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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Product Summary

BV_{DSS}	$R_{DS(ON)}$ max	I_D max T_A = +25°C
30V	20mΩ @ V_{GS} = 10V	10A

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

- General Purpose Interfacing Switch
- Power Management Functions
- DC-DC Converters
- Analog Switch

Features and Benefits

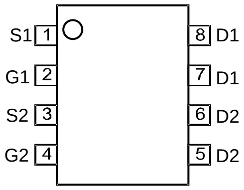
- Low On-Resistance
- Low Input Capacitance
- Low Input/Output Leakage
- Low Gate Resistance
- Fast Switching Speed

Mechanical Data

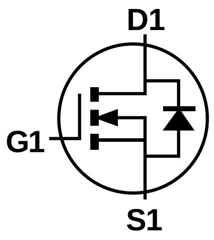
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish — NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.072 grams (Approximate)

SO-8

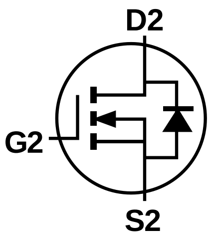
Top View



Top View
Internal Schematic



N-Channel MOSFET



N-Channel MOSFET

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±25	V
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	T_A = +25°C	I_D	10	A
		T_A = +85°C		6.6	
Pulsed Drain Current (Note 6)			I_{DM}	60	A
Avalanche Current (Notes 7 & 8)			I_{AR}	1.68	A
Repetitive Avalanche Energy L = 0.3mH (Notes 7 & 8)			E_{AR}	12.8	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	1.42	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	88.4	°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 9)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±25V, V_{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	$V_{GS(TH)}$	1	—	3	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	13.4	20	mΩ	V_{GS} = 10V, I_D = 8.5A
		—	19.5	31		V_{GS} = 4.5V, I_D = 6A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	20	—	mS	V_{DS} = 5V, I_D = 8.5A
Diode Forward Voltage	V_{SD}	—	0.4	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	478.9	—	pF	V_{DS} = 16V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	96.7	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	61.4	—	pF	
Gate Resistance	R_g	—	1.1	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	5	—	nC	V_{GS} = 10V, V_{DS} = 15V, I_D = 8.5A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	10.5	—	nC	
Gate-Source Charge	Q_{gs}	—	1.8	—	nC	
Gate-Drain Charge	Q_{gd}	—	1.6	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	2.9	—	ns	V_{DS} = 15V, V_{GS} = 10V, R_L = 1.8Ω, R_G = 3Ω
Turn-On Rise Time	t_R	—	7.9	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	14.6	—	ns	
Turn-Off Fall Time	t_F	—	3.1	—	ns	

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%.
7. Repetitive rating, pulse width limited by junction temperature.
8. I_{AR} and E_{AR} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
9. Short duration pulse test used to minimize self-heating effect.
10. Guaranteed by design. Not subject to product testing.

