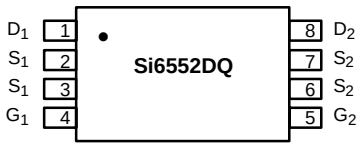
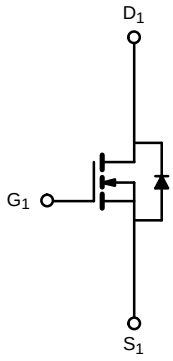
Dual N- and P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.08 @ V_{GS} = 4.5 V	±2.8
		0.11 @ V_{GS} = 2.5 V	±2.1
P-Channel	-12	0.1 @ V_{GS} = -4.5 V	±2.5
		0.18 @ V_{GS} = -2.5 V	±1.9

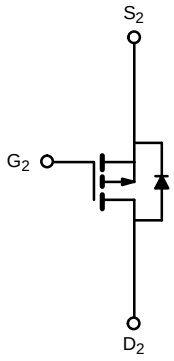
TSSOP-8



Top View



N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	20	-12	V
Gate-Source Voltage		V_{GS}	±8		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	±2.8	±2.5	A
	T_A = 70°C		±2.3	±2.0	
Pulsed Drain Current		I_{DM}	±20		
Continuous Source Current (Diode Conduction)[a]		I_S	1.0	-1.0	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	1.0		W
	T_A = 70°C		0.64		
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	N- or P-Channel	Unit
Maximum Junction-to-Ambient[a]	R_{thJA}	125	°C/W

Notes
a. Surface Mounted on FR4 Board, t ≤ 10 sec.

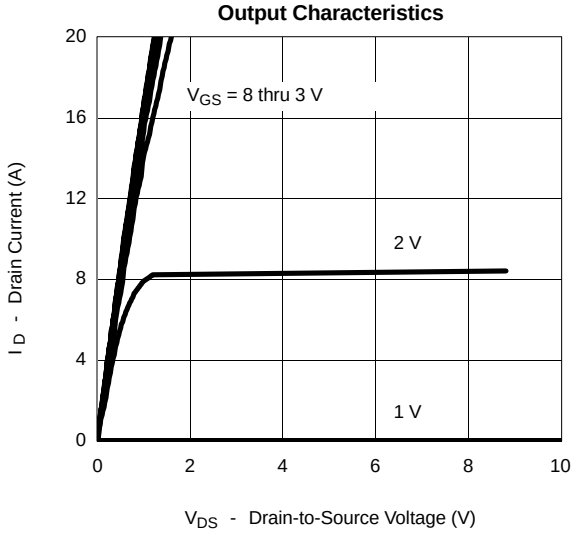
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Static							
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	N-Ch	0.6			V
		V_{DS} = V_{GS}, I_D = -250 μA	P-Ch	-0.6			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 V				±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V	N-Ch			1	μA
		V_{DS} = -12 V, V_{GS} = 0 V	P-Ch			-1	
		V_{DS} = 20 V, V_{GS} = 0 V, T_J = 70°C	N-Ch			5	
		V_{DS} = -12 V, V_{GS} = 0 V, T_J = 70°C	P-Ch			-5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 4.5 V	N-Ch	10			A
		V_{DS} = -5 V, V_{GS} = -4.5 V	P-Ch	-10			
		V_{DS} = 5 V, V_{GS} = 2.5 V	N-Ch	4			
		V_{DS} = -5 V, V_{GS} = -2.5 V	P-Ch	-4			
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 2.8 A	N-Ch			0.08	Ω
		V_{GS} = -4.5 V, I_D = 2.5 A	P-Ch			0.1	
		V_{GS} = 2.5 V, I_D = 2.1 A	N-Ch			0.11	
		V_{GS} = -2.5 V, I_D = 1.9 A	P-Ch			0.18	
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 2.8 A	N-Ch		12		S
		V_{DS} = -9 V, I_D = -2.5 A	P-Ch		7		
Diode Forward Voltage[a]	V_{SD}	I_S = 1.0 A, V_{GS} = 0 V	N-Ch			1.2	V
		I_S = -1.0 A, V_{GS} = 0 V	P-Ch			-1.2	
Dynamic[b]							
Total Gate Charge	Q_g	N-Channel V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 2.8 A P-Channel V_{DS} = -6 V, V_{GS} = -4.5 V, I_D = -2.5 A	N-Ch		16	40	nC
			P-Ch		9	20	
Gate-Source Charge	Q_{gs}		N-Ch		3		
			P-Ch		2		
Gate-Drain Charge	Q_{gd}		N-Ch		6		
			P-Ch		3		
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 10 V, R_L = 10 Ω I_D ≅ 1 A, V_{GEN} = 4.5 V, R_G = 6 Ω P-Channel V_{DD} = -6 V, R_L = 6 Ω I_D ≅ -1 A, V_{GEN} = -4.5 V, R_G = 6 Ω	N-Ch		37	60	ns
			P-Ch		21	40	
Rise Time	t_r		N-Ch		66	100	
			P-Ch		35	70	
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		56	100	
			P-Ch		43	80	
Fall Time	t_f		N-Ch		57	100	
			P-Ch		22	40	
Source-Drain Reverse Recovery Time	t_{rr}	N-Channel—I_F = 1.0 A, di/dt = 100 A/μs	N-Ch		26	70	
		P-Channel—I_F = -1.0 A, di/dt = 100 A/μs	P-Ch		35	70	

