优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Product Summary

BV_{DSS}	$R_{DS(on)}$	I_D T_A = +25°C
200V	10Ω @ V_{GS}= 10V	0.32A

Features and Benefits

- $V_{(BR)DSS}$ > 200V
- $R_{DS(on)}$ ≤ 10 Ω @ V_{GS} = 10V

Description and Applications

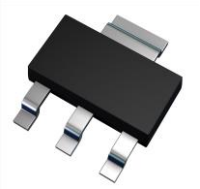
This MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- DC-DC Converters
- Automotive Solenoids / Relay Drivers

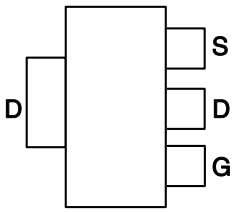
Mechanical Data

- Package: SOT223 (Type DN)
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

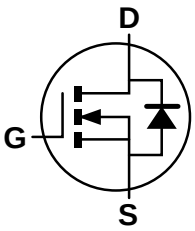
SOT223 (Type DN)



Top View



Pin Out - Top



Equivalent Circuit

Maximum Ratings (@ T_A = +25°C, unless otherwise specified.)

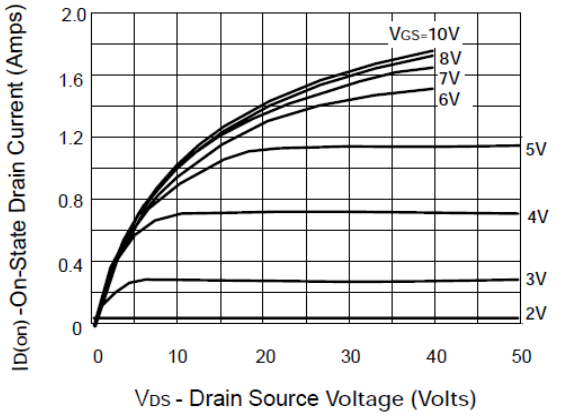
Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	200	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	0.32	A
Pulsed Drain Current	I_{DM}	2	A
Power Dissipation	P_D	2	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

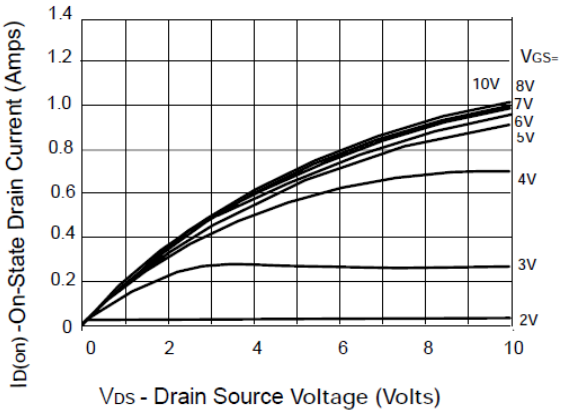
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	200	-	-	V	V_{GS} = 0V, I_D = 1mA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	10 100	μA μA	V_{DS} = 200V, V_{GS} = 0V V_{DS} = 160V, V_{GS} = 0V, T_J = +125°C (Note 7)
Gate-Source Leakage	I_{GSS}	-	-	±20	nA	V_{GS} = ±20V, V_{DS} = 0V
On-State Drain Current (Note 6)	$I_{D(on)}$	500	-	-	mA	V_{GS} = 10V, V_{DS} = 25V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	1	-	3	V	V_{DS} = V_{GS}, I_D = 1mA
Static Drain-Source On-Resistance (Note 6)	$R_{DS(on)}$	-	-	10	Ω	V_{GS} = 10V, I_D = 250mA
Forward Transconductance (Notes 6, 7)	g_{fs}	100	-	-	mS	V_{DS} = 25V, I_D = 250mA
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	-	-	85	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	-	20	pF	
Reverse Transfer Capacitance	C_{rss}	-	-	7	pF	
Turn-On Delay Time (Note 8)	$t_{D(on)}$	-	-	8	ns	V_{DD} = 25V, I_D = 250mA
Turn-On Rise Time (Note 8)	t_R	-	-	8	ns	
Turn-Off Delay Time (Note 8)	$t_{D(off)}$	-	-	20	ns	
Turn-Off Fall Time (Note 8)	t_F	-	-	12	ns	

Notes:
5. Short duration pulse test used to minimize self-heating effect.
6. Measured under pulsed conditions. Width=300ms. Duty cycle ≤2%.
7. Guaranteed by design. Not subject to product testing.
8. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.

