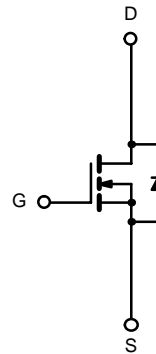
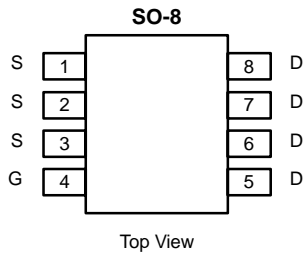




N-Channel 20-V (D-S) MOSFET

TrenchFET®
Power MOSFETs
2.5-V Rated

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.005 @ $V_{GS} = 4.5$ V	21
	0.0075 @ $V_{GS} = 2.5$ V	17



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	21	14	A
	$T_A = 85^\circ\text{C}$		15	10	
Pulsed Drain Current		I_{DM}	50		
Avalanche Current		I_{AS}	42		
Single Avalanche Energy		E_{AS}	88		mJ
Continuous Source Current (Diode Conduction) ^a		I_S	3	1.3	mS
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	3.6	1.6	W
	$T_A = 85^\circ\text{C}$		1.9	0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	29	35	$^\circ\text{C/W}$
	Steady State		67	80	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	13	16	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.



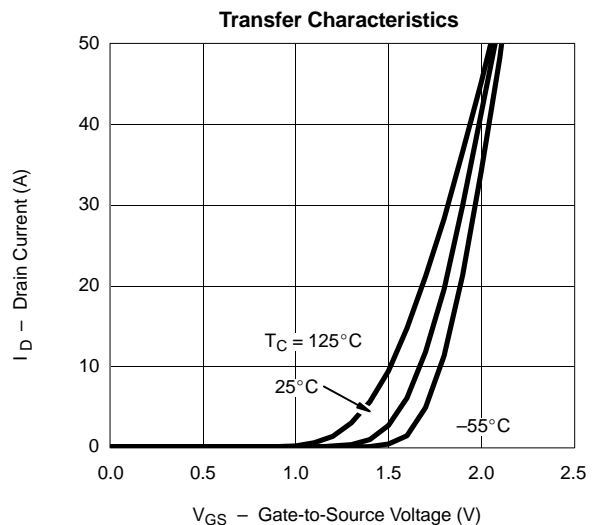
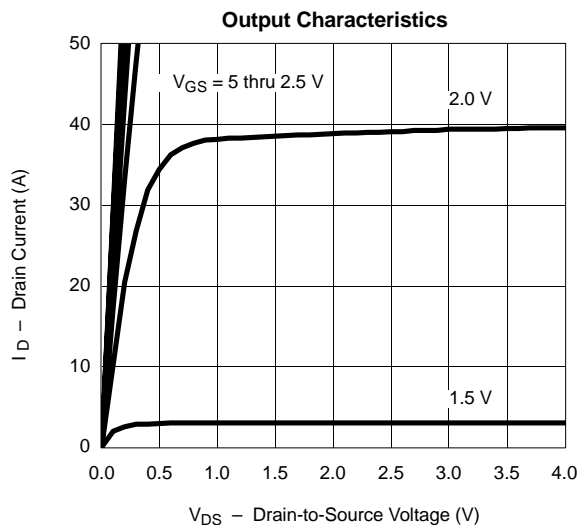
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

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} = 16 V, V _{GS} = 0 V			1	μA
		V _{DS} = 16 V, V _{GS} = 0 V, T _J = 85 °C			20	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 4.5 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 21 A		0.0037	0.005	Ω
		V _{GS} = 2.5 V, I _D = 17 A		0.0058	0.0075	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 21 A		17		S
Diode Forward Voltage ^a	V _{SD}	I _S = 3 A, V _{GS} = 0 V		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 21 A		55	80	nC
Gate-Source Charge	Q _{gs}			13		
Gate-Drain Charge	Q _{gd}			11		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 10 V, R _L = 10 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		40	60	ns
Rise Time	t _r			30	45	
Turn-Off Delay Time	t _{d(off)}			175	260	
Fall Time	t _f			70	105	
Gate Resistance	R _g	V _{GS} = 0.1 V, f = 10 MHz		2.7		Ω
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3 A, di/dt = 100 A/μs		56	85	ns

