

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

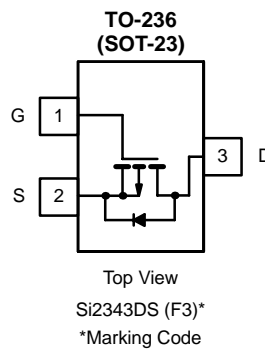
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.053 @ $V_{GS} = -10$ V	-4.0
	0.086 @ $V_{GS} = -4.5$ V	-3.1

FEATURES

- TrenchFET® Power MOSFET

APPLICATIONS

- Load Switch
- PA 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}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^{a, b}	I_D	$T_A = 25^\circ\text{C}$	-4.0	-3.1	A
		$T_A = 70^\circ\text{C}$	-3.2	-2.5	
Pulsed Drain Current	I_{DM}	-15			
Continuous Source Current (Diode Conduction) ^{a, b}	I_S	-1.0	-0.6		
Maximum Power Dissipation ^{a, b}	P_D	$T_A = 25^\circ\text{C}$	1.25	0.75	W
		$T_A = 70^\circ\text{C}$	0.8	0.48	
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 ^a	$t \leq 5$ sec	R_{thJA}	75	100	$^\circ\text{C/W}$
	Steady State		120	166	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	40	50	

Notes

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

SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1		-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}, V_{GS} = -10\text{ V}$	-15			A
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -4.0\text{ A}$		0.043	0.053	Ω
		$V_{GS} = -4.5\text{ V}, I_D = -3.1\text{ A}$		0.068	0.086	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -5\text{ V}, I_D = -4.0\text{ A}$		10		S
Diode Forward Voltage	V_{SD}	$I_S = -1.0\text{ A}, V_{GS} = 0\text{ V}$		0.7	-1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}$ $I_D \cong -4.0\text{ A}$		14	21	nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			3.7		
Input Capacitance	C_{iss}	$V_{DS} = -15\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$		540		pF
Output Capacitance	C_{oss}			131		
Reverse Transfer Capacitance	C_{rss}			105		
Switching^c						
Turn-On Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 15\ \Omega$ $I_D \cong -1.0\text{ A}, V_{GEN} = -10\text{ V}$ $R_G = 6\ \Omega$		10	15	ns
	t_r			15	25	
Turn-Off Time	$t_{d(off)}$			31	50	
	t_f			20	30	

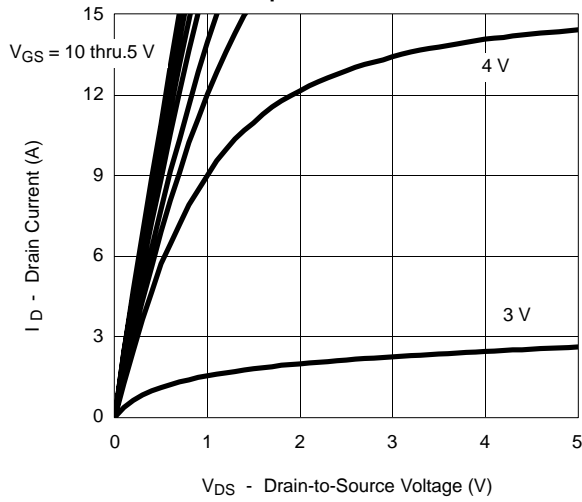
Notes

- Pulse test: $PW \leq 300\ \mu\text{s}$ duty cycle $\leq 2\%$.
- For DESIGN AID ONLY, not subject to production testing.
- Switching time is essentially independent of operating temperature.

