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

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D T_A = +25°C
200V	10Ω @ V_{GS} = 10V	320mA

Features and Benefits

- High Voltage
- Low On-resistance
- Fast Switching Speed
- Low Gate Drive
- Low Threshold

Description and Applications

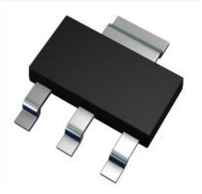
This new generation trench MOSFET features a unique structure combining the benefits of low on-resistance and fast switching, making it ideal for high-efficiency power management applications.

- Offline power supply start-up circuitry

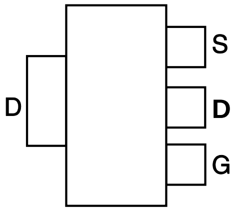
Mechanical Data

- Package: SOT223 (Type DN)
- Package Material: Molded Plastic, “Green” Molding Compound; 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)

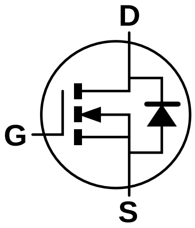
SOT223 (Type DN)



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 (V_{GS} = 10V, T_A = +25°C)	I_D	320	mA
Pulsed Drain Current	I_{DM}	2	A

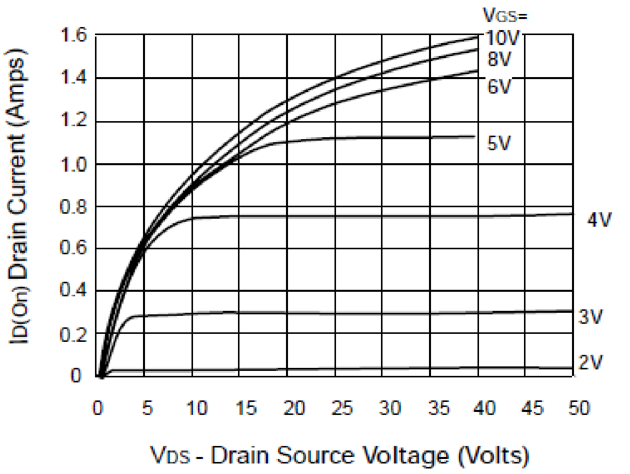
Thermal Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = +25°C (Note 5)	P_D	2.0	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

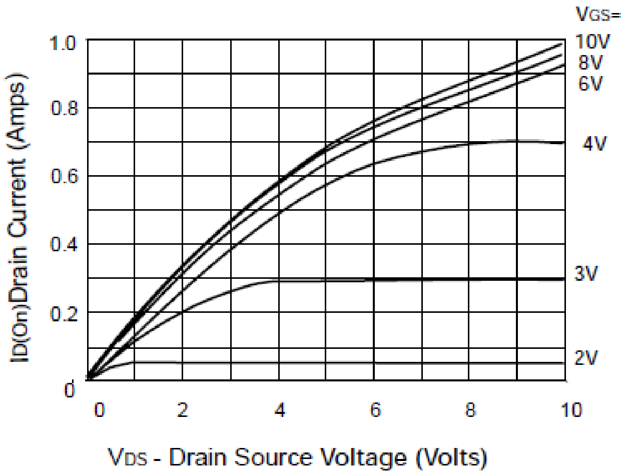
Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	200	-	-	V	V_{GS} = 0V, I_D = 1mA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	10 100	µA	V_{DS} = 200V, V_{GS} = 0V V_{DS} = 160V, V_{GS} = 0V, T = +125°C
Gate-Source Leakage	I_{GSS}	-	-	100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.5	V	V_{DS} = V_{GS}, I_D = 1mA
Static Drain-Source On-Resistance (Note 6)	$R_{DS(on)}$	-	-	10	Ω	V_{GS} = 5V, I_D = 250mA
		-	-	10	Ω	V_{GS} = 3V, I_D = 125mA
Forward Transconductance (Notes 6, 7)	g_{fs}	200	-	-	mS	V_{DS} = 25V, I_D = 250mA
On-State Drain Current (Note 6)	$I_{D(on)}$	500	-	-	mA	V_{DS} = 25V, V_{GS} = 5V
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	

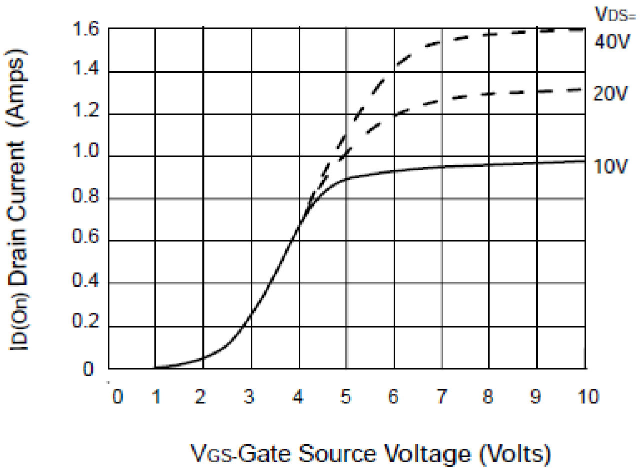
Notes:
5. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
6. Measured under pulsed conditions. Pulse width≦300µs. Duty cycle ≦2%.
7. Sample test.
8. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.



