



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 $T_A = +25^\circ\text{C}$
30V	23m Ω @ $V_{GS} = 10\text{V}$	6.6A
	30m Ω @ $V_{GS} = 4.5\text{V}$	5.8A

Description

This new generation 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

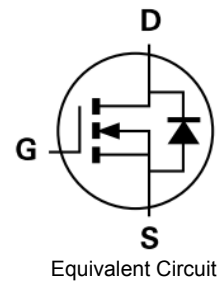
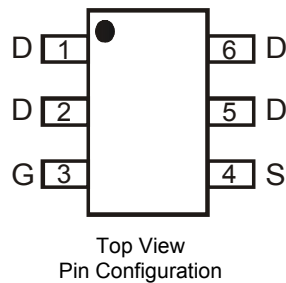
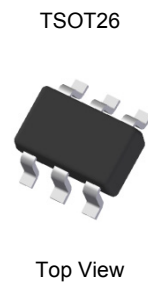
- DC-DC Converters
- Power management functions
- Backlighting

Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed

Mechanical Data

- Case: TSOT26
- 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 – Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.013 grams (approximate)



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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	6.6 5.3	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	8.5 6.8	A
Maximum Body Diode Forward Current (Note 6)			I_S	3.0	A
Pulsed Drain Current (10 μs pulse, duty cycle = 1%)			I_{DM}	35	A

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

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	$T_A = +25^\circ\text{C}$	P_D	1.2	W
	$T_A = +70^\circ\text{C}$		0.8	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	$R_{\theta JA}$	100	$^\circ\text{C/W}$
	$t < 10\text{s}$		60	$^\circ\text{C/W}$
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	P_D	1.5	W
	$T_A = +70^\circ\text{C}$		1.0	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	$R_{\theta JA}$	83	$^\circ\text{C/W}$
	$t < 10\text{s}$		50	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	14.5	$^\circ\text{C/W}$
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
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.5	2.0	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	19	23	m Ω	$V_{GS} = 10\text{V}, I_D = 6.5\text{A}$
		—	22	30		$V_{GS} = 4.5\text{V}, I_D = 6.0\text{A}$
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	$V_{GS} = 0\text{V}, I_S = 1.0\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	643	—	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	65	—		
Reverse Transfer Capacitance	C_{rss}	—	49	—		
Gate Resistance	R_G	—	2.5	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	5.7	—	nC	$V_{DS} = 15\text{V}, I_D = 4.0\text{A}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	—	12.5	—		
Gate-Source Charge	Q_{gs}	—	1.7	—		
Gate-Drain Charge	Q_{gd}	—	1.8	—		
Turn-On Delay Time	$t_{D(on)}$	—	2.2	—	nS	$V_{GS} = 10\text{V}, V_{DD} = 15\text{V}, R_G = 6.0\Omega,$ $I_D = 6.5\text{A}$
Turn-On Rise Time	t_r	—	2.5	—		
Turn-Off Delay Time	$t_{D(off)}$	—	12.1	—		
Turn-Off Fall Time	t_f	—	3.0	—		
Body Diode Reverse Recovery Time	t_{rr}	—	6.5	—	nS	$I_F = 6.5\text{A}, dI/dt = 100\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Charge	Q_{rr}	—	1.7	—	nC	$I_F = 6.5\text{A}, dI/dt = 100\text{A}/\mu\text{s}$

