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

$V_{(BR)DSS}$	Max $R_{DS(ON)}$	Max I_D $T_A = +25°C$ (Note 6)
20V	120mΩ @ $V_{GS} = 4.5V$	3.1A

Description and Applications

This new generation of trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

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

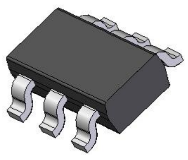
Features and Benefits

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

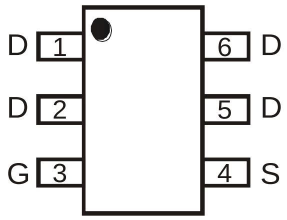
Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. 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 e3
- Weight: 0.016 grams (Approximate)

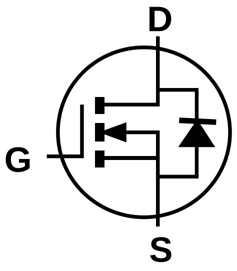
SOT26



Top View



Pin-Out (Top View)



Equivalent Circuit

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	±12	V
Continuous Drain Current	V_{GS} = 10V	T_A = +25°C (Note 6)	I_D	3.1	A
		T_A = +70°C (Note 6)		2.5	
		T_A = +25°C (Note 5)		2.5	
Pulsed Drain Current (Note 7)			I_{DM}	11	A
Continuous Source Current (Body Diode) (Note 6)			I_S	2.4	A
Pulsed Source Current (Body Diode) (Note 7)			I_{SM}	11	A

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

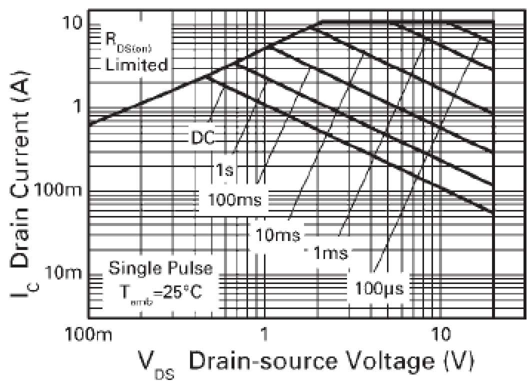
Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = +25°C (Note 5) Linear derating factor	P_D	1.1 8.8	W mW/°C
Power Dissipation at T_A = +25°C (Note 6) Linear Derating Factor	P_D	1.7 13.6	W mW/°C
Junction to Ambient (Note 5)	$R_{\theta JA}$	113	°C/W
Junction to Ambient (Note 6)	$R_{\theta JA}$	70	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. For a device surface mounted on 25mm x 25mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions.
6. For a device surface mounted on FR-4 PCB measured at t≦10 secs.
7. Repetitive rating 25mm x 25mm FR-4 PCB, D = 0.05, pulse width 10µs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

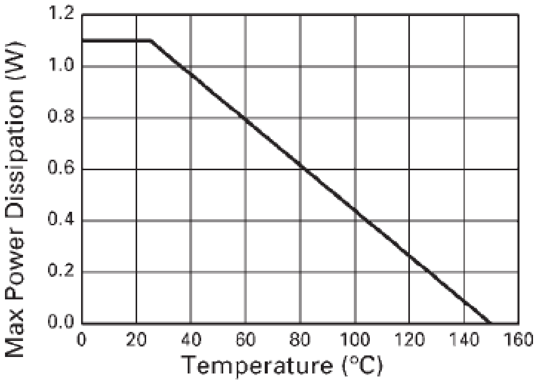
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	20	-	-	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	µA	V_{DS} = 20V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	-	-	100	nA	V_{GS} = ±12V, V_{DS} = 0V
Gate-Source Threshold Voltage	$V_{GS(TH)}$	0.7	-	-	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-State Resistance (Note 8)	$R_{DS(ON)}$	-	-	0.120 0.225	Ω	V_{GS} = 4.5V, I_D =4A V_{GS} = 2.5V, I_D =1.5A
Forward Transconductance (Notes 8 &10)	g_{fs}	-	6.1	-	S	V_{DS} = 10V, I_D =4A
Diode Forward Voltage (Note 8)	V_{SD}	-	0.9	0.95	V	T_J = +25°C , I_S = 3.2A, V_{GS} = 0V
DYNAMIC CHARACTERISTICS						
Input Capacitance (Note 10)	C_{iss}	-	303	-	pF	V_{DS} = 15V, V_{GS} = 0V f = 1MHz
Output Capacitance (Note 10)	C_{oss}	-	59	-	pF	
Reverse Transfer Capacitance (Note 10)	C_{rss}	-	30	-	pF	
Total Gate Charge (Notes 9 & 10)	Q_g	-	3.0	-	nC	V_{GS} = 4.5V, V_{DS} = 10V I_D = 4A
Gate-Source Charge (Notes 9 & 10)	Q_{gs}	-	0.8	-	nC	
Gate-Drain Charge (Notes 9 & 10)	Q_{gd}	-	1.0	-	nC	
Turn-On Delay Time (Notes 9 & 10)	$t_{D(ON)}$	-	2.49	-	ns	V_{DD} = 10V, V_{GS} = 5V I_D = 4A, R_G = 6.0Ω
Turn-On Rise Time (Notes 9 & 10)	t_R	-	5.21	-	ns	
Turn-Off Delay Time (Notes 9 & 10)	$t_{D(OFF)}$	-	7.47	-	ns	
Turn-Off Fall Time (Notes 9 & 10)	t_F	-	4.62	-	ns	
Reverse Recovery Time (Note 10)	t_{RR}	-	23	-	ns	T_J = +25°C, I_F=4A, di/dt= 100A/µs
Reverse Recovery Charge (Note 10)	Q_{RR}	-	5.65	-	nC	

