

P-Channel 20-V (D-S) MOSFET

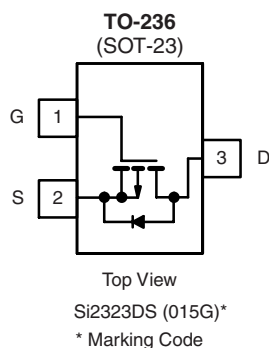
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
- 20	0.039 at $V_{GS} = - 4.5$ V	- 4.7
	0.052 at $V_{GS} = - 2.5$ V	- 4.1
	0.068 at $V_{GS} = - 1.8$ V	- 3.5

FEATURES

- TrenchFET[®] Power MOSFET

APPLICATIONS

- Load Switch
- PA Switch


RoHS*
 COMPLIANT


ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted					
Parameter	Symbol	5 s	Steady State	Unit	
Drain-Source Voltage	V_{DS}	- 20		V	
Gate-Source Voltage	V_{GS}	± 8			
Continuous Drain Current ($T_J = 150$ °C) ^{a, b}	I_D	$T_A = 25$ °C	- 4.7	- 3.7	A
		$T_A = 70$ °C	- 3.8	- 2.9	
Pulsed Drain Current	I_{DM}	- 20			
Continuous Source Current (Diode Conduction) ^{a, b}	I_S	- 1.0	- 0.6		
Maximum Power Dissipation ^{a, b}	P_D	$T_A = 25$ °C	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	$t \leq 5$ s	R_{thJA}	75	100	°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.

* Pb containing terminations are not RoHS compliant, exemptions may apply.

SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	- 20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	- 0.40		- 1.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}$			- 1	μA
		$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			- 10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}, V_{GS} = -4.5\text{ V}$	- 20			A
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -4.7\text{ A}$		0.031	0.039	Ω
		$V_{GS} = -2.5\text{ V}, I_D = -4.1\text{ A}$		0.041	0.052	
		$V_{GS} = -1.8\text{ V}, I_D = -2.0\text{ A}$		0.054	0.068	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -5\text{ V}, I_D = -4.7\text{ A}$		16		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	$V_{DS} = -10\text{ V}, V_{GS} = -4.5\text{ V}$ $I_D \cong -4.7\text{ A}$		12.5	19	nC
Gate-Source Charge	Q_{gs}			1.7		
Gate-Drain Charge	Q_{gd}			3.3		
Input Capacitance	C_{iss}	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		1020		pF
Output Capacitance	C_{oss}			191		
Reverse Transfer Capacitance	C_{rss}			140		
Switching^c						
Turn-On Time	$t_{d(on)}$	$V_{DD} = -10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \cong -1.0\text{ A}, V_{GEN} = -4.5\text{ V}$ $R_G = 6\text{ }\Omega$		25	40	ns
	t_r			43	65	
Turn-Off Time	$t_{d(off)}$			71	110	
	t_f			48	75	

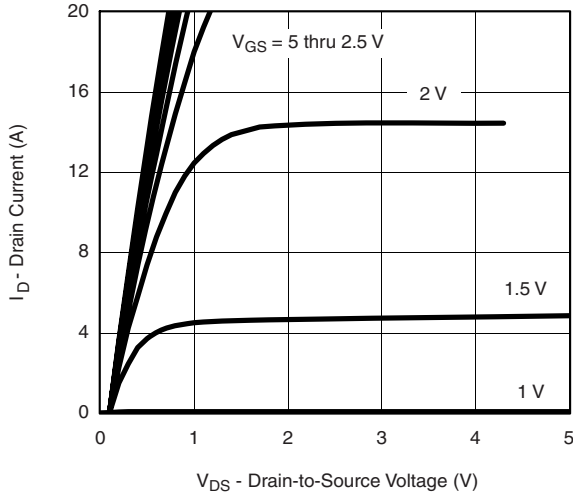
Notes:

a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

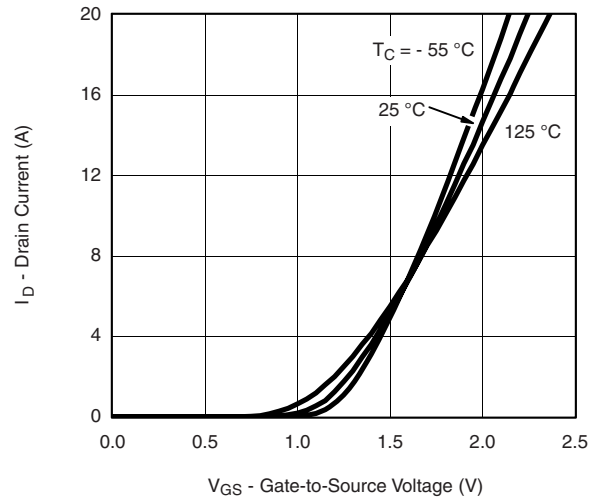
b. For DESIGN AID ONLY, not subject to production testing.

c. Switching time is essentially independent of operating temperature.

