

N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

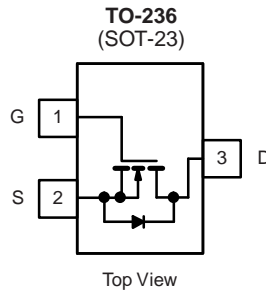
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
100	0.275 at V _{GS} = 10 V	0.9

FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- 100 % R_g and UIS Tested
- TrenchFET[®] Power MOSFET
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE
Available



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

Parameter	Symbol	Steady State	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	A
		T _A = 70 °C	
Pulsed Drain Current ^b	I _{DM}	6	mJ
Avalanche Current ^b	I _{AS}	6	
Single Avalanche Energy	E _{AS}	1.8	
Continuous Source Current (Diode Conduction) ^a	I _S	0.6	A
Power Dissipation ^a	P _D	T _A = 25 °C	W
		T _A = 70 °C	
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}	t ≤ 5 s	80	°C/W
		Steady State	130	
Maximum Junction-to-Foot	R _{thJF}	45	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)

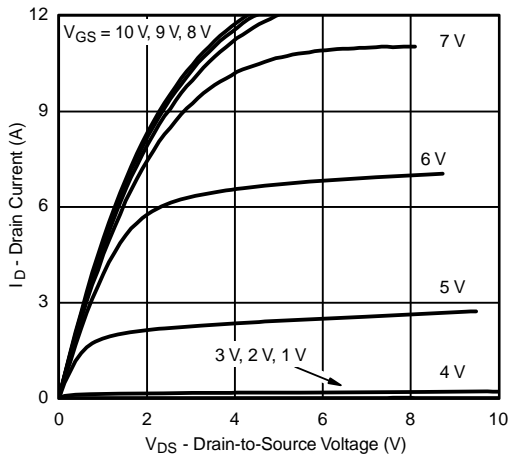
Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	100			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2		4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^\circ\text{C}$			75	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 15\text{ V}, V_{GS} = 10\text{ V}$	6			A
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 0.5\text{ A}$		0.275		Ω
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 0.5\text{ A}$		4		S
Diode Forward Voltage	V_{SD}	$I_S = 0.5\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V}, I_D = 0.5\text{ A}$		3.3		nC
Gate-Source Charge	Q_{gs}			0.47		
Gate-Drain Charge	Q_{gd}			1.45		
Gate Resistance	R_g			1.3		
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 50\text{ V}, R_L = 33\text{ }\Omega$ $I_D \cong 0.2\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$		7		ns
Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(off)}$			9		
Fall Time	t_f			10		
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 0.5\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		50		

Notes:

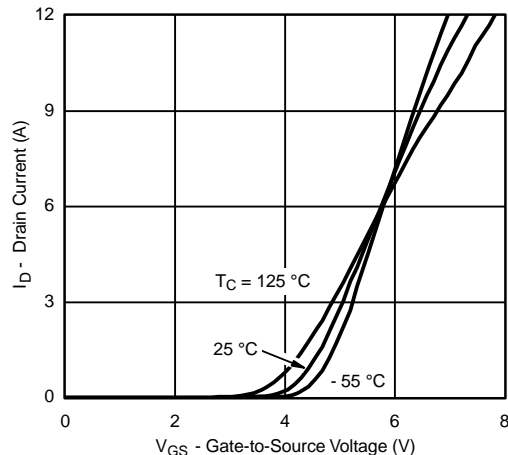
- a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

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)