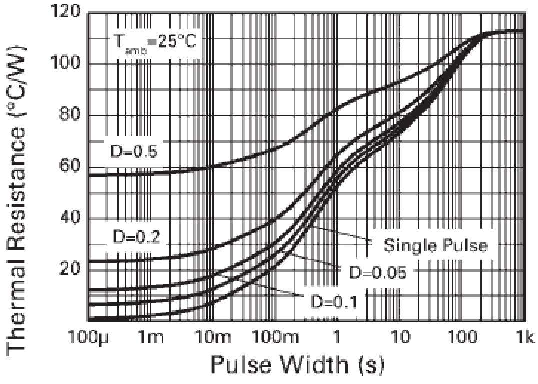
Notes: 8. Measured under pulsed conditions. Width=300µs. Duty cycle ≤ 2%.
9. Switching characteristics are independent of operating junction temperature.
10. For design aid only, not subject to production testing.



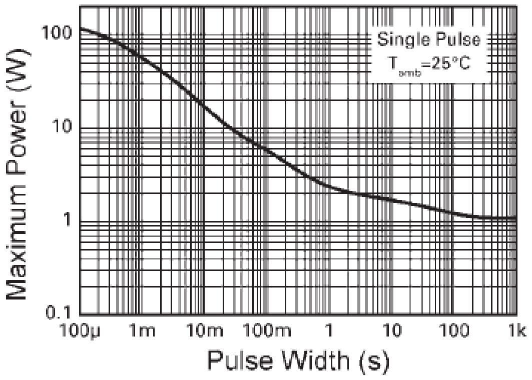
Safe Operating Area



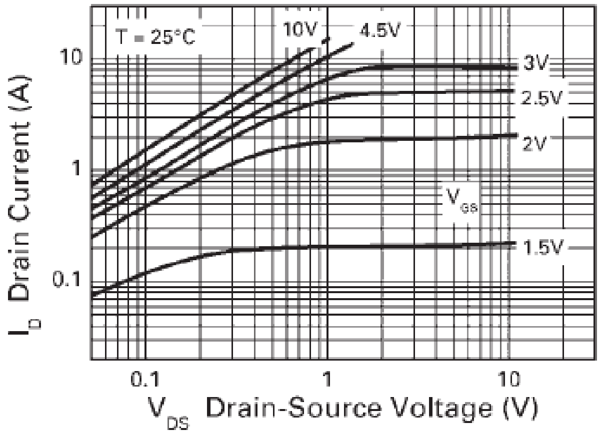
Derating Curve



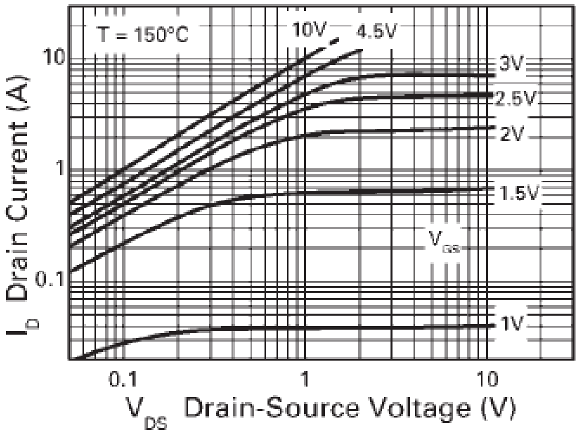
Transient Thermal Impedance



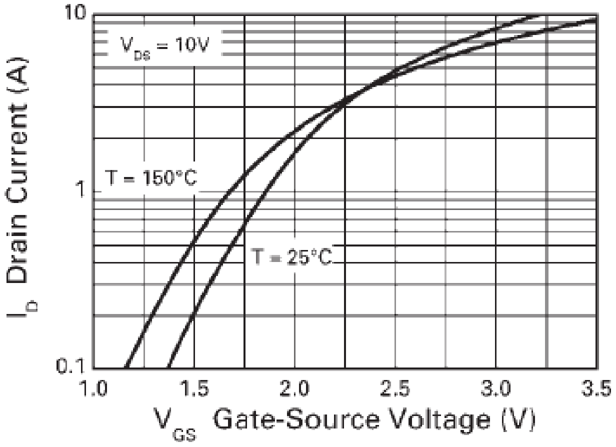