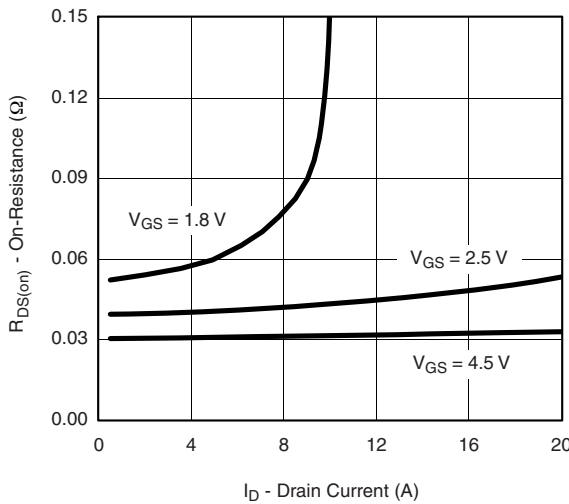
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



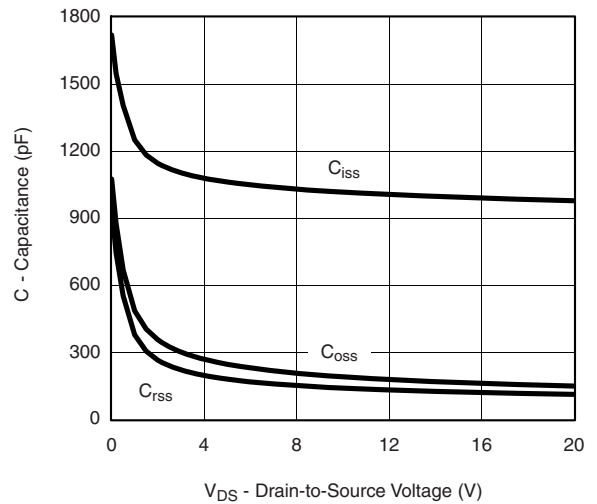
Output Characteristics



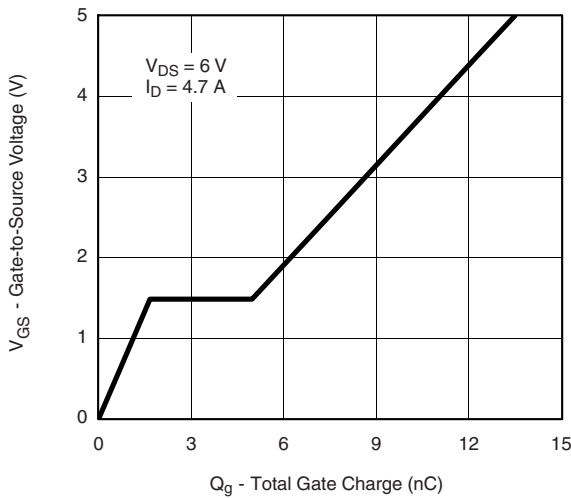
Transfer Characteristics



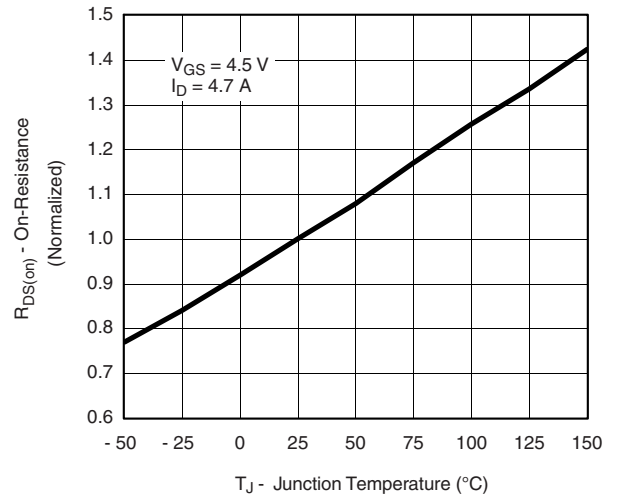
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

