



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

PRODUCT SUMMARY

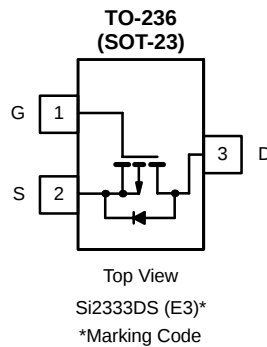
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.032 @ $V_{GS} = -4.5$ V	-5.3
	0.042 @ $V_{GS} = -2.5$ V	-4.6
	0.059 @ $V_{GS} = -1.8$ V	-3.9

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	

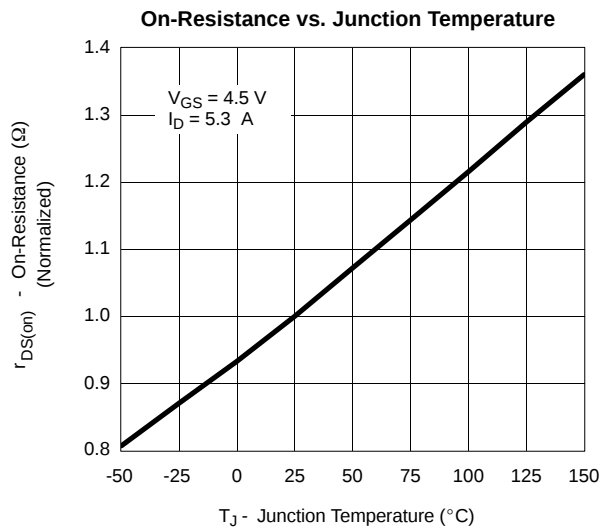
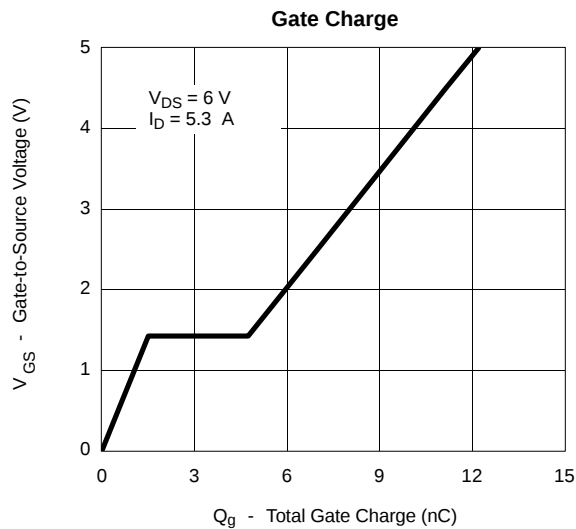
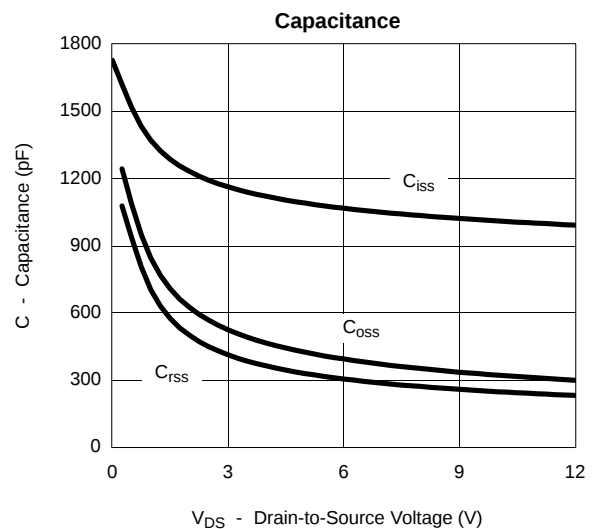
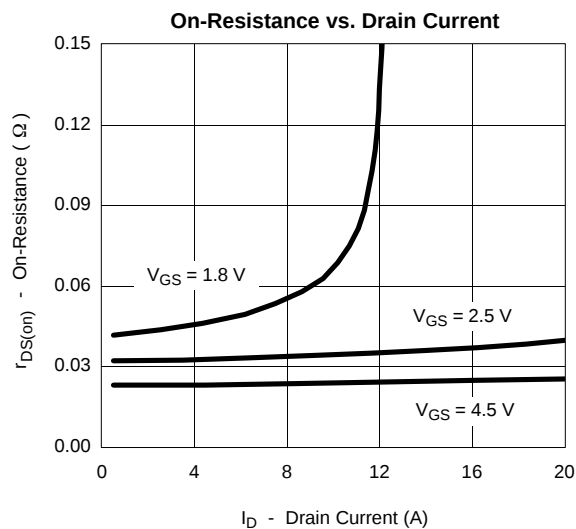
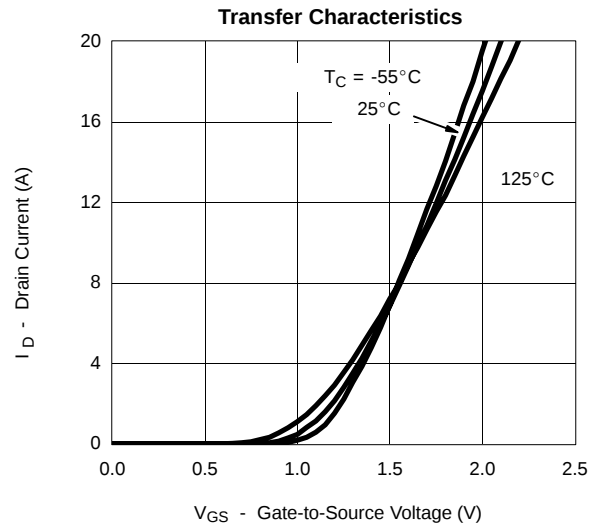
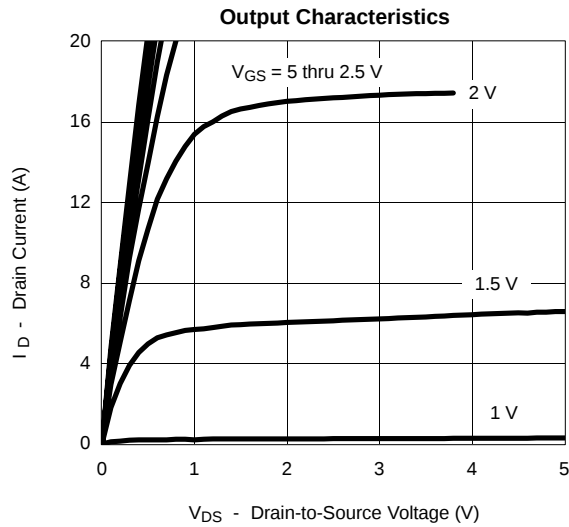
Notes

