



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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Features and Benefits

- $V_{(BR)DSS} > 60V$
- $R_{DS(ON)} \leq 2\Omega @ V_{GS} = 10V$
- Maximum Continuous Drain Current $I_D = 0.71A$

Applications

- DC-DC Converters
- Solenoids / Relay Driver for Automotive

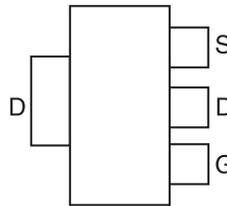
Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Ⓔ3
- Weight: 0.112 grams (Approximate)

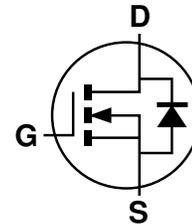
SOT223



Top View



Pin Out - Top



Equivalent Circuit

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	0.71	A
Pulsed Drain Current (Note 6)	I_{DM}	8	A

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

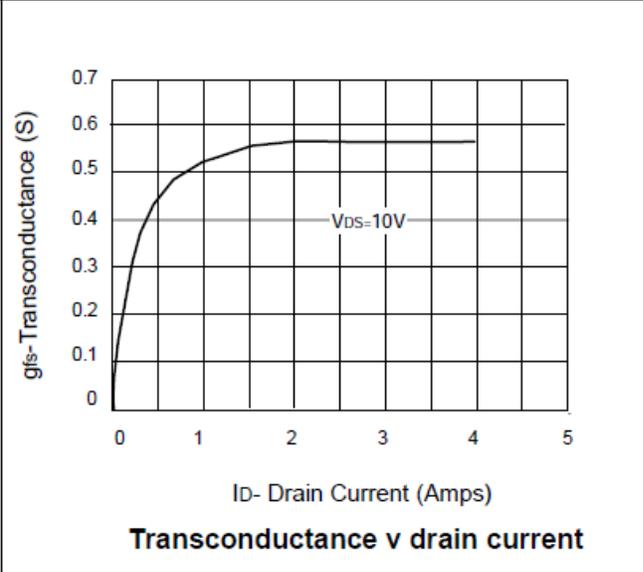
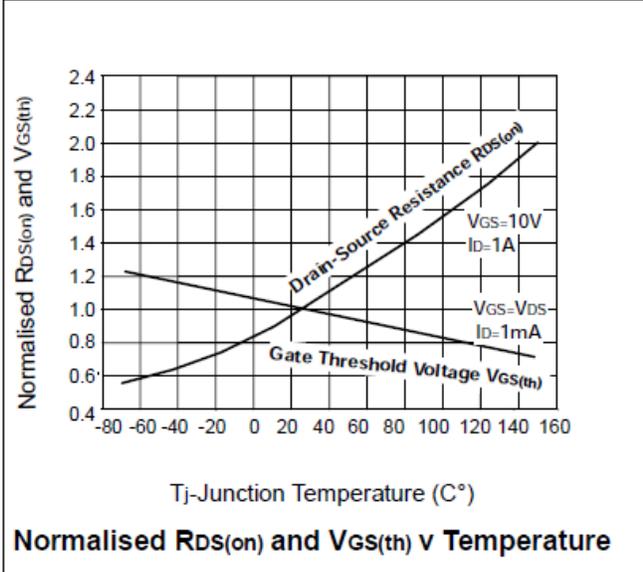
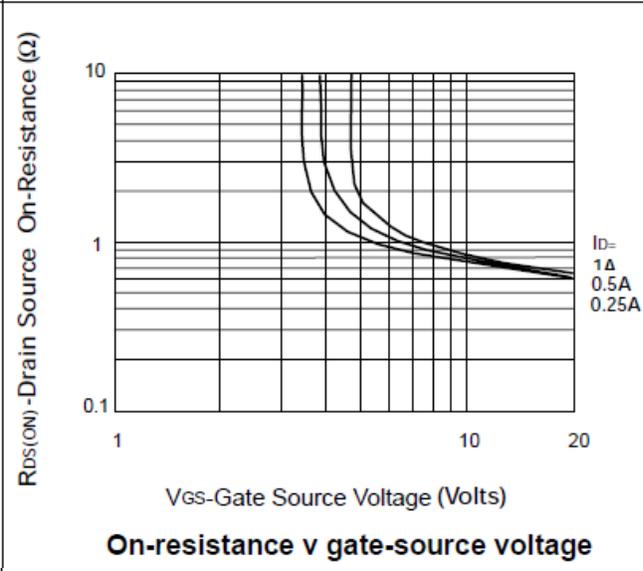
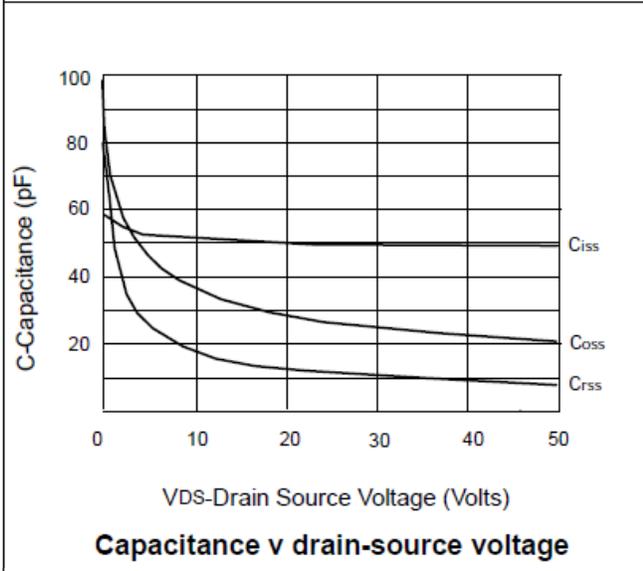
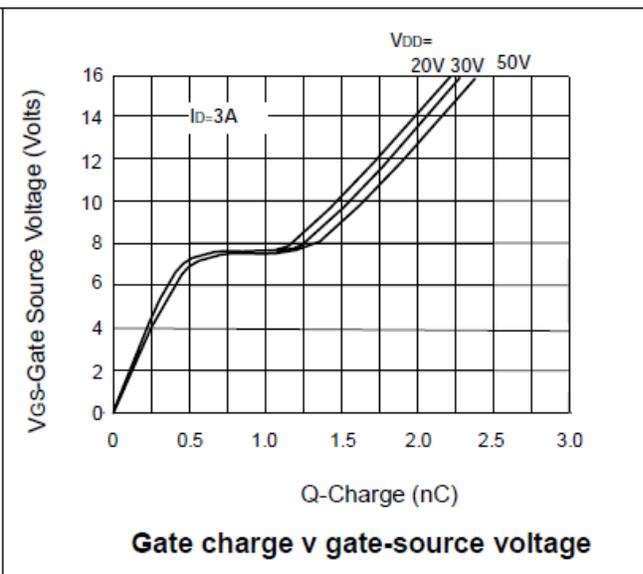
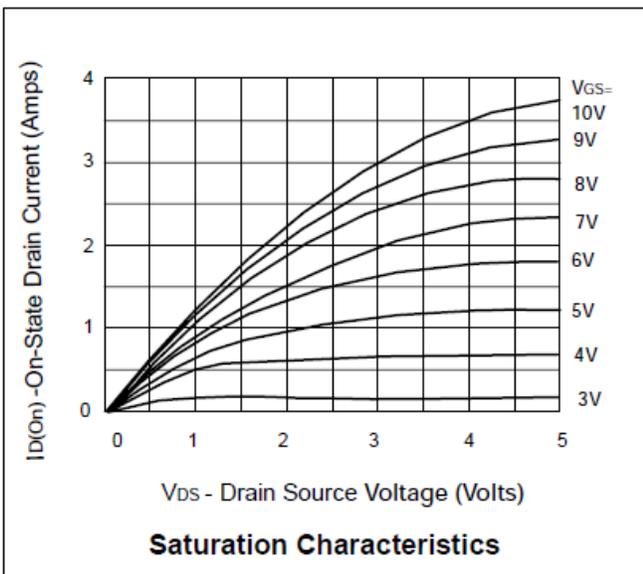
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	2	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