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

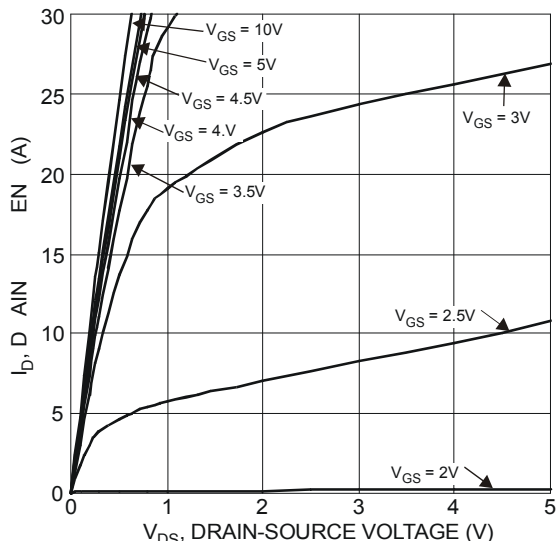


Figure 1 Typical Output Characteristics

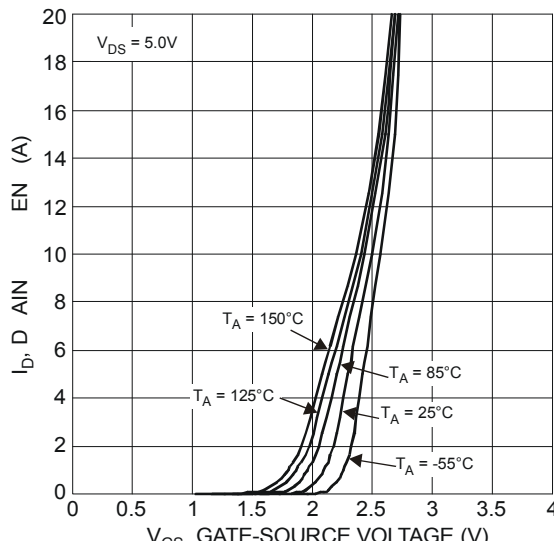


Figure 2 Typical Transfer Characteristics

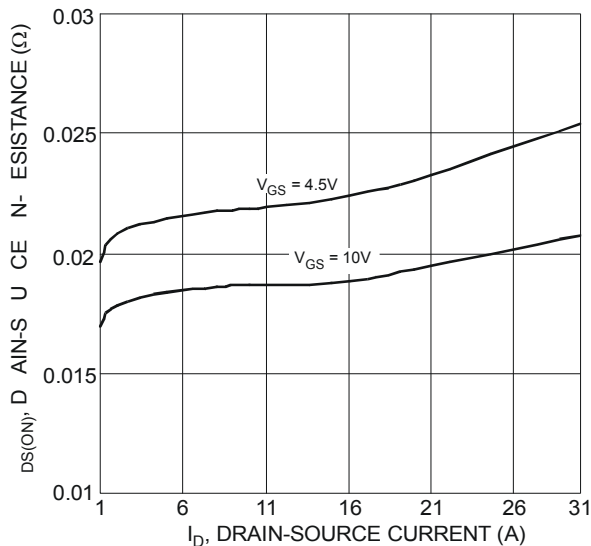


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

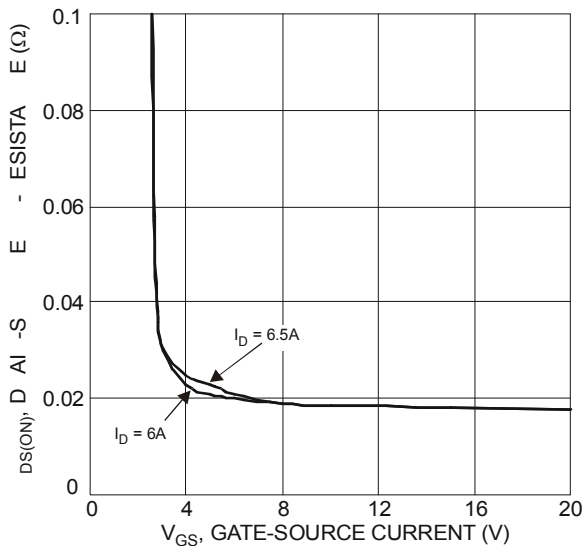


Figure 4 Typical Transfer Characteristics

