



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



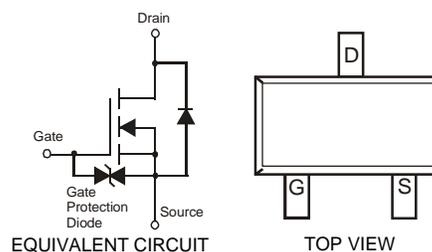
企业QQ二维码

Features

- Low On-Resistance:
 - 3.0 Ω @ 4.5V
 - 4.0 Ω @ 2.5V
 - 6.0 Ω @ 1.8V
 - 10 Ω @ 1.5V
- Very Low Gate Threshold Voltage, 1.0V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- ESD Protected Gate

Mechanical Data

- Case: SOT-523
- 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: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current (Note 1)	I_D	230	mA
Pulsed Drain Current	I_{DM}	805	mA

$T_P = 10\mu\text{s}$

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Total Power Dissipation (Note 1)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
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 4)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	$V_{GS} = 0V, I_D = 100\mu A$
Zero Gate Voltage Drain Current @ $T_C = 25^\circ\text{C}$	I_{DSS}	—	—	500	nA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Body Leakage	I_{GSS}	—	—	± 1	μA	$V_{GS} = \pm 10V, V_{DS} = 0V$
				± 500	nA	$V_{GS} = \pm 8V, V_{DS} = 0V$
				± 100	nA	$V_{GS} = \pm 5V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	1.8	3.0	Ω	$V_{GS} = 4.5V, I_D = 100mA$
			2.4	4.0		$V_{GS} = 2.5V, I_D = 50mA$
			2.9	6.0		$V_{GS} = 1.8V, I_D = 20mA$
			3.7	10.0		$V_{GS} = 1.5V, I_D = 10mA$
			5.4	15.0		$V_{GS} = 1.2V, I_D = 1mA$
Forward Transconductance	$ Y_{fs} $	—	242	—	mS	$V_{DS} = 10V, I_D = 0.1A$
Source-Drain Diode Forward Voltage	V_{SD}	0.5	—	1.0	V	$V_{GS} = 0V, I_S = 115mA$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	14.1	—	pF	$V_{DS} = 15V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	C_{oss}	—	2.9	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	1.6	—	pF	
SWITCHING CHARACTERISTICS, $V_{GS} = 4.5V$ (Note 5)						
Turn-On Delay Time	$t_{d(on)}$	—	3.8	—	ns	$V_{GS} = 4.5V, V_{DD} = 10V$ $I_D = 200mA, R_G = 2.0\Omega$
Rise Time	t_r	—	7.9	—		
Turn-Off Delay Time	$t_{d(off)}$	—	13.4	—		
Fall Time	t_f	—	15.2	—		

Notes: 4. Short duration pulse test used to minimize self-heating effect.
5. Switching characteristics are independent of operating junction temperature.

