

N-Channel 200 V (D-S) MOSFET

PRODUCT SUMMARY

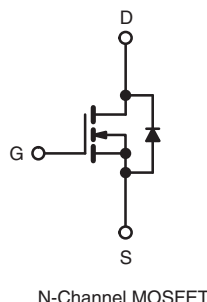
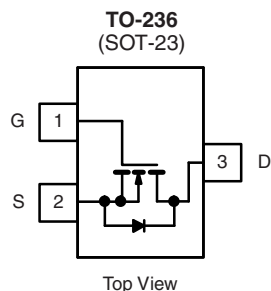
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
200	1.2 at $V_{GS} = 10$ V	0.6

FEATURES

- DT-Trench Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested

APPLICATIONS

- Load switch
- Power management for mobile computing


RoHS
 COMPLIANT


ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_J = 150$ °C) ^a	I_D	0.6	A
		0.5	
Pulsed Drain Current ^b	I_{DM}	2.5	
Avalanche Current ^b	I_{AS}	2.5	mJ
Single Avalanche Energy	E_{AS}	53	
Continuous Source Current (Diode Conduction) ^a	I_S	0.6	A
Power Dissipation ^a	P_D	1.56	W
		1.19	
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	R_{thJA}	75	100	°C/W
		125	170	
Maximum Junction-to-Foot	R_{thJF}	40	55	

Notes:

a. Surface mounted on 1" x 1" FR4 board.

b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	200			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0		3.4	
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}	$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 160\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^{\circ}\text{C}$			75	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 15\text{ V}, V_{GS} = 10\text{ V}$	2.5			A
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 0.5\text{ A}$		1.2	1.4	Ω
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 0.5\text{ A}$		4		S
Diode Forward Voltage	V_{SD}	$I_S = 1\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = 100\text{ V}, V_{GS} = 10\text{ V}, I_D = 0.5\text{ A}$		3	5	nC
Gate-Source Charge	Q_{gs}			0.37		
Gate-Drain Charge	Q_{gd}			1.45		
Gate Resistance	R_g		0.5	1.3	2.4	Ω
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 100\text{ V}, R_L = 33\text{ }\Omega$ $I_D \cong 0.2\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$		7	13	ns
Rise Time	t_r			10	16	
Turn-Off Delay Time	$t_{d(off)}$			9	15	
Fall Time	t_f			11	15	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 0.5\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}50100$				

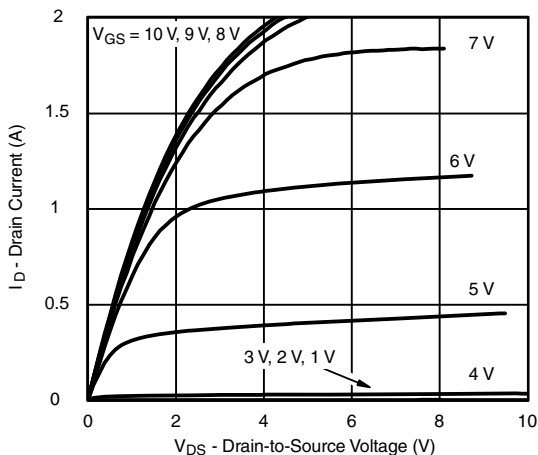
Notes:

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

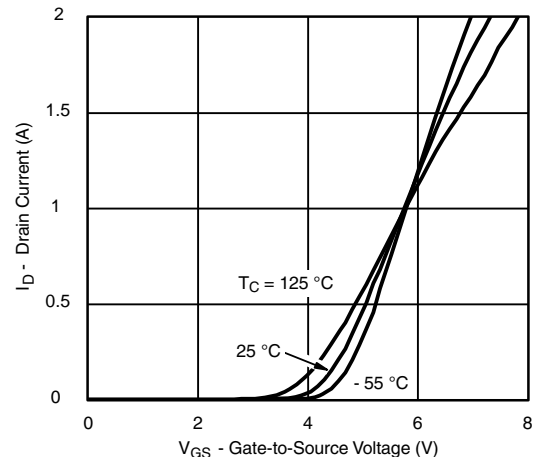
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS ($25\text{ }^{\circ}\text{C}$, unless otherwise noted)

