



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**

0755-83047638

ysbdt@szyoushang.cn

www.szyoushang.cn



企业微信二维码



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## Product Summary

<b>BV<sub>DSS</sub></b>	<b>Max R<sub>DS(ON)</sub></b>	<b>Max I<sub>D</sub> T<sub>A</sub> = +25°C</b>
240V	5.5Ω @ V <sub>GS</sub> = 10V	500mA

## Features and Benefits

- 240 Volt BVDS
- Extremely Low R<sub>DS(ON)</sub>=4.3Ω
- Low Threshold and Fast Switching

## Description and Applications

This MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Earth Recall and Dialing Switches
- Electronic Hook Switches
- Battery Powered Equipment
- Telecoms and High Voltage DC-DC Convertors

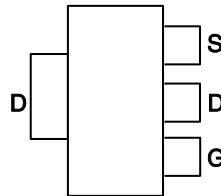
## Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.112 grams (Approximate)

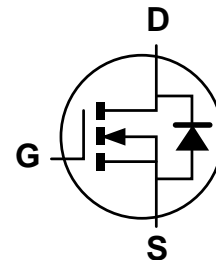
SOT223 (Type DN)



Top View



Pin Out Top-View



Equivalent Circuit

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	240	V
Gate-Source Voltage	$V_{GS}$	$\pm 40$	V
Continuous Drain Current	$I_D$	500	mA
Pulsed Drain Current	$I_{DM}$	1.5	A