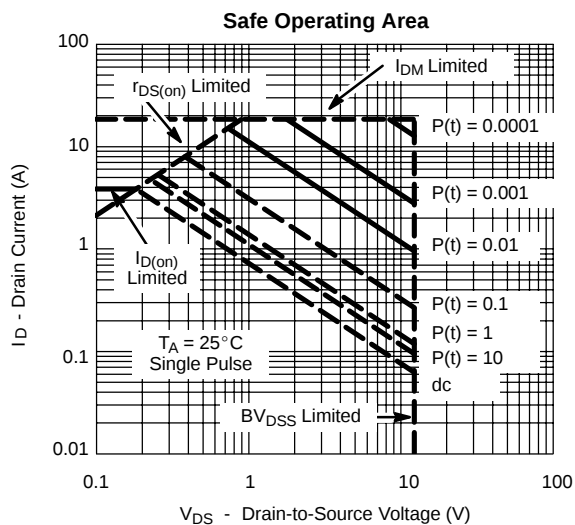
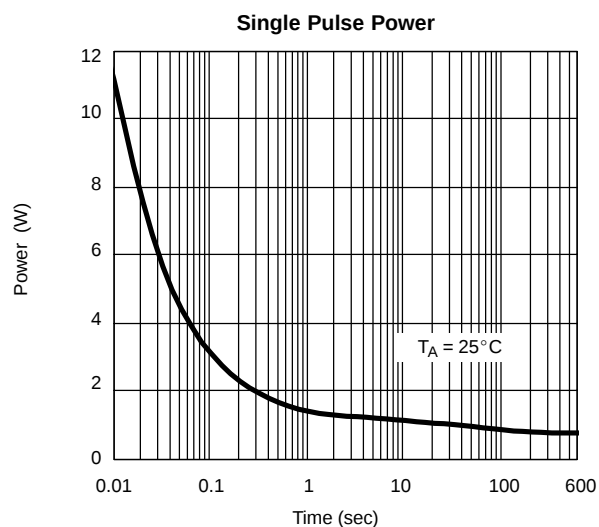
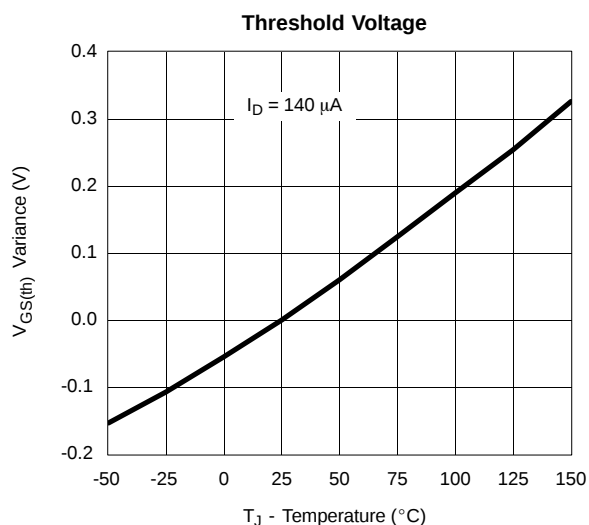
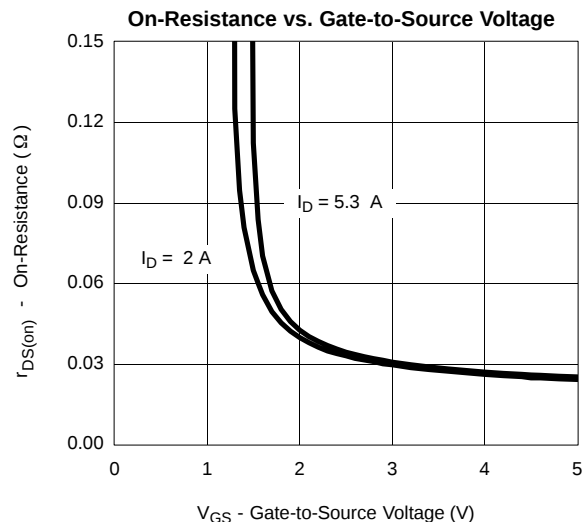
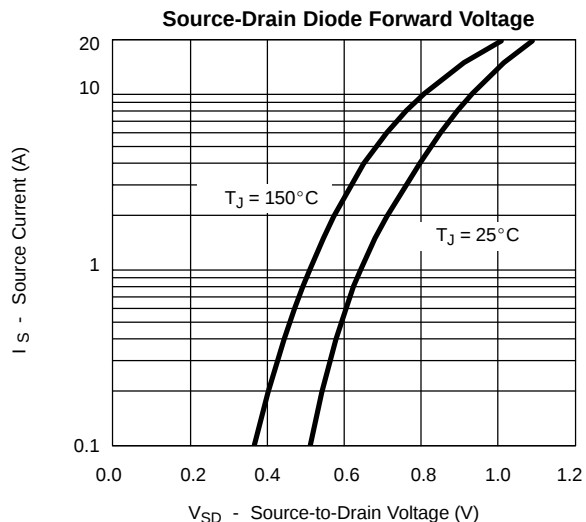
- a. Surface Mounted on 1" x 1" FR4 Board.
b. Pulse width limited by maximum junction temperature.