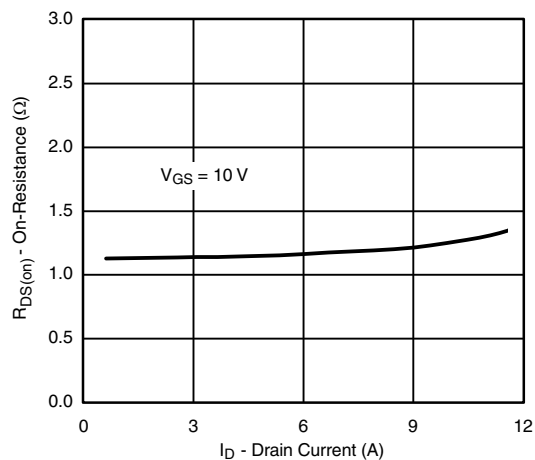


Output Characteristics

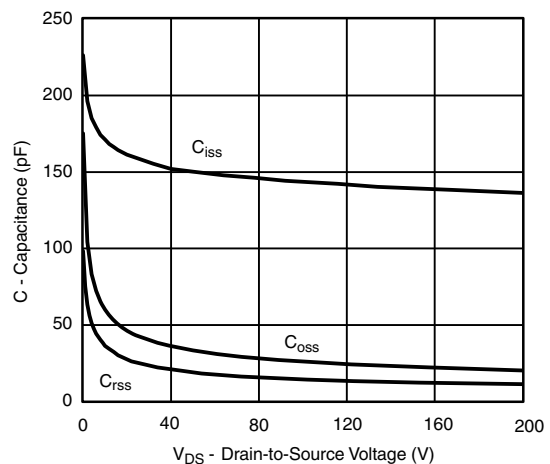


Transfer Characteristics

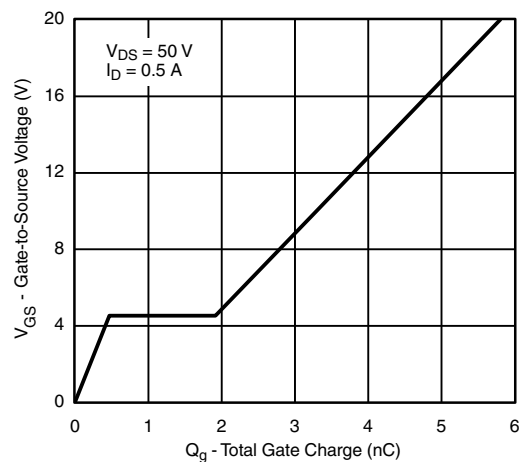
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



