



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

Features

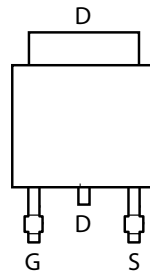
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

Mechanical Data

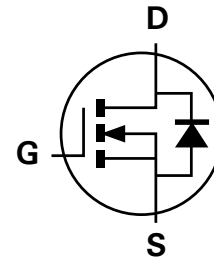
- Case: TO252
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.33 grams (approximate)



TOP VIEW



PIN OUT -TOP VIEW



Equivalent Circuit

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$	I_D	9.7	A
		$T_A = +85^\circ\text{C}$		6.3	
Pulsed Drain Current (Note 6)			I_{DM}	48	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1.68	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$	R_{JA}	74.3	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 6. Repetitive rating, pulse width limited by junction temperature.

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	$V_{GS} = 0V, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	1.0	μA	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	1.05	-	1.95	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	11	16	m Ω	$V_{GS} = 10V, I_D = 11.6A$
			17	25		$V_{GS} = 4.5V, I_D = 10A$
Forward Transfer Admittance	$ Y_{fs} $	-	8	-	S	$V_{DS} = 10V, I_D = 9A$
Diode Forward Voltage	V_{SD}	-	0.73	1.0	V	$V_{GS} = 0V, I_S = 1A$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	867	-	pF	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	85	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	81	-	pF	
Gate Resistance	R_g	-	1.39	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$
Total Gate Charge	Q_g	-	18.85	-	nC	$V_{GS} = 10V, V_{DS} = 15V,$ $I_D = 11.6A$
Gate-Source Charge	Q_{gs}	-	2.59	-	nC	
Gate-Drain Charge	Q_{gd}	-	6.15	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.46	-	ns	$V_{DD} = 15V, V_{GS} = 10V,$ $R_L = 1.3\Omega, R_G = 3\Omega$
Turn-On Rise Time	t_r	-	14.53	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	18.84	-	ns	
Turn-Off Fall Time	t_f	-	6.01	-	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to production testing.