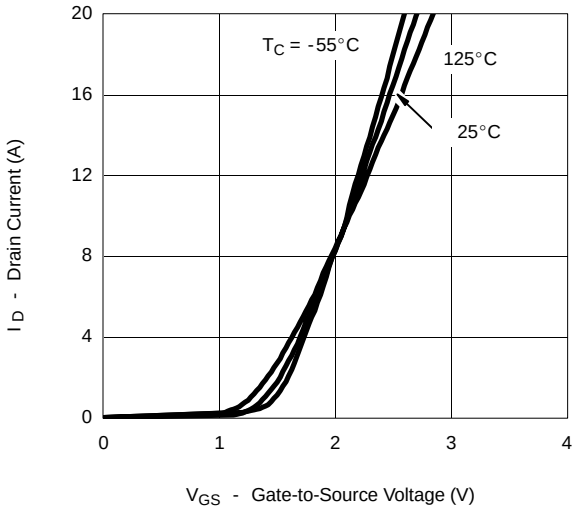
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) N-CHANNEL

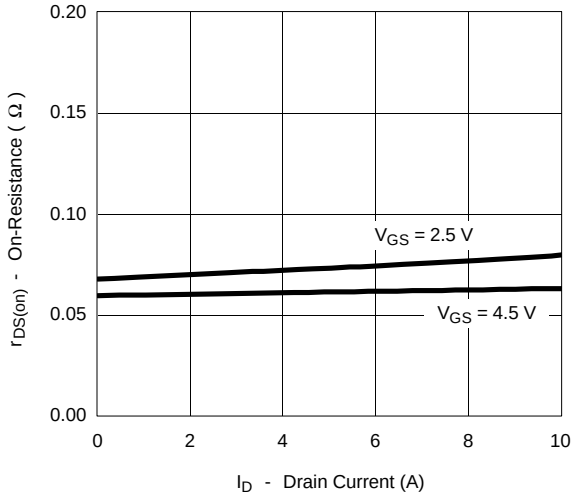
Output Characteristics



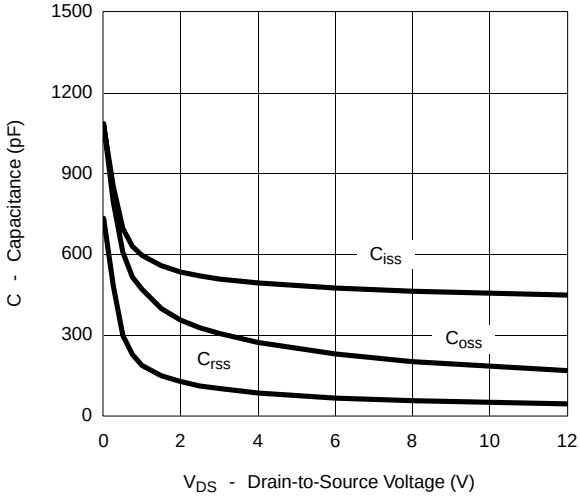
Transfer Characteristics



