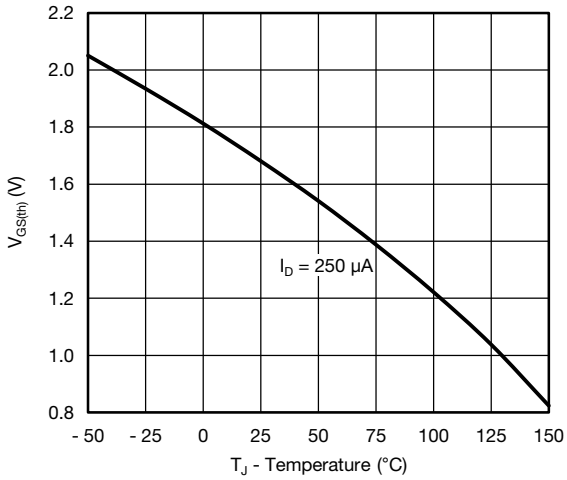
CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



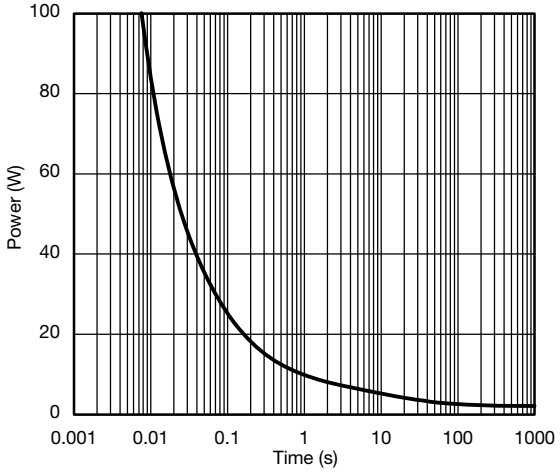
Source-Drain Diode Forward Voltage



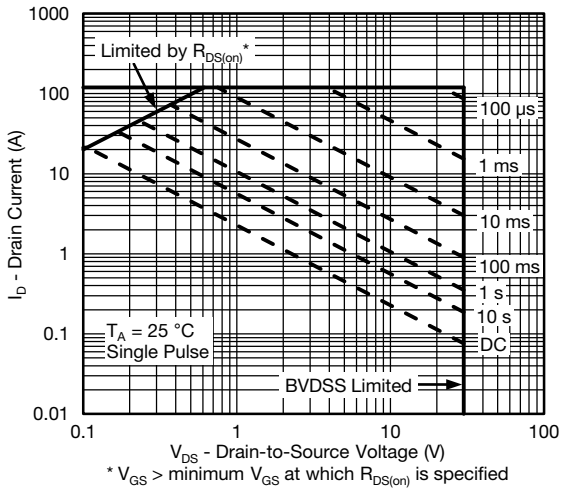
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power

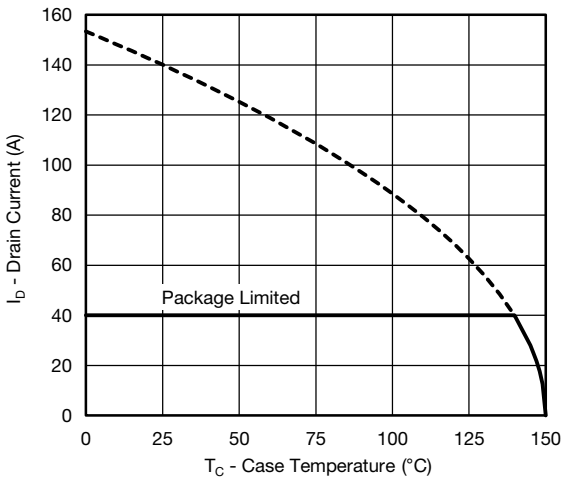


Safe Operating Area, Junction-to-Ambient

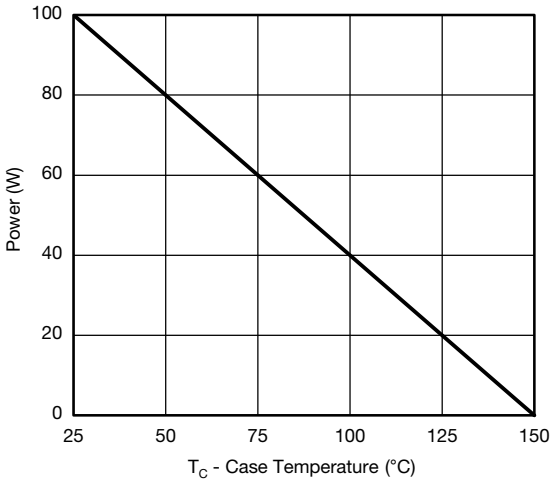
SiZ920DT

Vishay Siliconix

CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*



Power, Junction-to-Case

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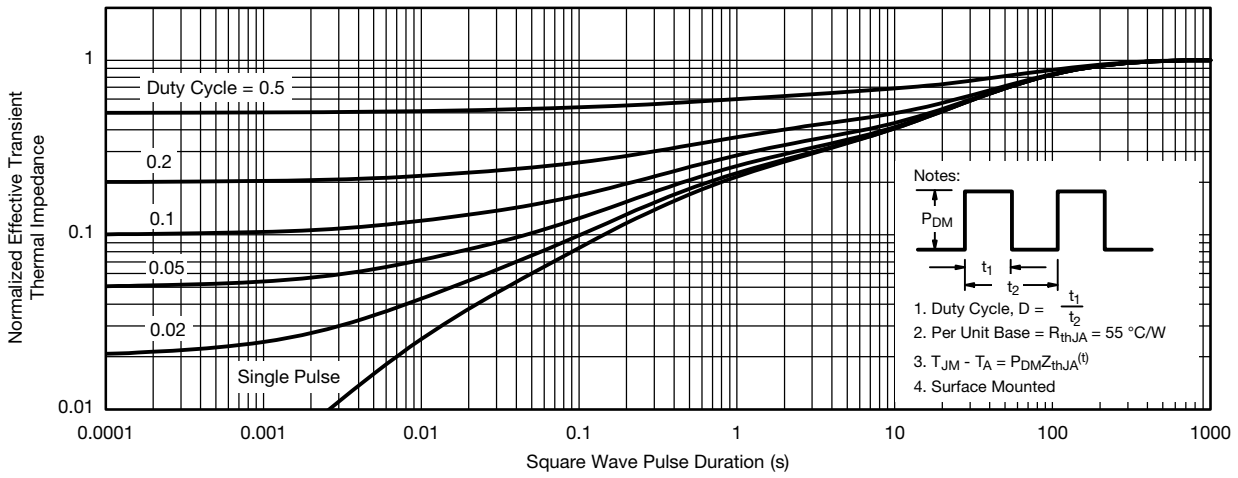
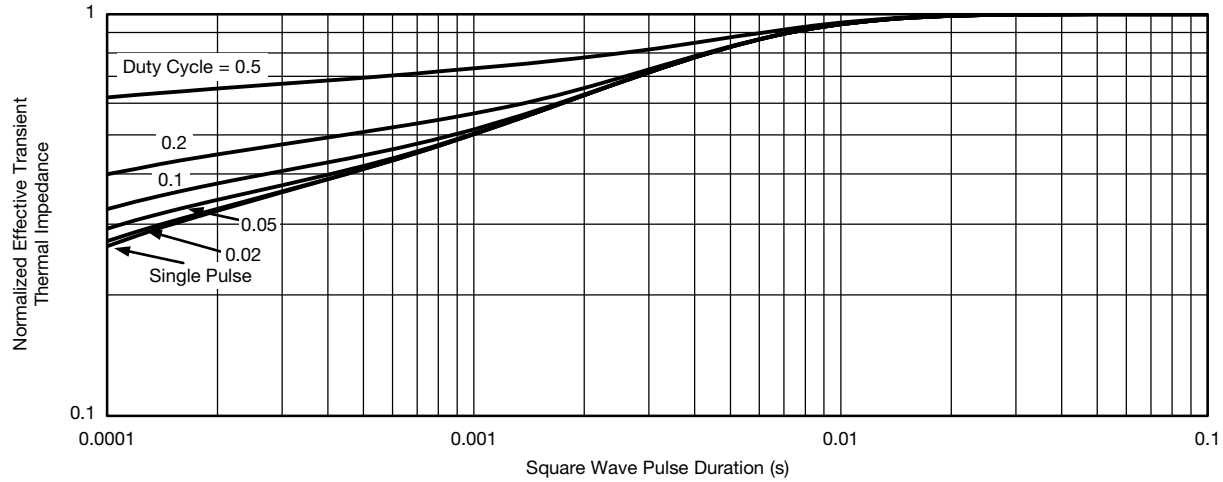
CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

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