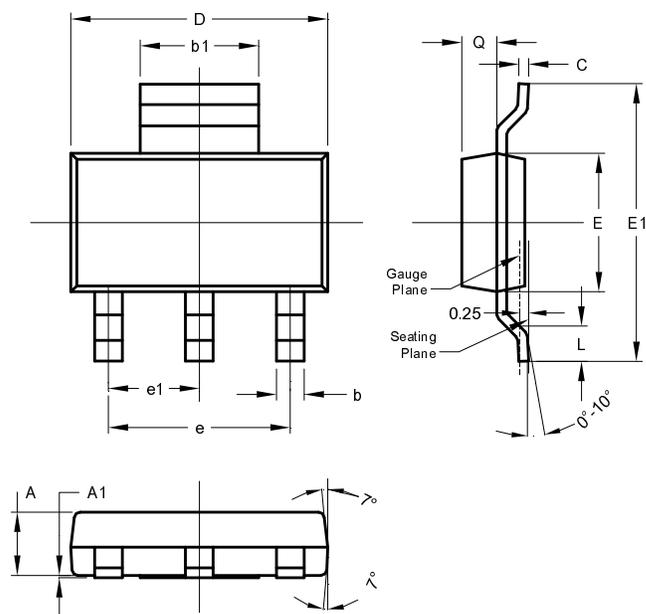
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS} = 0V, I_D = 1mA$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	500 100	nA μA	$V_{DS} = 60V, V_{GS} = 0V$ $V_{DS} = 48V, V_{GS} = 0V, T_A = +125^\circ\text{C}$
Gate-Source Leakage	I_{GSS}	-	-	± 20	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
On-State Drain Current	$I_{D(ON)}$	2	-	-	A	$V_{GS} = 10V, V_{DS} = 18V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.8	-	2.4	V	$V_{DS} = V_{GS}, I_D = 1mA$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	2	Ω	$V_{GS} = 10V, I_D = 1.0A$
Forward Transconductance	g_{fs}	0.3	-	-	S	$V_{DS} = 18V, I_D = 1.0A$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	-	75	pF	$V_{DS} = 18V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	C_{oss}	-	-	45	pF	
Reverse Transfer Capacitance	C_{rss}	-	-	20	pF	
Turn-On Delay Time	$t_{D(ON)}$	-	-	7	ns	$V_{DD} = 18V, I_D = 1A, V_{GEN} = 10V,$ $R_{GS} = 50\Omega$
Turn-On Rise Time	t_R	-	-	8	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	-	12	ns	
Turn-Off Fall Time	t_F	-	-	15	ns	

- Notes:
5. For a device mounted on 50mm x 50mm x 1.6mm FR-4 PCB with high coverage of single sided 2oz copper, in still air condition.
 6. Device mounted on minimum recommended pad layout test board, 10 μs pulse duty cycle = 1%.
 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to production testing.

Typical Characteristics

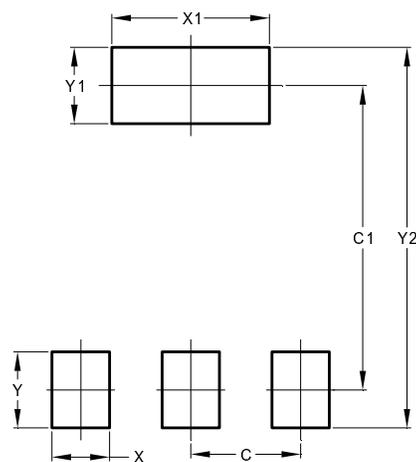


Package Outline Dimensions



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout



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