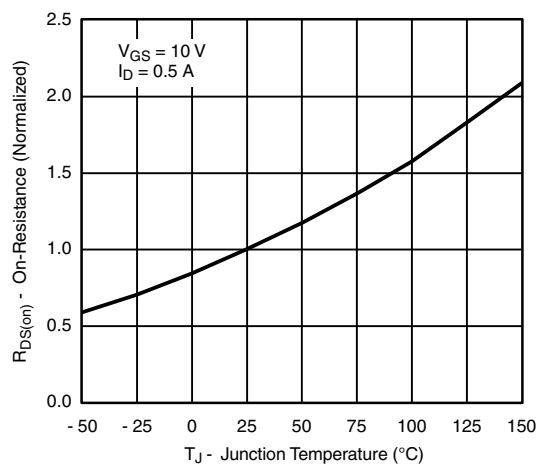
On-Resistance vs. Drain Current



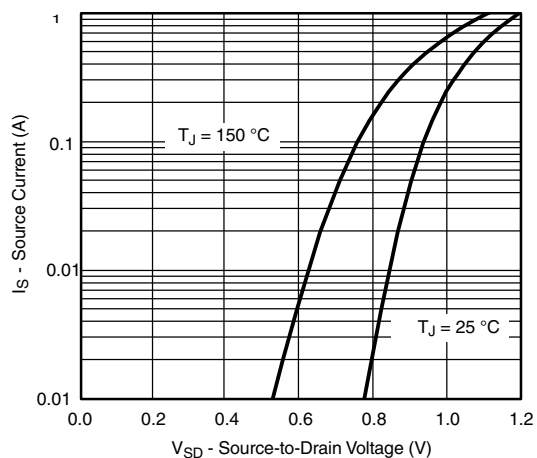
Capacitance



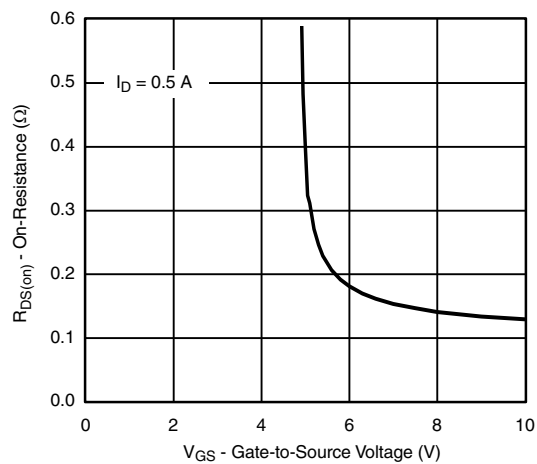
Gate Charge



On-Resistance vs. Junction Temperature

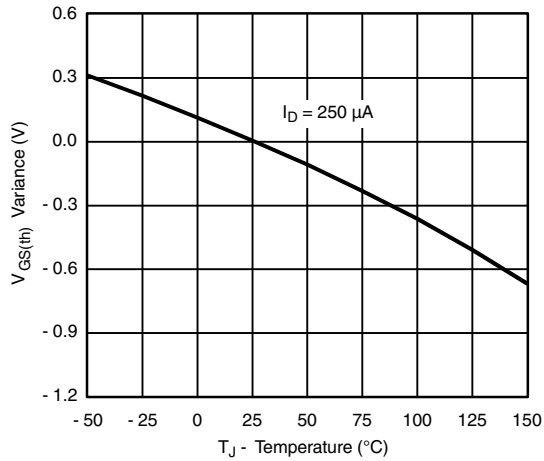


Source-Drain Diode Forward Voltage

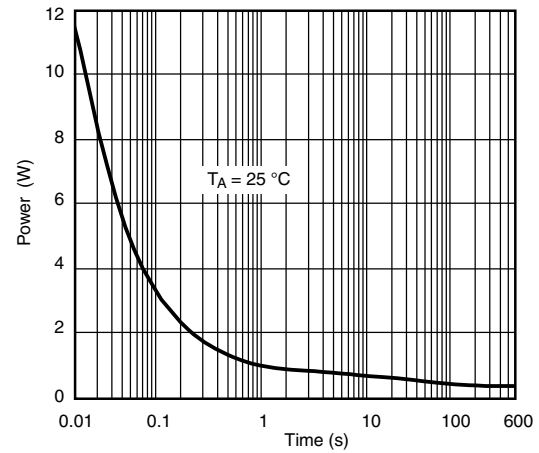


On-Resistance vs. Gate-to-Source Voltage

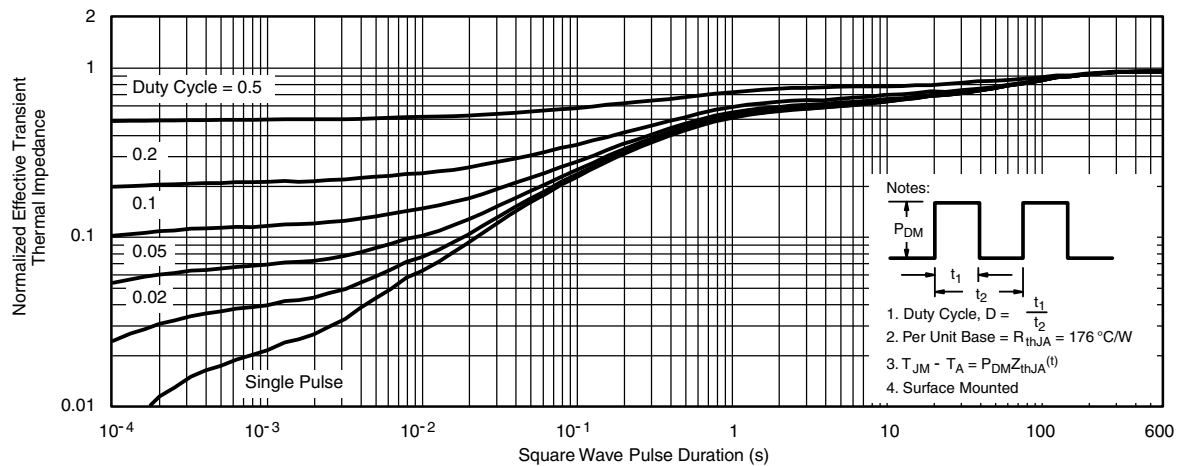