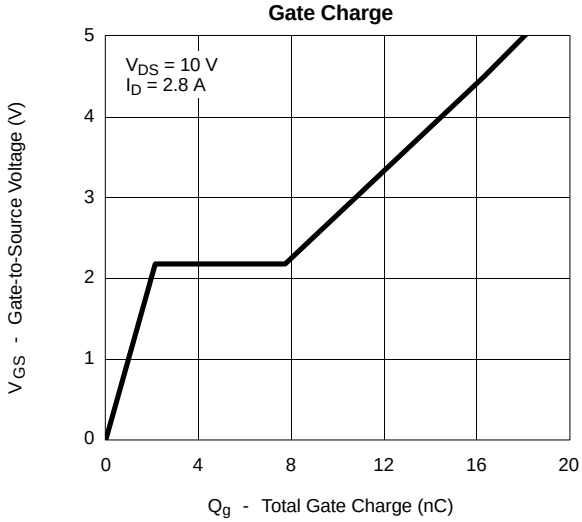
On-Resistance vs. Drain Current



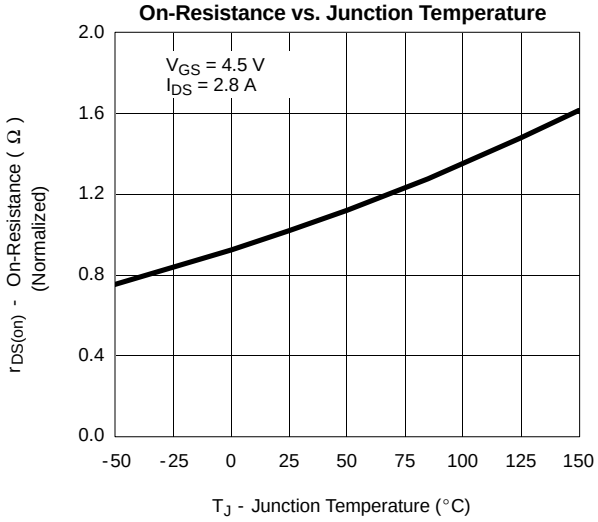
Capacitance



Gate Charge

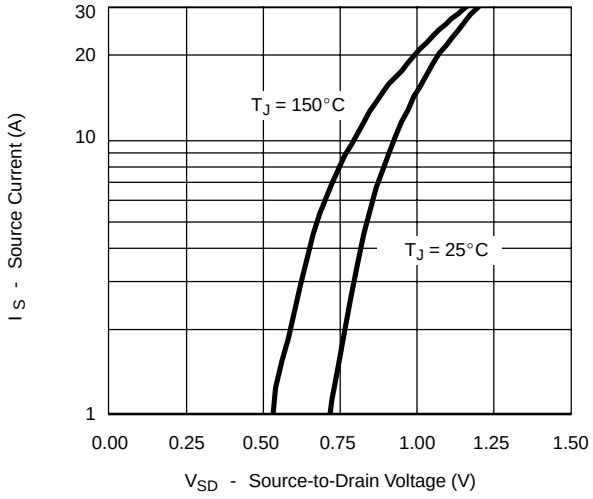


On-Resistance vs. Junction Temperature

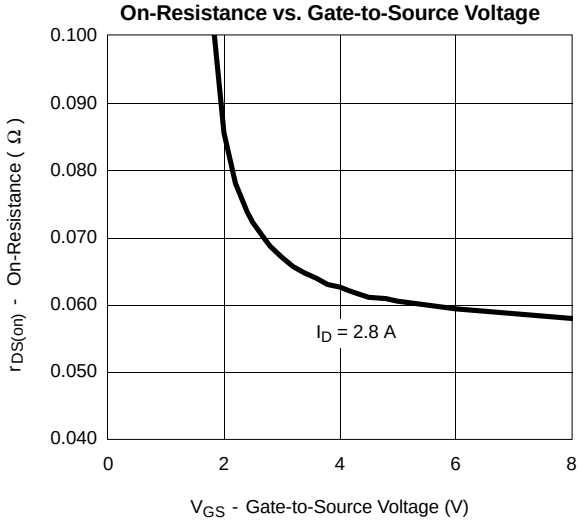


