



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

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ\text{C}$
60V	80m Ω @ $V_{GS}=10\text{V}$	3.5A
	150m Ω @ $V_{GS}=4.5\text{V}$	2.5A

Description

This MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

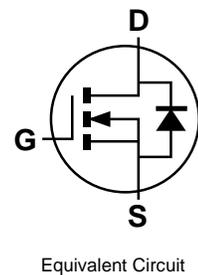
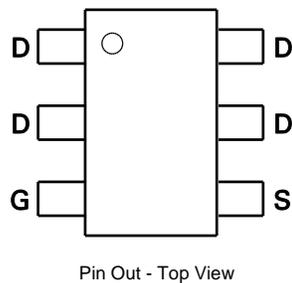
- DC-DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

Features and Benefits

- Low On-Resistance
- Fast Switching Speed
- Low Gate Drive
- Low Threshold

Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 
- Weight: 0.018 grams (Approximate)



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

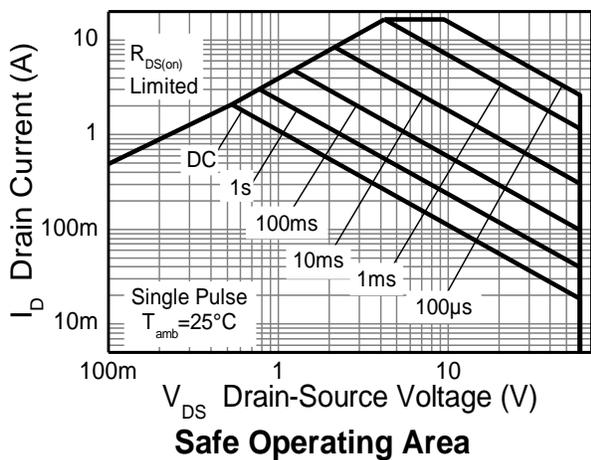
Characteristic			Symbol	Value	Unit	
Drain-Source Voltage			V_{DSS}	60	V	
Gate-Source Voltage			V_{GS}	± 20	V	
Continuous Drain Current	$V_{GS} = 10\text{V}$	(Note 6)	I_D	3.5	A	
		$T_A = +70^\circ\text{C}$ (Note 6)		2.8		
		(Note 5)		2.8		
Pulsed Drain Current	$V_{GS} = 10\text{V}$	(Note 7)	I_{DM}	16	A	
Continuous Source Current (Body Diode)			(Note 6)	I_S	2.6	A
Pulsed Source Current (Body Diode)			(Note 7)	I_{SM}	16	A

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

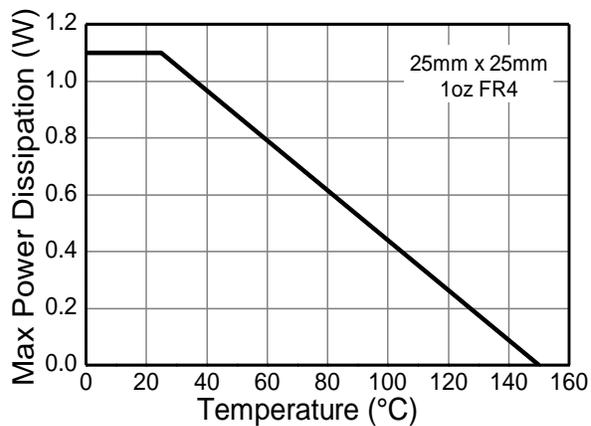
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1.1	W
	(Note 6)		8.8	
Linear Derating Factor	(Note 5)		1.7	$\text{mW}/^\circ\text{C}$
	(Note 6)		13.6	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	113	$^\circ\text{C}/\text{W}$
	(Note 6)		73	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Same as Note 5, except the device is measured at $t \leq 10$ sec.
 - Same as Note 5, except the device is pulsed with $D = 0.02$ and pulse width 300 μs . The pulse current is limited by the maximum junction temperature.