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

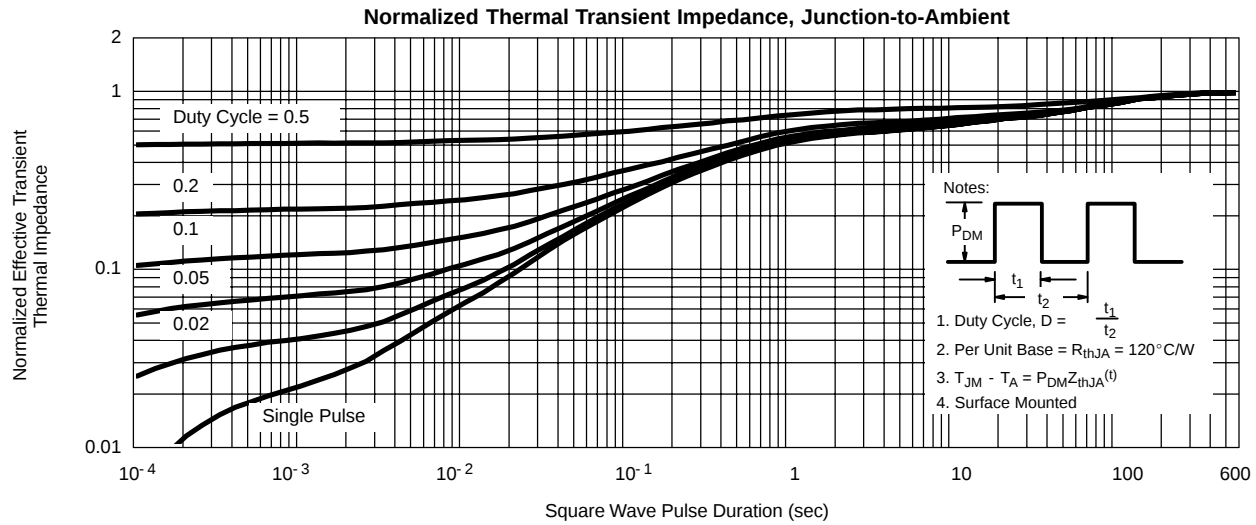
- a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- b. For DESIGN AID ONLY, not subject to production testing.
- c. Switching time is essentially independent of operating temperature.

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

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.