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) N-CHANNEL

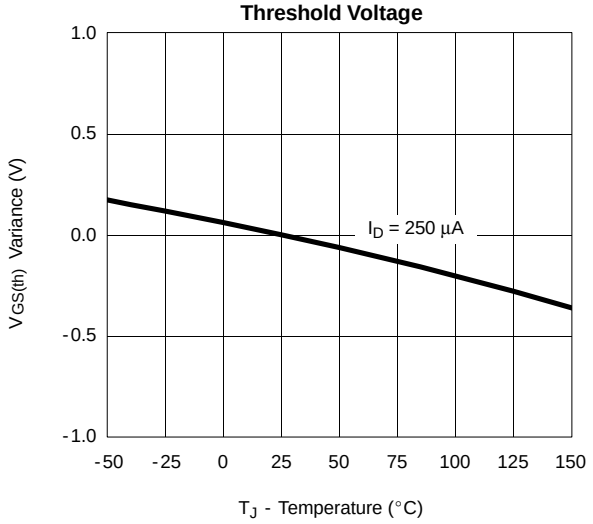
Source-Drain Diode Forward Voltage



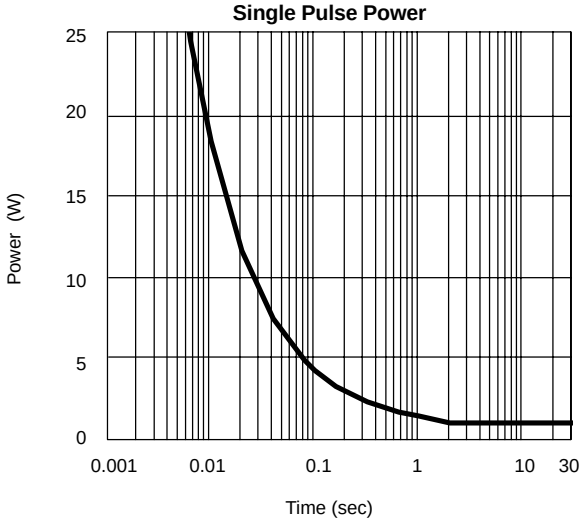
On-Resistance vs. Gate-to-Source Voltage