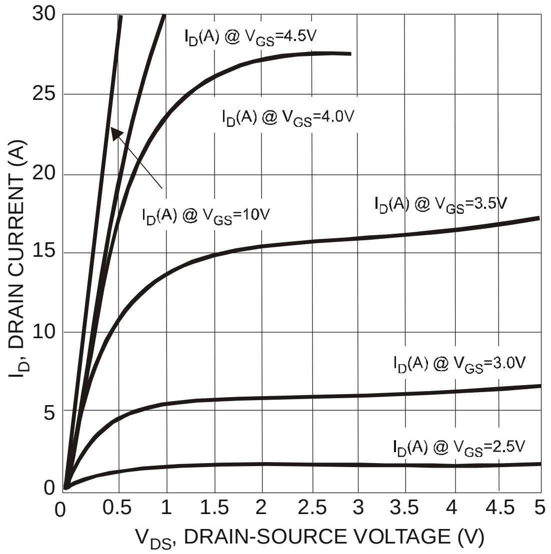


Fig.1 Typical Output Characteristic

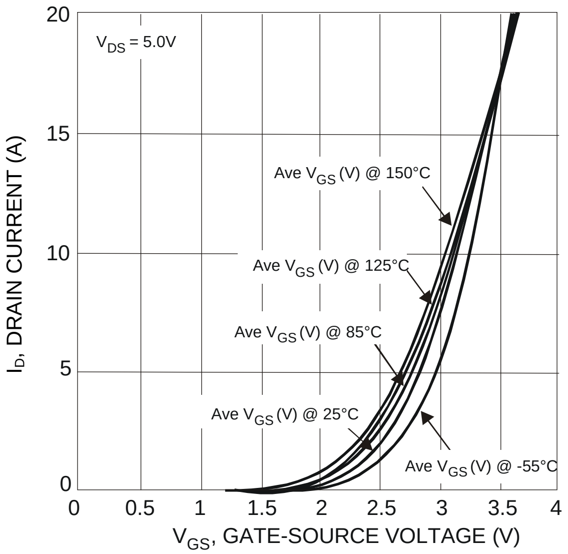


Fig.2 Typical Transfer Characteristics

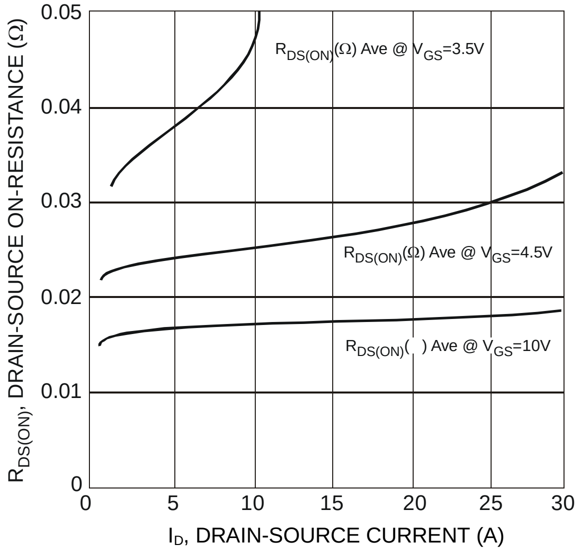


Fig. 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

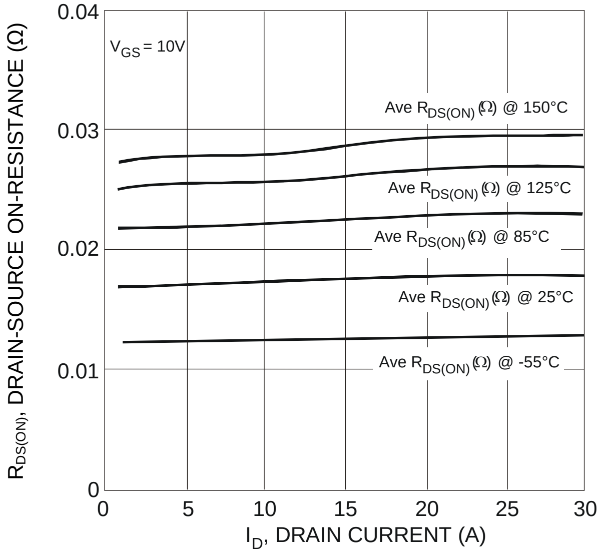


Fig. 4 Typical On-Resistance vs.
Drain Current and Temperature