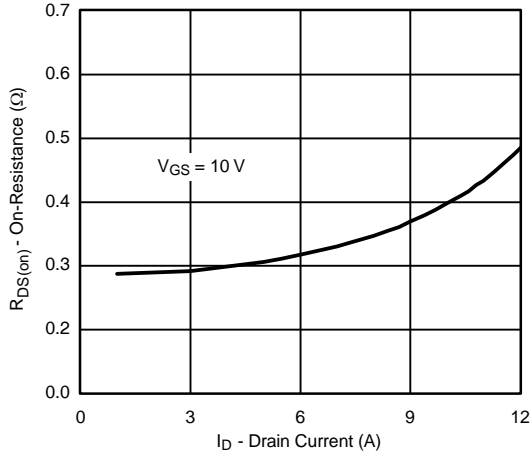


Output Characteristics

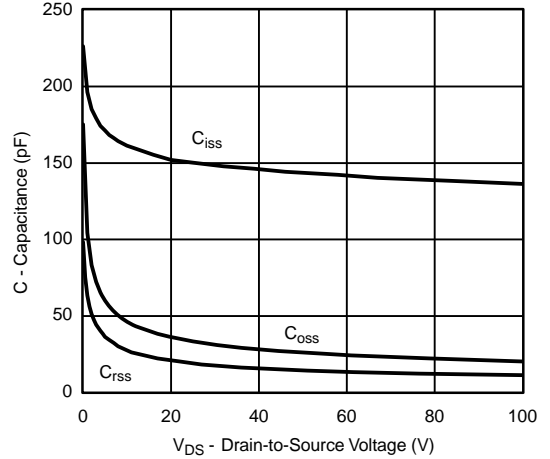


Transfer Characteristics

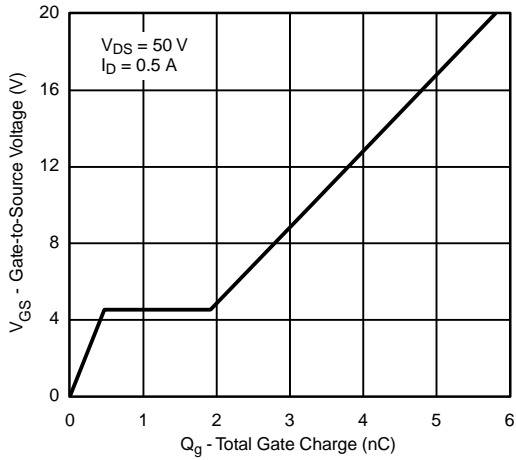
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