Pulse Power Dissipation



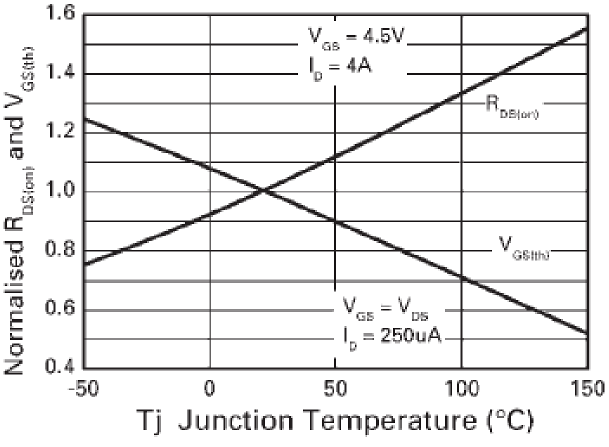
Output Characteristics



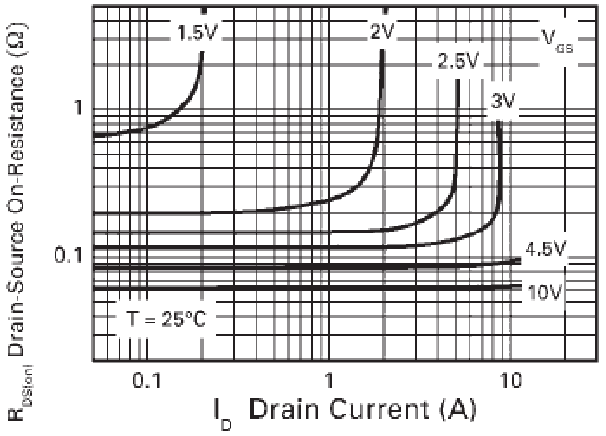
Output Characteristics



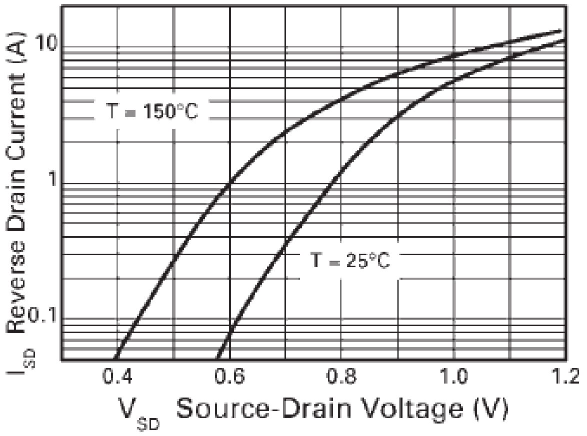
Typical Transfer Characteristics



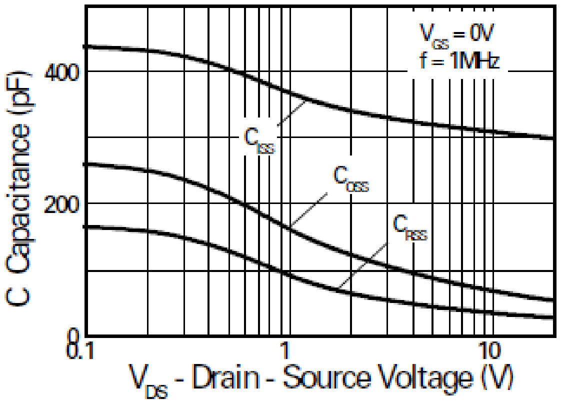
Normalised Curves v Temperature



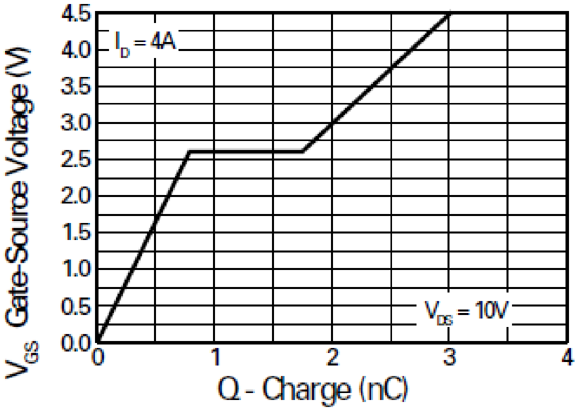
On-Resistance v Drain Current



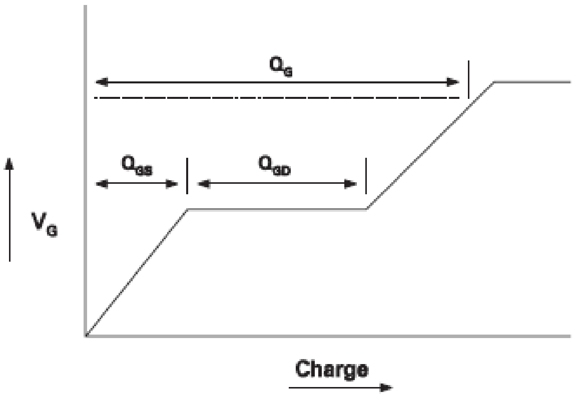
Source-Drain Diode Forward Voltage



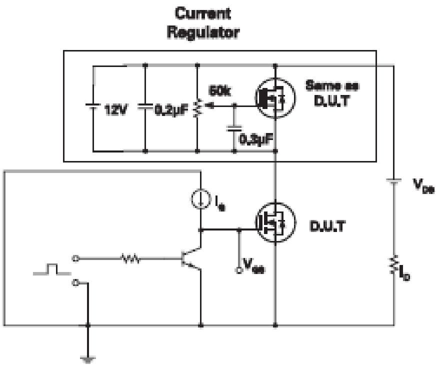
