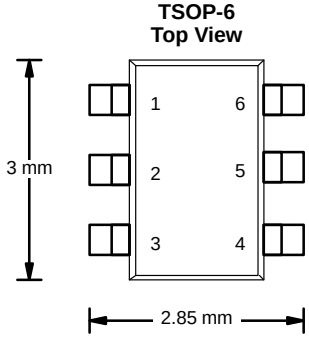
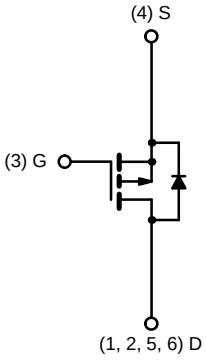
P-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–60	0.220 @ V_{GS} = –10 V	±2.2
	0.310 @ V_{GS} = –4.5 V	±1.9

TrenchFET® Power MOSFETs





P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	–60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (T_J = 150°C)[a, b]	T_A = 25°C	I_D	±2.2	A
	T_A = 70°C		±1.7	
Pulsed Drain Current		I_{DM}	±10	
Single Avalanche Current (L = 0.1 mH)		I_{AS}	–7	
Maximum Power Dissipation[a, b]	T_A = 25°C	P_D	2	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	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 5 sec	R_{thJA}		62.5	°C/W
	Steady State		106		
Maximum Junction-to-Lead	Steady State	R_{thJL}	35		

Notes
a. Surface Mounted on FR4 Board.
b. t ≤ 5 sec

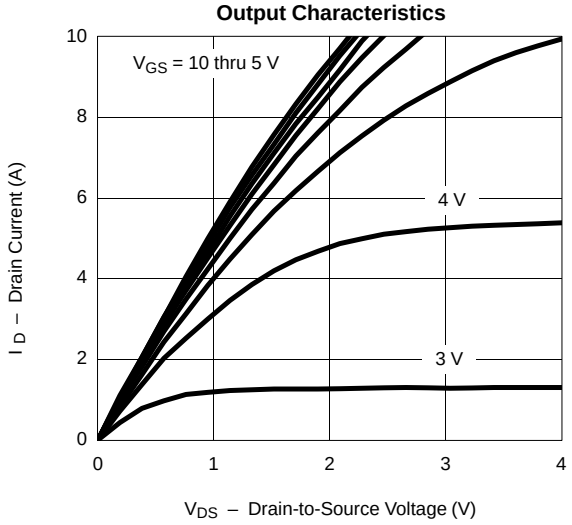
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{DS} = 0 V, I_D = –250 µA	–60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –250 µA	–1			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –48 V, V_{GS} = 0 V			–1	µA
		V_{DS} = –48 V, V_{GS} = 0 V, T_J = 150°C			–50	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = –5 V, V_{GS} = –10 V	–10			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = –10 V, I_D = –2.2 A		0.190	0.220	Ω
		V_{GS} = –4.5 V, I_D = –1.9 A		0.265	0.310	
Forward Transconductance[a]	g_{fs}	V_{DS} = –4.5 V, I_D = –2.2 A		4		S
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = –30 V, V_{GS} = –10 V, I_D = –2.2 A		7	14	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			1.2		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = –30 V, R_L = 30 Ω I_D ≅ –1 A, V_{GEN} = –10 V, R_G = 6 Ω		8	16	ns
Rise Time	t_r			12	24	
Turn-Off Delay Time	$t_{d(off)}$			23	45	
Fall Time	t_f			12	25	
Source-Drain Rating Characteristics[b]						
Continuous Current	I_S				–1.7	A
Pulsed Current	I_{SM}				–10	
Diode Forward Voltage[a]	V_{SD}	I_S = –1.7 A, V_{GS} = 0 V		–0.8	–1.2	V
Source-Drain Reverse Recovery Time	t_{rr}	I_F = –1.7 A, di/dt = 100 A/µs		50	90	ns

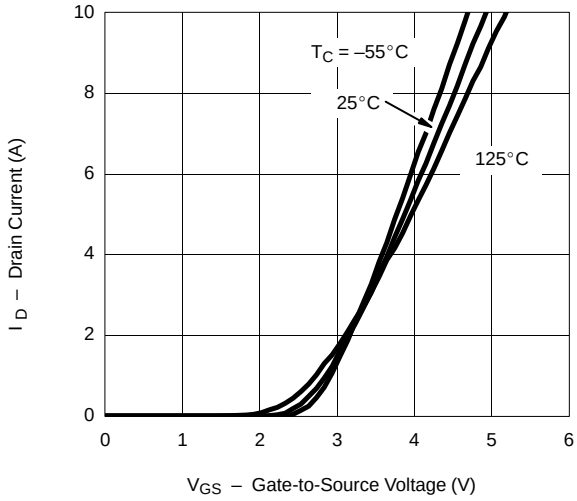
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