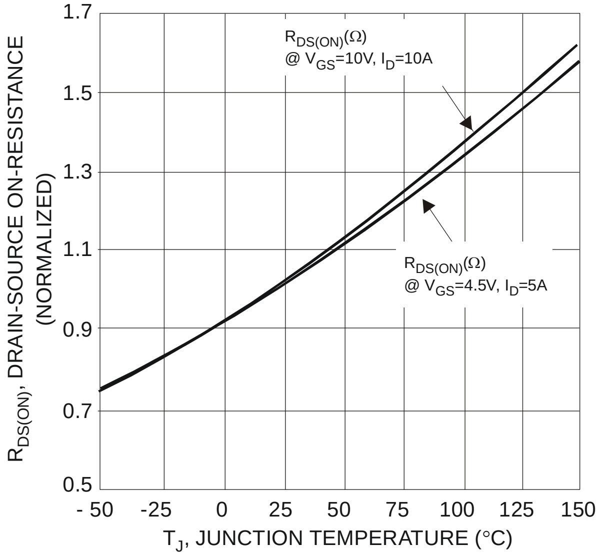


Fig. 5 On-Resistance Variation with Temperature

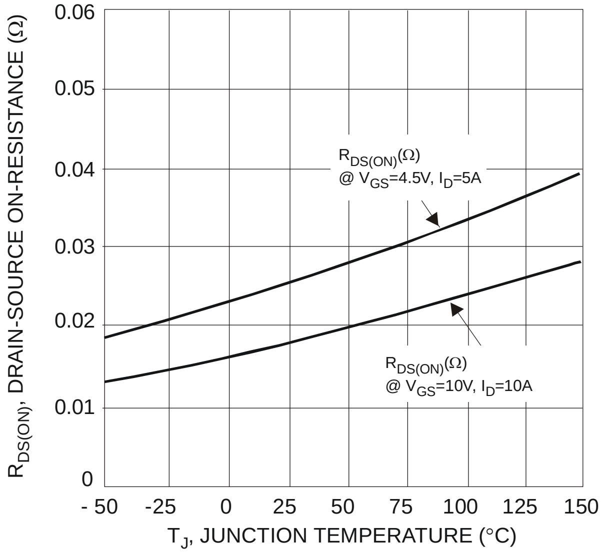


Fig. 6 On-Resistance Variation with Temperature

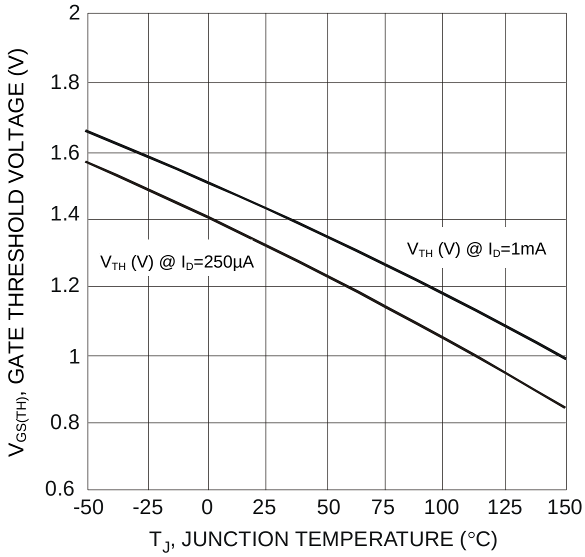


Fig. 7 Gate Threshold Variation vs. Junction Temperature

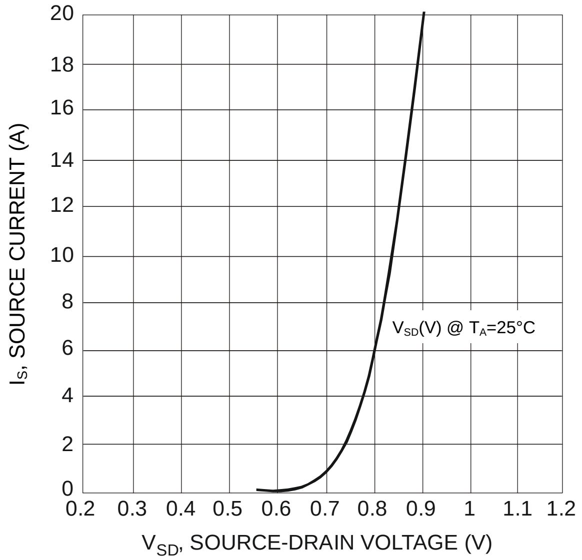