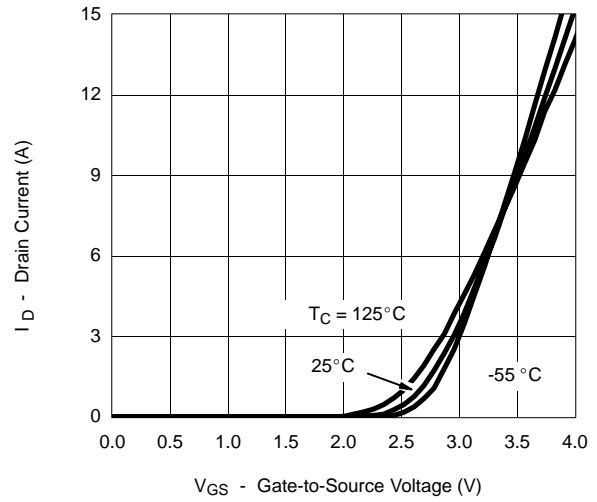


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

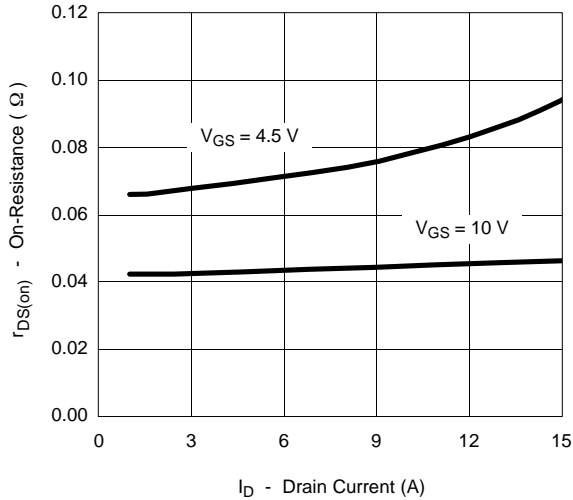
Output Characteristics



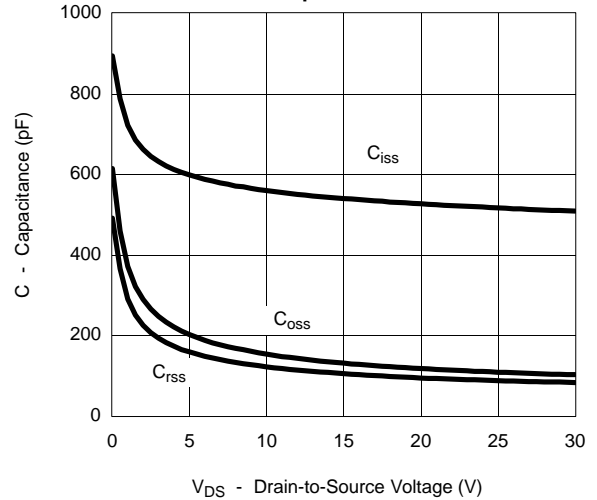
Transfer Characteristics



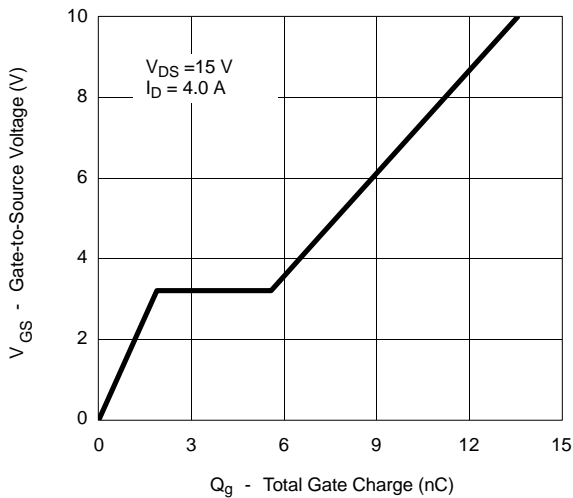
On-Resistance vs. Drain Current



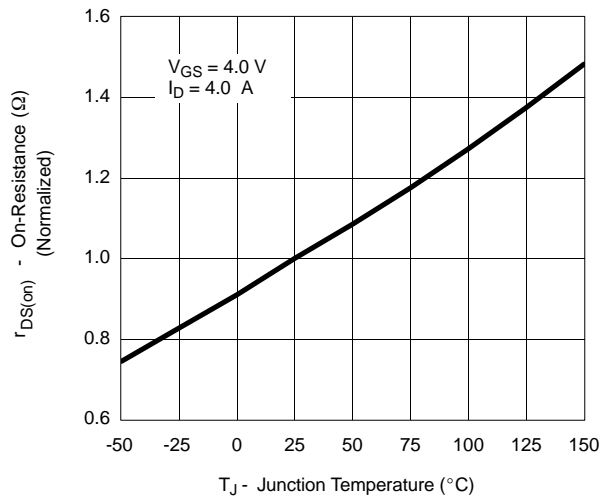
Capacitance



Gate Charge

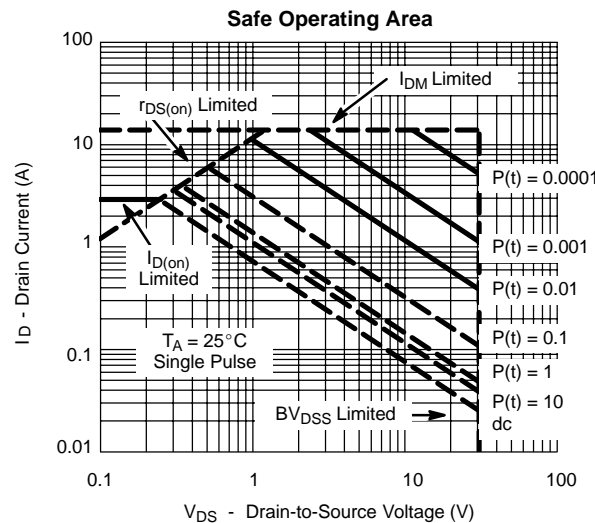
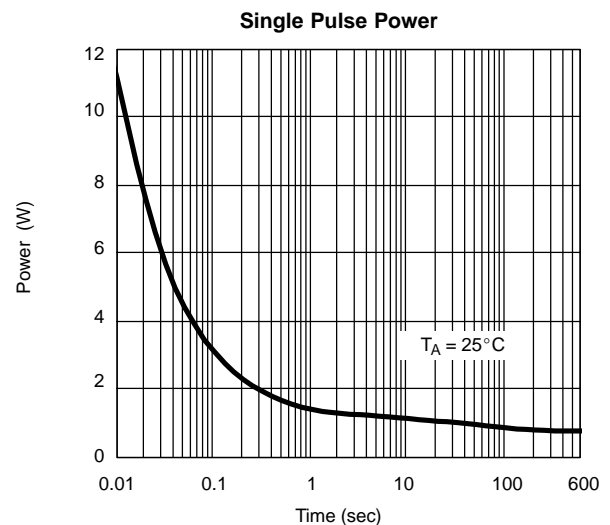
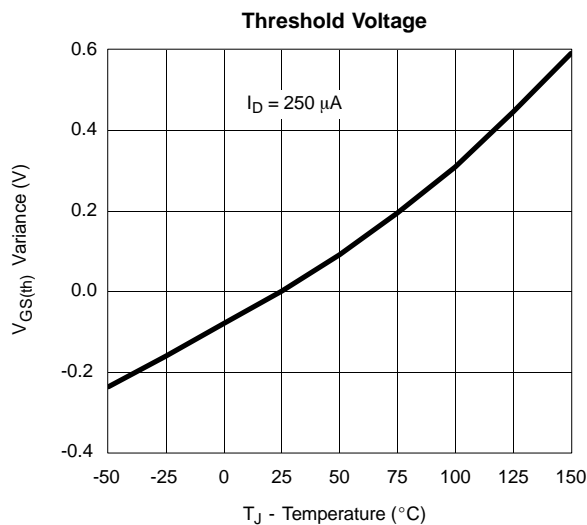
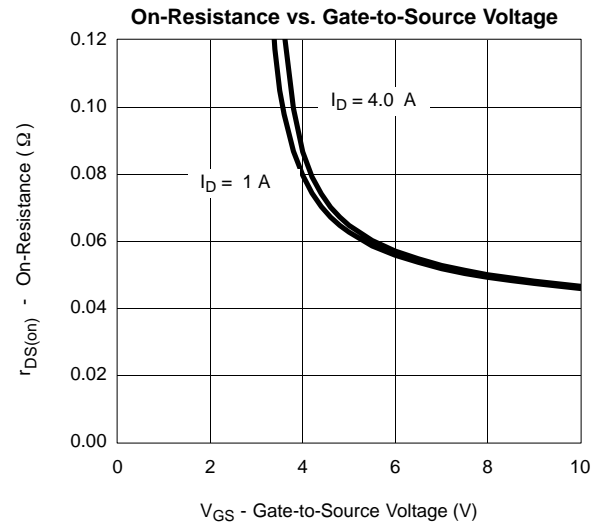
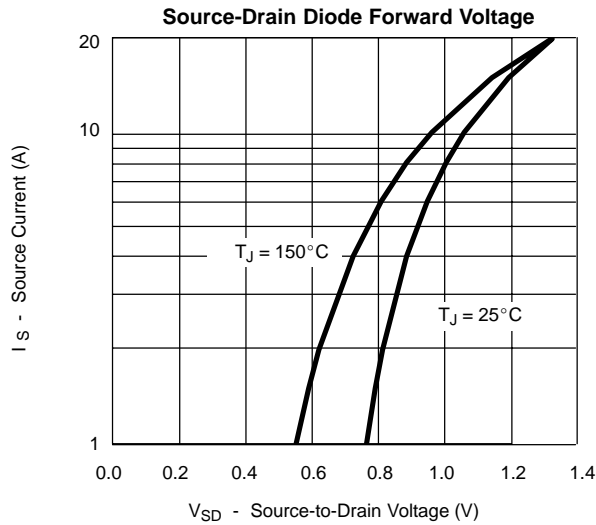


On-Resistance vs. Junction Temperature





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

