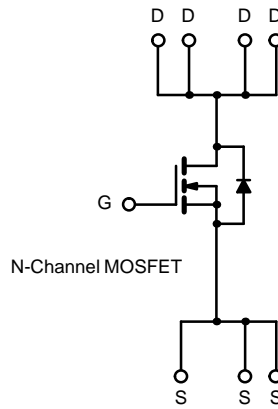
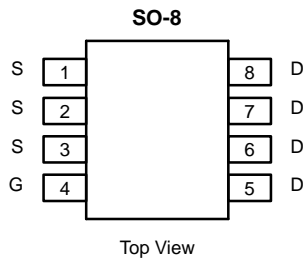




## N-Channel Reduced $Q_g$ , Fast Switching MOSFET

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.012 @ $V_{GS} = 10$ V	$\pm 11$
	0.020 @ $V_{GS} = 4.5$ V	$\pm 9$

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



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>	$T_A = 25^\circ\text{C}$	$I_D$	$\pm 11$	A
	$T_A = 70^\circ\text{C}$		$\pm 9$	
Pulsed Drain Current (10 $\mu\text{s}$ Pulse Width)		$I_{DM}$	$\pm 50$	
Continuous Source Current (Diode Conduction) <sup>a, b</sup>		$I_S$	2.3	
Maximum Power Dissipation <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$P_D$	2.5	W
	$T_A = 70^\circ\text{C}$		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>	$t \leq 10$ sec	$R_{thJA}$		50	$^\circ\text{C/W}$
	Steady State		70		

Notes

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



<b>MOSFET SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.8			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			5	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 10 V	40			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 11 A		0.0098	0.012	Ω
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 9 A		0.0164	0.020	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 11 A		21		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 2.3 A, V <sub>GS</sub> = 0 V		0.71	1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 5.0 V, I <sub>D</sub> = 11 A		14.2	20	nC
Gate-Source Charge	Q <sub>gs</sub>			3.3		
Gate-Drain Charge	Q <sub>gd</sub>			6.6		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15 V, R <sub>L</sub> = 15 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω		13	20	ns
Rise Time	t <sub>r</sub>			8.5	15	
Turn-Off Delay Time	t <sub>d(off)</sub>			35	53	
Fall Time	t <sub>f</sub>			17	26	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 2.3 A, di/dt = 100 A/μs		35	70	