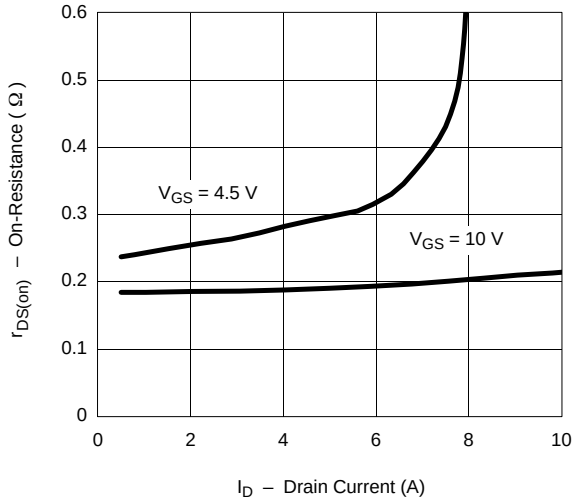
Output Characteristics



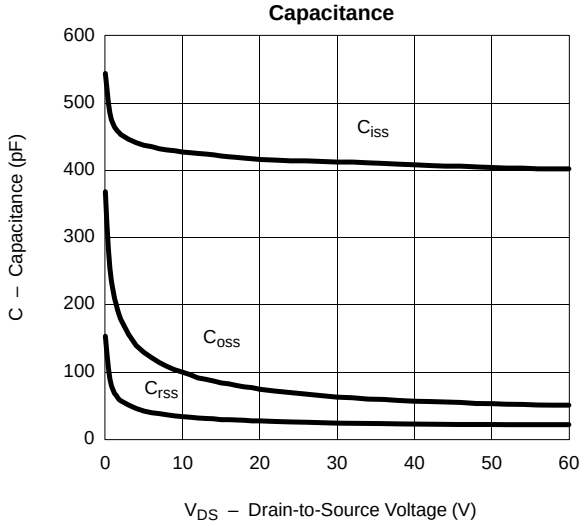
Transfer Characteristics



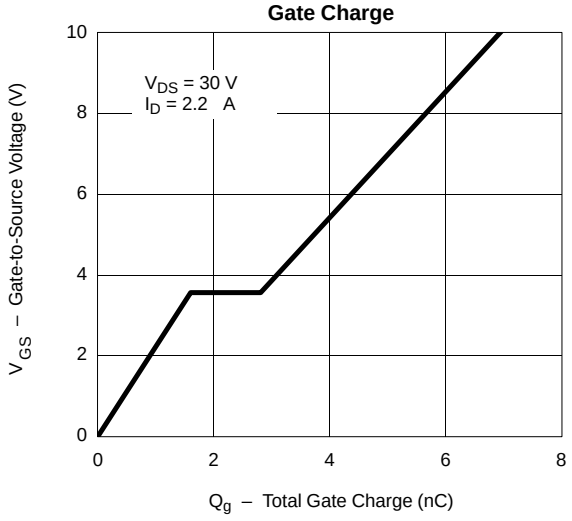
On-Resistance vs. Drain Current



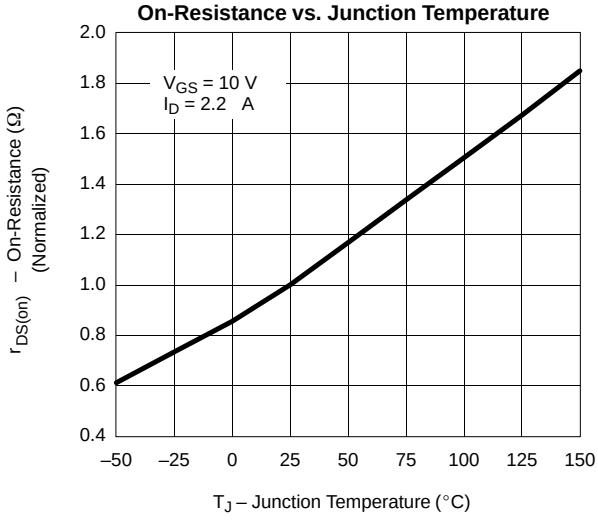
Capacitance



Gate Charge

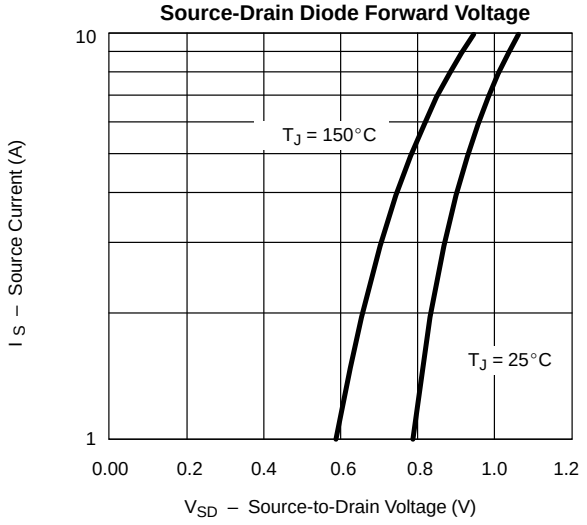