Capacitance v Drain-Source Voltage



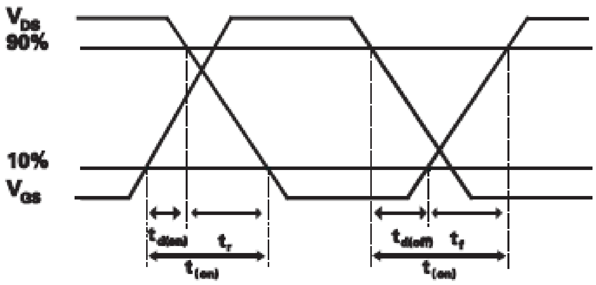
Gate-Source Voltage v Gate Charge



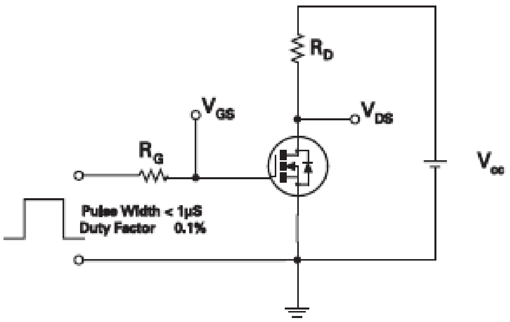
Basic Gate Charge Waveform



Gate Charge Test Circuit

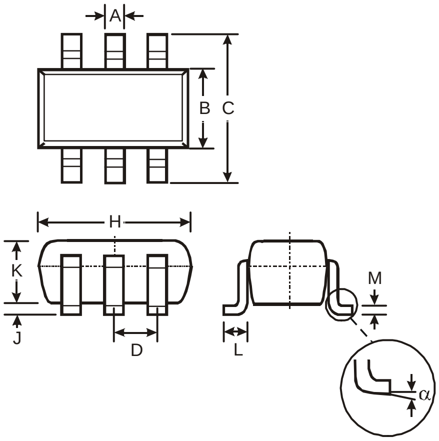


Switching Time Waveforms



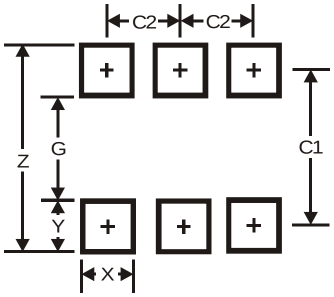
Switching Time Test Circuit

Package Outline Dimensions



SOT26			
Dim	**Min**	**Max**	**Typ**
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95