P-Channel 1.8-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–20	0.017 @ V_{GS} = –4.5 V	–9
	0.023 @ V_{GS} = –2.5 V	–7
	0.032 @ V_{GS} = –1.8 V	–6

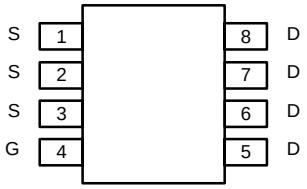
FEATURES

- TrenchFET® Power MOSFETS

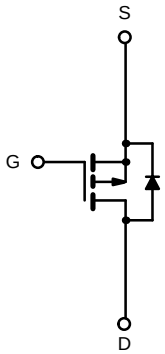
APPLICATIONS

- Load Switch
  - Game Stations
  - Notebooks
  - Desktops

SO-8



Top View



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	–20		V
Gate-Source Voltage		V_{GS}	±8		V
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	–9	–6.5	A
	T_A = 70°C		–7	–5.0	
Pulsed Drain Current		I_{DM}	–30		A
continuous Source Current (Diode Conduction)[a]		I_S	–2.1	–1.3	A
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.5	1.35	W
	T_A = 70°C		1.6	0.87	
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 ≤ 10 sec	R_{thJA}	38	50	°C/W
	Steady State		71	92	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	19	25	°C/W

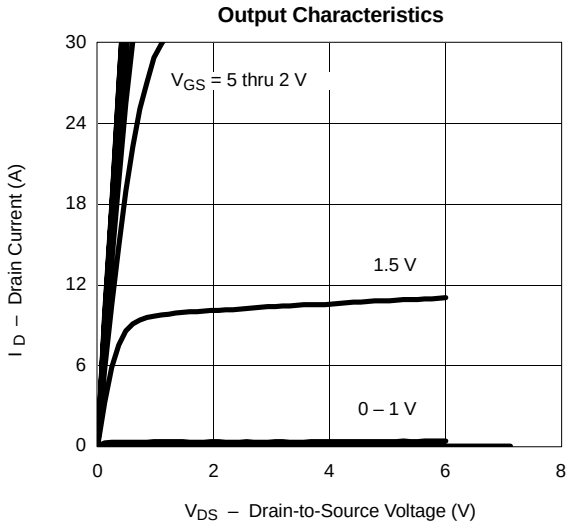
Notes
a Surface Mounted on 1” x 1” FR4 Board.

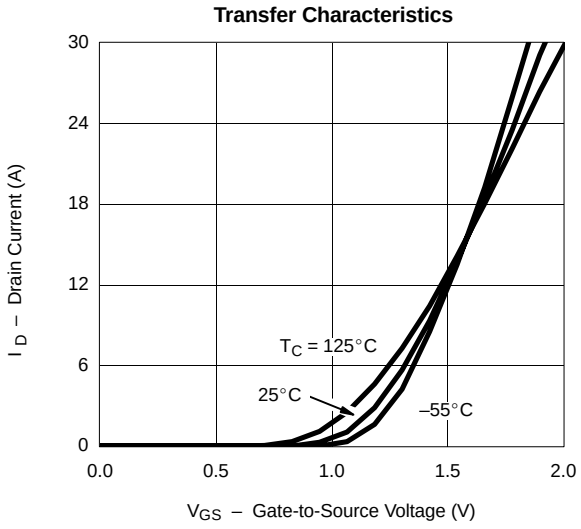
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250$ µA	–0.45			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 8$ 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, $T_J = 70$°C			–10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} –5 V, $V_{GS} = -4.5$ V	20			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	$V_{GS} = -4.5$ V, $I_D = -7.4$ A		0.014	0.017	Ω
		$V_{GS} = -2.5$ V, $I_D = -6.3$ A		0.018	0.023	
		$V_{GS} = -1.8$ V, $I_D = -5.5$ A		0.024	0.032	Ω
Forward Transconductance[a]	g_{fs}	$V_{DS} = -15$ V, $I_D = -7.4$ A		28		S
Diode Forward Voltage[a]	V_{SD}	$I_S = -1.3$ A, $V_{GS} = 0$ V		–0.64	–1.1	V
Dynamic[b]						
Total Gate Charge	Q_g	$V_{DS} = -10$ V, $V_{GS} = -5$ V, $I_D = -7.4$ A		30.5	50	nC
Gate-Source Charge	Q_{gs}			5.3		
Gate-Drain Charge	Q_{gd}			3.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10$ V, $R_L = 15$ Ω $I_D \cong -1$ A, $V_{GEN} = -4.5$ V, $R_G = 6$ Ω		30	50	ns
Rise Time	t_r			30	50	
Turn-Off Delay Time	$t_{d(off)}$			110	200	
Fall Time	t_f			65	110	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.3$ A, di/dt = 100 A/µs		45	80	