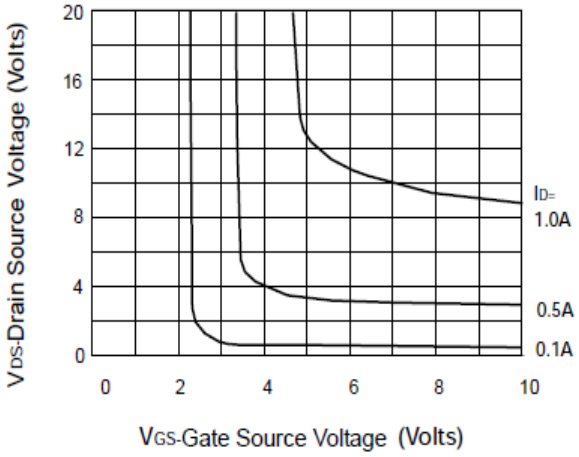
TYPICAL CHARACTERISTICS



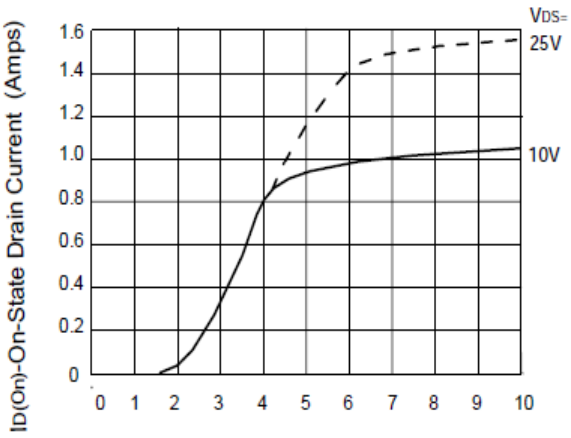
Output Characteristics



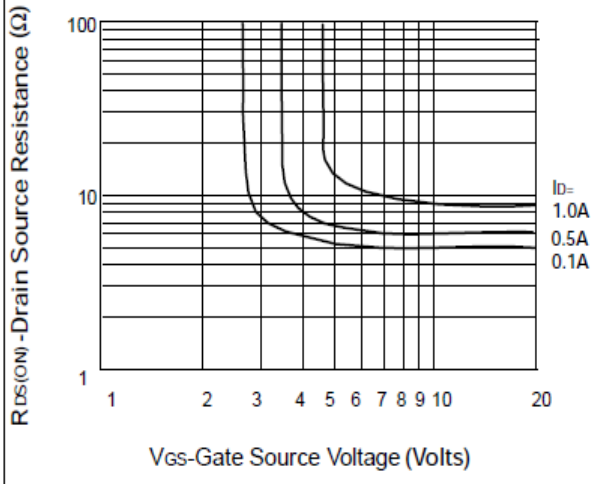
Saturation Characteristics



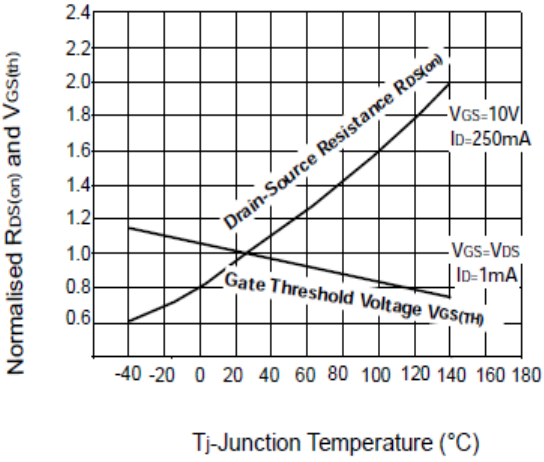
Voltage Saturation Characteristics



Transfer Characteristics

