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
100V	6.0Ω @ V_{GS} = 10V	170mA

Description

This MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Small Servo Motor Control
- Power MOSFET Gate Drivers
- Switching Applications

Features and Benefits

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- High Drain-Source Voltage Rating

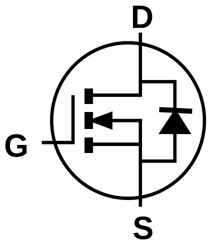
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
  Weight: 0.006 grams (approximate)

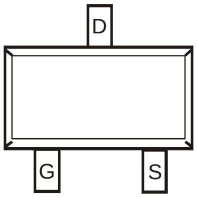
e3

SOT323

Top View



Equivalent Circuit



Top View

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

Characteristic		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	100	V
Drain-Gate Voltage $R_{GS} \leq 20K\Omega$		V_{DGR}	100	V
Gate-Source Voltage	Continuous	V_{GSS}	±20	V
Drain Current (Note 6)	Continuous Pulsed	I_D I_{DM}	170 680	mA

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

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	625	°C/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 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0 10	µA nA	V_{DS} = 100V, V_{GS} = 0V V_{DS} = 20V, V_{GS} = 0V
Gate-Body Leakage, Forward	I_{GSSF}	—	—	50	nA	V_{GS} = 20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	1.4	2.0	V	V_{DS} = V_{GS}, I_D = 1mA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	— —	— —	6.0 10	Ω	V_{GS} = 10V, I_D = 0.17A V_{GS} = 4.5V, I_D = 0.17A
Forward Transconductance	g_{FS}	80	370	—	mS	V_{DS} = 10V, I_D = 0.17A, f = 1.0KHz
Drain-Source Diode Forward Voltage	V_{SD}	—	0.84	1.3	V	V_{GS} = 0V, I_S = 0.34A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	29	60	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	10	15	pF	
Reverse Transfer Capacitance	C_{rss}	—	2	6	pF	
SWITCHING CHARACTERISTICS(Note 8)						
Turn-On Rise Time	t_r	—	—	8	ns	V_{DD} = 30V, I_D = 0.28A, R_{GEN} = 6.0Ω, V_{GS} = 10V
Turn-Off Fall Time	t_f	—	—	16	ns	
Turn-On Delay Time	$t_{D(ON)}$	—	—	8	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	—	13	ns	

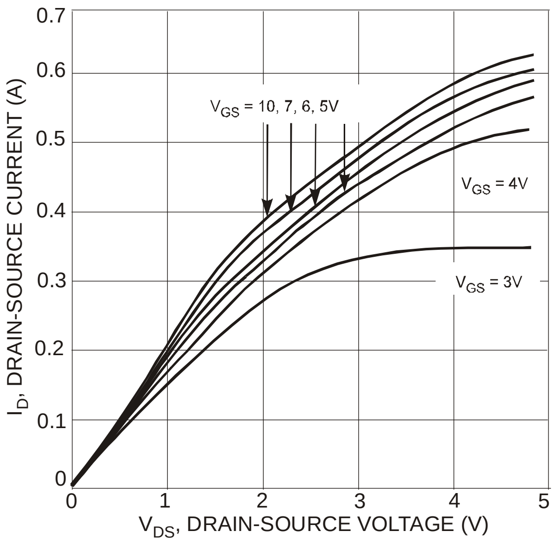


Fig. 1 On-Region Characteristics

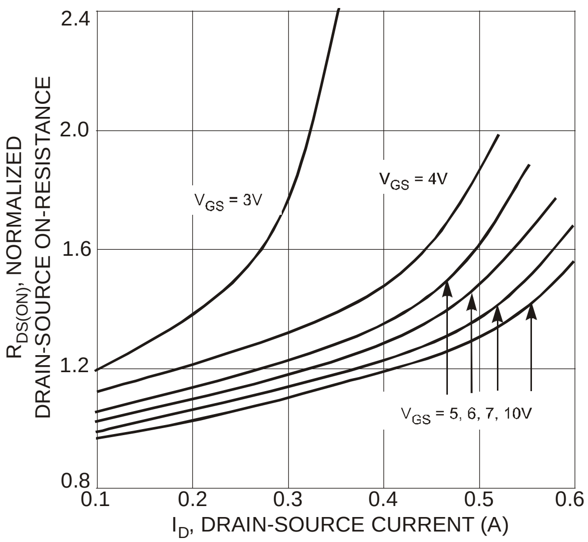


Fig. 2 On-Resistance Variation with Gate Voltage and Drain-Source Current

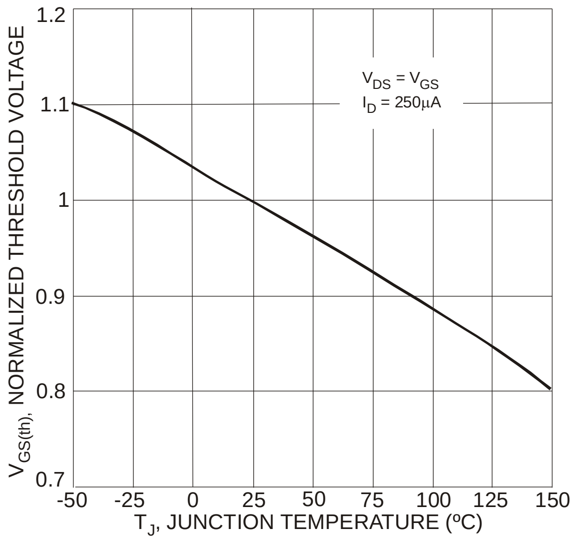


Fig. 3 Gate Threshold Variation with Temperature

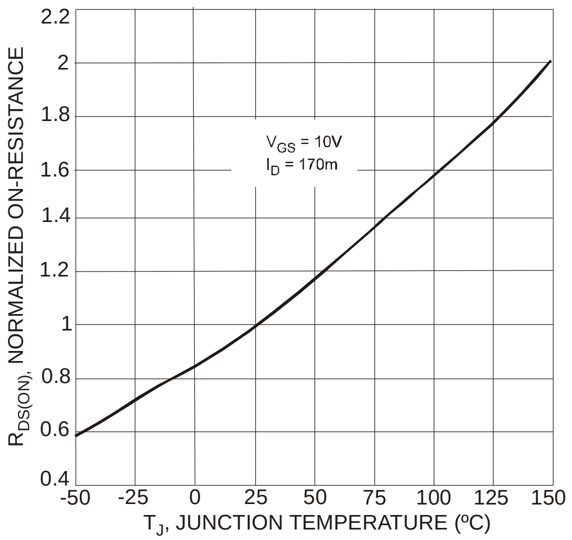


Fig. 4 On-Resistance Variation with Temperature

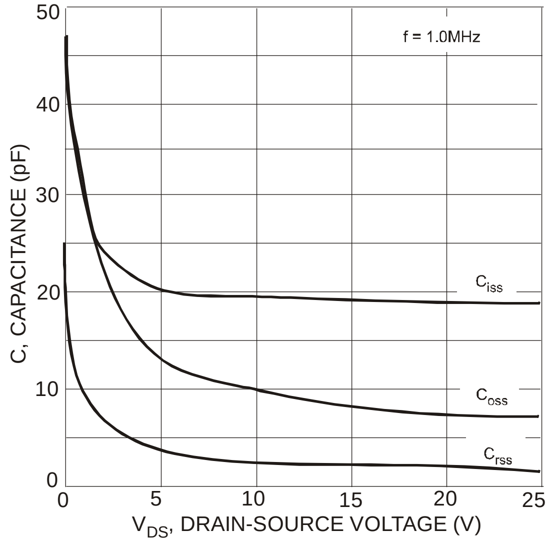


Fig. 5 Typical Capacitance

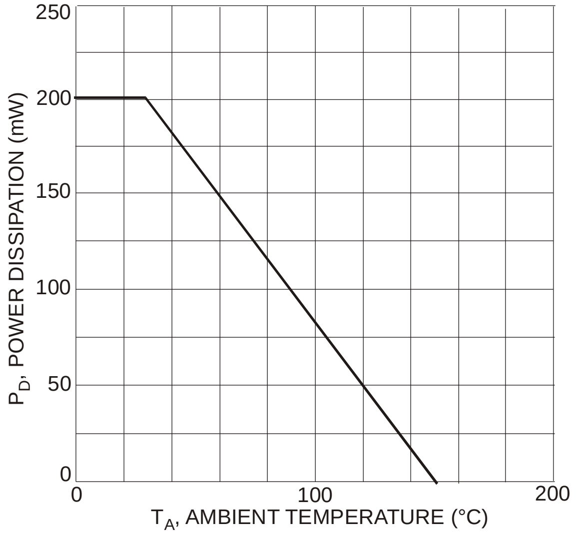
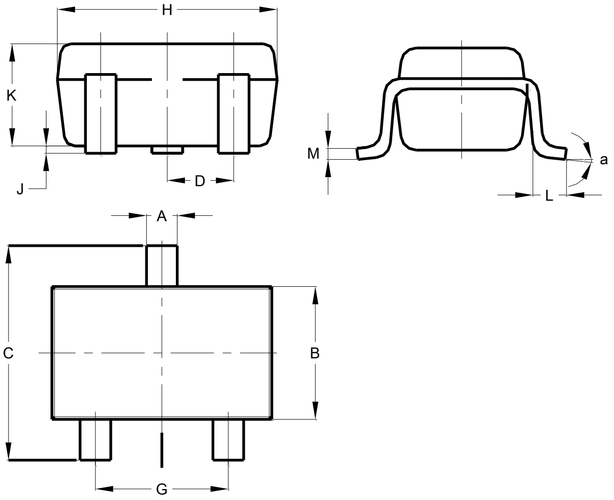


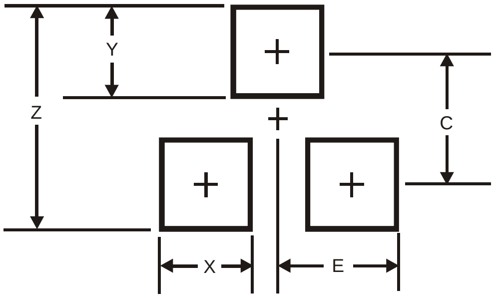
Fig. 6 Power Derating Curve, Total Package

Package Outline Dimensions



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.650 BSC		
F	0.375	0.475	0.425
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.00	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
a	8°C		
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0