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

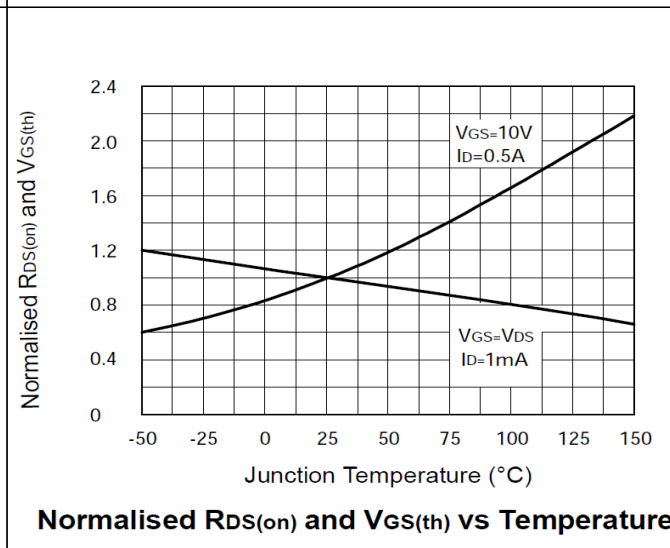
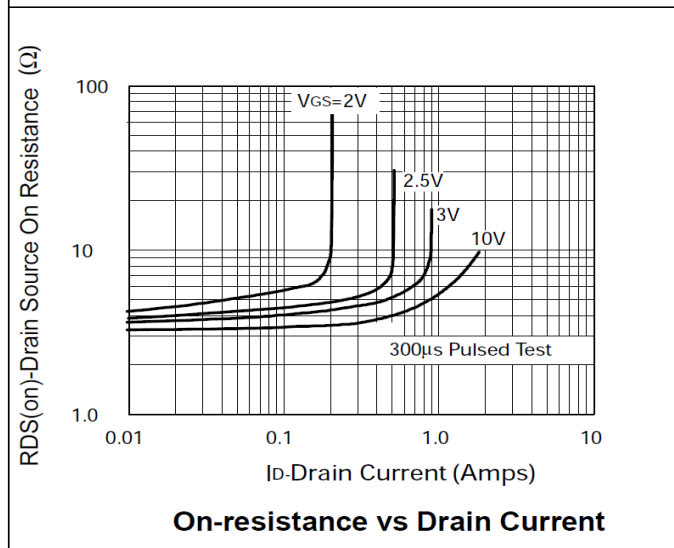
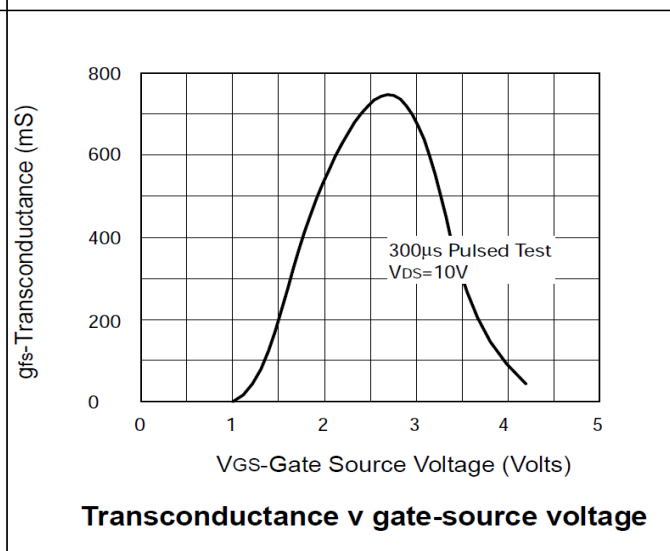
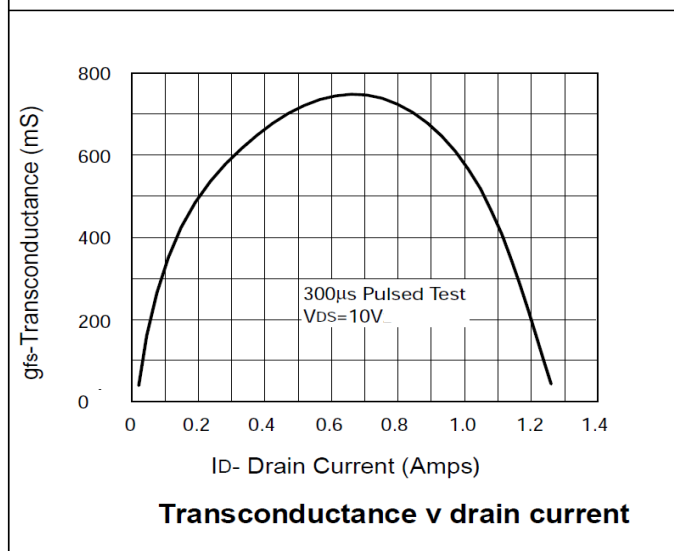
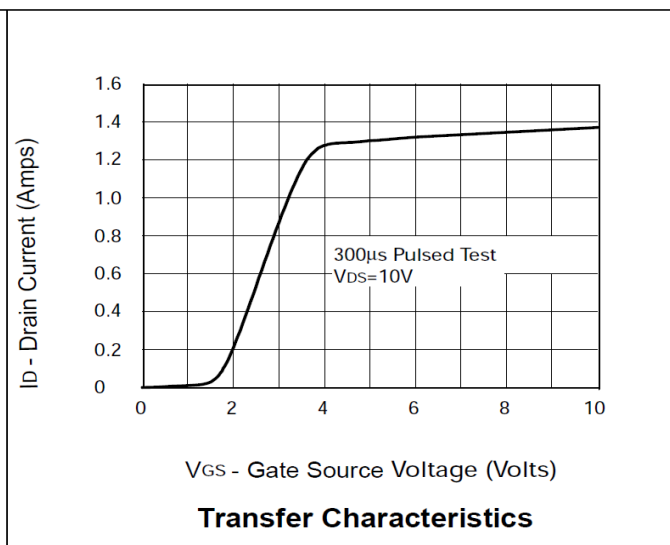
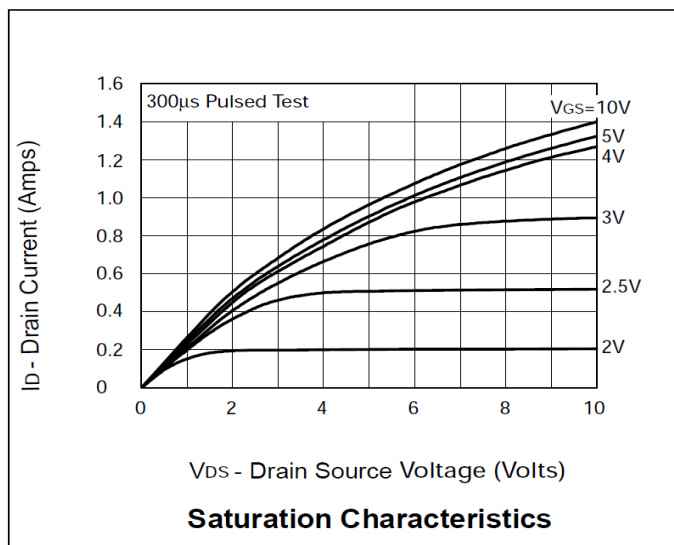
Characteristic	Symbol	Value	Unit
Power Dissipation at $T_A = +25^\circ\text{C}$	$P_{TOT}$	2.5	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