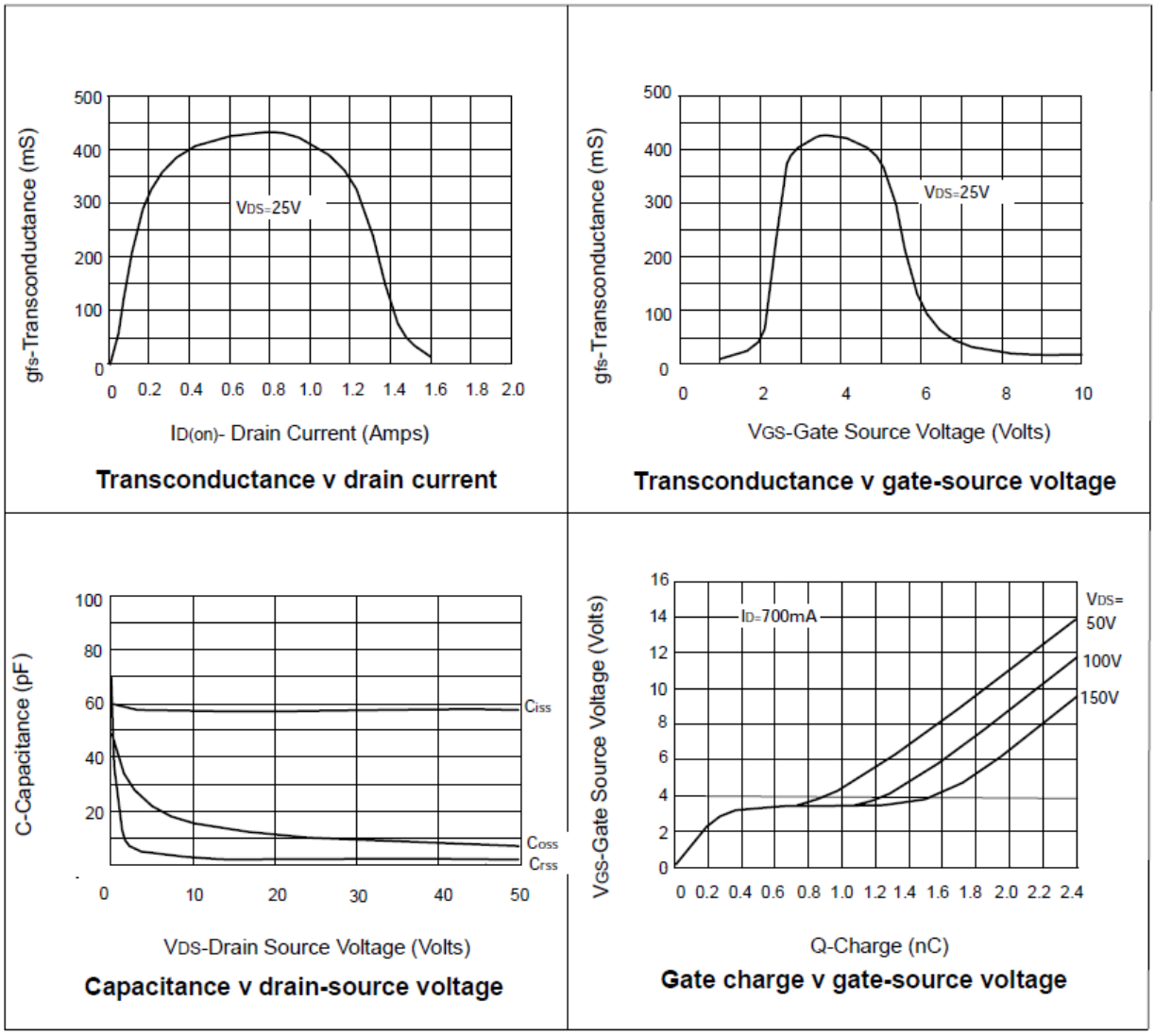


On-resistance vs gate-source voltage



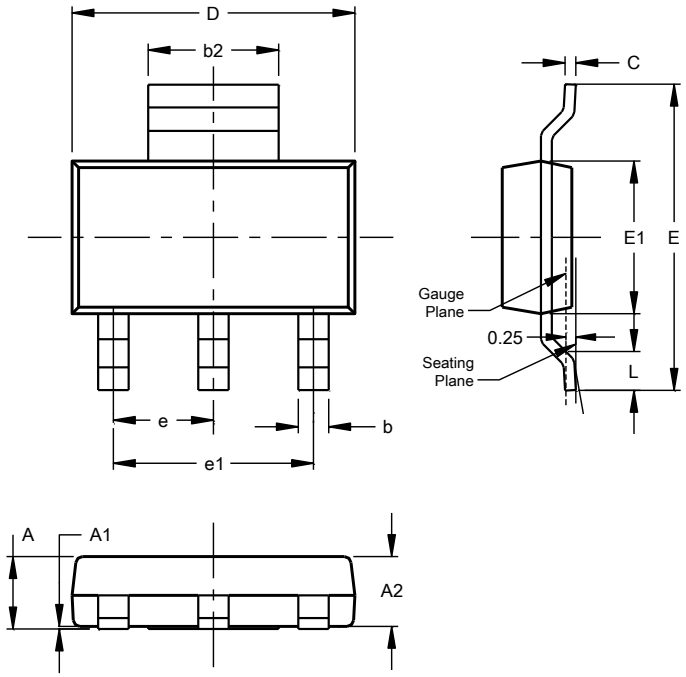
Normalised RDS(on) and VGS(th) v Temperature

TYPICAL CHARACTERISTICS



Package Outline Dimensions

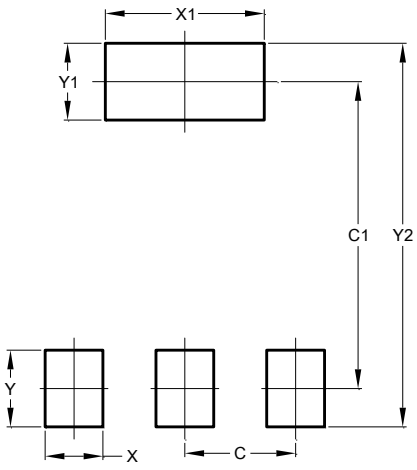
SOT223 (Type DN)



SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00