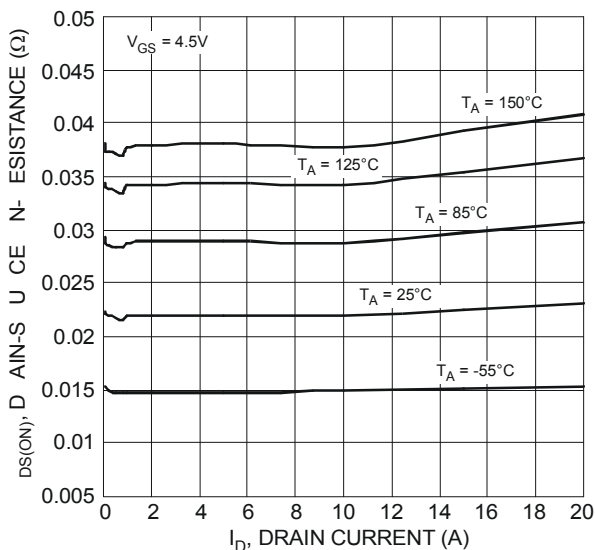


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

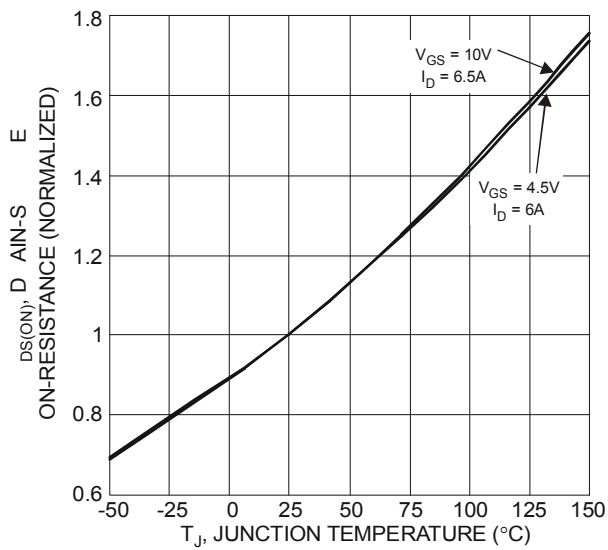


Figure 6 On-Resistance Variation with Temperature

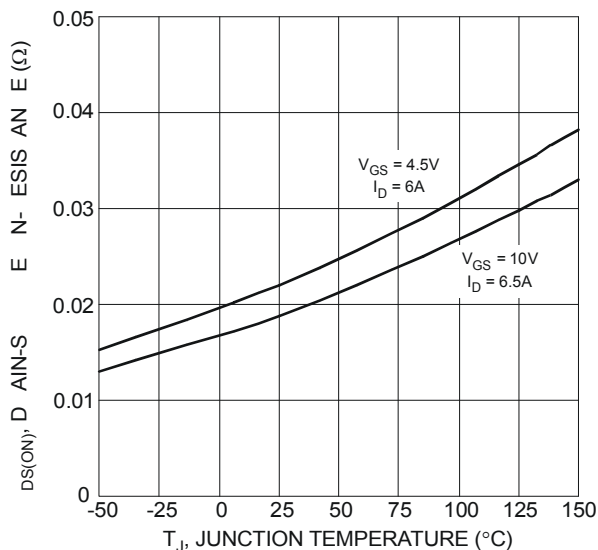


Figure 7 On-Resistance Variation with Temperature

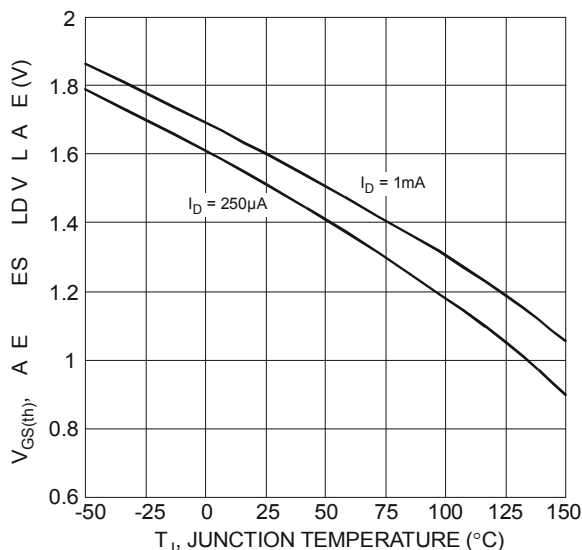


Figure 8 Gate Threshold Variation vs. Ambient Temperature