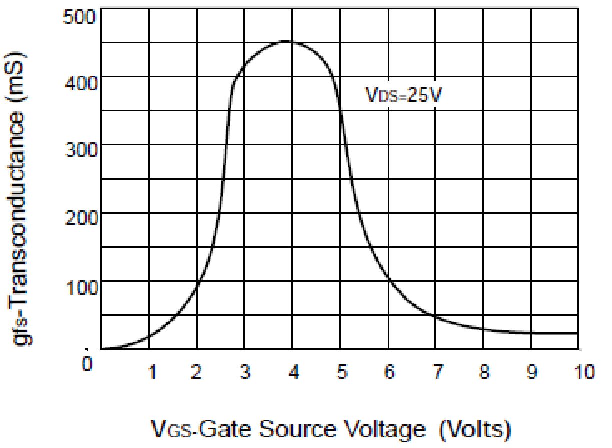
Output Characteristics



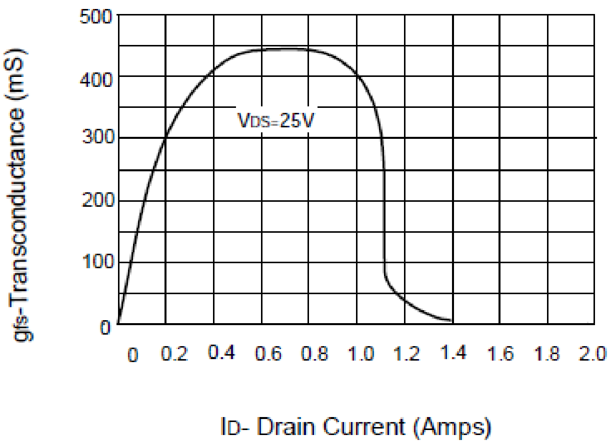
Saturation Characteristics



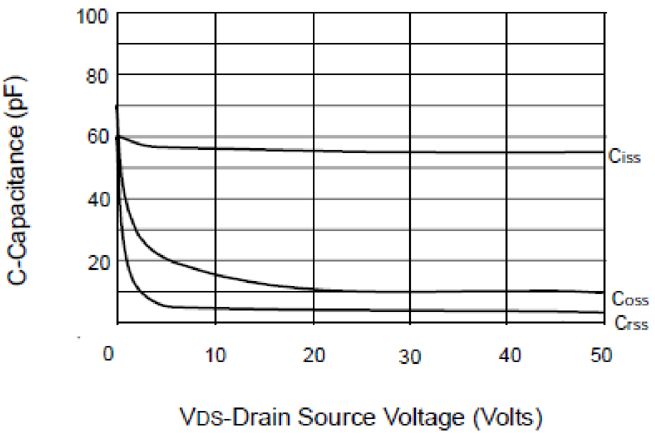
Transfer Characteristics



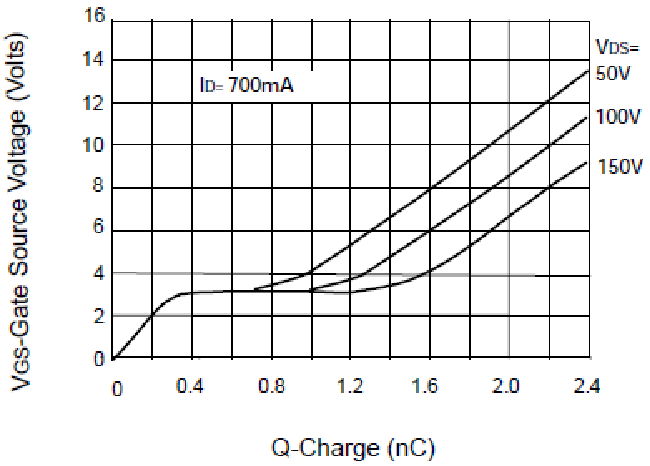
Transconductance v gate-source voltage



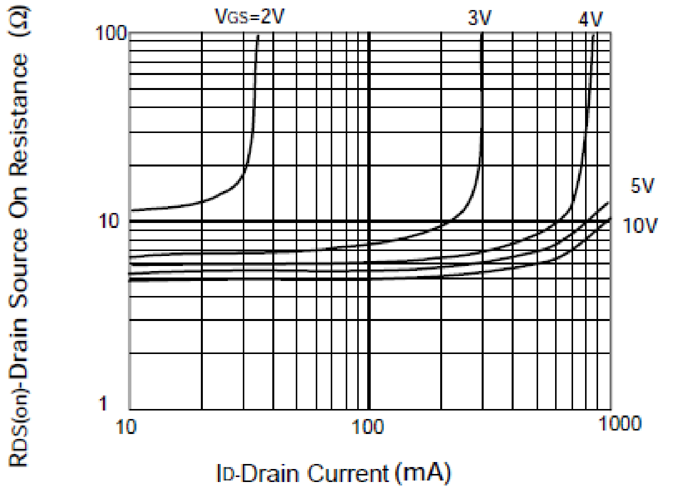
Transconductance v drain current



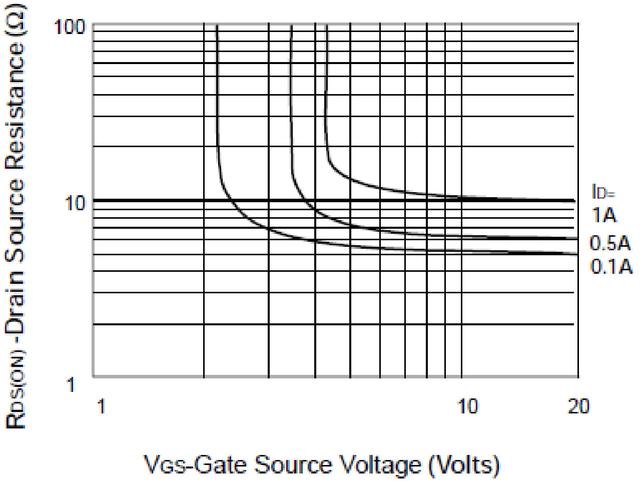