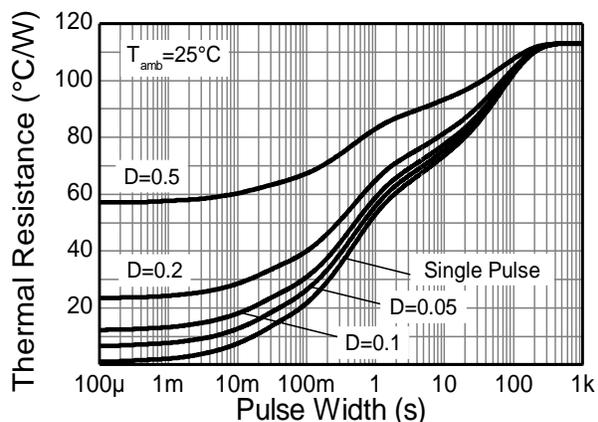
Thermal Characteristics



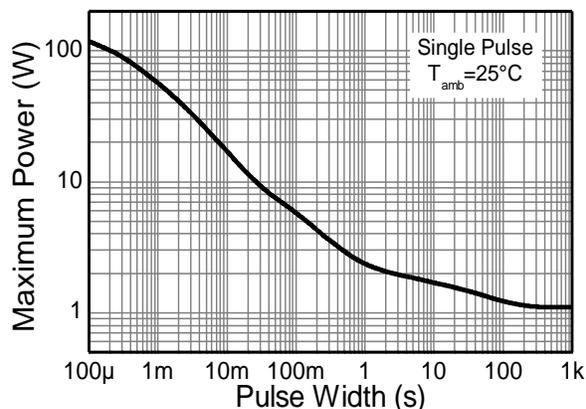
Safe Operating Area



Derating Curve



Transient Thermal Impedance



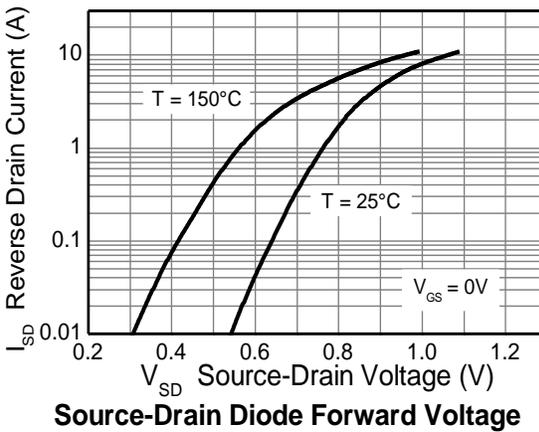
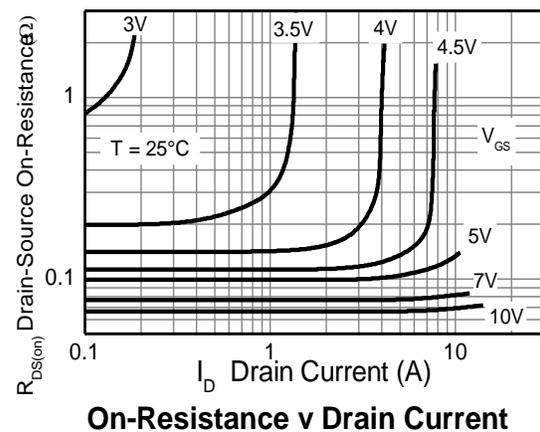
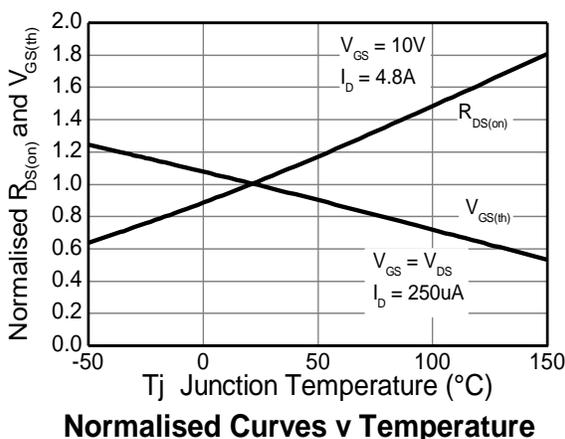
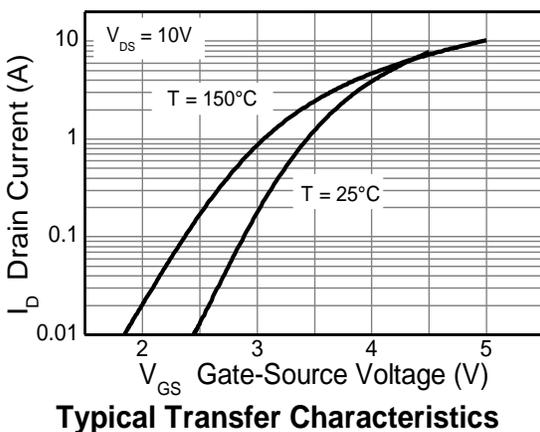
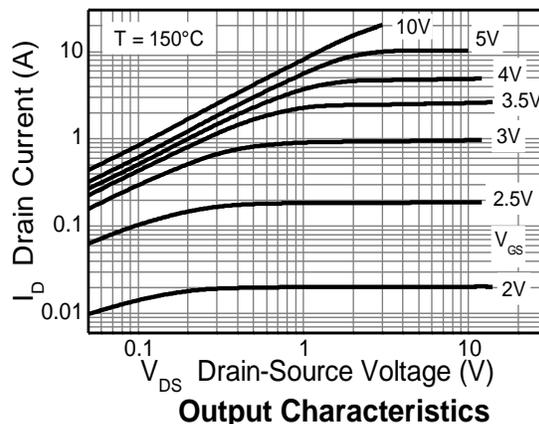
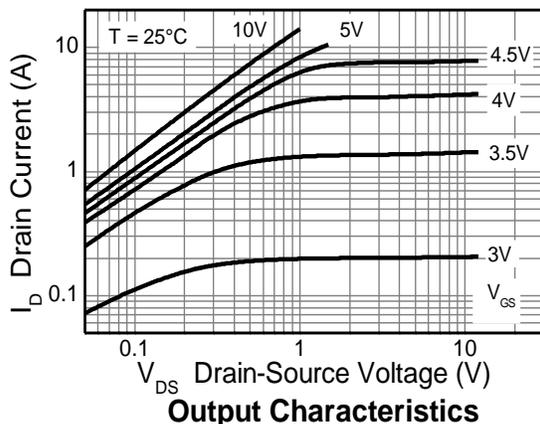
Pulse Power Dissipation