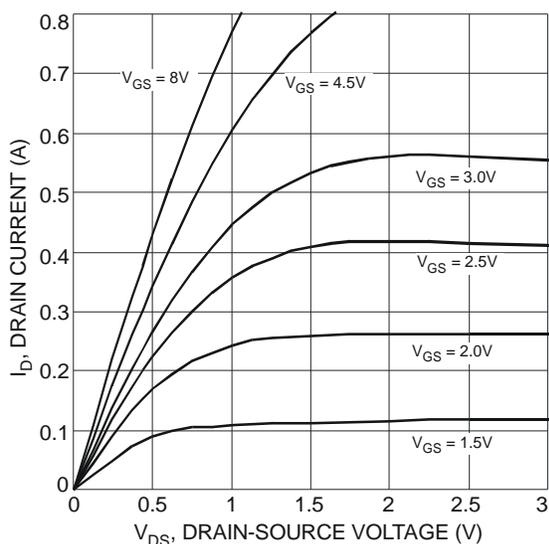


Fig. 1 Typical Output Characteristic

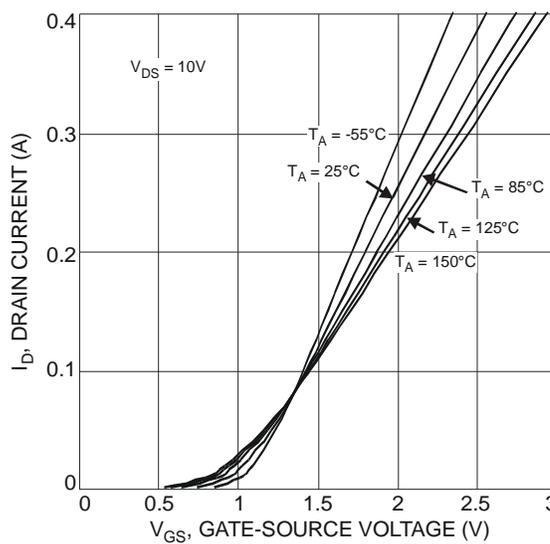


Fig. 2 Typical Transfer Characteristic

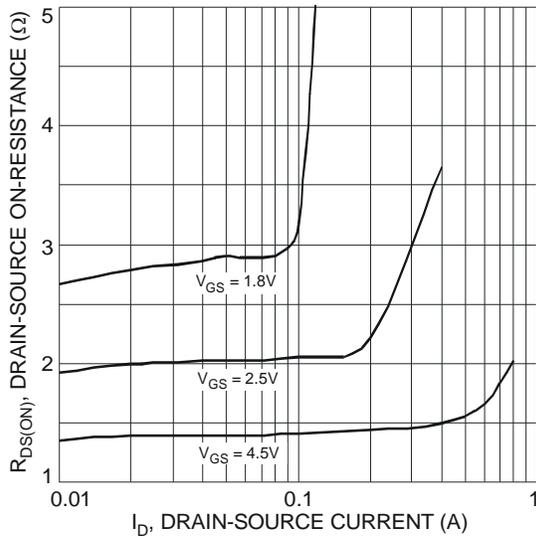


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

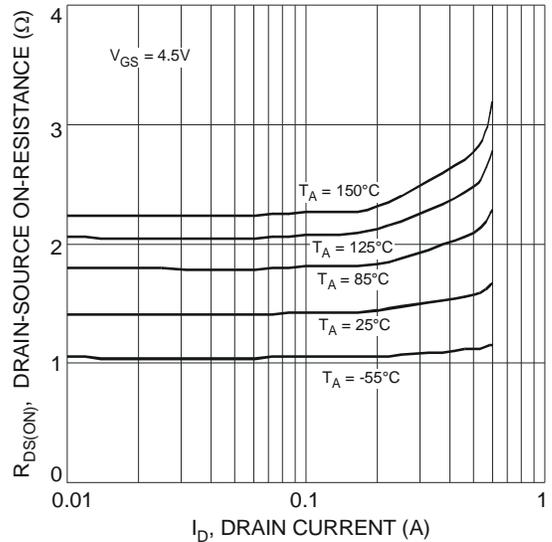


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

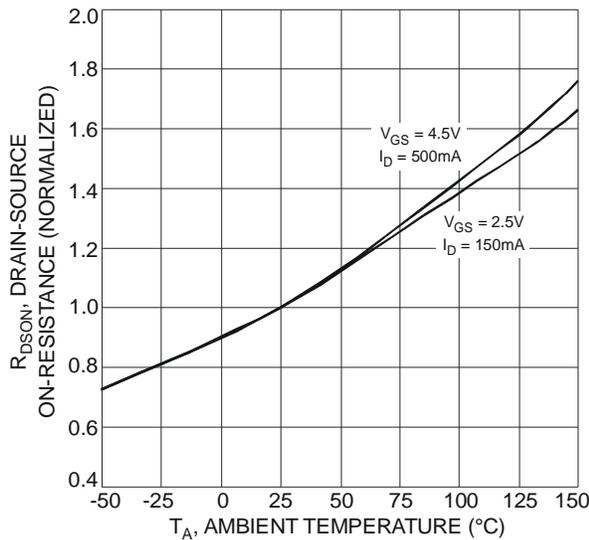


Fig. 5 On-Resistance Variation with Temperature

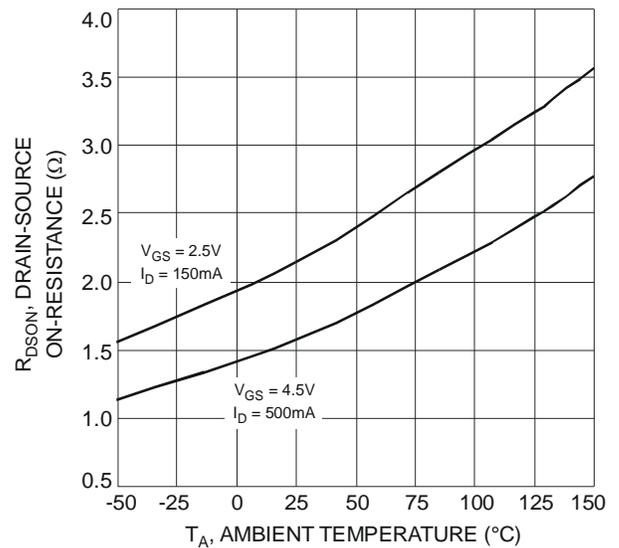


Fig. 6 On-Resistance Variation with Temperature

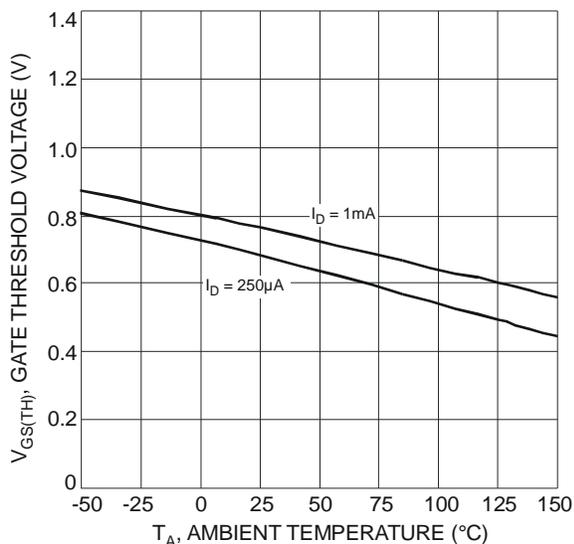


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

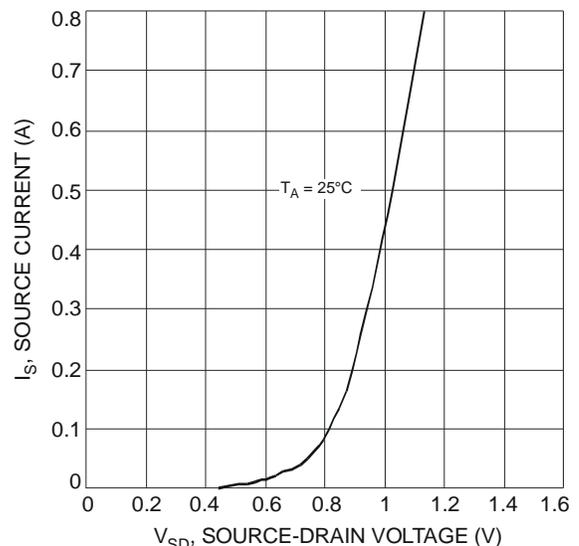


Fig. 8 Diode Forward Voltage vs. Current

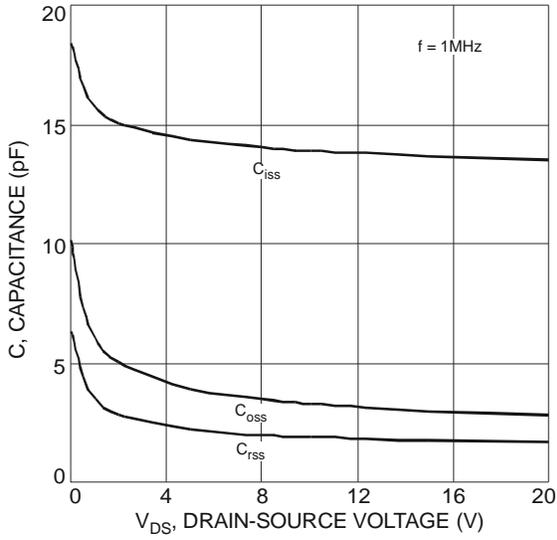


Fig. 9 Typical Total Capacitance

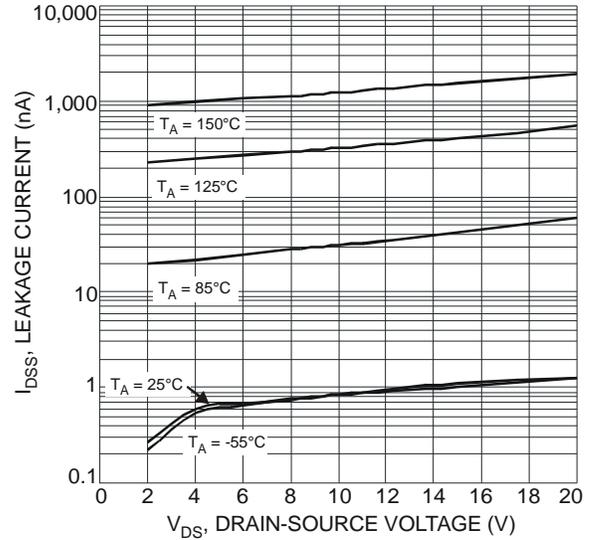


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

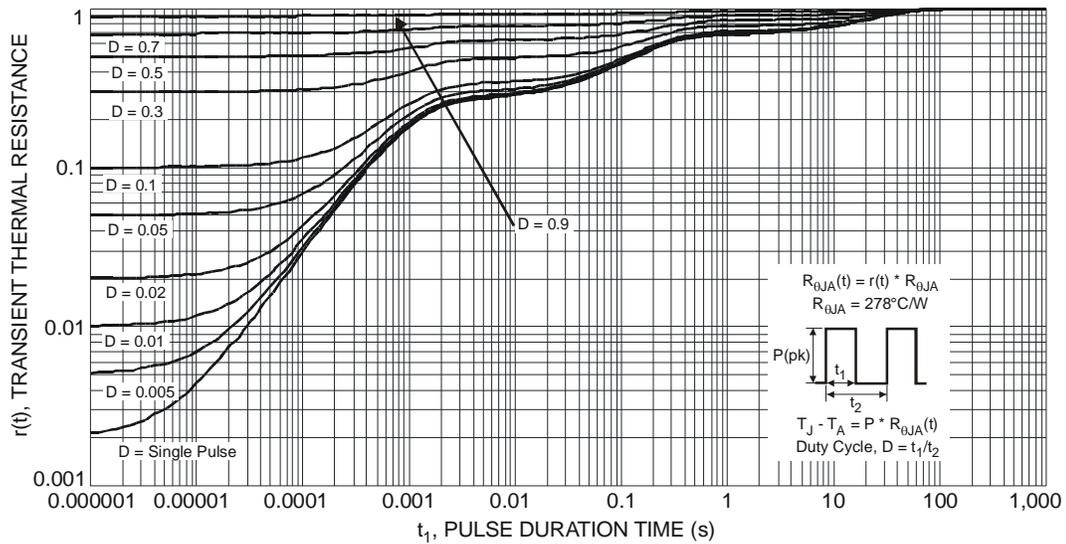
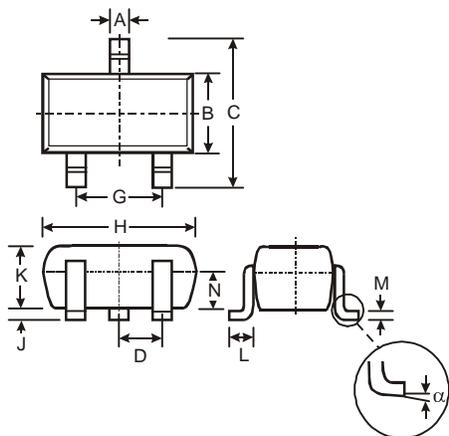


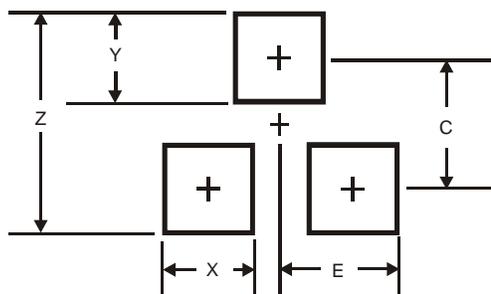
Fig. 11 Transient Thermal Response

Package Outline Dimensions



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.8
X	0.4
Y	0.51
C	1.3
E	0.7