Fig.8 Diode Forward Voltage vs. Current

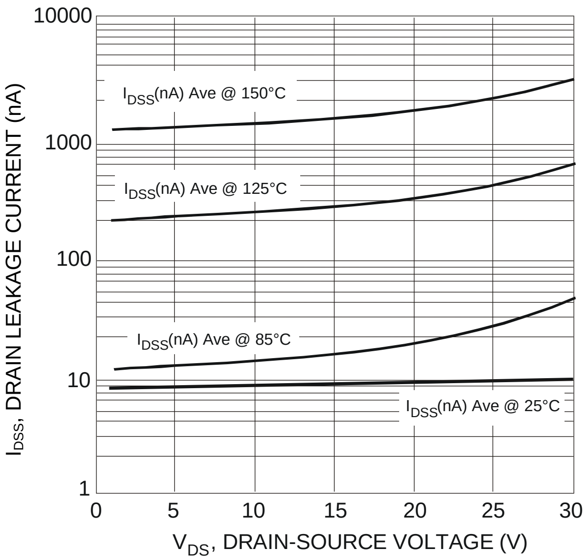


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

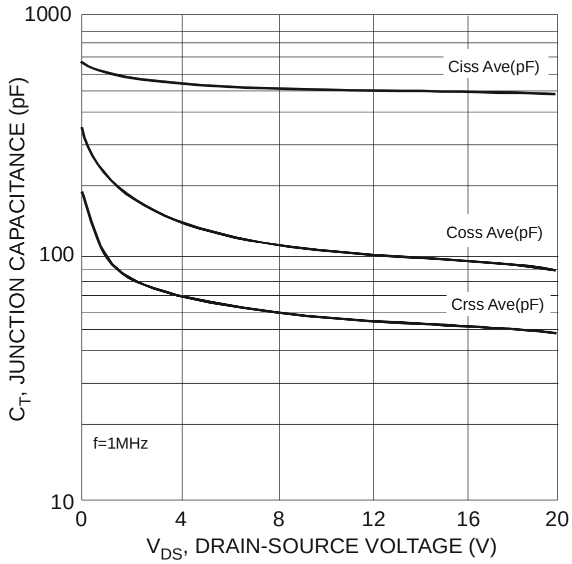


Fig. 10 Typical Junction Capacitance

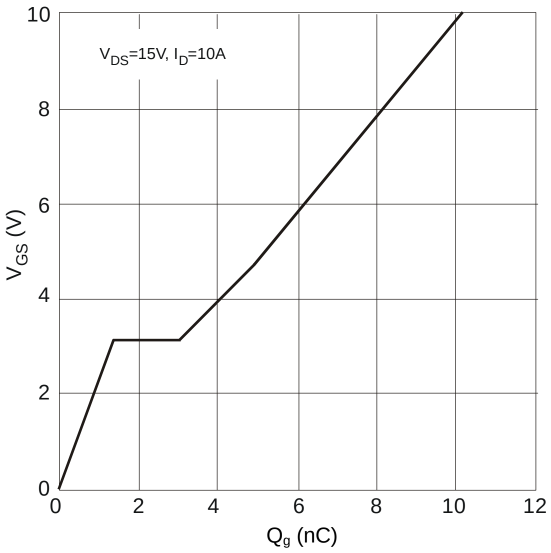


Fig. 11 Gate Charge

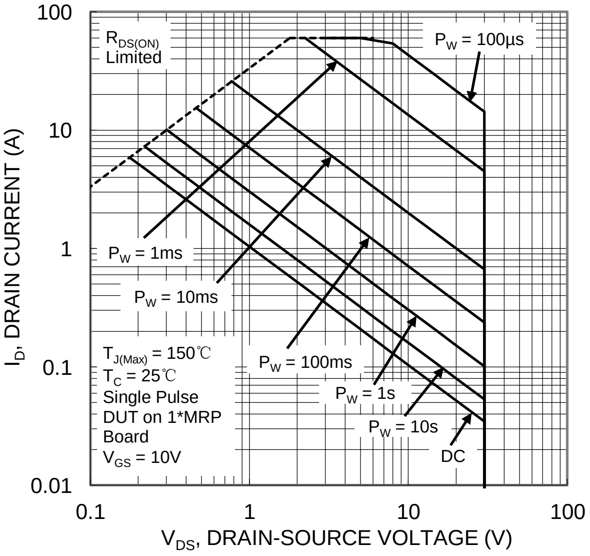


Fig. 12 SOA, Safe Operation Area