Notes

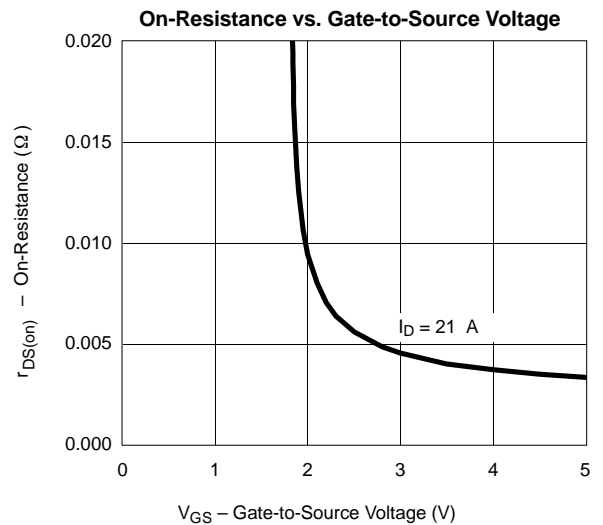
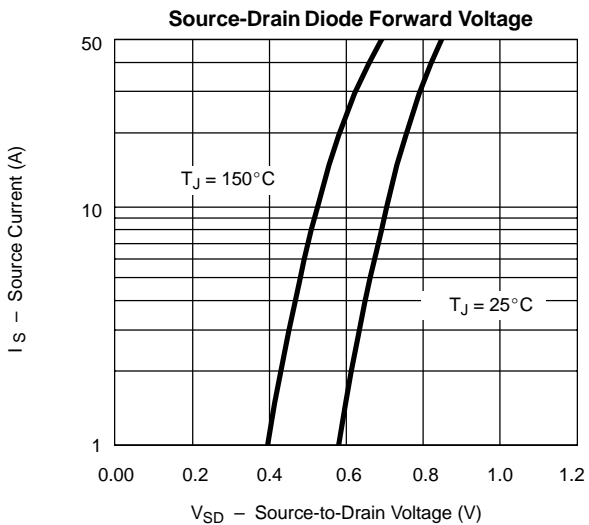
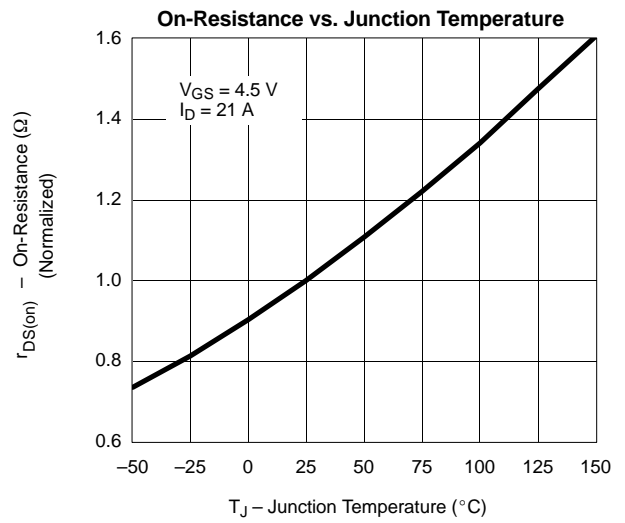
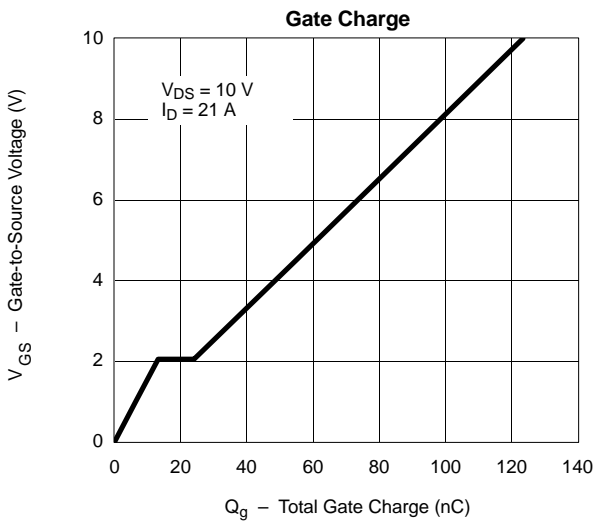
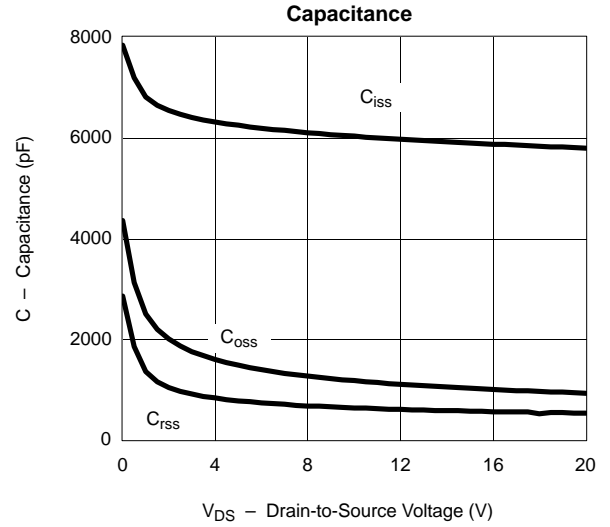
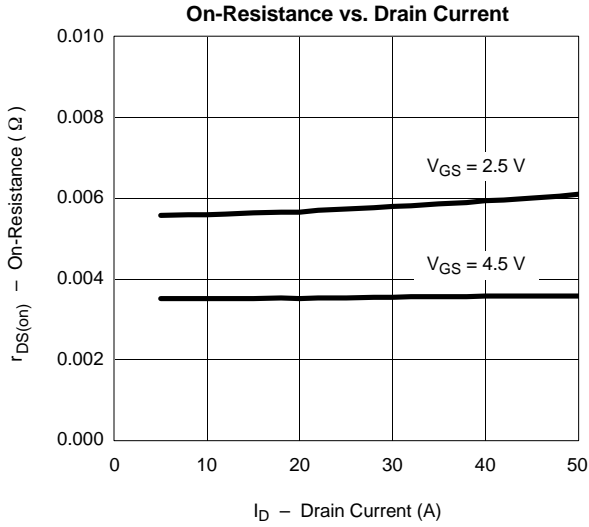
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



