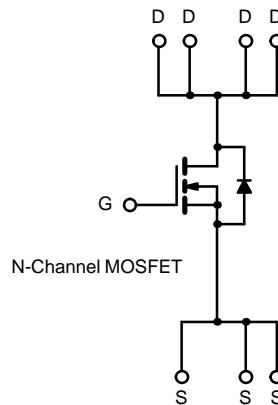
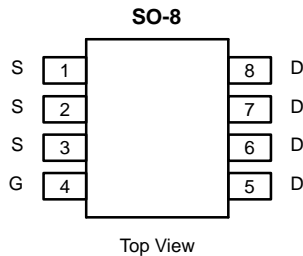




## N-Channel Reduced $Q_g$ , Fast Switching MOSFET

**TrenchFET<sup>®</sup>**  
Power MOSFETs  
**High-Efficiency**  
PWM Optimized

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.0085 @ $V_{GS} = 10$ V	$\pm 13$
	0.014 @ $V_{GS} = 4.5$ V	$\pm 10$



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 25$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a, b</sup>	$I_D$	$T_A = 25^\circ\text{C}$	$\pm 13$
		$T_A = 70^\circ\text{C}$	$\pm 10$
Pulsed Drain Current (10 $\mu\text{s}$ Pulse Width)	$I_{DM}$	$\pm 50$	A
Continuous Source Current (Diode Conduction) <sup>a, b</sup>	$I_S$	2.3	
Maximum Power Dissipation <sup>a, b</sup>	$P_D$	$T_A = 25^\circ\text{C}$	2.5
		$T_A = 70^\circ\text{C}$	1.6
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 (MOSFET) <sup>a</sup>	$R_{thJA}$		50	$^\circ\text{C}/\text{W}$	
		Steady State	70		

Notes

- a. Surface Mounted on FR4 Board.
- b.  $t \leq 10$  sec.



MOSFET SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.8			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24\ \text{V}, V_{GS} = 0\ \text{V}$			1	$\mu\text{A}$
		$V_{DS} = 24\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$			5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}, V_{GS} = 10\ \text{V}$	40			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 13\ \text{A}$		0.0069	0.0085	$\Omega$
		$V_{GS} = 4.5\ \text{V}, I_D = 10\ \text{A}$		0.0115	0.014	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 15\ \text{V}, I_D = 13\ \text{A}$		26		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = 2.3\ \text{A}, V_{GS} = 0\ \text{V}$		0.70	1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15\ \text{V}, V_{GS} = 5.0\ \text{V}, I_D = 13\ \text{A}$		19.5	25	nC
Gate-Source Charge	$Q_{gs}$			4.2		
Gate-Drain Charge	$Q_{gd}$			8.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_G = 6\ \Omega$		14	22	ns
Rise Time	$t_r$			9	15	
Turn-Off Delay Time	$t_{d(off)}$			46	70	
Fall Time	$t_f$			30	45	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 2.3\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		35	70	

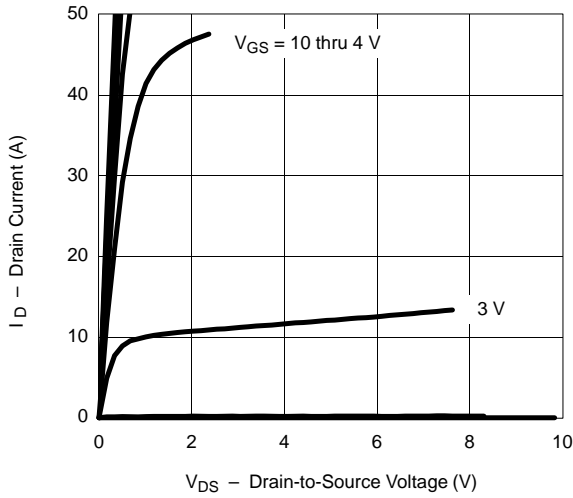
## Notes

- Pulse test; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

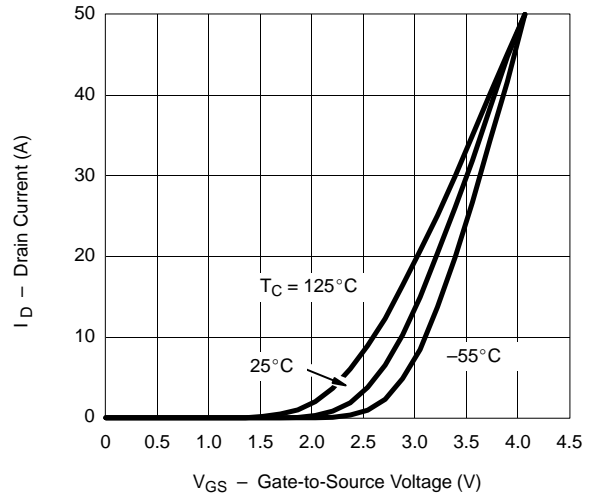


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

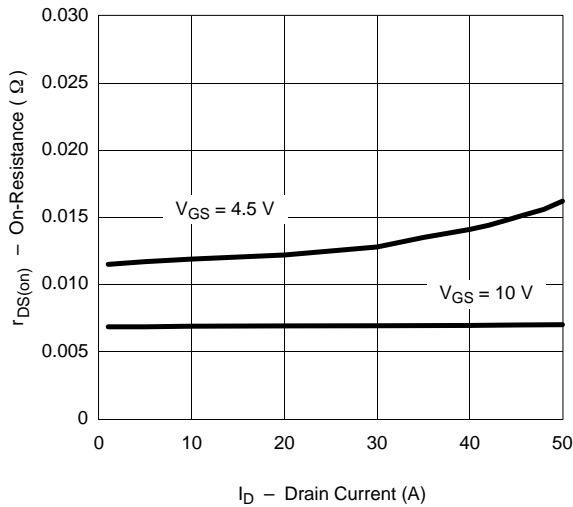
Output Characteristics



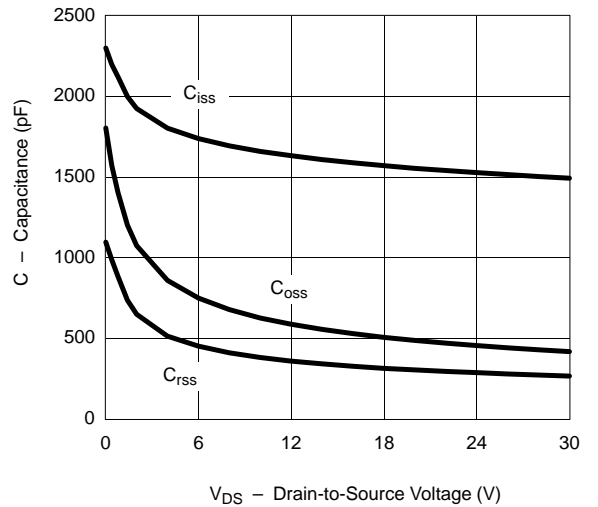
Transfer Characteristics



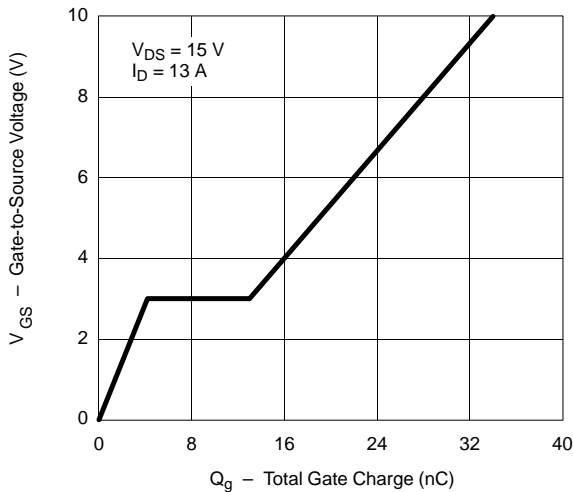
On-Resistance vs. Drain Current