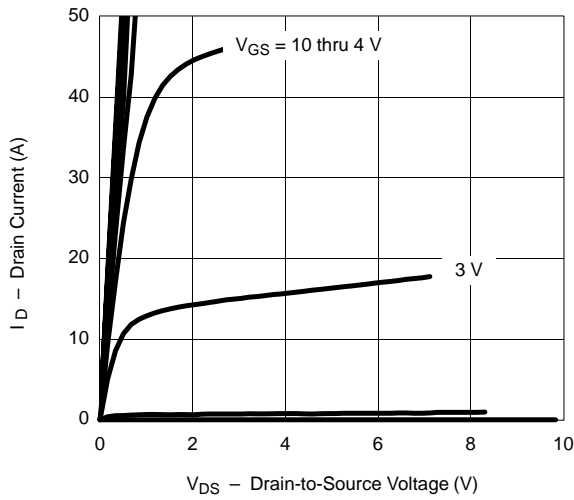
Notes

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

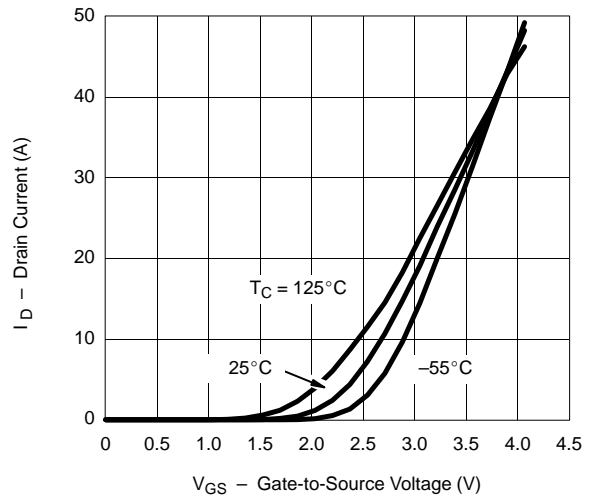


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

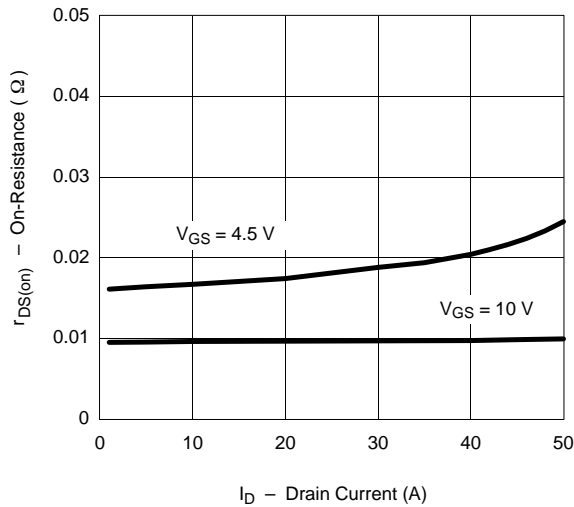
**Output Characteristics**



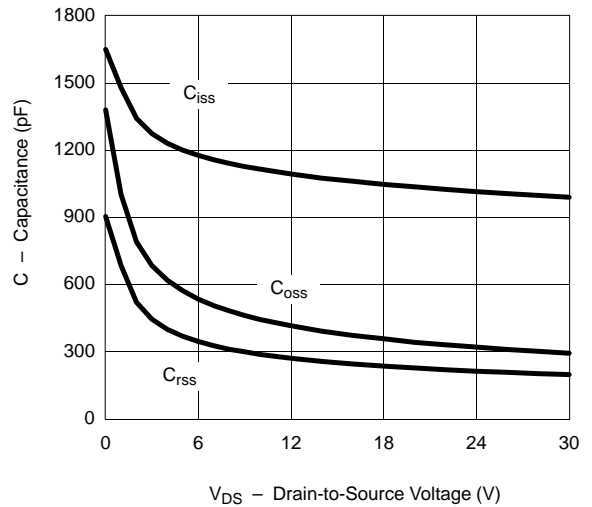
**Transfer Characteristics**



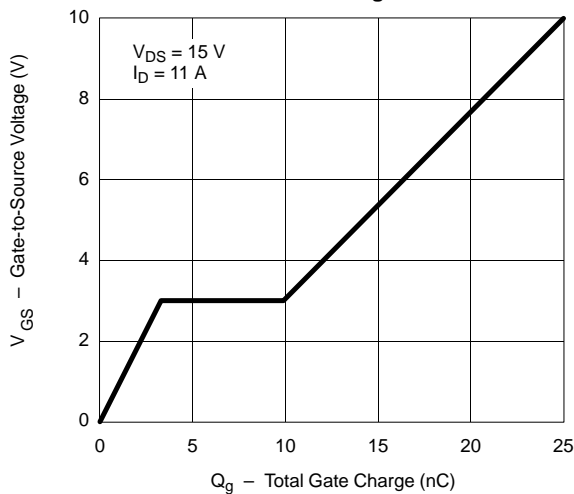
**On-Resistance vs. Drain Current**



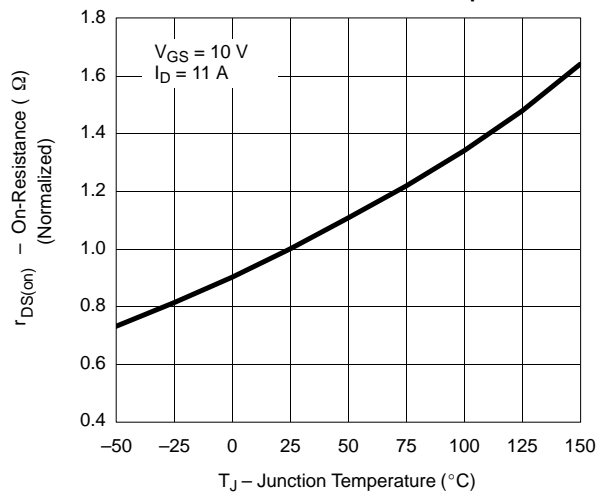