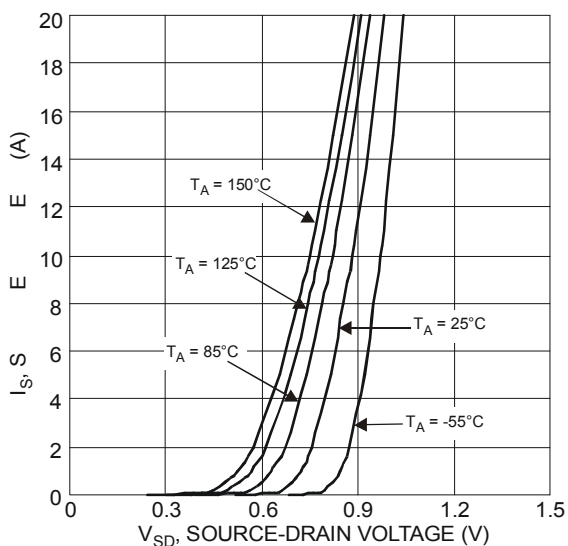


Figure 9 Diode Forward Voltage vs. Current

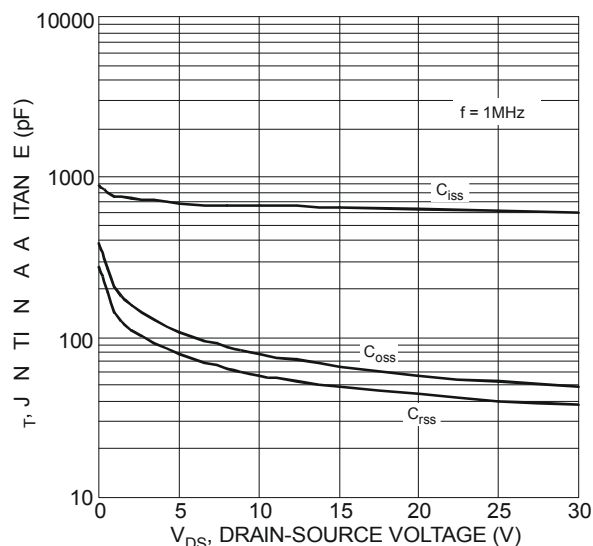


Figure 10 Typical Junction Capacitance

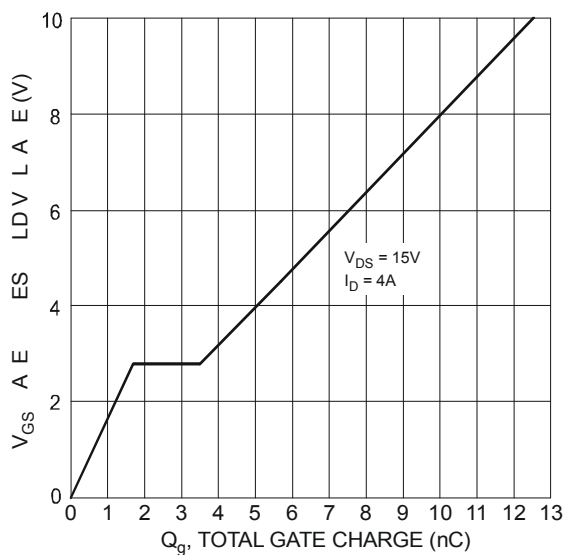


Figure 11 Gate Charge

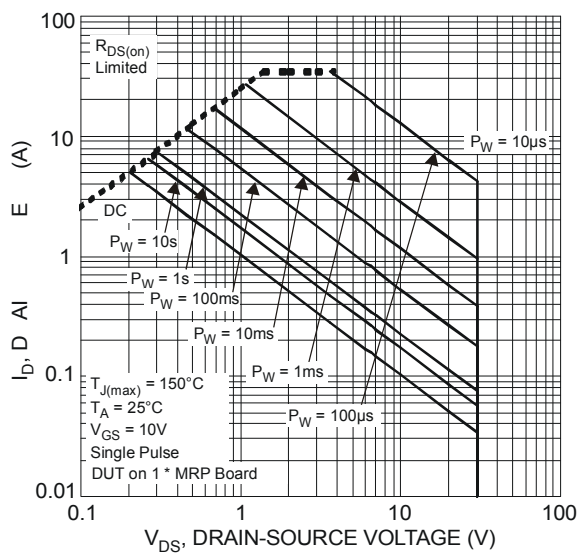


Figure 12 SOA, Safe Operation Area

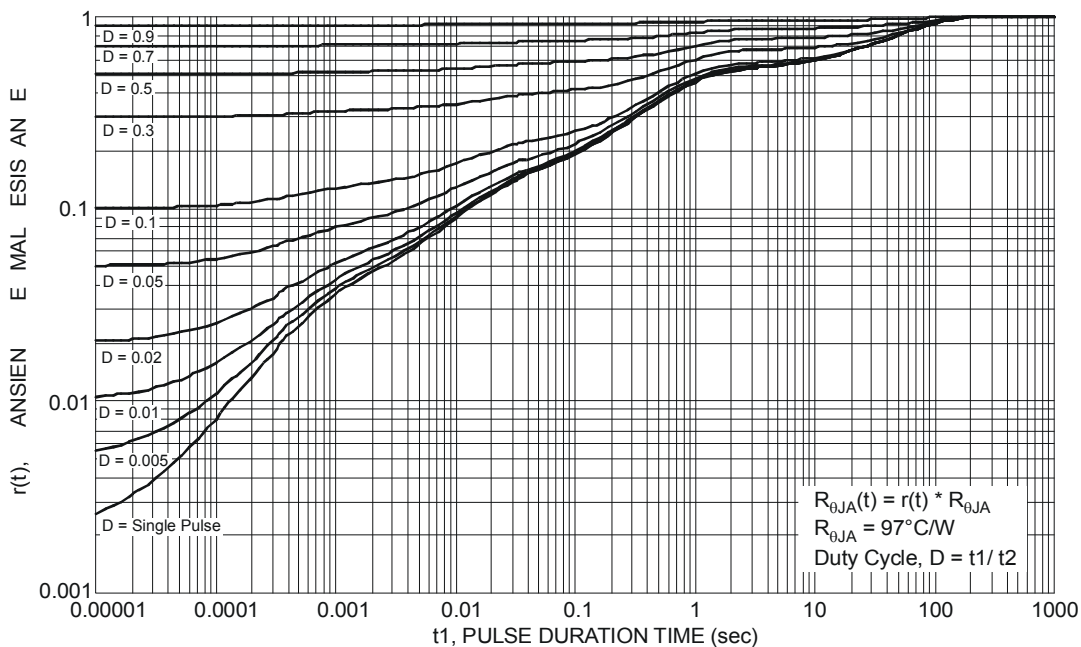
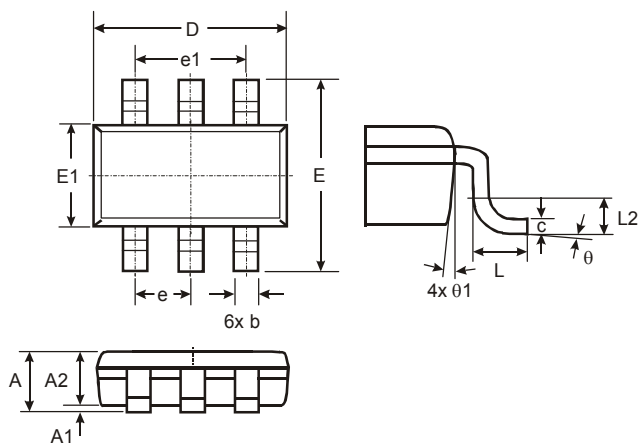


Figure 13 Transient Thermal Resistance

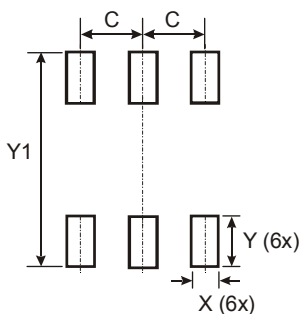
Package Outline Dimensions



TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.01	0.10	—
A2	0.84	0.90	—
D	—	—	2.90
E	—	—	2.80
E1	—	—	1.60
b	0.30	0.45	—
c	0.12	0.20	—
e	—	—	0.95
e1	—	—	1.90
L	0.30	0.50	—
L2	—	—	0.25
θ	0°	8°	4°
θ1	4°	12°	—

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199