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

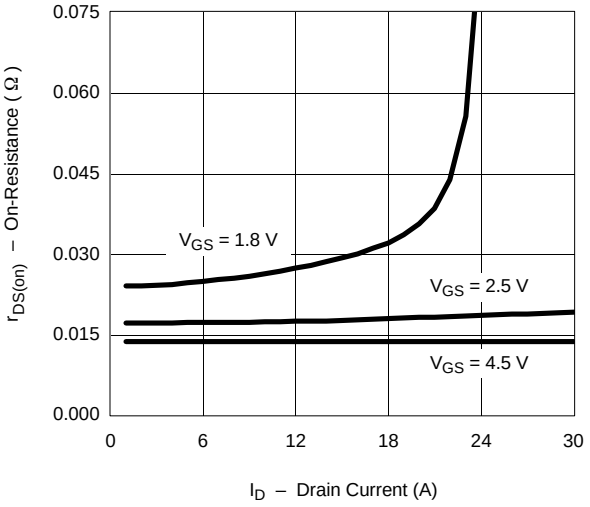
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



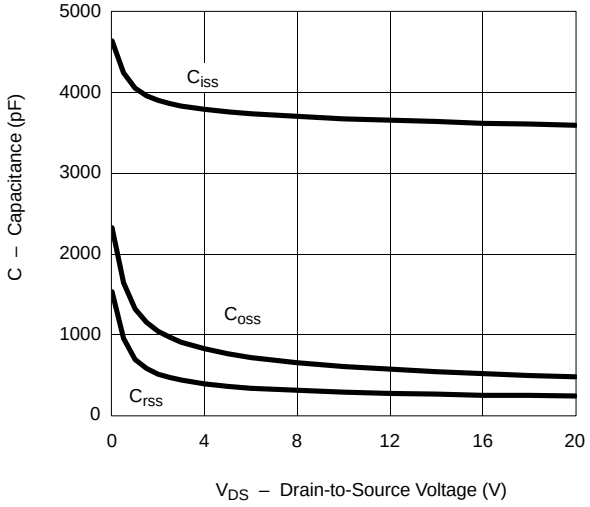


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

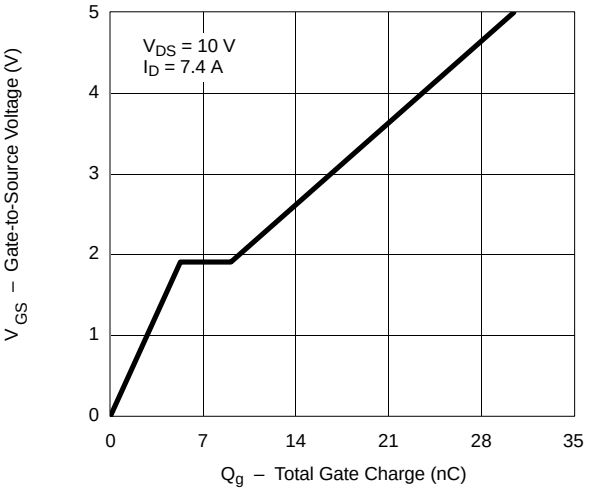
On-Resistance vs. Drain Current



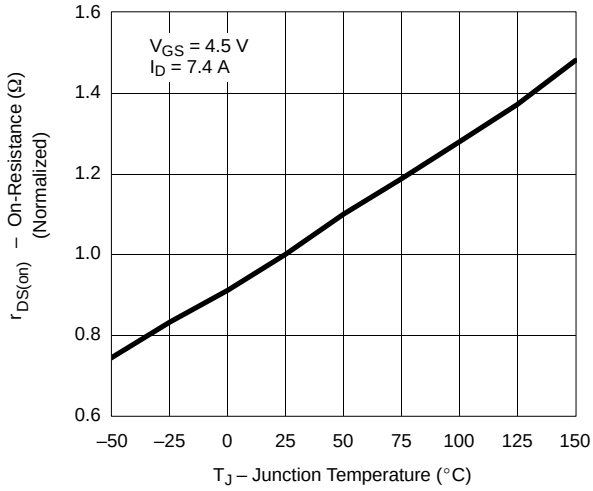
Capacitance



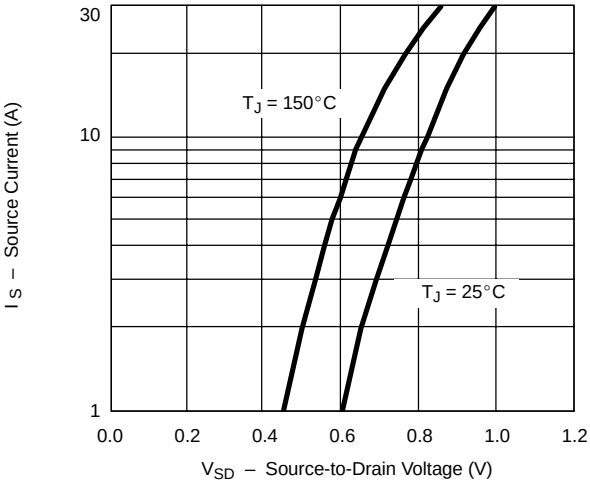
Gate Charge



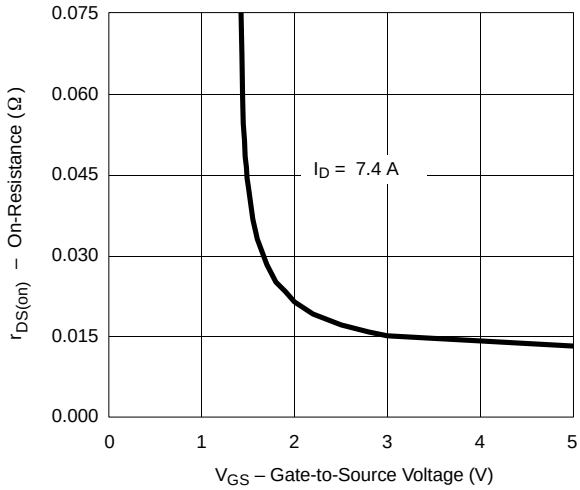
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

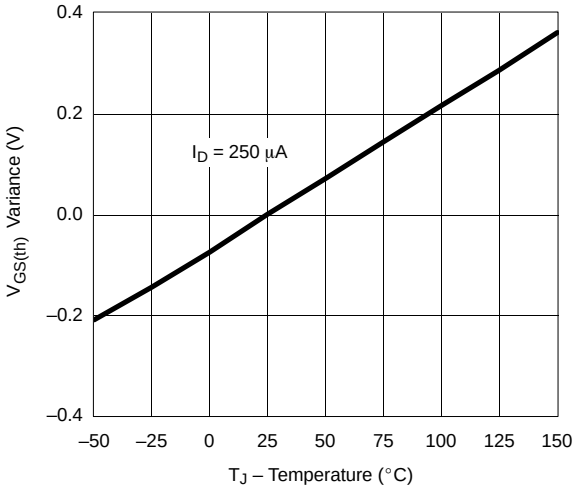


On-Resistance vs. Gate-to-Source Voltage

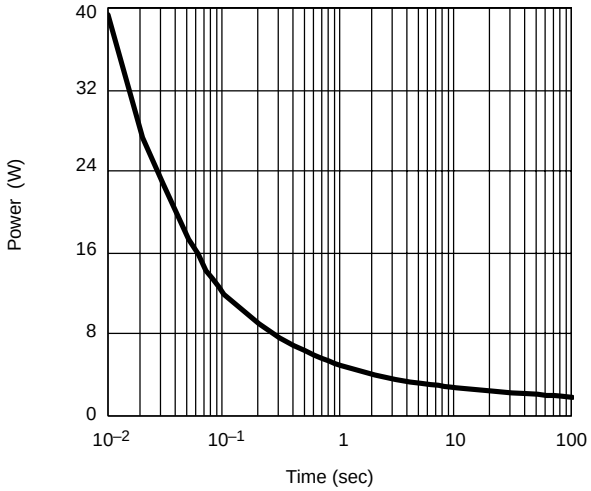


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

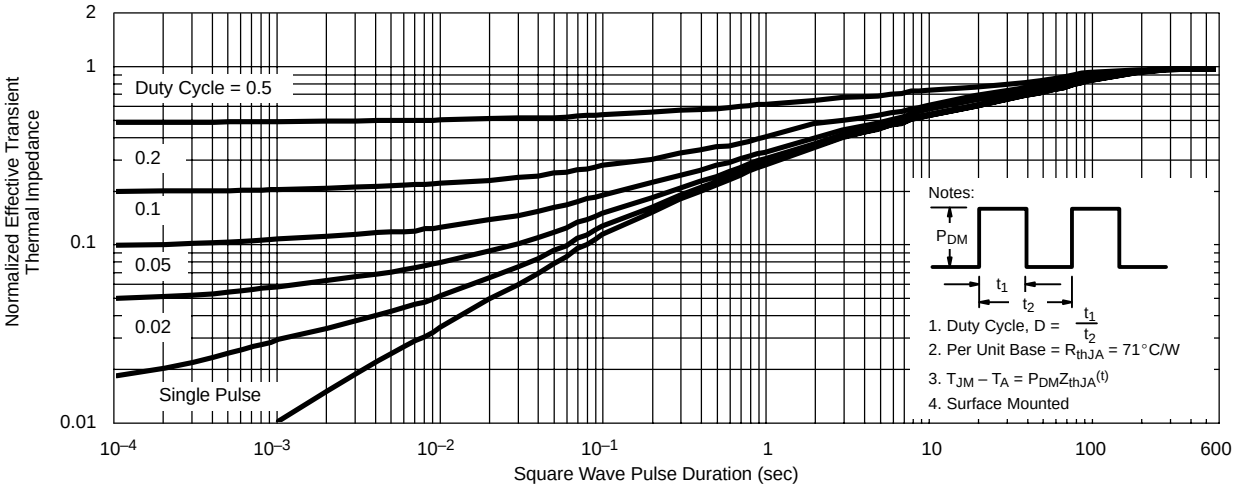
Threshold Voltage



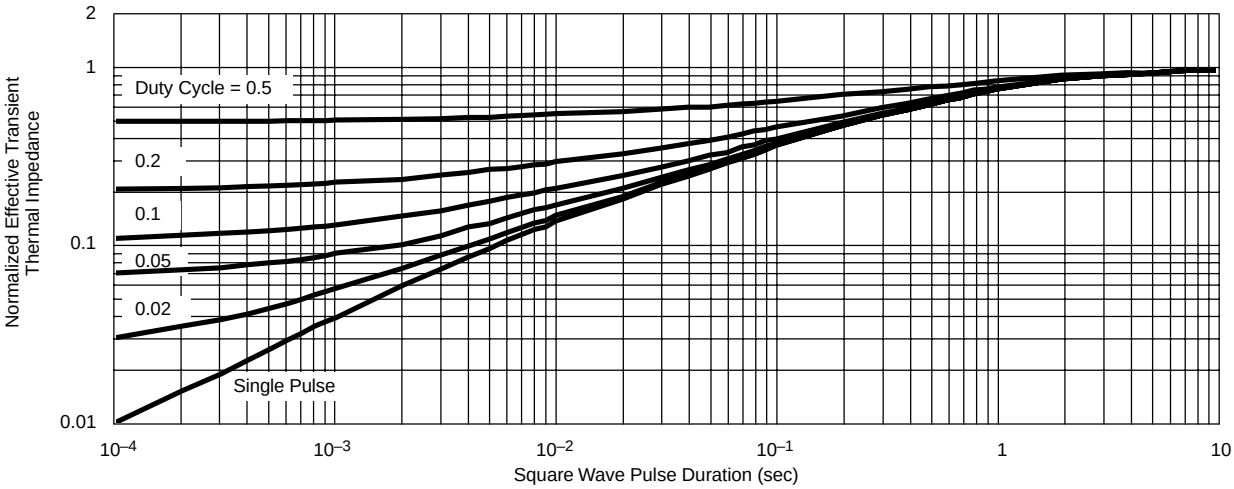
Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



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