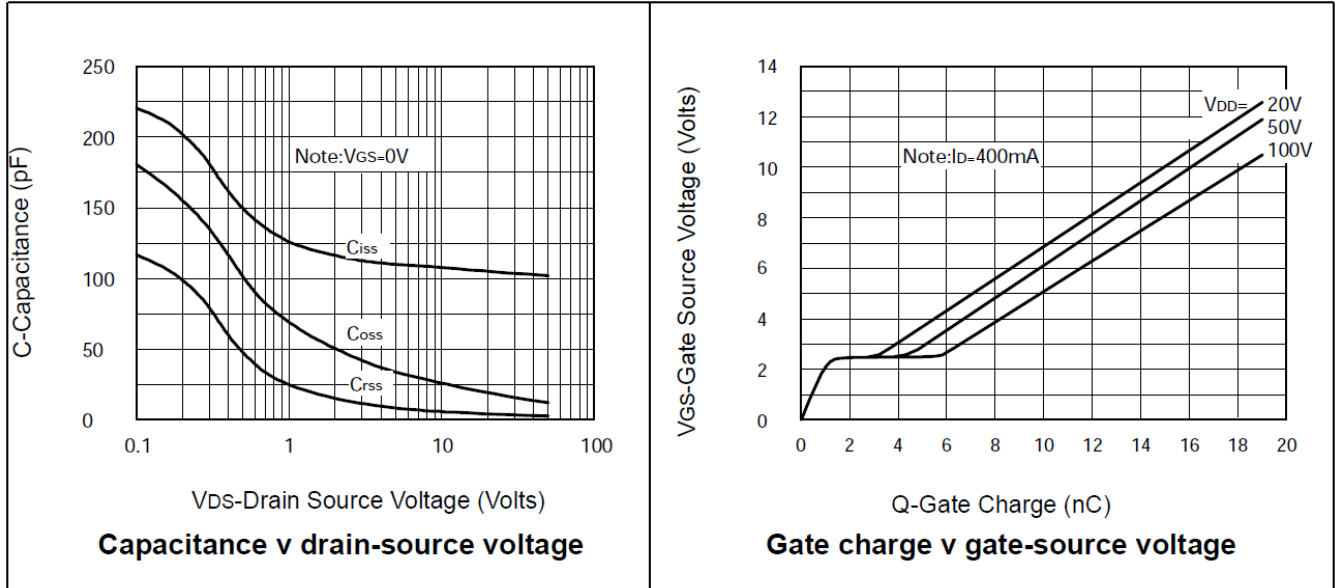
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	240	—	—	V	$I_D = 1\text{mA}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	10 100	$\mu\text{A}$	$V_{DS} = 240\text{V}, V_{GS} = 0\text{V}$ $V_{DS} = 190\text{V}, V_{GS} = 0\text{V}, T_A = +125^\circ\text{C}$
Gate-Body Leakage	$I_{GSS}$	—	—	100	nA	$V_{GS} = \pm 40\text{V}, V_{DS} = 0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(TH)}$	0.8	1.3	1.8	V	$I_D = 1\text{mA}, V_{DS} = V_{GS}$
<b>ON CHARACTERISTICS</b>						
On-State Drain Current (Note 6)	$I_{D(ON)}$	0.8	1.4	—	A	$V_{DS} = 10\text{V}, V_{GS} = 10\text{V}$
Static Drain-Source On-State Resistance (Note 6)	$R_{DS(ON)}$	—	4	5.5	$\Omega$	$V_{GS} = 10\text{V}, I_D = 500\text{mA}$
		—	4.3	6		$V_{GS} = 2.5\text{V}, I_D = 500\text{mA}$
Forward Transconductance (Notes 6 & 7)	$g_{fs}$	0.4	0.75	—	S	$V_{DS} = 10\text{V}, I_D = 0.5\text{A}$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance (Note 7)	$C_{iss}$	—	110	200	pF	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
Output Capacitance (Note 7)	$C_{oss}$	—	15	25	pF	
Reverse Transfer Capacitance (Note 7)	$C_{rss}$	—	3.5	15	pF	
Turn-On Delay Time (Notes 7 & 8)	$t_{D(ON)}$	—	2.5	5	ns	$V_{DD} = 50\text{V}, V_{GEN} = 10\text{V}$ $I_D = 0.25\text{A}$
Turn-On Rise Time (Notes 7 & 8)	$t_R$	—	5	8	ns	
Turn-Off Delay Time (Notes 7 & 8)	$t_{D(OFF)}$	—	40	60	ns	
Turn-Off Fall Time (Notes 7 & 8)	$t_F$	—	16	25	ns	