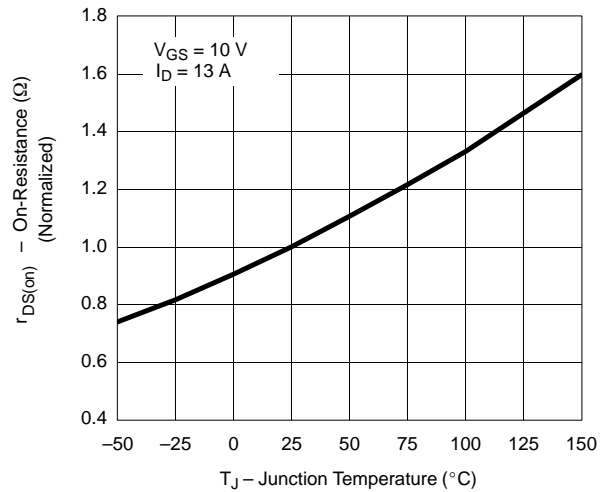
Capacitance



Gate Charge



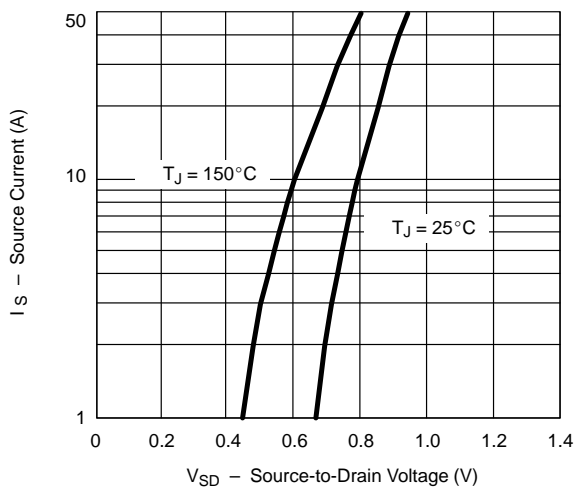
On-Resistance vs. Junction Temperature



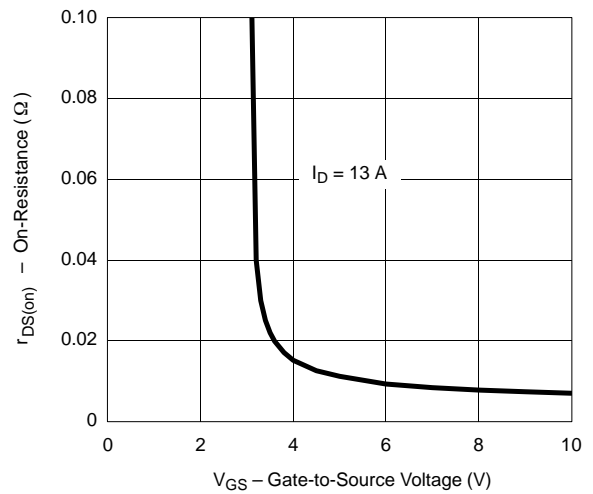


### TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

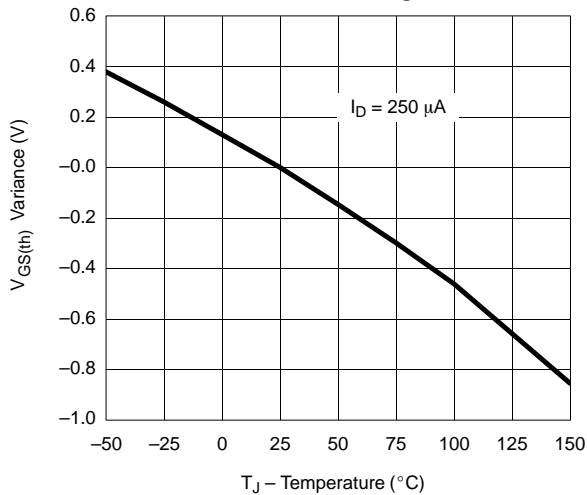
Source-Drain Diode Forward Voltage



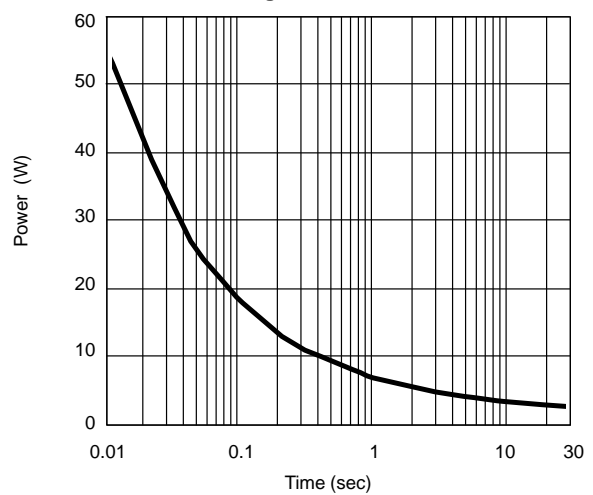
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