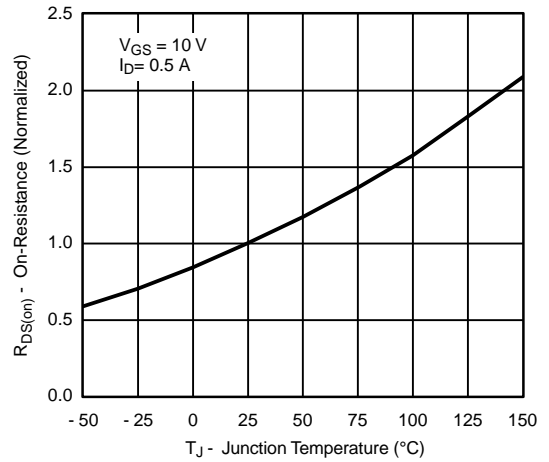
On-Resistance vs. Drain Current



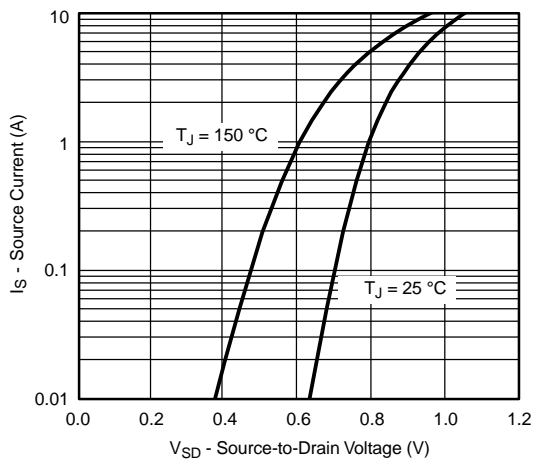
Capacitance



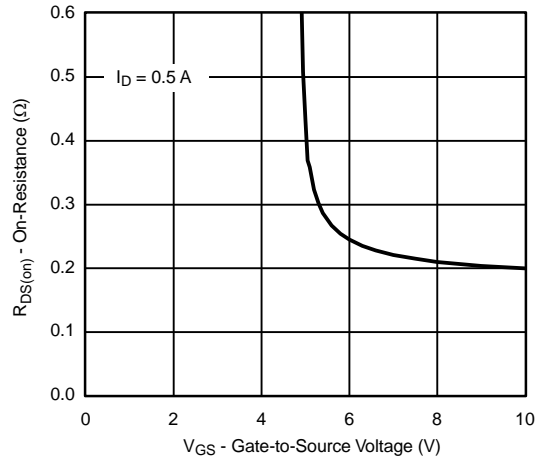
Gate Charge



On-Resistance vs. Junction Temperature

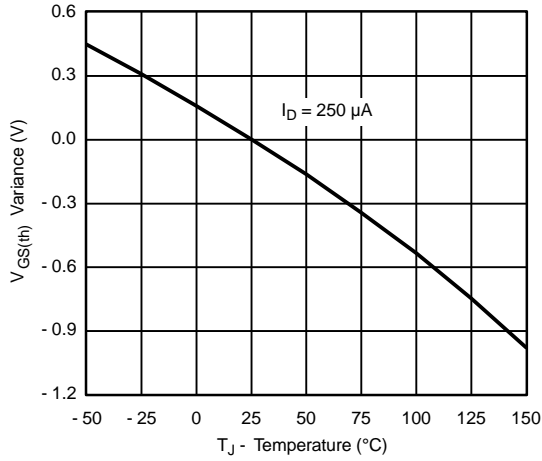


Source-Drain Diode Forward Voltage

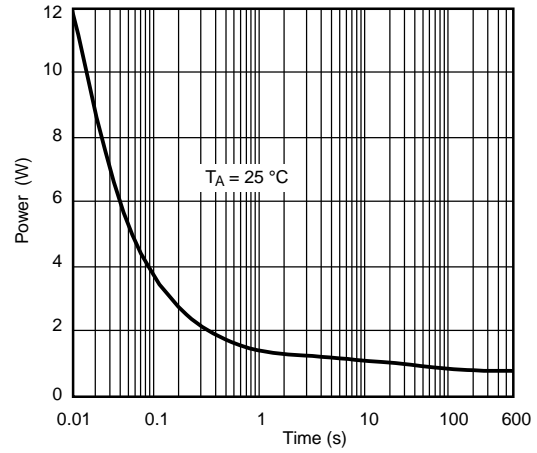


On-Resistance vs. Gate-to-Source Voltage

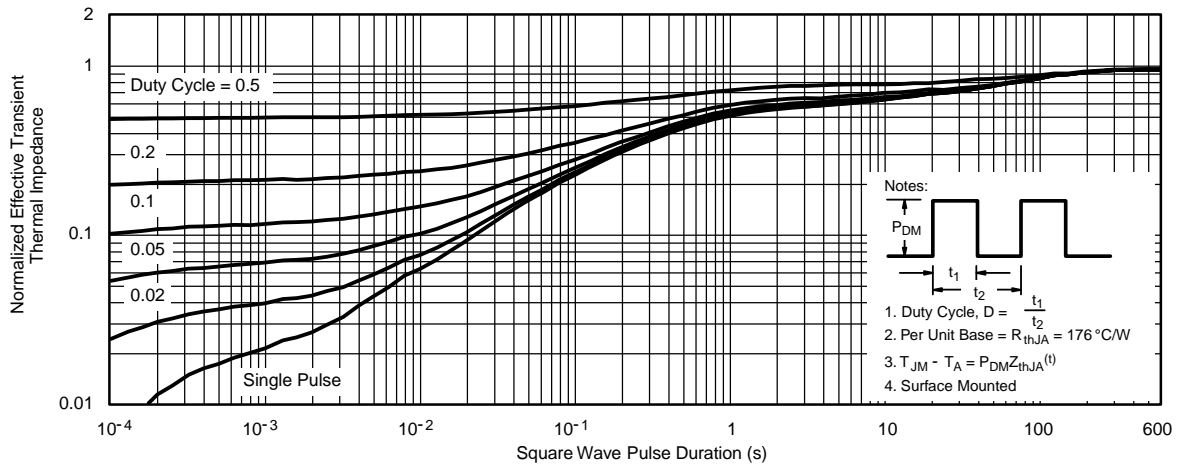
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Threshold Voltage