- Notes:
6. Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .
  7. Sample test.
  8. Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator.

**Typical Characteristics**

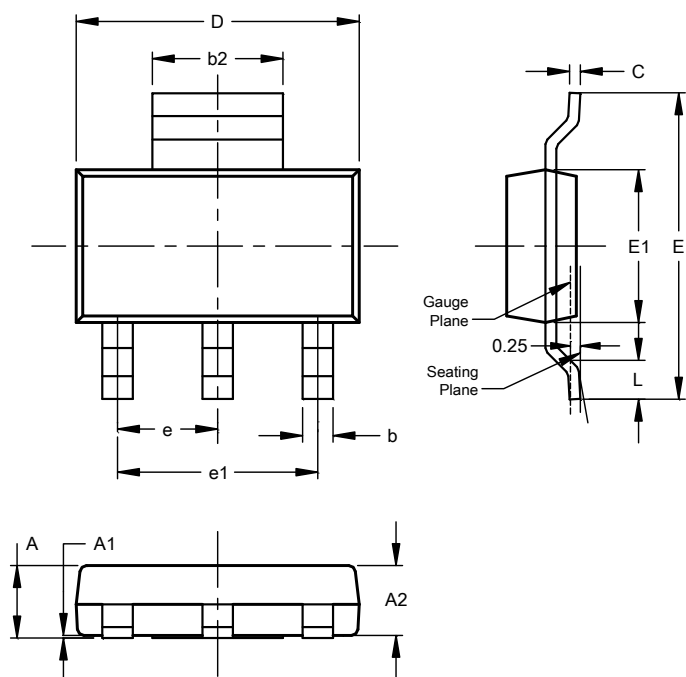


**Typical Characteristics** (Cont.)



### Package Outline Dimensions

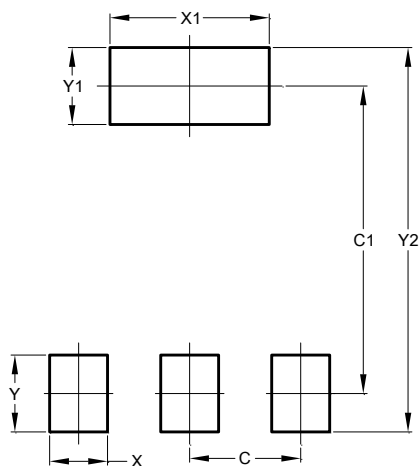
SOT223 (Type DN)



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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
C2	8.00