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Threshold Voltage

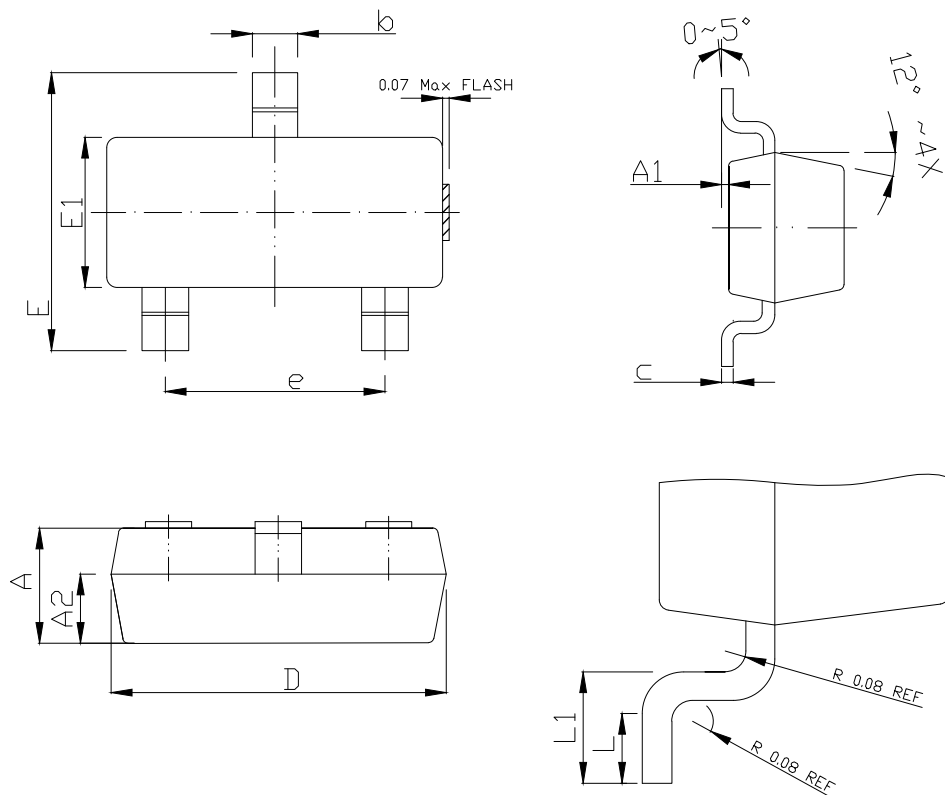


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

SOT-23 PACKAGE OUTLINE



COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.80	1.00	1.30
A1	0.00	0.05	0.15
b	0.25	0.40	0.55
c	0.11 BSC		
D	2.60	2.90	3.20
E	2.10	2.40	2.70
E1	1.10	1.30	1.48
e	1.90 BSC		
L	0.17	—	—
L1	0.28	0.40	0.53
A2	0.60 REF		

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