



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

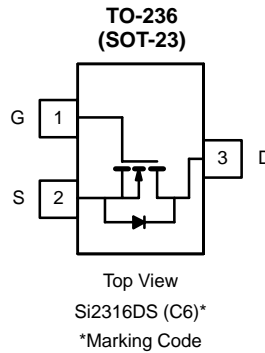
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.050 @ $V_{GS} = 10$ V	3.4
	0.085 @ $V_{GS} = 4.5$ V	2.6

### FEATURES

- TrenchFET® Power MOSFET

### APPLICATIONS

- Battery Switch



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	$V_{DS}$	30		V
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	3.4	2.9	A
	$T_A = 70^\circ\text{C}$	2.7	2.3	
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	16		
Continuous Source Current (Diode Conduction) <sup>a, b</sup>	$I_S$	0.8		
Power Dissipation <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	0.96	0.7	W
	$T_A = 70^\circ\text{C}$	0.6	0.45	
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 <sup>a</sup>	$t \leq 5$ sec	100	130	$^\circ\text{C/W}$
	Steady State	140	175	
Maximum Junction-to-Foot (drain)	Steady State	60	75	

Notes

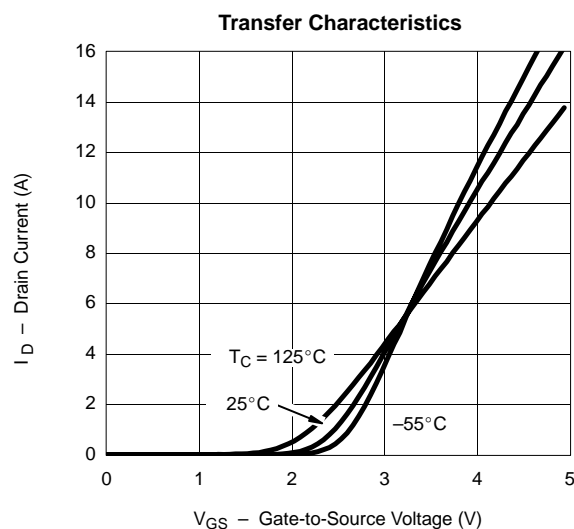
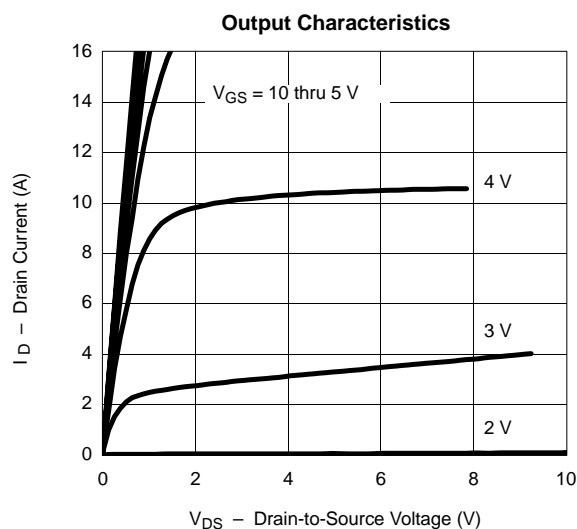
- a. Surface Mounted on 1" x 1" FR4 Board.  
b. Pulse width limited by maximum junction temperature

SPECIFICATIONS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	30			V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.8			
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			0.5	μA
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			10	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 4.5 V, V <sub>GS</sub> = 10 V	6			A
On-State Drain Current <sup>a</sup>		V <sub>DS</sub> ≥ 4.5 V, V <sub>GS</sub> = 4.5 V	4			
Drain-Source On-Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3.4 A		0.042	0.050	Ω
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 2.6 A		0.068	0.085	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 4.5 V, I <sub>D</sub> = 3.4 A		6.0		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 0.8 A, V <sub>GS</sub> = 0 V		0.8	1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3.4 A		4.3	7	nC
Gate-Source Charge	Q <sub>gs</sub>			0.65		
Gate-Drain Charge	Q <sub>gd</sub>			1.2		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V, f = 1 MHz		215		pF
Output Capacitance	C <sub>oss</sub>			90		
Reverse Transfer Capacitance	C <sub>rss</sub>			55		
<b>Switching</b>						
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> ≅ 1.0 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω		9	15	ns
Rise Time	t <sub>r</sub>			9	15	
Turn-Off Delay Time	t <sub>d(off)</sub>			14	20	
Fall-Time	t <sub>f</sub>			6	12	

## Notes

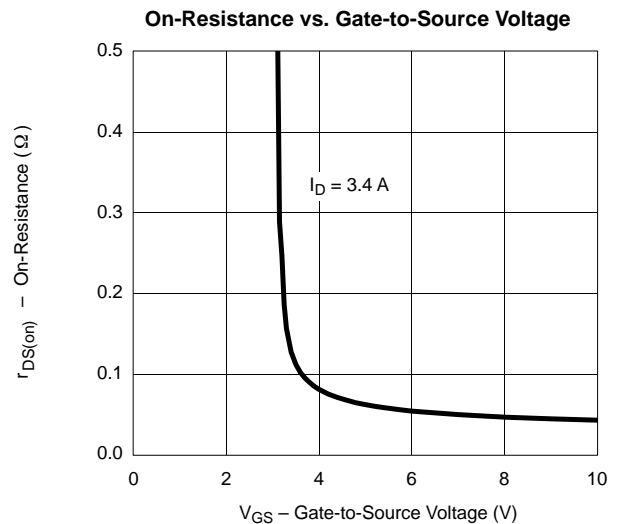
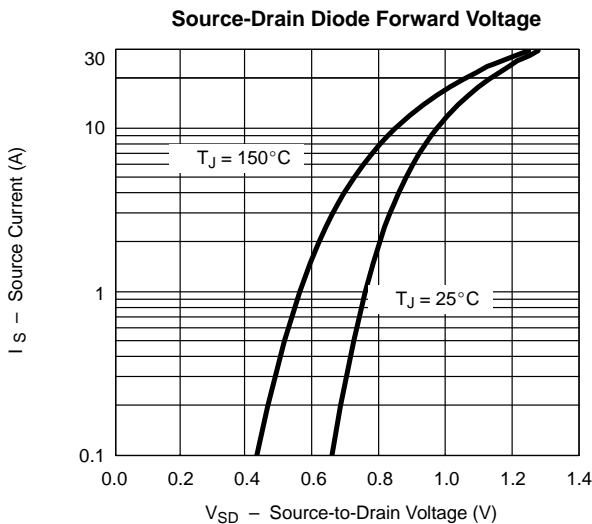
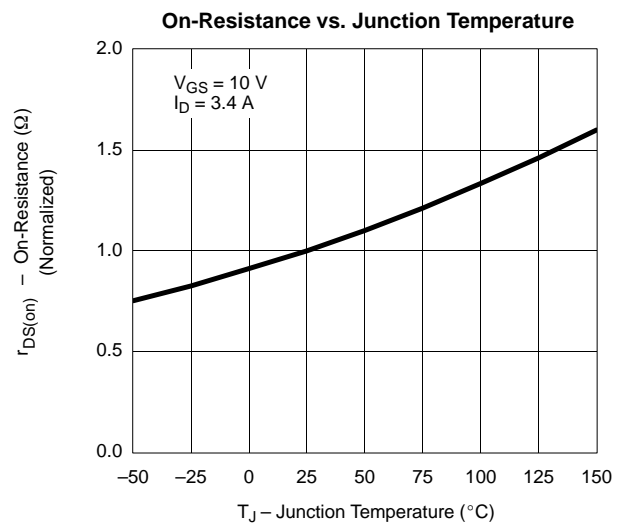
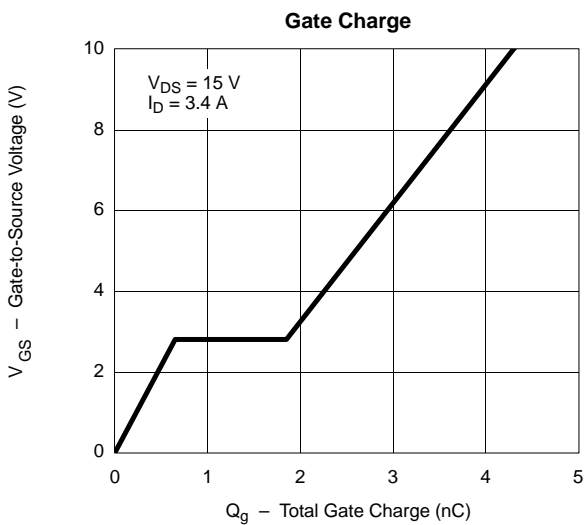
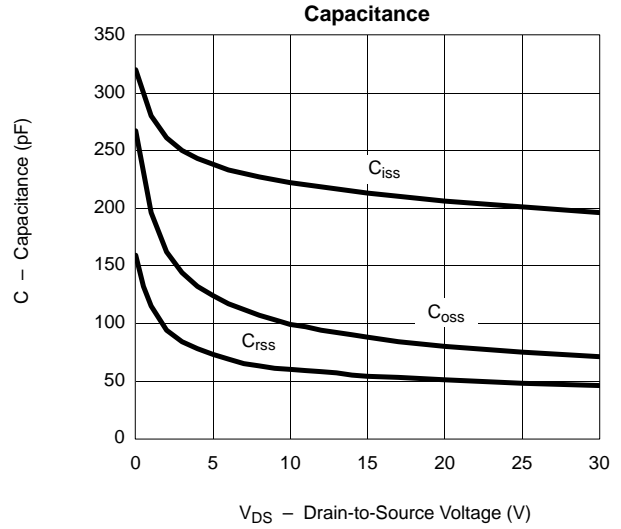
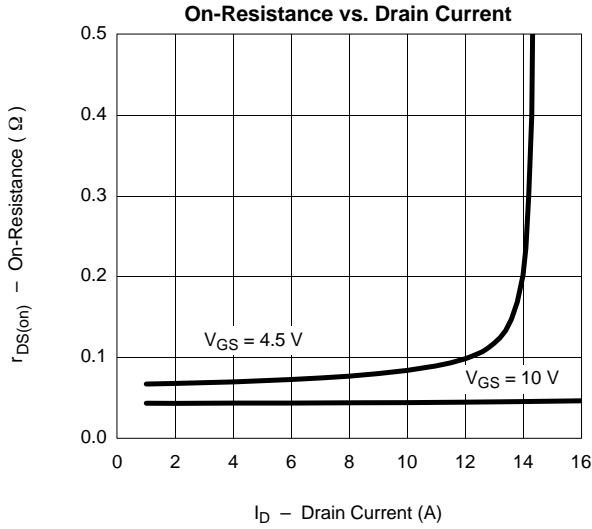
- a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)
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