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

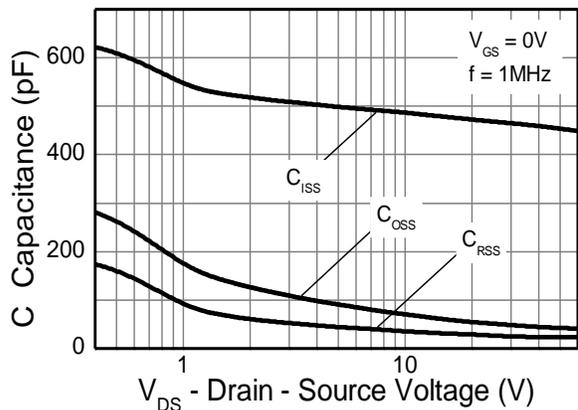
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	I _D = 250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	0.5	μA	V _{DS} = 60V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	1.0	—	—	V	I _D = 250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 8)	R _{DS(on)}	—	0.067	0.080	Ω	V _{GS} = 10V, I _D = 4.8A
			0.100	0.150		V _{GS} = 4.5V, I _D = 4.2A
Forward Transconductance (Notes 8 & 9)	g _{fs}	—	6.6	—	S	V _{DS} = 15V, I _D = 4.8A
Diode Forward Voltage (Note 8)	V _{SD}	—	0.88	1.2	V	I _S = 4A, V _{GS} = 0V, T _J = +25°C
Reverse Recovery Time (Note 9)	t _{rr}	—	19.2	—	ns	I _F = 1.4A, di/dt = 100A/μs, T _J = +25°C
Reverse Recovery Charge (Note 9)	Q _{rr}	—	30.3	—	nC	
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	459	—	pF	V _{DS} = 40V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	44.2	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	24.1	—	pF	
Total Gate Charge (Note 10)	Q _g	—	3.7	—	nC	V _{GS} = 4.5V
Total Gate Charge (Note 10)	Q _g	—	5.8	—	nC	V _{GS} = 10V
Gate-Source Charge (Note 10)	Q _{gs}	—	1.4	—	nC	
Gate-Drain Charge (Note 10)	Q _{gd}	—	1.9	—	nC	
Turn-On Delay Time (Note 10)	t _{D(on)}	—	2.6	—	ns	V _{DD} = 30V, V _{GS} = 10V I _D = 1.5A, R _G ≅ 6.0Ω
Turn-On Rise Time (Note 10)	t _r	—	2.1	—	ns	
Turn-Off Delay Time (Note 10)	t _{D(off)}	—	12.3	—	ns	
Turn-Off Fall Time (Note 10)	t _f	—	4.6	—	ns	

- Notes:
- 8. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.
 - 9. For design aid only, not subject to production testing.
 - 10. Switching characteristics are independent of operating junction temperatures.

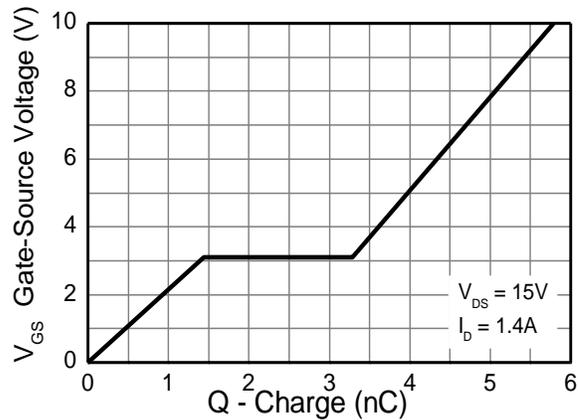
Typical Characteristics



Typical Characteristics (cont.)