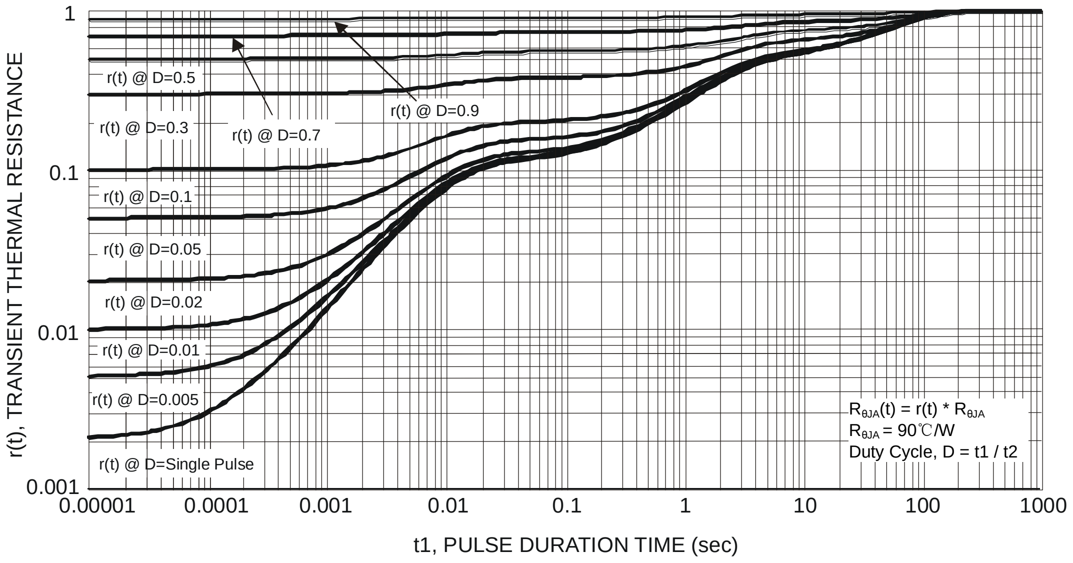
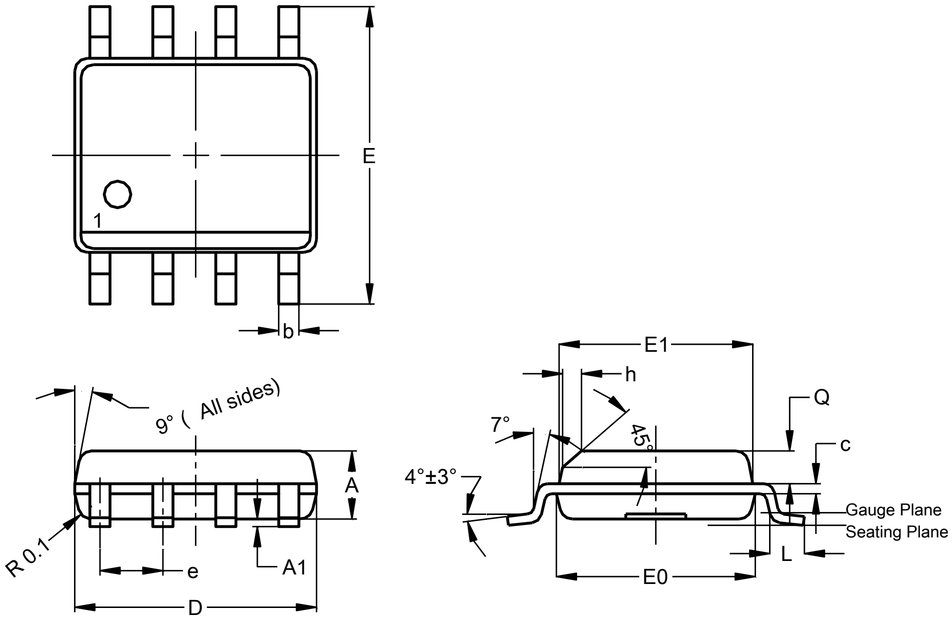


Fig. 13 Transient Thermal Resistance

Package Outline Dimensions

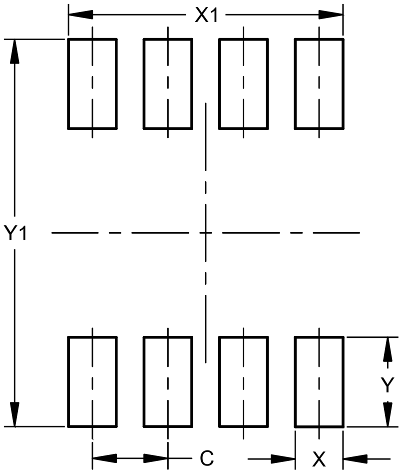
SO-8



SO-8			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

Suggested Pad Layout

SO-8



Dimensions	Value (in mm)
C	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50