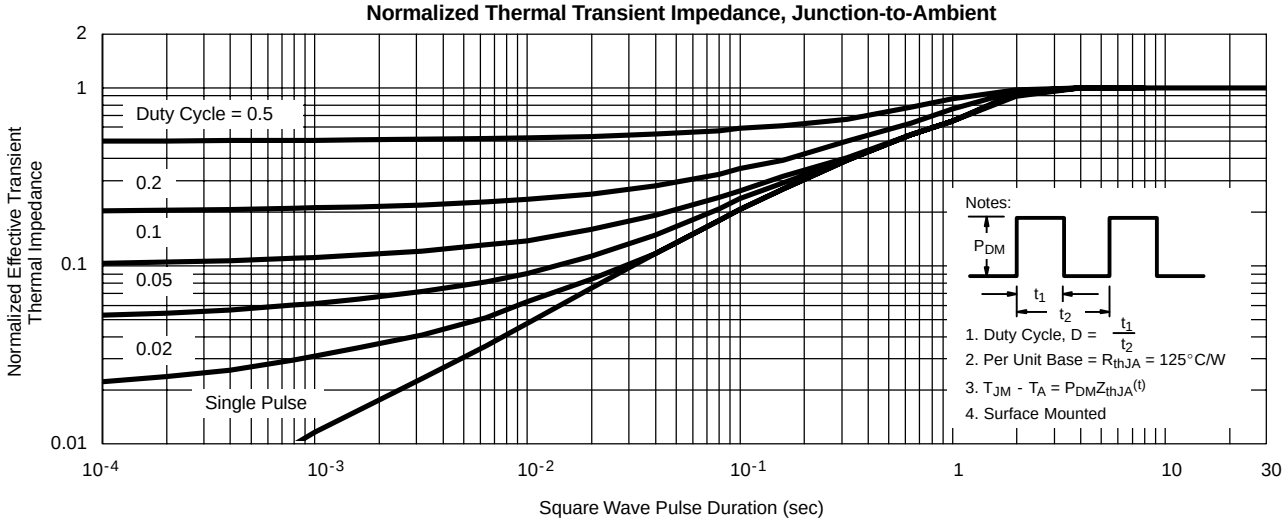
Threshold Voltage



Single Pulse Power

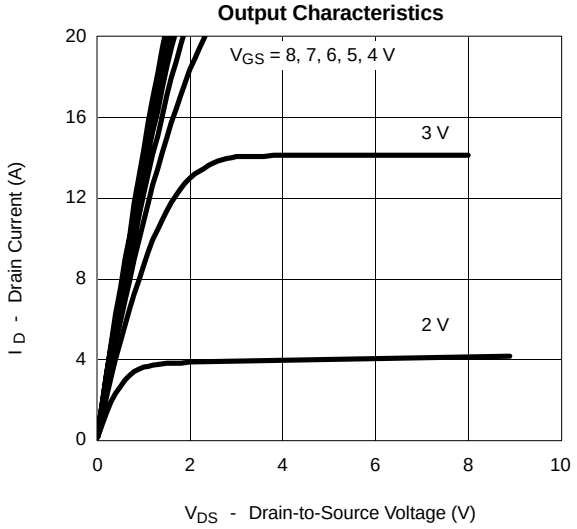


Normalized Thermal Transient Impedance, Junction-to-Ambient

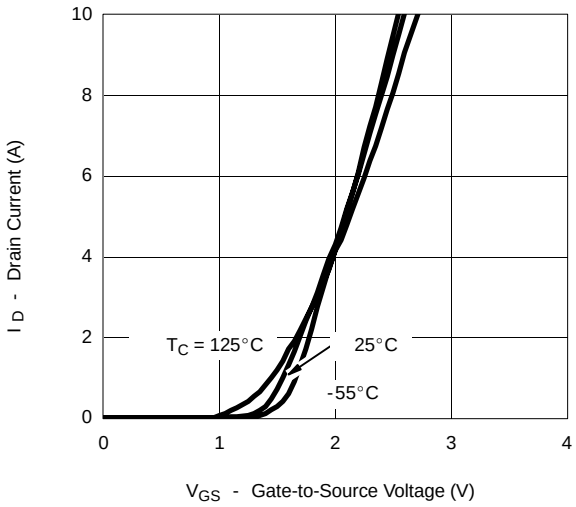


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) P-CHANNEL