**Capacitance**



**Gate Charge**

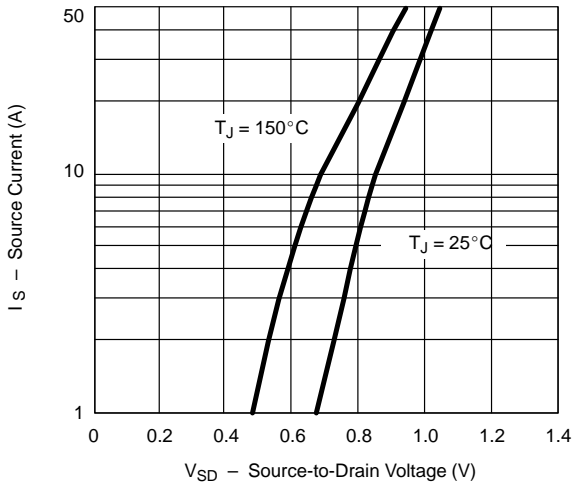


**On-Resistance vs. Junction Temperature**

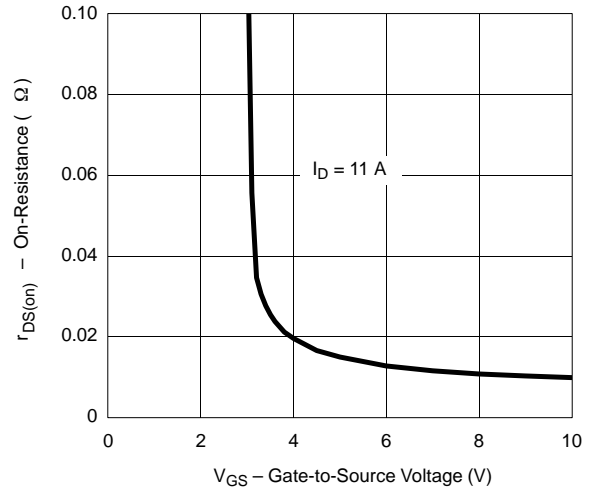


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

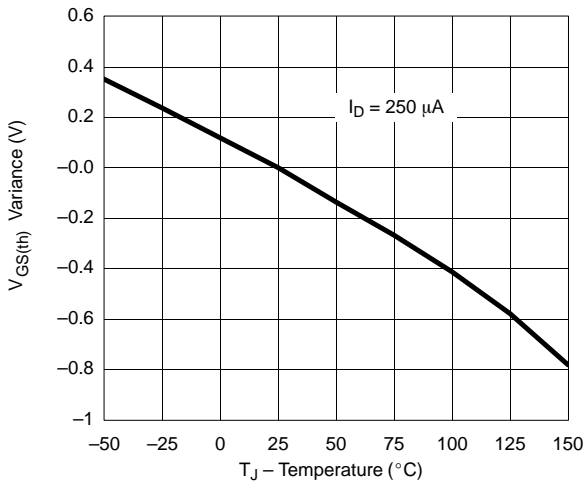
**Source-Drain Diode Forward Voltage**



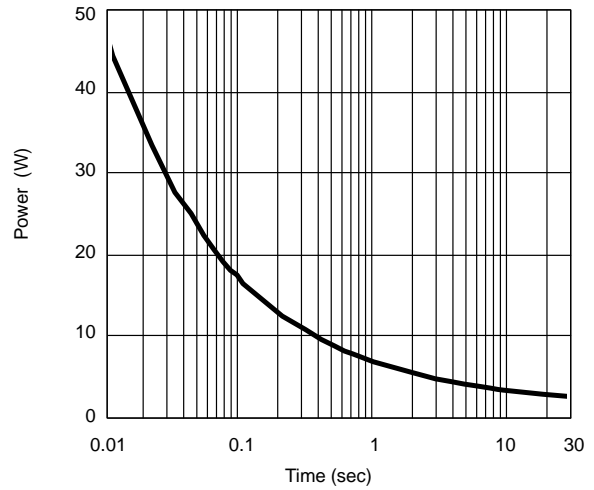
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**



**Single Pulse Power**



**Normalized Thermal Transient Impedance, Junction-to-Ambient**

