

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

PRODUCT SUMMARY

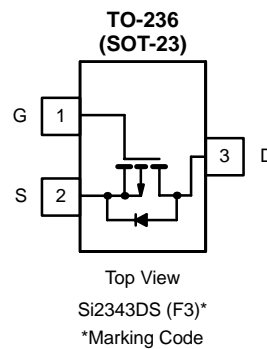
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.053 @ $V_{GS} = -10$ V	-4.0
	0.086 @ $V_{GS} = -4.5$ V	-3.1

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	R_{thJA}	$t \leq 5$ sec	75	100	$^\circ\text{C/W}$
		Steady State	120	166	
Maximum Junction-to-Foot (Drain)	R_{thJF}	40	50		

Notes

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

SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -250 μA	-30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1		-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55 °C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -10 V	-15			A
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = -10 V, I _D = -4.0 A		0.043	0.053	Ω
		V _{GS} = -4.5 V, I _D = -3.1 A		0.068	0.086	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -4.0 A		10		S
Diode Forward Voltage	V _{SD}	I _S = -1.0 A, V _{GS} = 0 V		0.7	-1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -10 V I _D = -4.0 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 V, V _{GS} = 0, f = 1 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 V, R _L = 15 Ω I _D = -1.0 A, V _{GEN} = -10 V R _G = 6 Ω		10	15	ns
	t _r			15	25	
Turn-Off Time	t _{d(off)}			31	50	
	t _f			20	30	

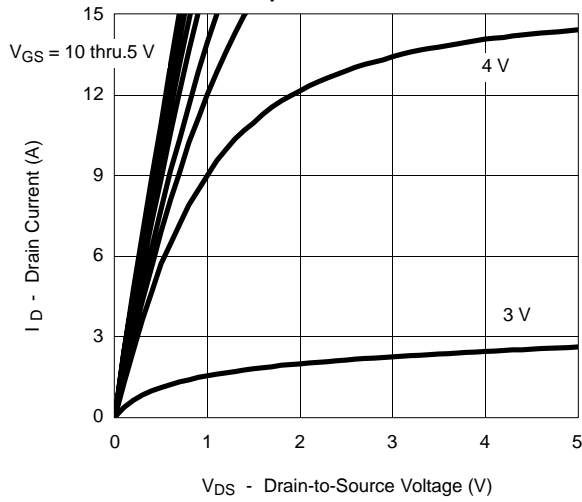
Notes

- Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- For DESIGN AID ONLY, not subject to production testing.
- Switching time is essentially independent of operating temperature.

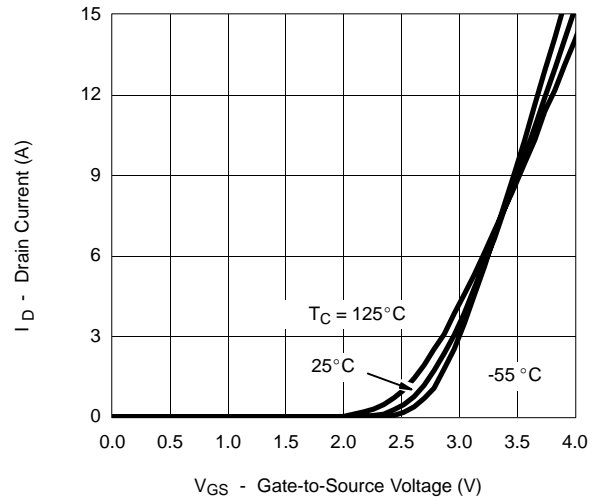


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

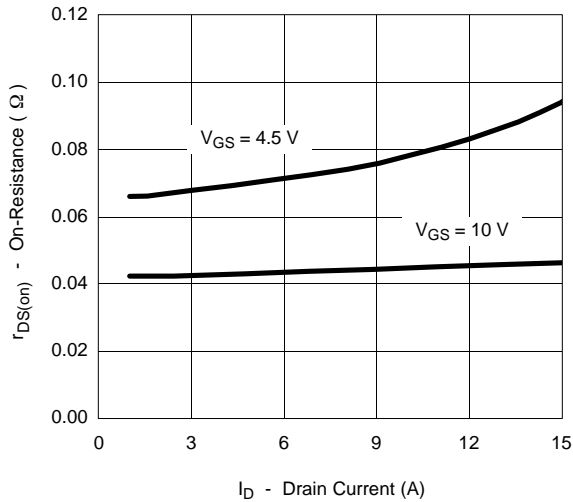
Output Characteristics



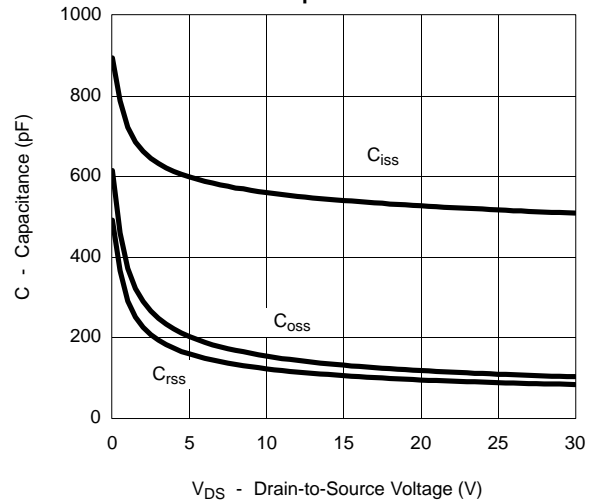
Transfer Characteristics



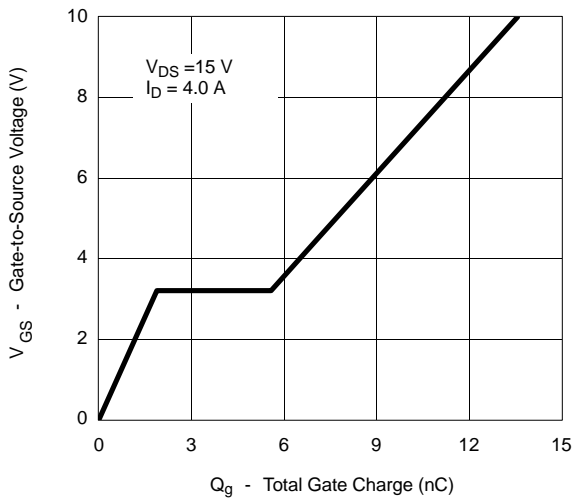
On-Resistance vs. Drain Current



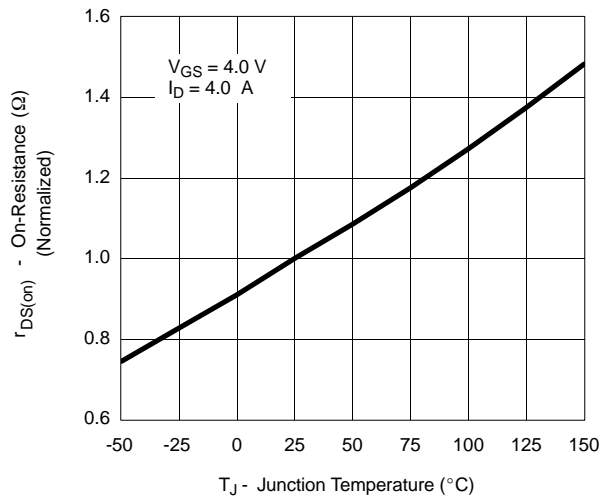
Capacitance



Gate Charge

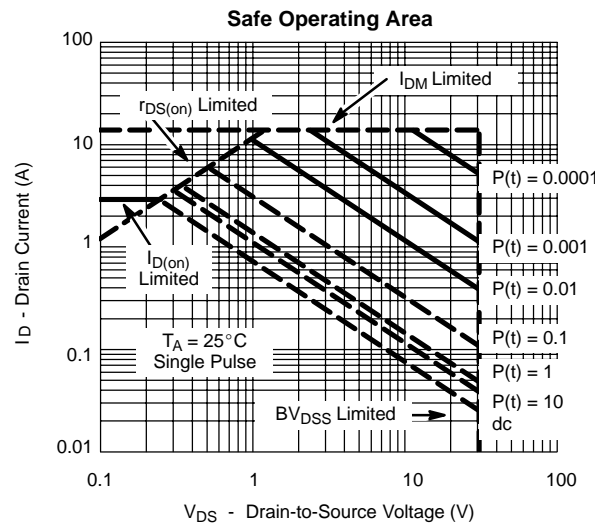
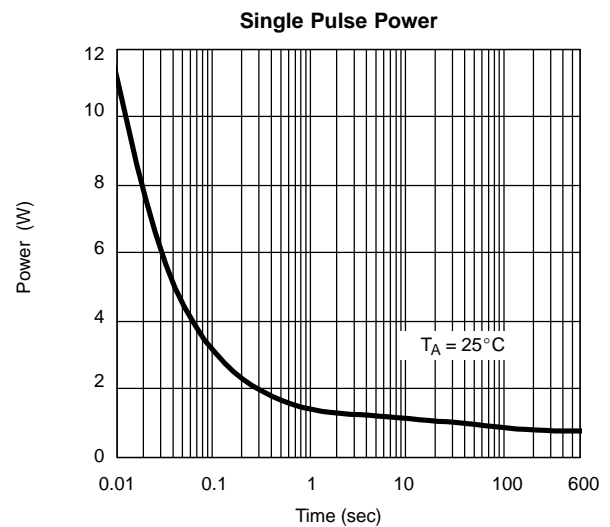
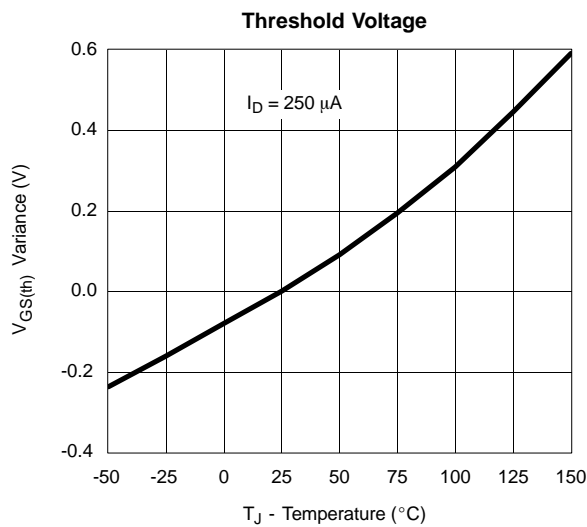
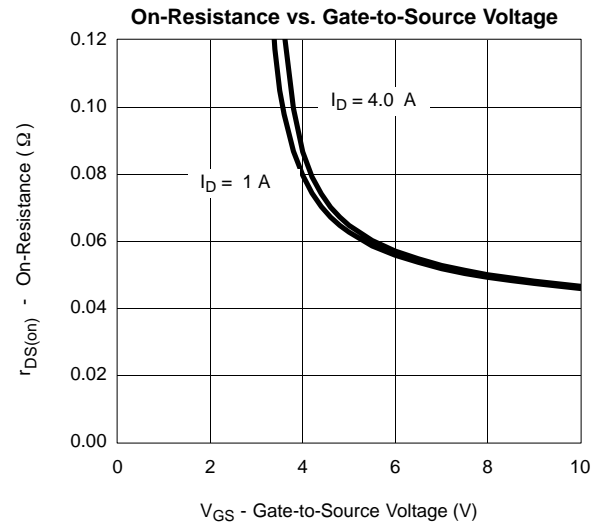
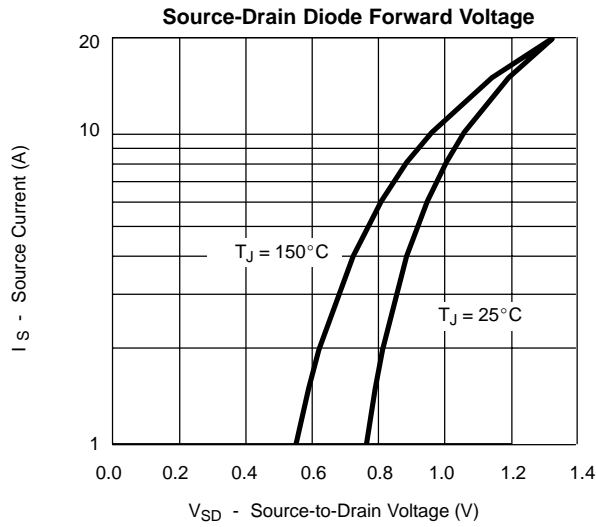


On-Resistance vs. Junction Temperature

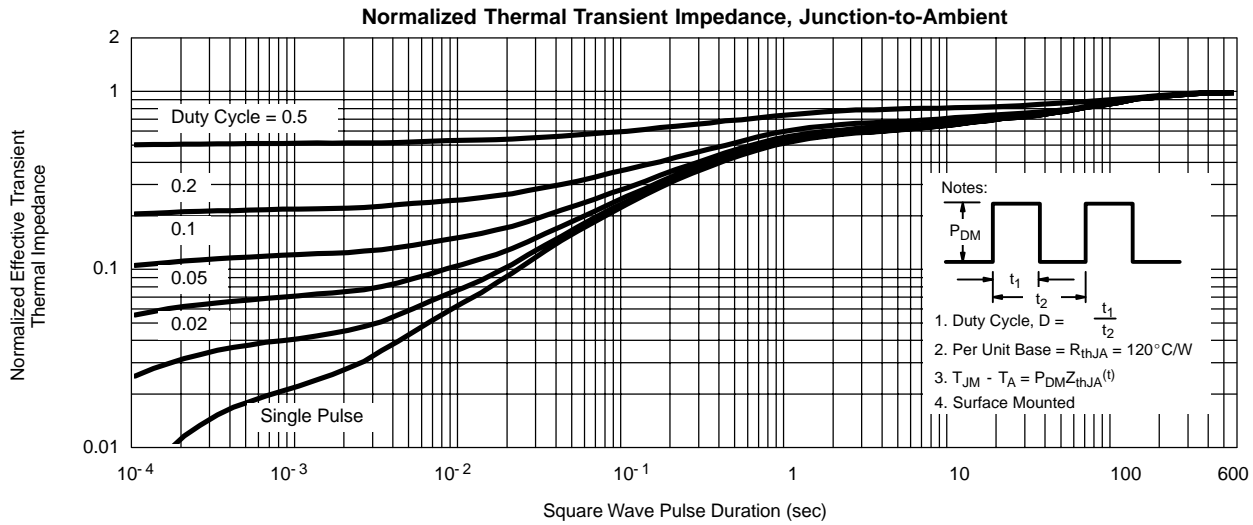




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