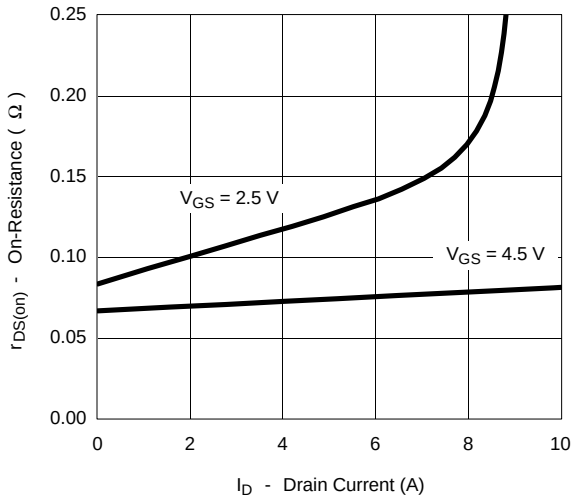
Output Characteristics



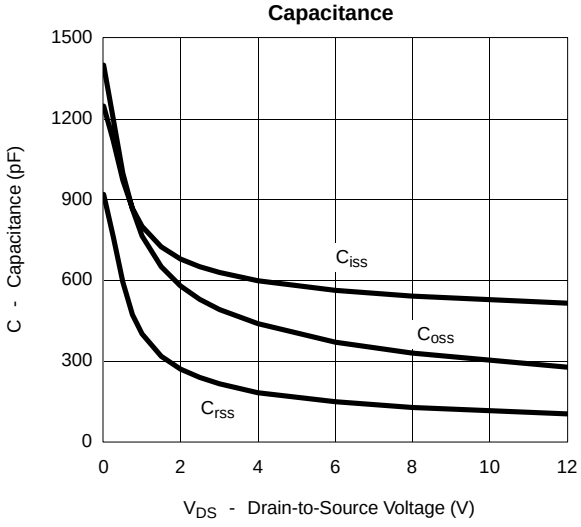
Transfer Characteristics



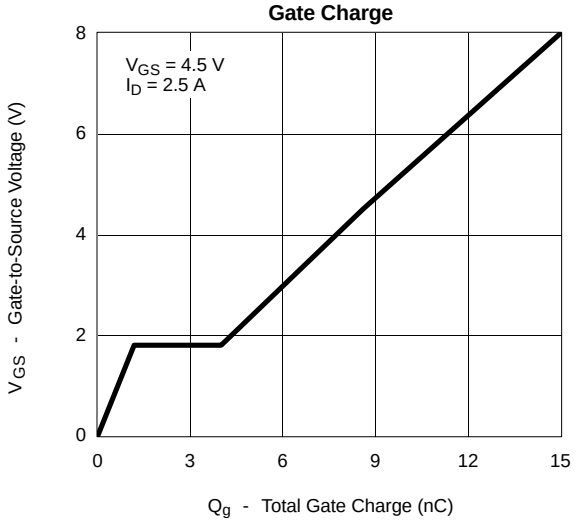
On-Resistance vs. Drain Current



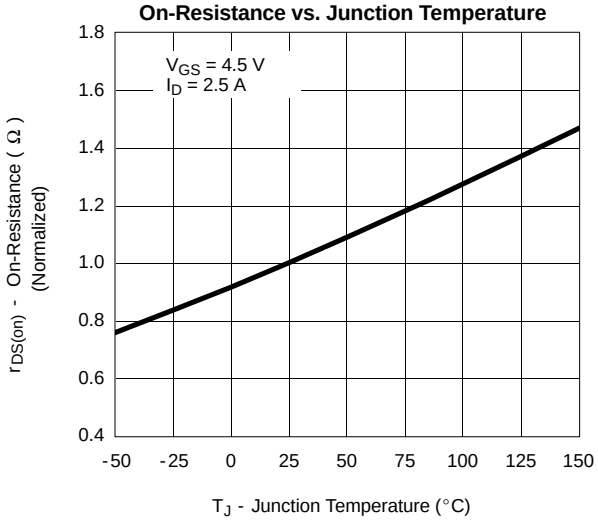
Capacitance



Gate Charge

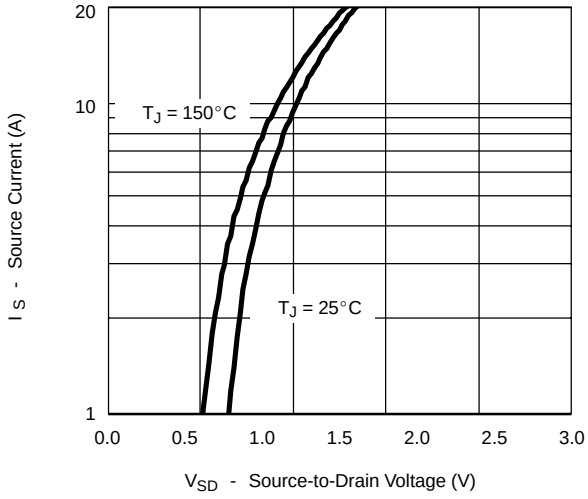