Capacitance v drain-source voltage



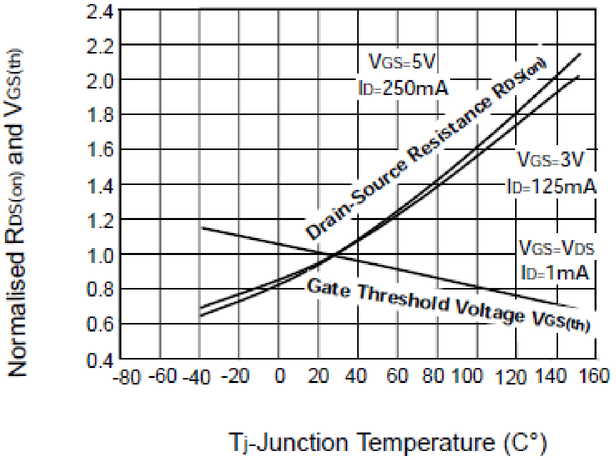
Gate charge v gate-source voltage



On-resistance v drain current



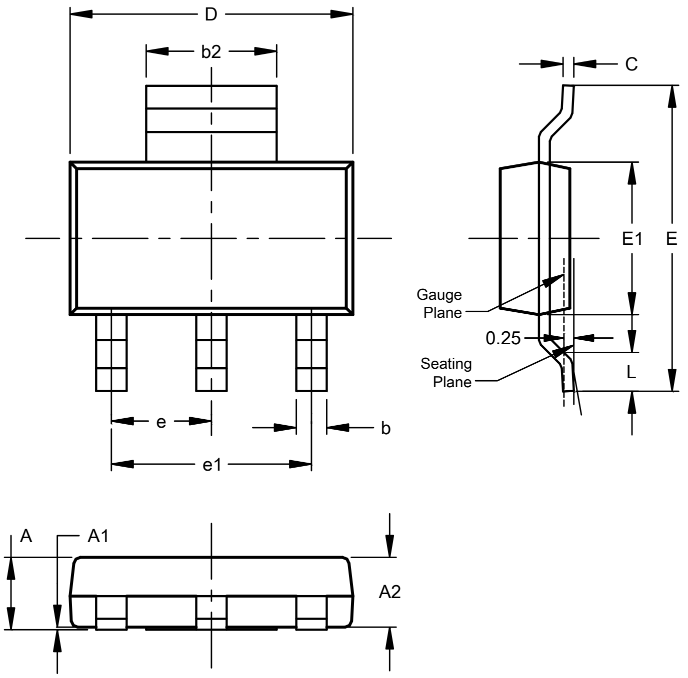
On-resistance vs gate-source voltage



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

Package Outline Dimensions

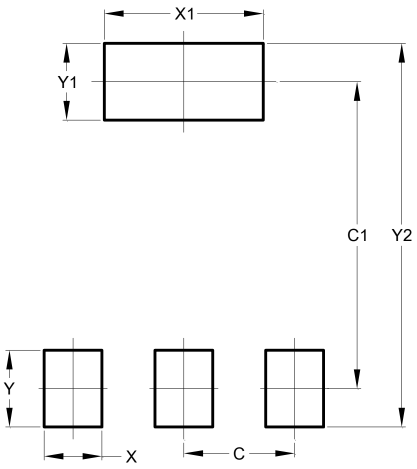
SOT223 (Type DN)



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