



N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

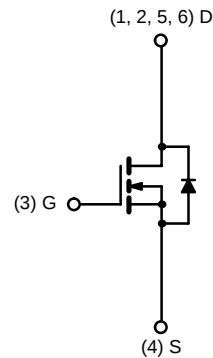
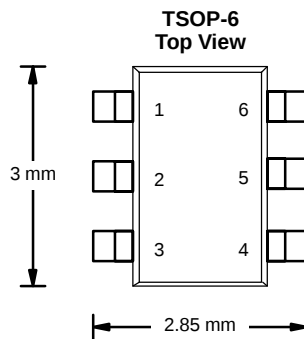
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.034 @ $V_{GS} = 4.5$ V	6.1
	0.050 @ $V_{GS} = 2.5$ V	5.0

FEATURES

- TrenchFET® Power MOSFET
- 2.5-V Rating for 30-V N-Channel
- Low $r_{DS(on)}$ for Footprint Area

APPLICATIONS

- Li-Ion Battery Protection



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	30		V
Gate-Source Voltage		V _{GS}	± 12		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25 °C	I _D	6.1	4.6	A
	T _A = 70 °C		4.9	3.6	
Pulsed Drain Current		I _{DM}	30		
Continuous Source Current (Diode Conduction) ^a		I _S	1.7	1.0	W
Maximum Power Dissipation ^a	T _A = 25 °C	P _D	2.0	1.14	
	T _A = 70 °C		1.3	0.73	
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	$t \leq 5$ sec	R_{thJA}	40	62.5	$^\circ\text{C/W}$
	Steady State		90	110	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	25	30	

Notes

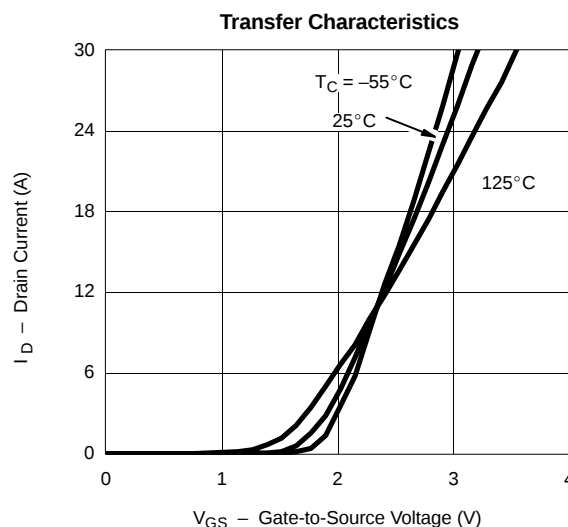
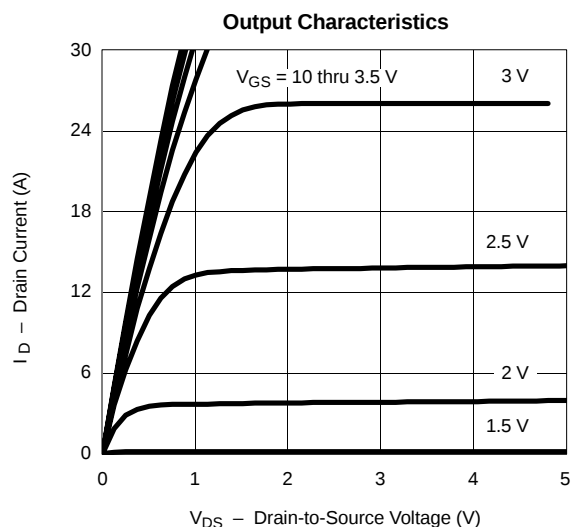
a. Surface Mounted on 1" x 1" FR4 Board.

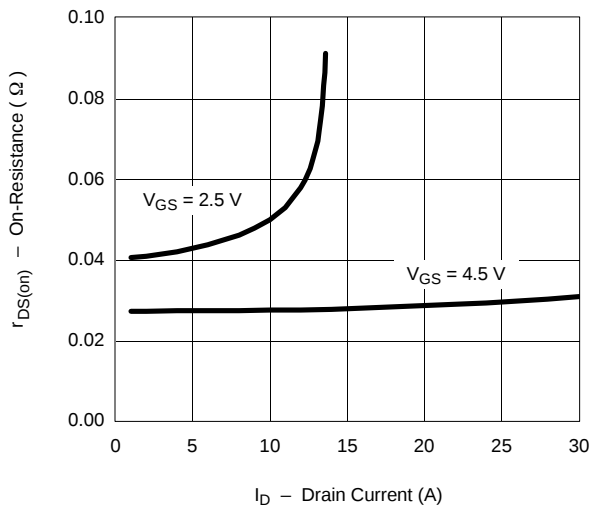
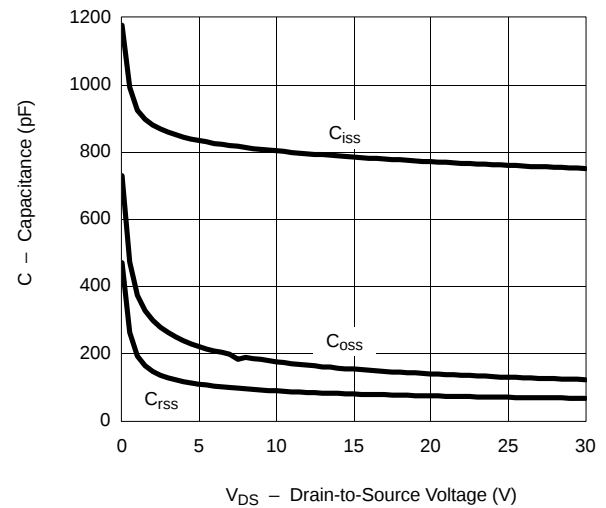
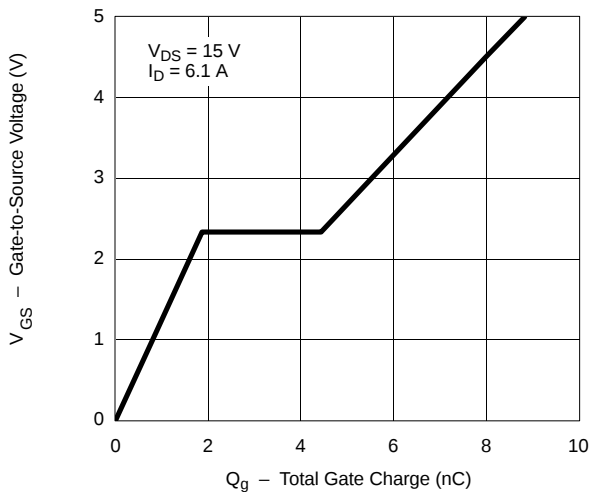
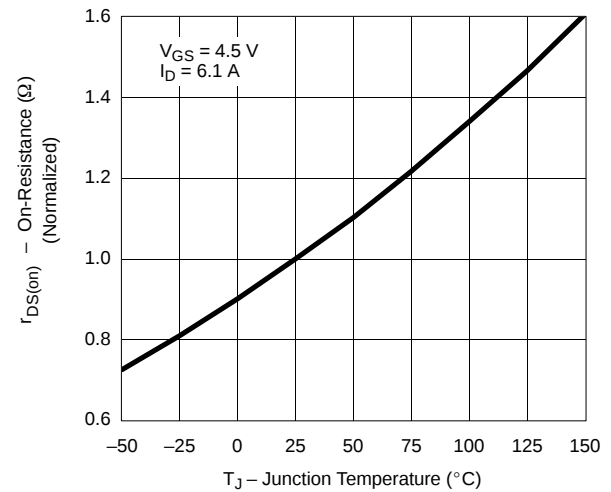
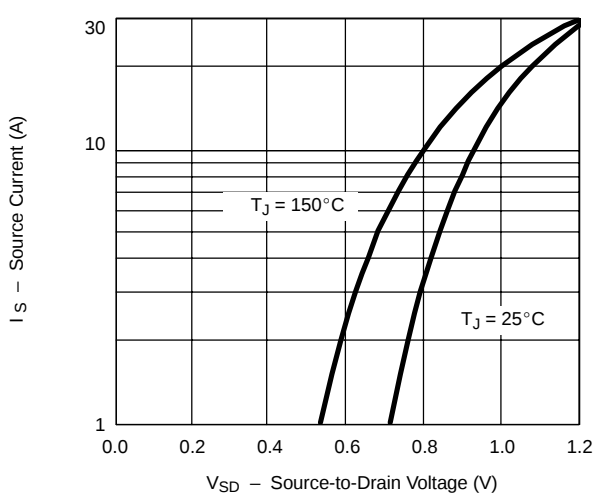
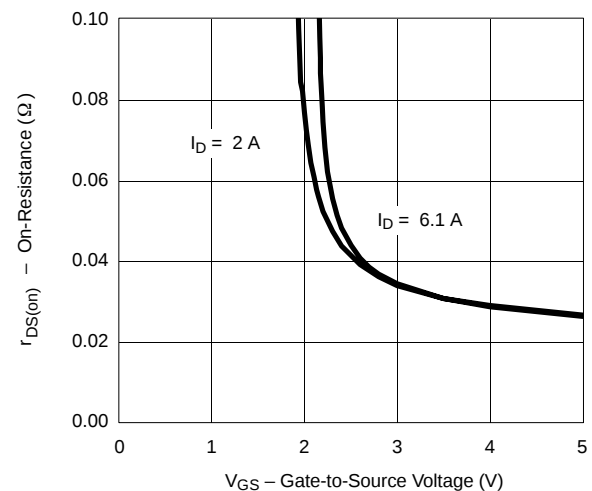
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 1\text{ mA}$	0.6			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 12\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24\text{ V}$, $V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 24\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 70^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}$, $V_{GS} = 4.5\text{ V}$	30			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 4.5\text{ V}$, $I_D = 6.1\text{ A}$		0.028	0.034	Ω
		$V_{GS} = 2.5\text{ V}$, $I_D = 2\text{ A}$		0.042	0.050	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 10\text{ V}$, $I_D = 6.1\text{ A}$		20		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 1.7\text{ A}$, $V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 15\text{ V}$, $V_{GS} = 4.5\text{ V}$, $I_D = 6.1\text{ A}$		8	12	nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			2.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}$, $R_L = 15\text{ }\Omega$ $I_D \cong 1\text{ A}$, $V_{GEN} = 4.5\text{ V}$, $R_G = 6\text{ }\Omega$		21	40	ns
Rise Time	t_r			45	90	
Turn-Off Delay Time	$t_{d(off)}$			40	80	
Fall Time	t_f			30	60	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.7\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$		40	80	

Notes

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
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)