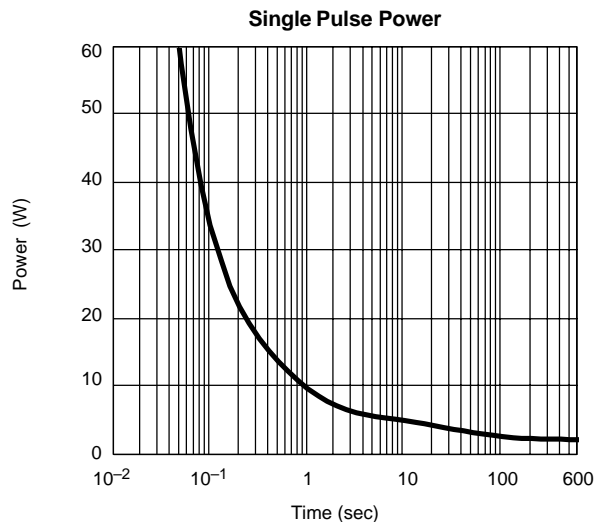
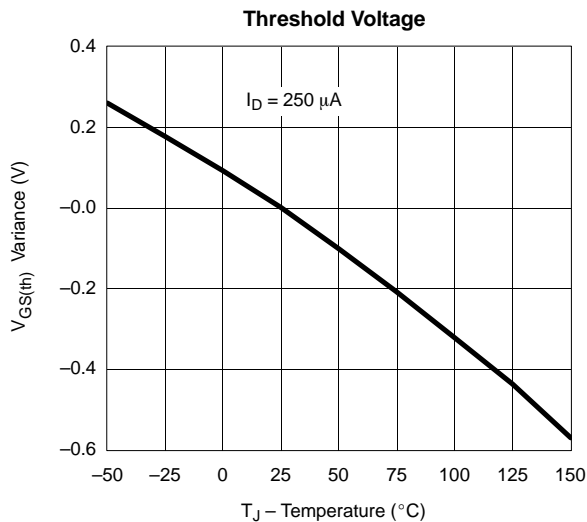


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

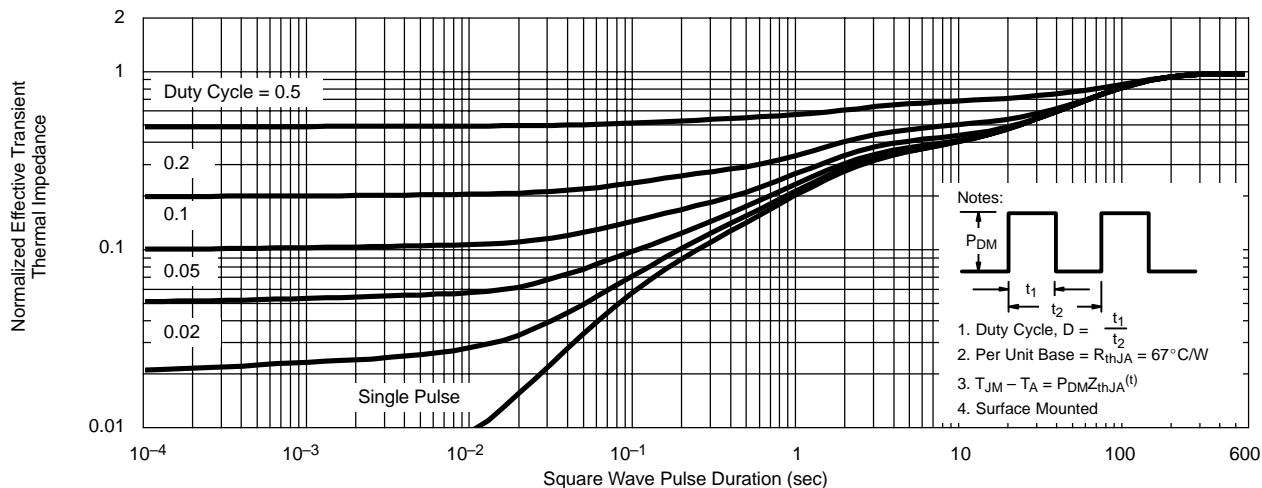




TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