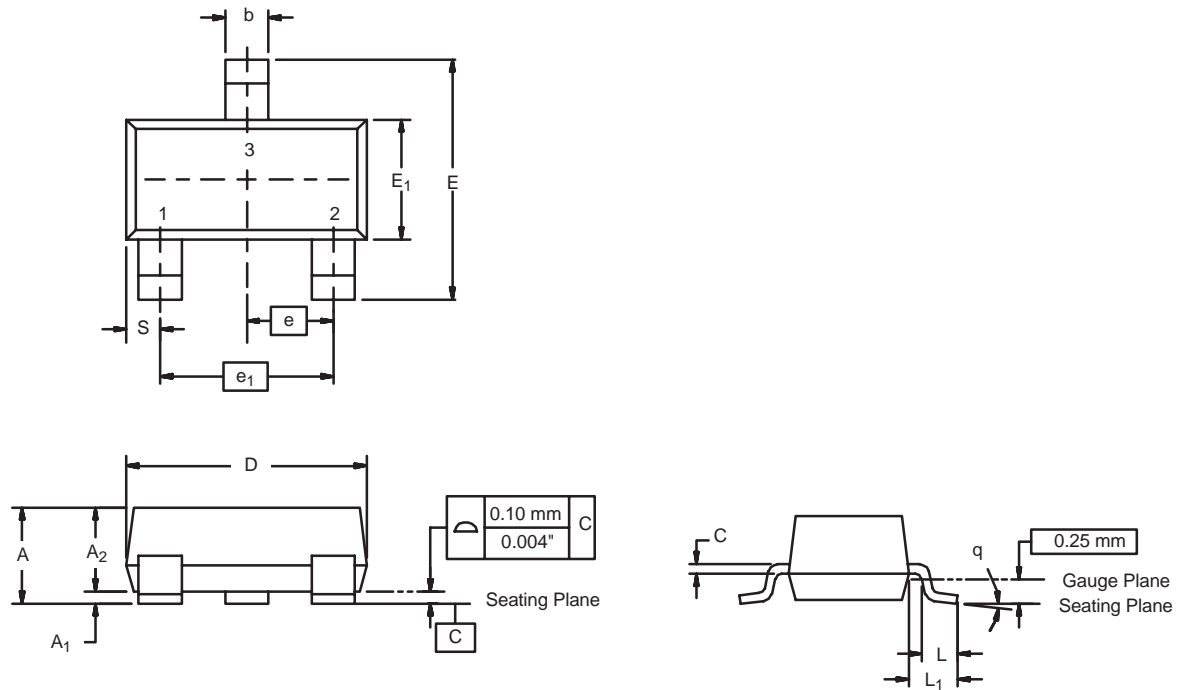


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

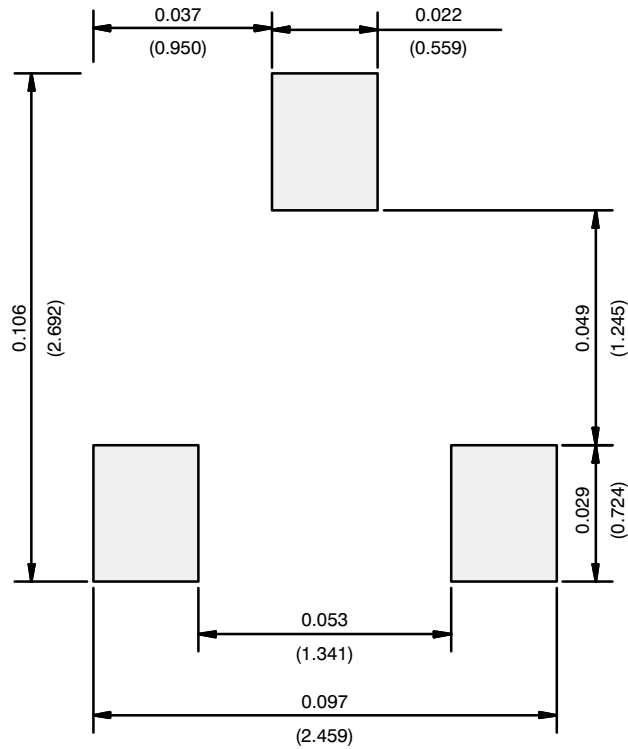
SOT-23 (TO-236): 3-LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A ₁	0.01	0.10	0.0004	0.004
A ₂	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E ₁	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e ₁	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L ₁	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°

ECN: S-03946-Rev. K, 09-Jul-01
DWG: 5479

RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads
Dimensions in Inches/(mm)

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