N- and P-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.025 at V_{GS} = 4.5 V	7.1
		0.035 at V_{GS} = 2.5 V	6.0
P-Channel	- 20	0.033 at V_{GS} = - 4.5 V	- 6.2
		0.050 at V_{GS} = - 2.5 V	- 5.0

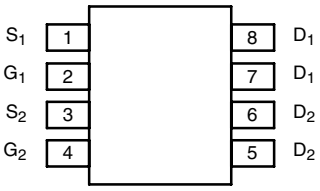
FEATURES

- TrenchFet® Power MOSFET: 2.5 Rated

Pb-free Available

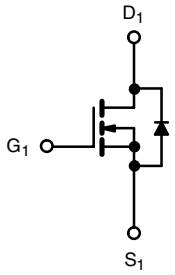
RoHS* COMPLIANT

SO-8

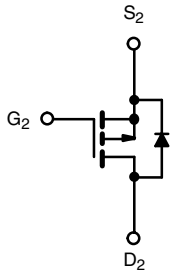


Top View

Ordering Information: Si4562DY-T1
Si4562DY-T1-E3 (Lead (Pb)-free)



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	- 20	V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	7.1	- 6.2	A
	T_A = 70 °C		5.7	- 4.9	
Pulsed Drain Current		I_{DM}	40	- 40	
Continuous Source Current (Diode Conduction)[a]		I_S	1.7	- 1.7	
Maximum Power Dissipation[a]	T_A = 25 °C	P_D	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	N- or P-Channel	Unit
Maximum Junction-to-Ambient[a]	R_{thJA}	62.5	°C/W

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

* Pb containing terminations are not RoHS compliant, exemptions may apply.

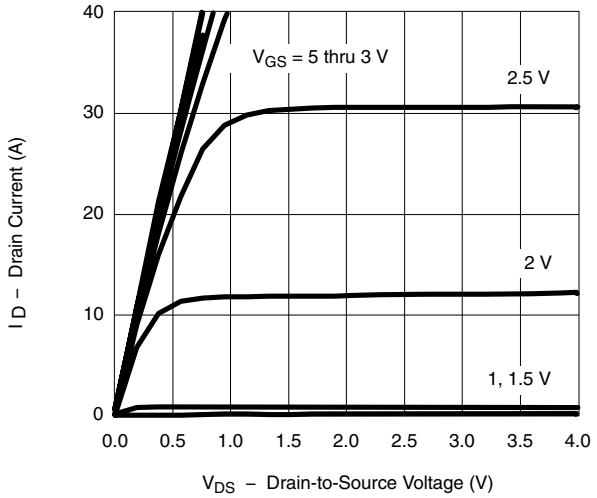
SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Static							
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	N-Ch	0.6		1.6	V
		V_{DS} = V_{GS}, I_D = - 250 µA	P-Ch	- 0.6		- 1.6	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V	N-Ch			± 100	nA
			P-Ch			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V	N-Ch			1	µA
		V_{DS} = - 20 V, V_{GS} = 0 V	P-Ch			- 1	
		V_{DS} = 20 V, V_{GS} = 0 V, T_J = 55 °C	N-Ch			5	
		V_{DS} = - 20 V, V_{GS} = 0 V, T_J = 55 °C	P-Ch			- 5	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 4.5 V	N-Ch	20			A
		V_{DS} ≤ - 5 V, V_{GS} = - 4.5 V	P-Ch	- 20			
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 7.1 A	N-Ch		0.019	0.025	Ω
		V_{GS} = - 4.5 V, I_D = - 6.2 A	P-Ch		0.027	0.033	
		V_{GS} = 2.5 V, I_D = 6.0 A	N-Ch		0.025	0.035	
		V_{GS} = - 2.5 V, I_D = - 5.0 A	P-Ch		0.040	0.050	
Forward Transconductance[b]	g_{fs}	V_{DS} = 10 V, I_D = 7.1 A	N-Ch		27		S
		V_{DS} = - 10 V, I_D = - 6.2 A	P-Ch		20		
Diode Forward Voltage[b]	V_{SD}	I_S = 1.7 A, V_{GS} = 0 V	N-Ch			1.2	V
		I_S = - 1.7 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 = 7.1 A P-Channel V_{DS} = - 10 V, V_{GS} = - 4.5 V, I_D = - 6.2 A	N-Ch		25	50	nC
			P-Ch		22	35	
Gate-Source Charge	Q_{gs}		N-Ch		6.5		
			P-Ch		7		
Gate-Drain Charge	Q_{gd}		N-Ch		4		
			P-Ch		3.5		
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} = - 10 V, R_L = 10 Ω I_D ≅ - 1 A, V_{GEN} = - 4.5 V, R_G = 6 Ω	N-Ch		40	60	ns
			P-Ch		27	50	
Rise Time	t_r		N-Ch		40	60	
			P-Ch		32	50	
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		90	150	
			P-Ch		95	150	
Fall Time	t_f		N-Ch		40	60	
			P-Ch		45	70	
Sorce-Drain Reverse Recovery Tme	t_{rr}	I_F = 1.7 A, di/dt = 100 A/µs	N-Ch		40	80	
		I_F = - 1.7 A, di/dt = 100 A/µs	P-Ch		40	80	