On-Resistance vs. Junction Temperature

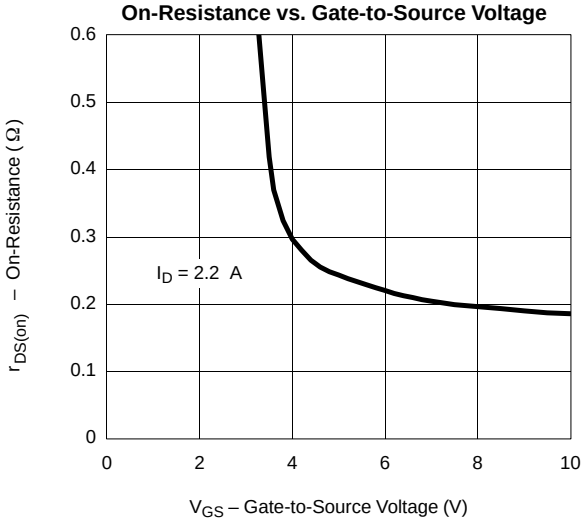


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

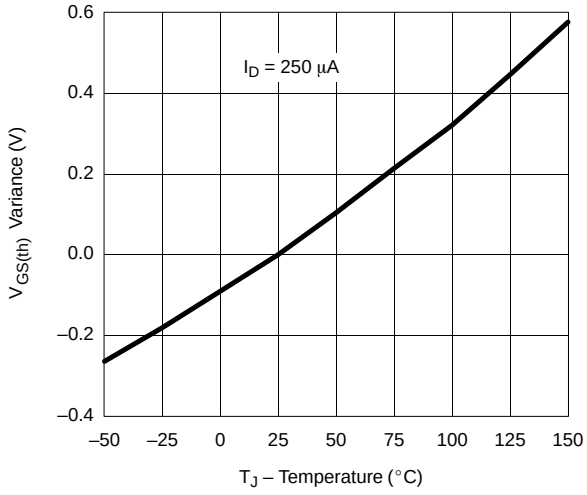
Source-Drain Diode Forward Voltage



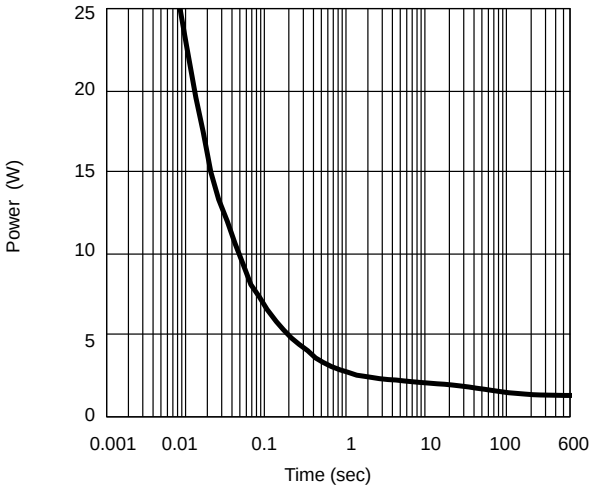
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient