



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

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	$I_D$ max $T_A = +25^\circ C$
20V	24m $\Omega$ @ $V_{GS} = 4.5V$	8A
	29m $\Omega$ @ $V_{GS} = 2.5V$	5.5A
	37m $\Omega$ @ $V_{GS} = 1.8V$	4.8A

## Description

This MOSFET has been 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

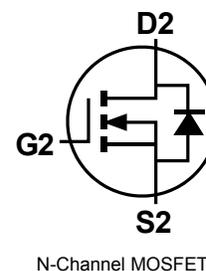
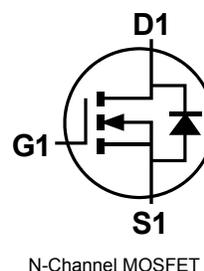
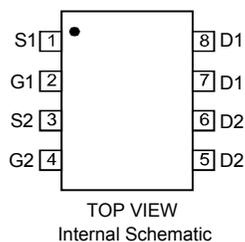
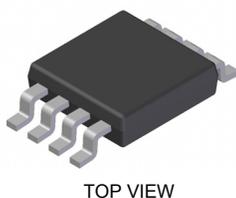
- Power Management Functions
- DC-DC Converters
- 

## Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

## Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.072g (approximate)



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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			$V_{DSS}$	20	V
Gate-Source Voltage			$V_{GSS}$	$\pm 8$	V
Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$	$I_D$	8	A
		$T_A = +70^\circ\text{C}$		6.7	
Pulsed Drain Current (Note 6)			$I_{DM}$	30	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	$P_D$	1.3	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	96	$^\circ\text{C/W}$
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 (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 8V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	0.9	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	19	24	m $\Omega$	$V_{GS} = 4.5V, I_D = 8.2A$
			23	29		$V_{GS} = 2.5V, I_D = 3.3A$
			29	37		$V_{GS} = 1.8V, I_D = 2A$
Forward Transfer Admittance	$ Y_{fs} $	—	7	—	S	$V_{DS} = 10V, I_D = 4A$
Diode Forward Voltage	$V_{SD}$	0.5	—	0.9	V	$V_{GS} = 0V, I_S = 1A$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	867	—	pF	$V_{DS} = 15V, V_{GS} = 0V$ $f = 1\text{MHz}$
Output Capacitance	$C_{oss}$	—	85	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	81	—	pF	
Gate Resistance	$R_G$	—	1.29	—	$\Omega$	$V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$
<b>SWITCHING CHARACTERISTICS (Note 8)</b>						
Total Gate Charge	$Q_g$	—	8.8	—	nC	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 8.2A$
Gate-Source Charge	$Q_{gs}$	—	1.2	—	nC	
Gate-Drain Charge	$Q_{gd}$	—	3	—	nC	
Turn-On Delay Time	$t_{d(on)}$	—	13.2	—	ns	$V_{DD} = 10V, V_{GS} = 4.5V,$ $R_L = 10\Omega, R_G = 6\Omega$
Turn-On Rise Time	$t_r$	—	12.6	—	ns	
Turn-Off Delay Time	$t_{d(off)}$	—	64.8	—	ns	
Turn-Off Fall Time	$t_f$	—	21.7	—	ns	

- Notes:
- Device mounted on FR-4 PCB with minimum recommended pad layout.
  - Repetitive rating, pulse width limited by function temperature.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to production testing.

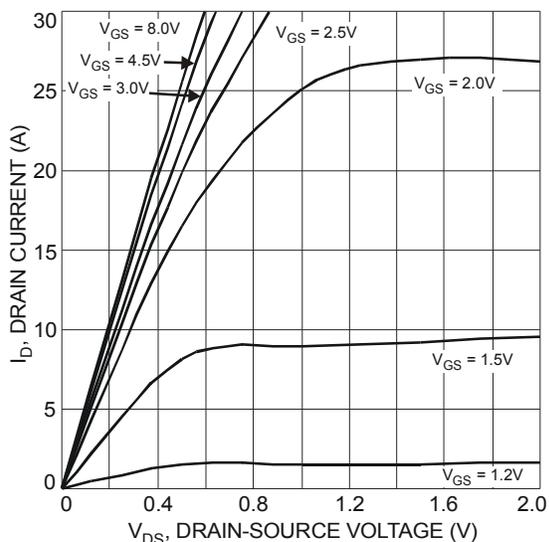


Fig. 1 Typical Output Characteristics

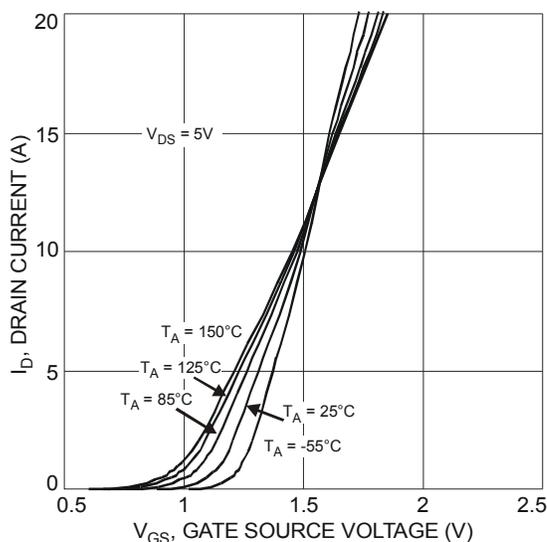


Fig. 2 Typical Transfer Characteristics

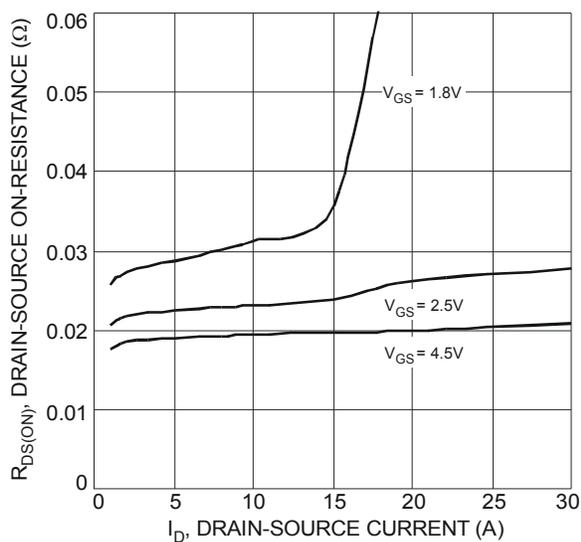


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

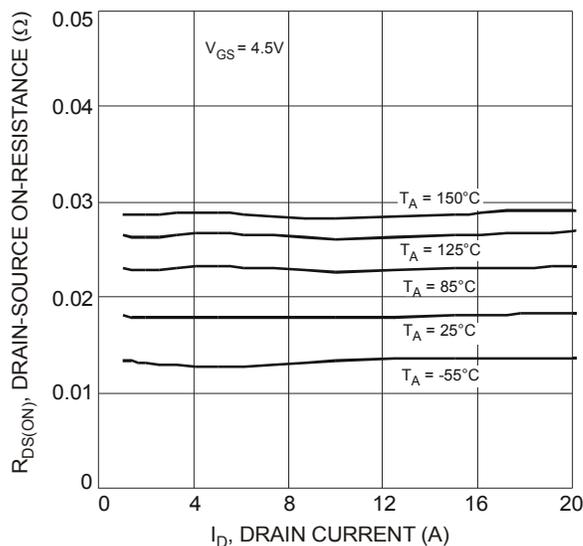


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

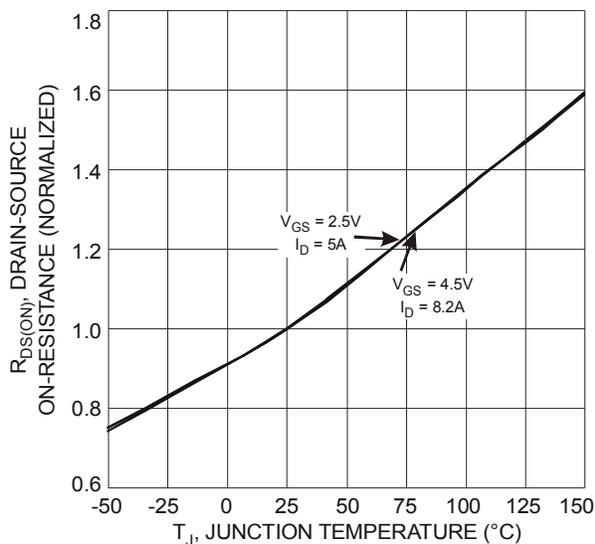


Fig. 5 On-Resistance Variation with Temperature

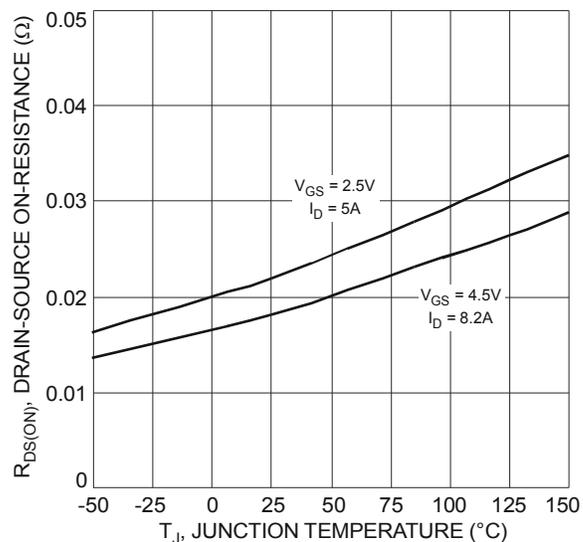


Fig. 6 On-Resistance Variation with Temperature

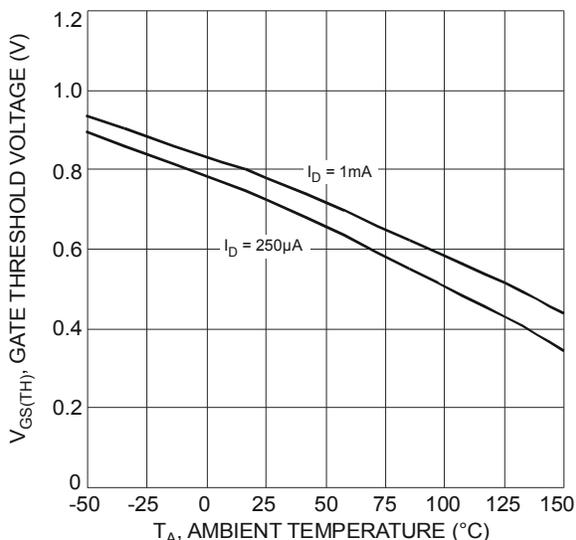


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

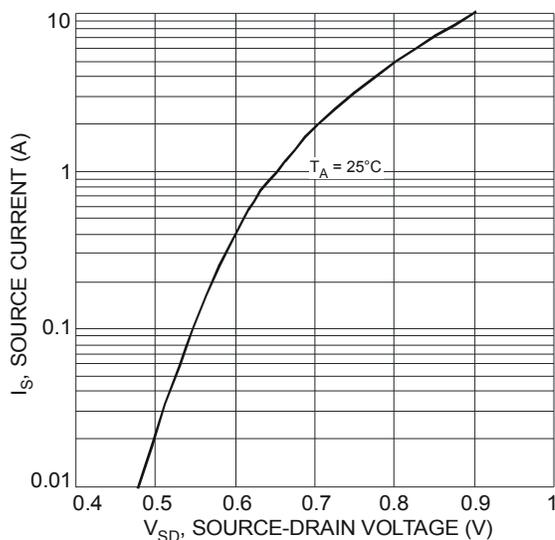


Fig. 8 Diode Forward Voltage vs. Current

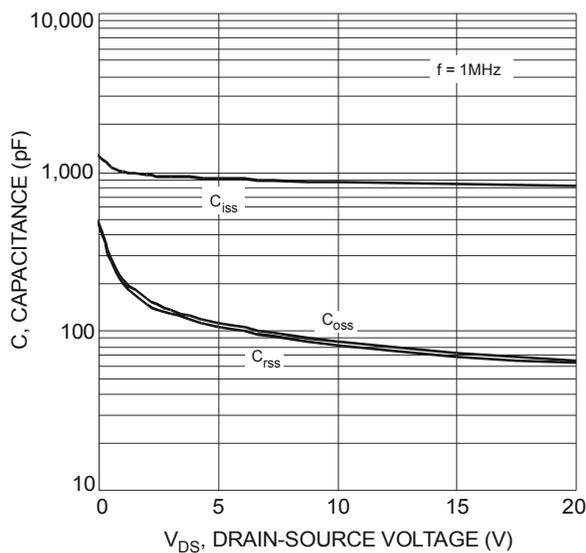


Fig. 9 Typical Capacitance

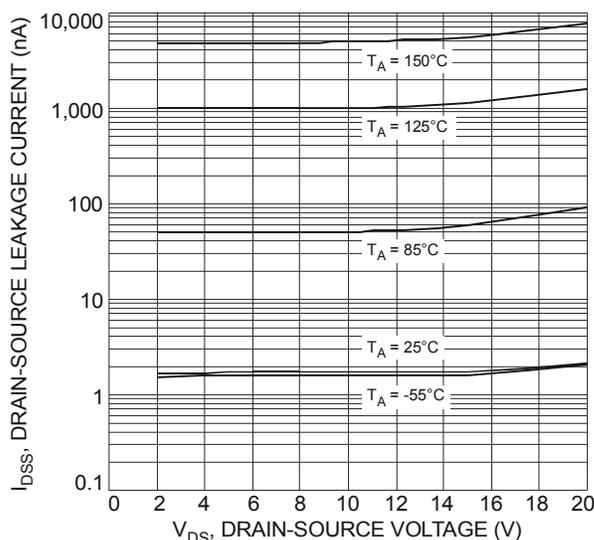


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

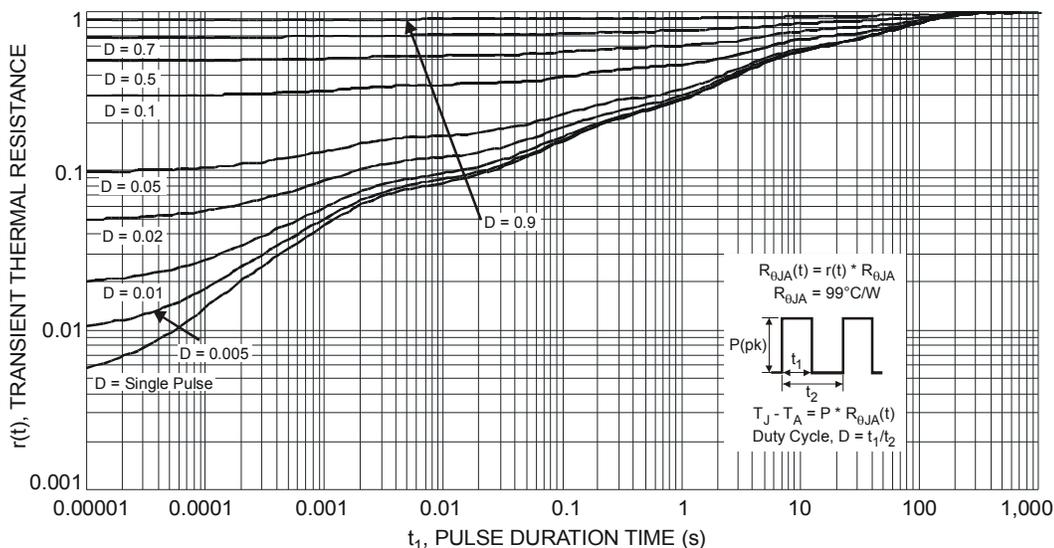
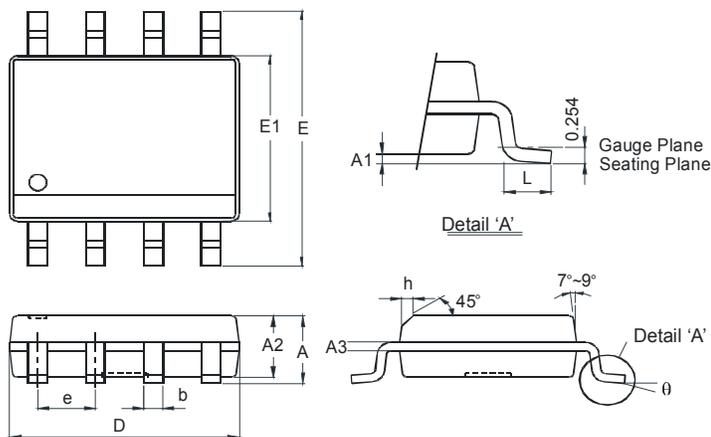


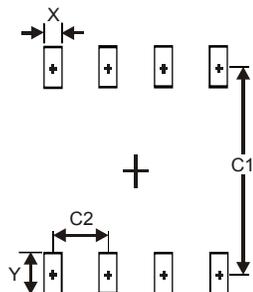
Fig. 11 Transient Thermal Response

### Package Outline Dimensions



SOP-8L		
Dim	Min	Max
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

### Suggested Pad Layout



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27