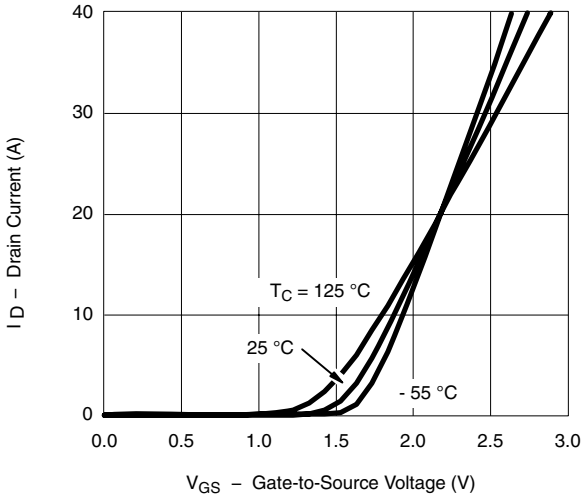
Notes:
a. For design aid only; not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

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.

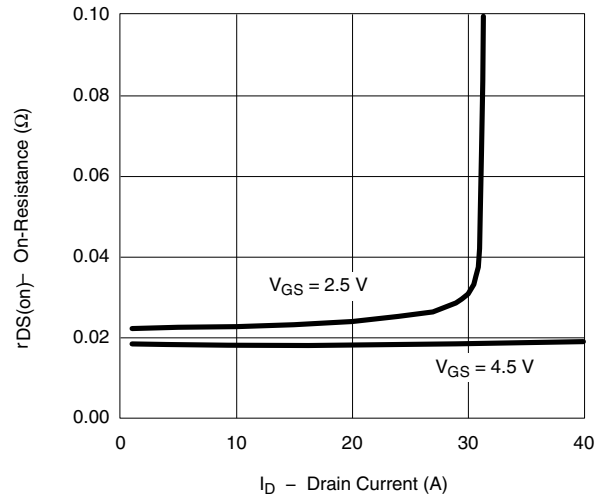
N-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless noted



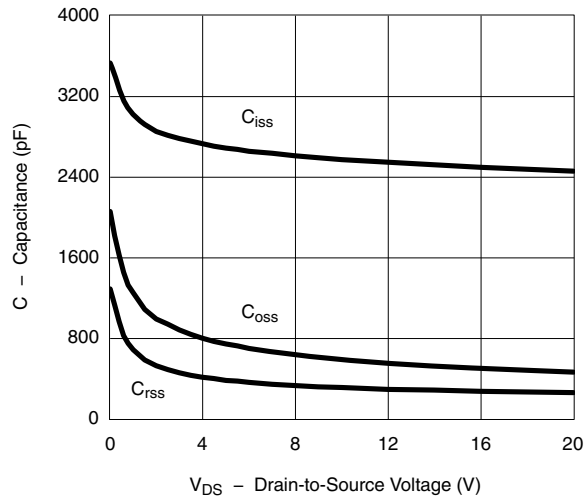
Output Characteristics



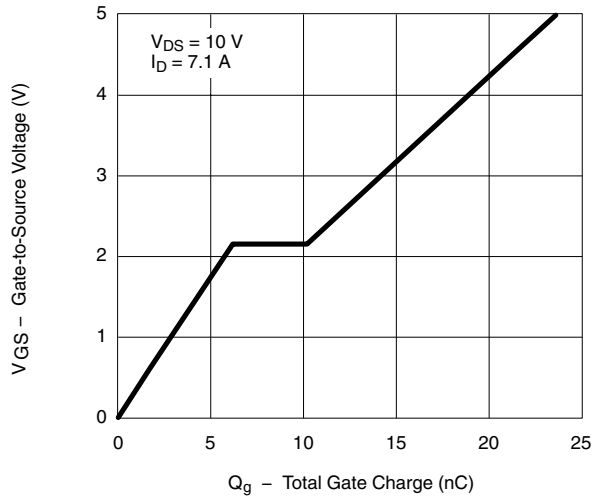
Transfer Characteristics



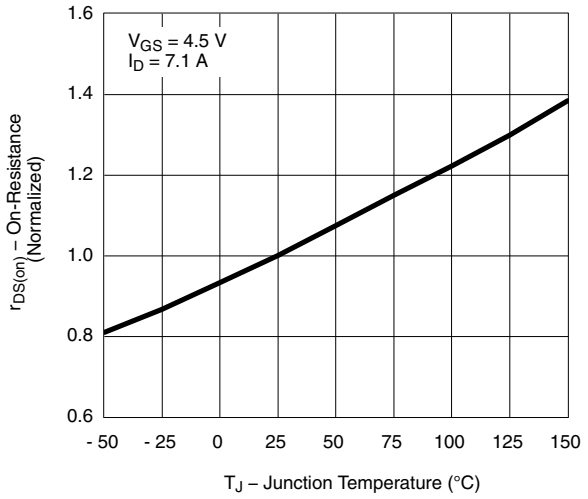
On-Resistance vs. Drain Current



Capacitance

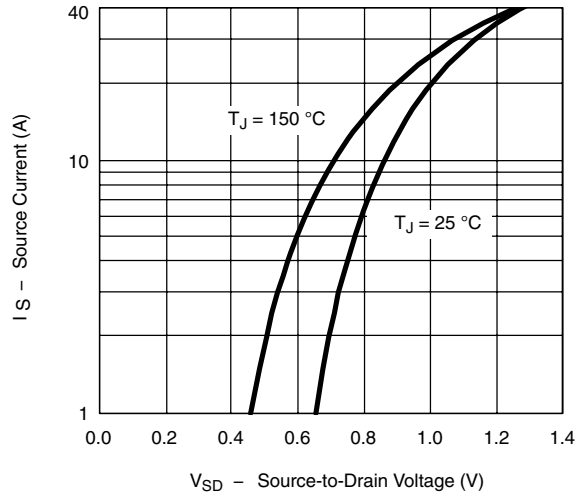


Gate Charge

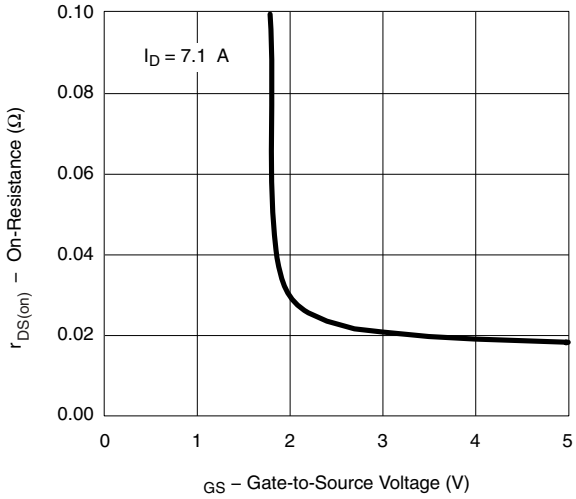


On-Resistance vs. Junction Temperature

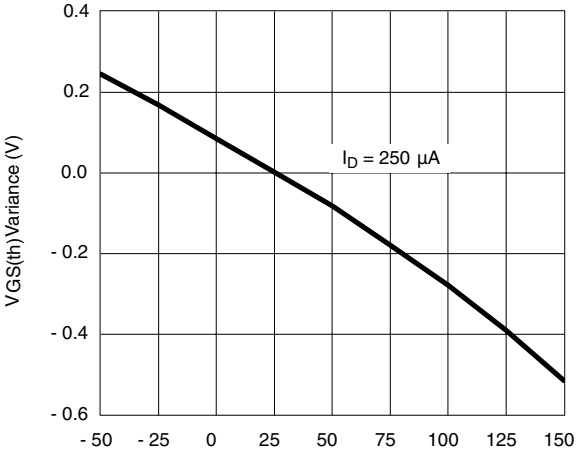
N-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless noted



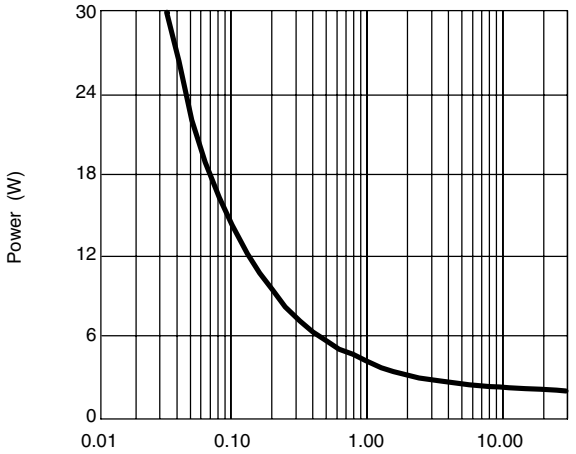
Source-Drain Diode Forward Voltage



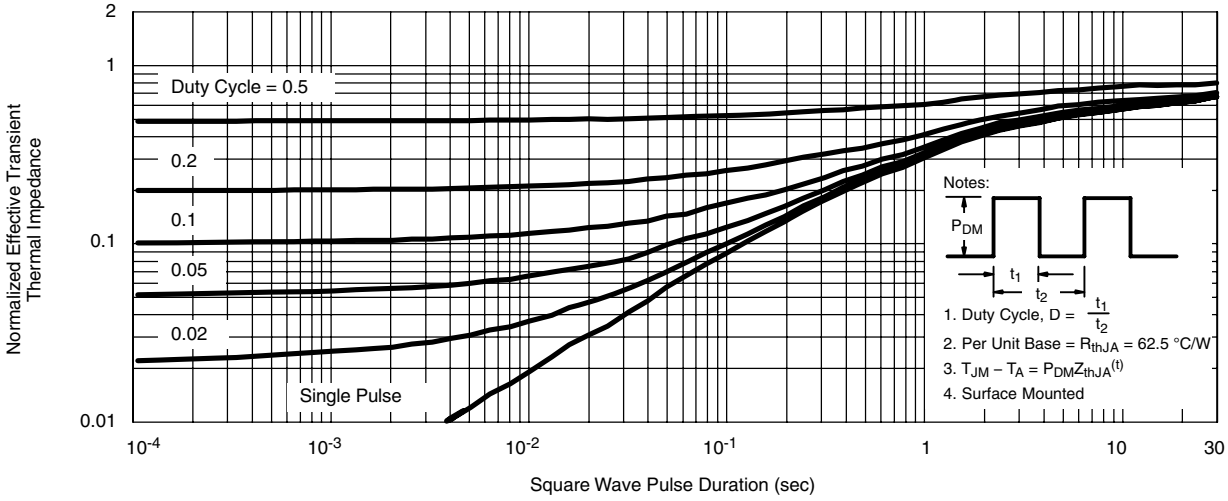
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

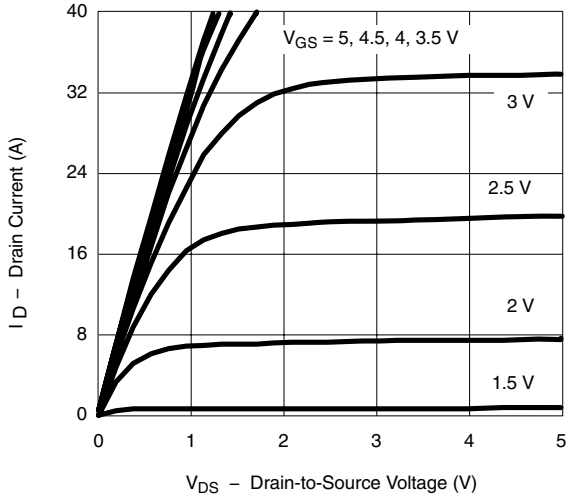


Single Pulse Power

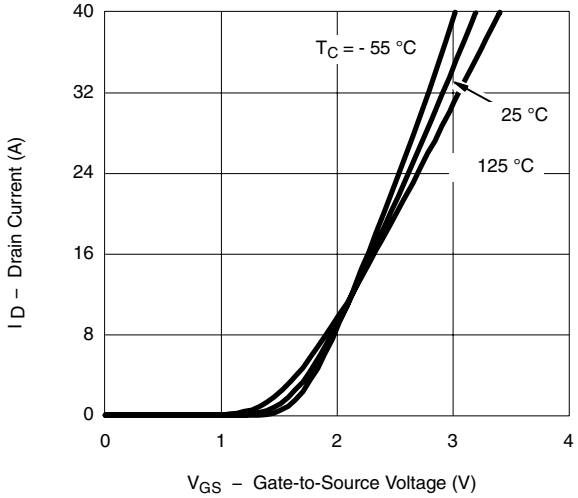


Normalized Thermal Transient Impedance, Junction-to-Ambient

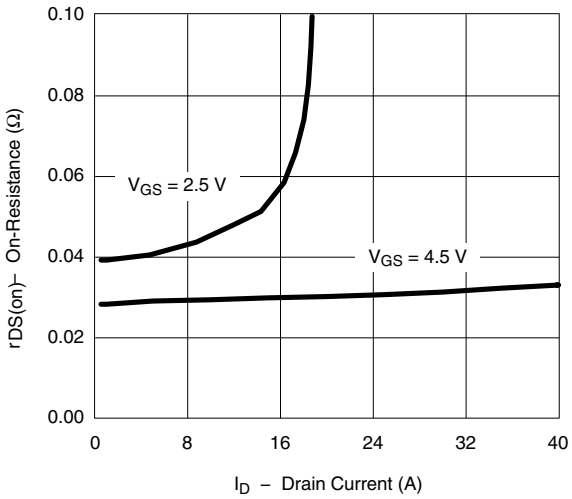
P-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless noted



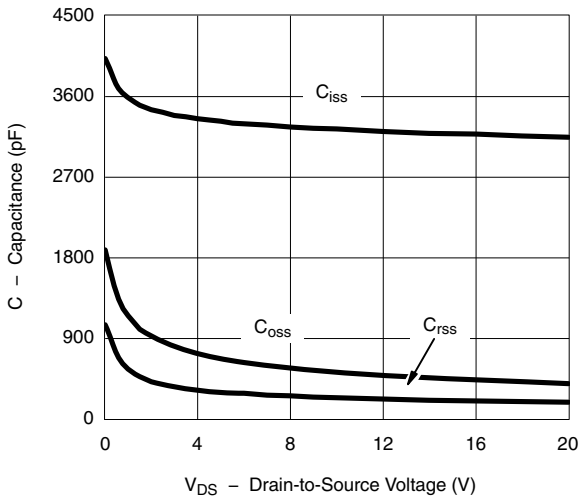
Output Characteristics



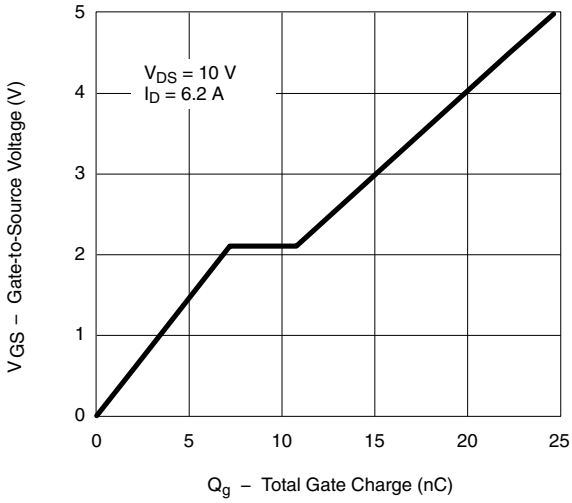
Transfer Characteristics



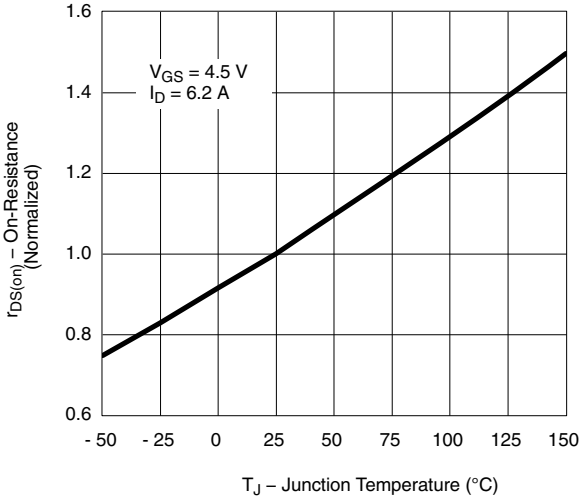
On-Resistance vs. Drain Current



Capacitance

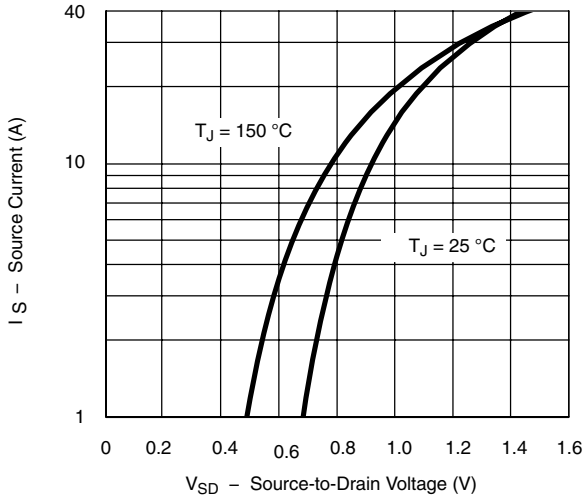


Gate Charge

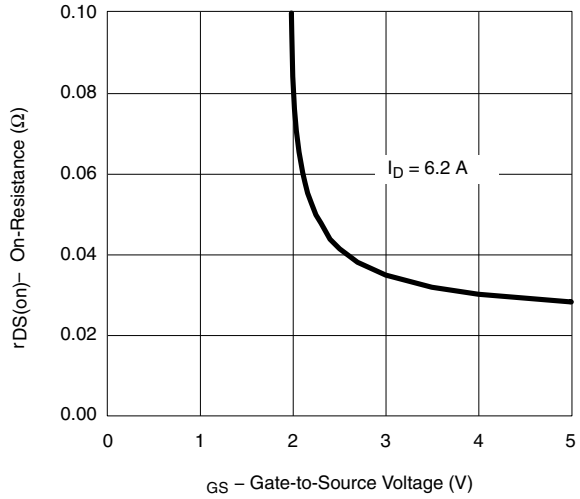


On-Resistance vs. Junction Temperature

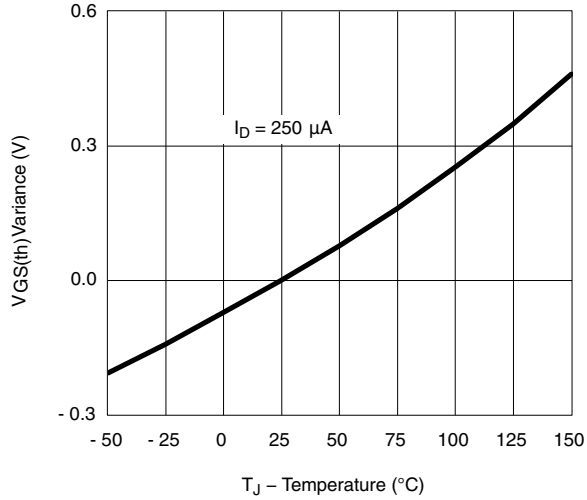
P-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless noted



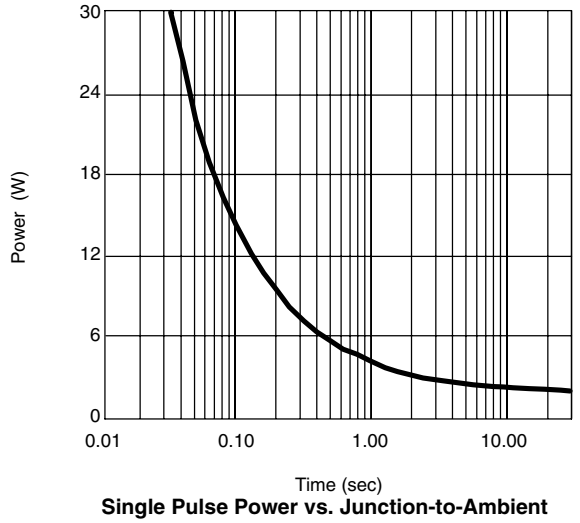
Source-Drain Diode Forward Voltage



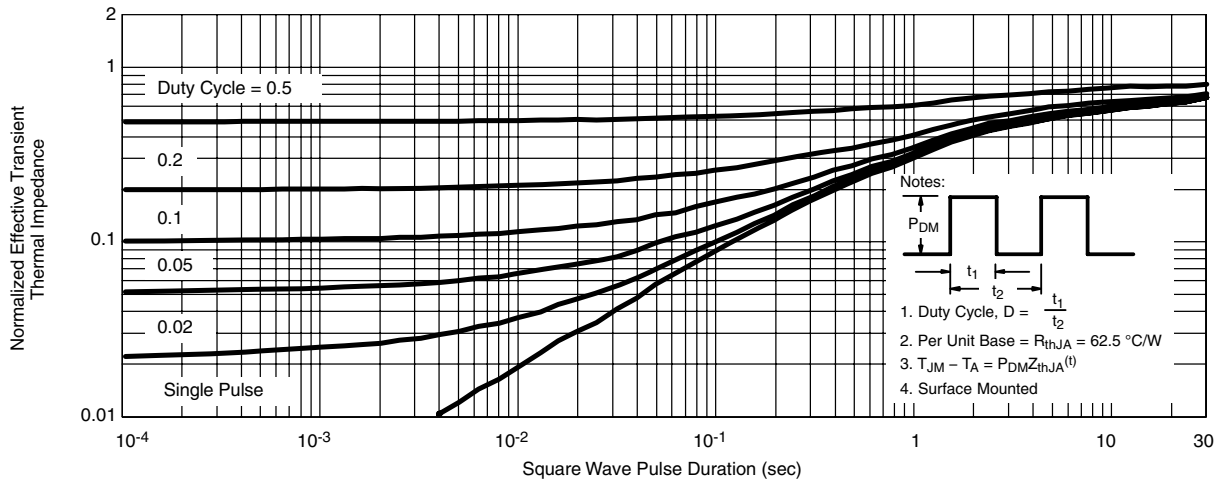
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power vs. Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

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