On-Resistance vs. Junction Temperature

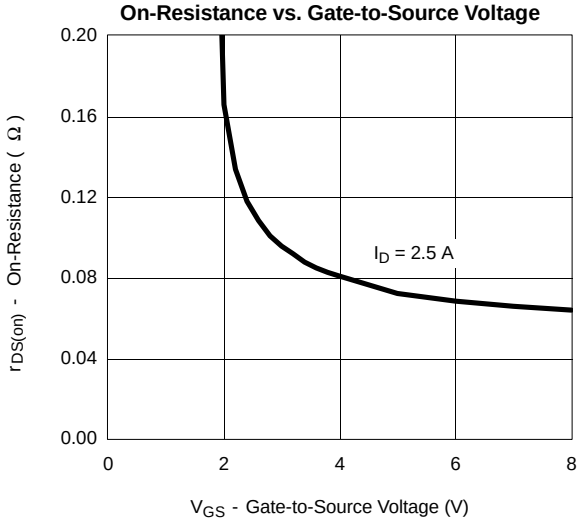


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) P-CHANNEL

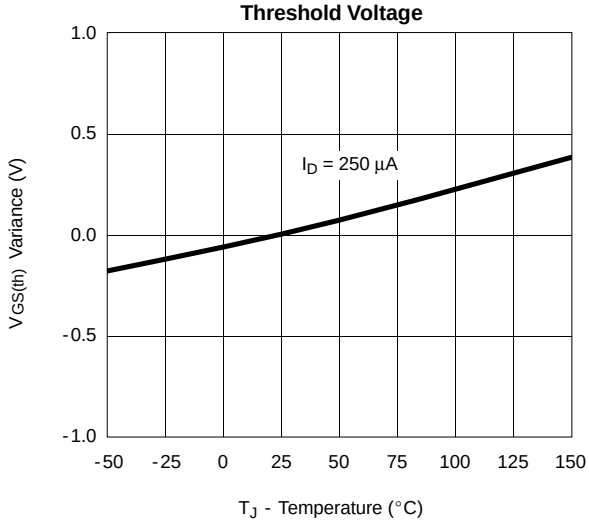
Source-Drain Diode Forward Voltage



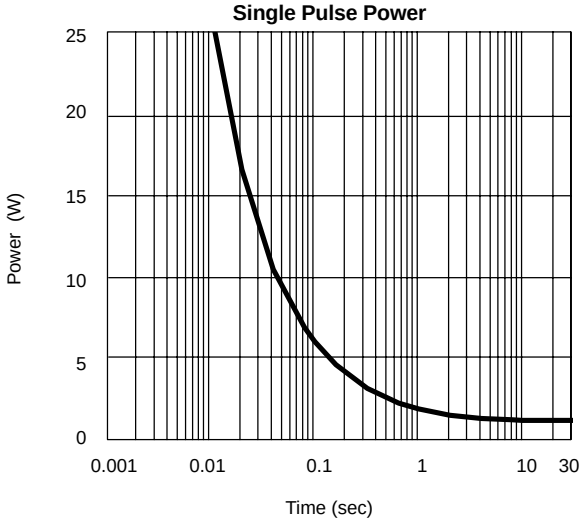
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient