



P-Channel 12-V (D-S) MOSFET

PRODUCT SUMMARY

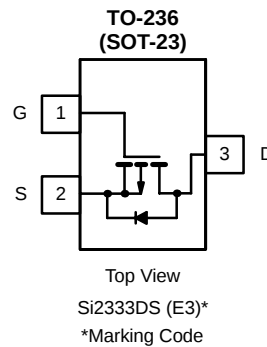
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.032 @ $V_{GS} = -4.5$ V	-5.3
	0.042 @ $V_{GS} = -2.5$ V	-4.6
	0.059 @ $V_{GS} = -1.8$ V	-3.9

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}	-12		V
Gate-Source Voltage		V _{GS}	± 8		
Continuous Drain Current (T _J = 150°C) ^{a, b}	T _A = 25°C	I _D	- 5.3	-4.1	A
	T _A = 70°C		-4.2	-3.3	
Pulsed Drain Current		I _{DM}	-20		
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	-1.0	-0.6	
Maximum Power Dissipation ^{a, b}	T _A = 25°C	P _D	1.25	0.75	W
	T _A = 70°C		0.8	0.48	
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}	75	100	$^\circ\text{C/W}$
	Steady State		120	166	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	40	50	

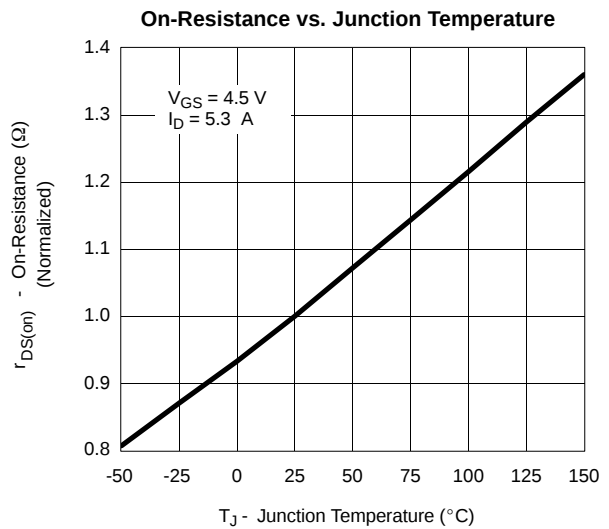
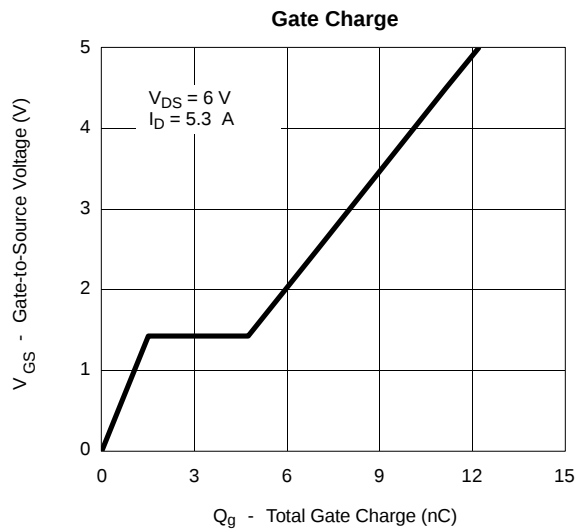
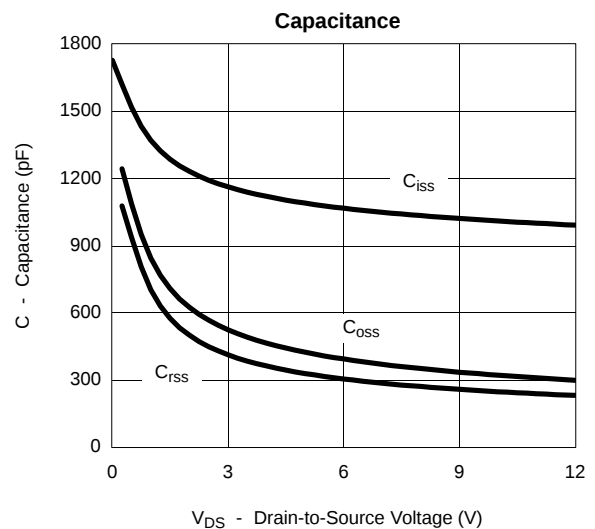
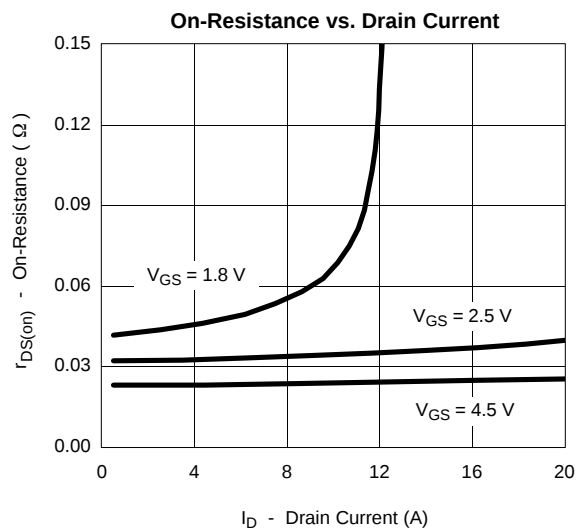
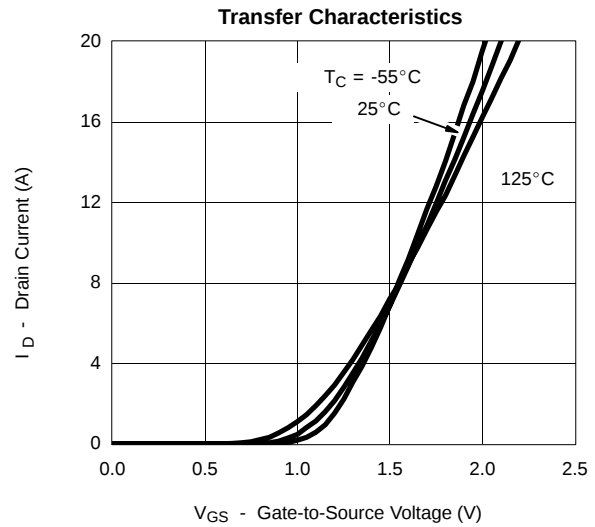
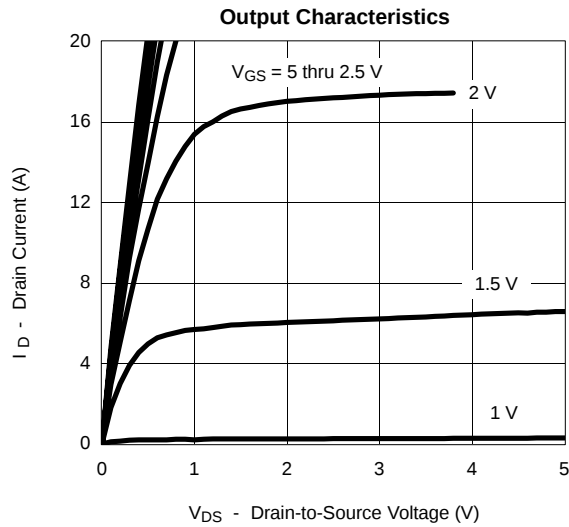
Notes

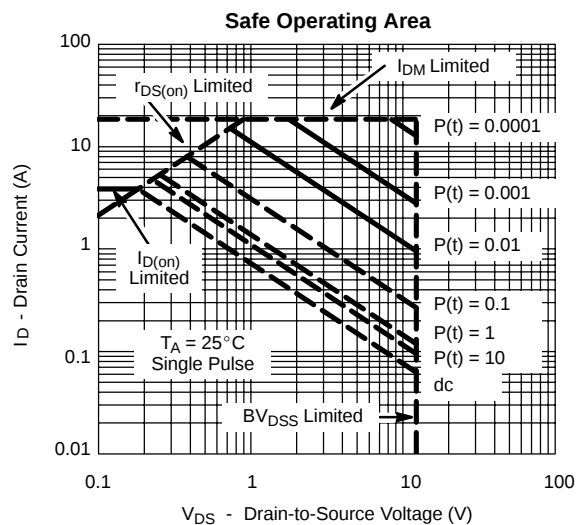
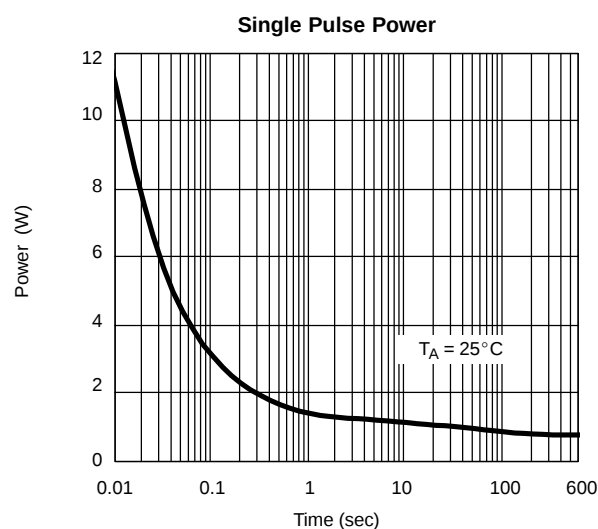
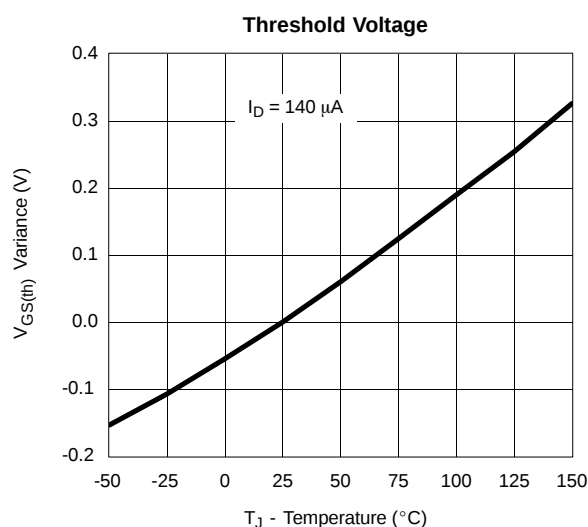
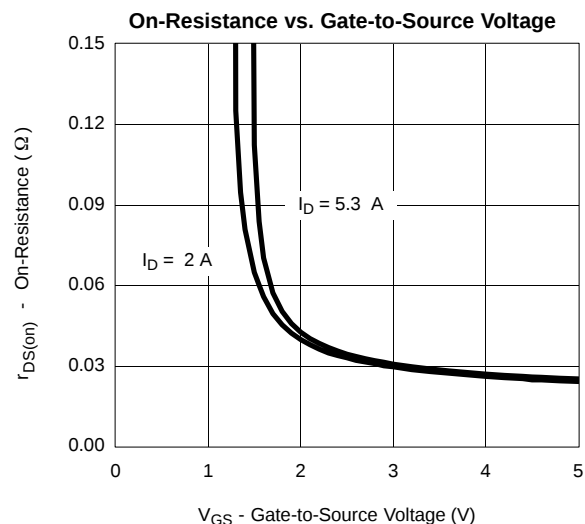
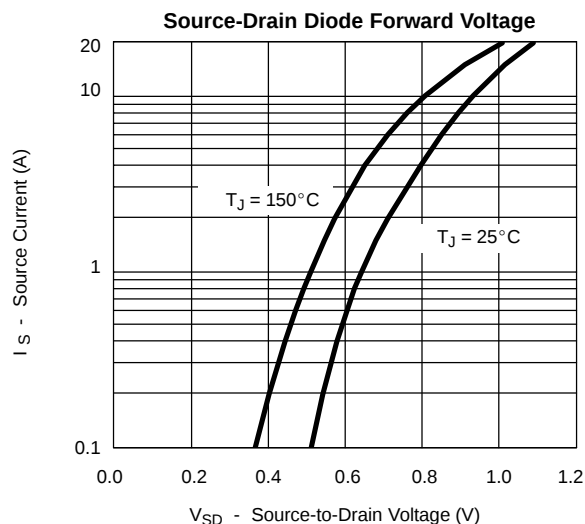
- a. Surface Mounted on 1" x 1" FR4 Board.
b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS (T _J = 25 °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	-12			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.40		-1.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -9.6 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -9.6 V, V _{GS} = 0 V, T _J = 55 °C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -4.5 V	-20			A
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -5.3 A		0.025	0.032	Ω
		V _{GS} = -2.5 V, I _D = -4.6 A		0.033	0.042	
		V _{GS} = -1.8 V, I _D = -2.0 A		0.046	0.059	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -5.3 A		17		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} = -6 V, V _{GS} = -4.5 V I _D ≅ -5.3 A		11.5	18	nC
Gate-Source Charge	Q _{gs}			1.5		
Gate-Drain Charge	Q _{gd}			3.2		
Input Capacitance	C _{iss}	V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz		1100		pF
Output Capacitance	C _{oss}			390		
Reverse Transfer Capacitance	C _{rss}			300		
Switching ^c						
Turn-On Time	t _{d(on)}	V _{DD} = -6 V, R _L = 6 Ω I _D ≅ -1.0 A, V _{GEN} = -4.5 V R _G = 6 Ω		25	40	ns
	t _r			45	70	
Turn-Off Time	t _{d(off)}			72	110	
	t _f			60	90	

Notes

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

**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

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