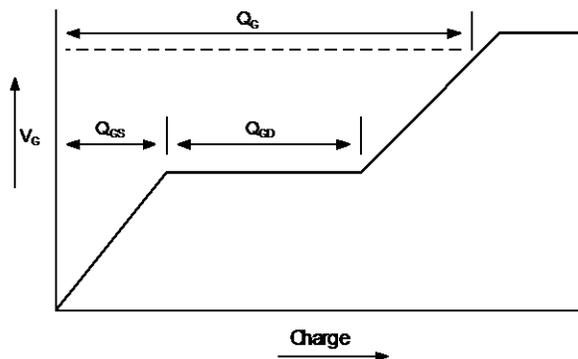


Capacitance v Drain-Source Voltage

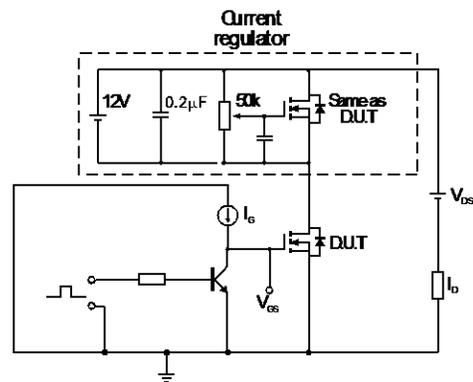


Gate-Source Voltage v Gate Charge

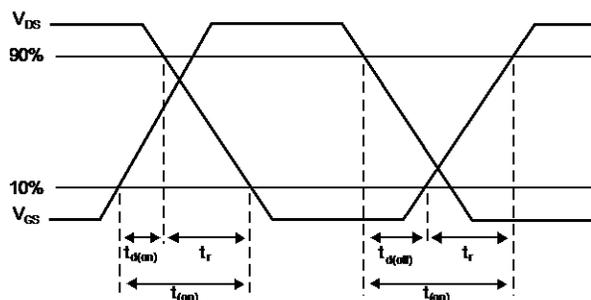
Test Circuits



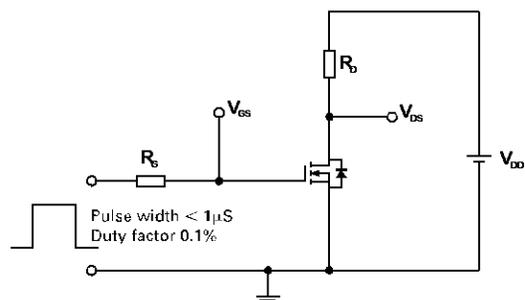
Basic gate charge waveform



Gate charge test circuit

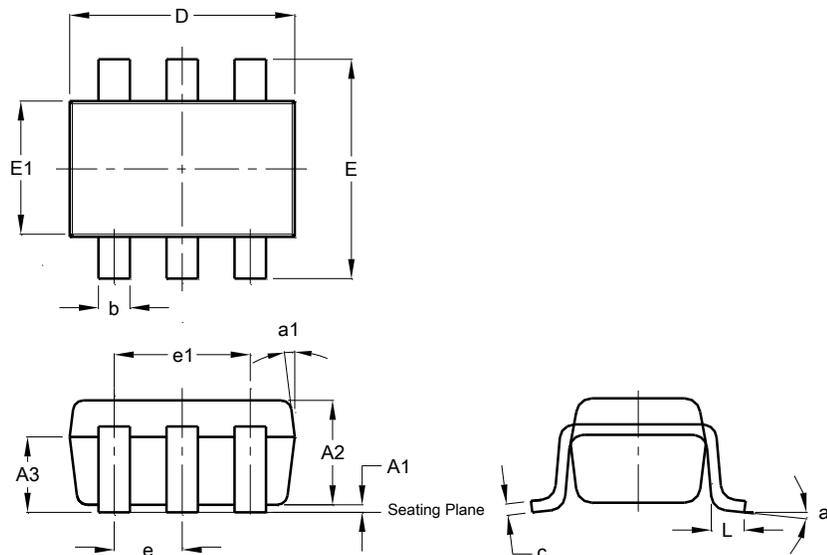


Switching time waveforms



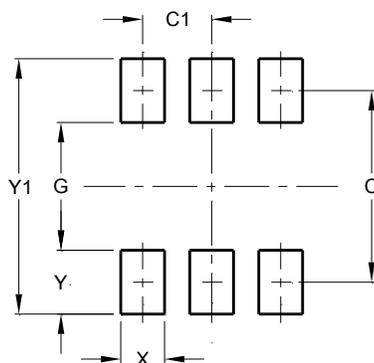
Switching time test circuit

Package Outline Dimensions



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20