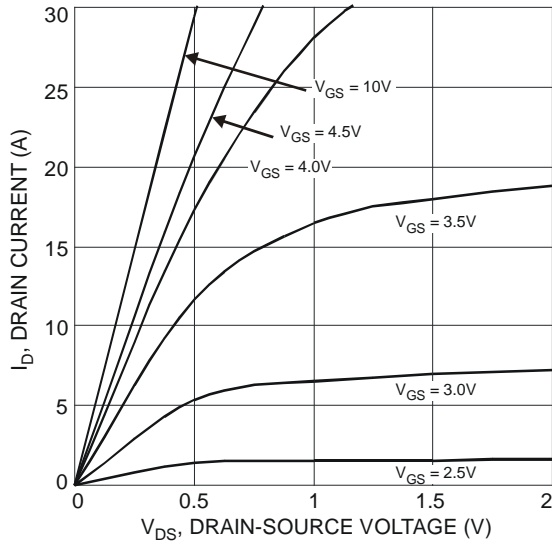


Fig. 1 Typical Output Characteristics

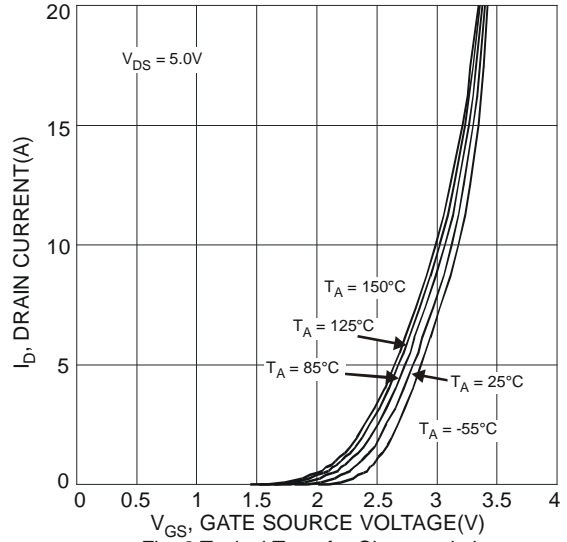


Fig. 2 Typical Transfer Characteristics

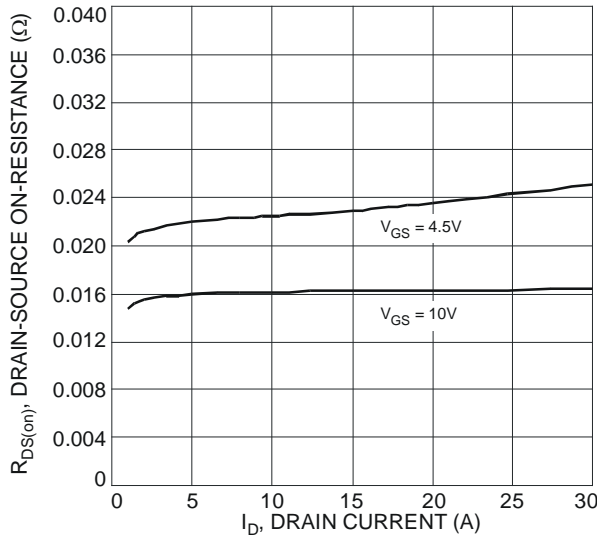


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

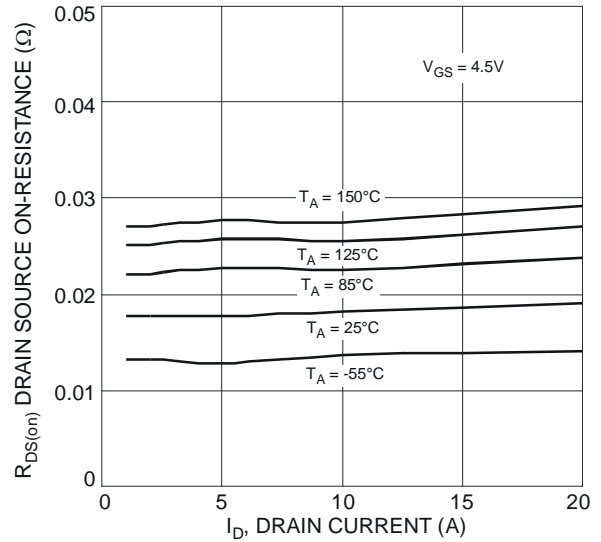


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

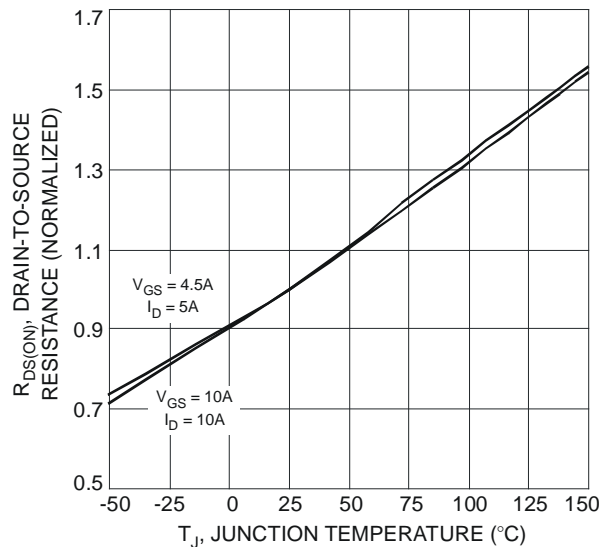


Fig. 5 On-Resistance Variation with Temperature

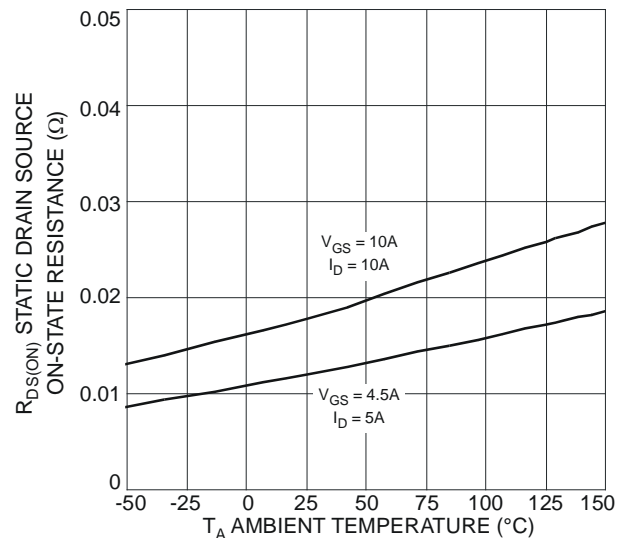


Fig. 6 Typical Static Drain-Source On-State Resistance vs. Ambient Temperature

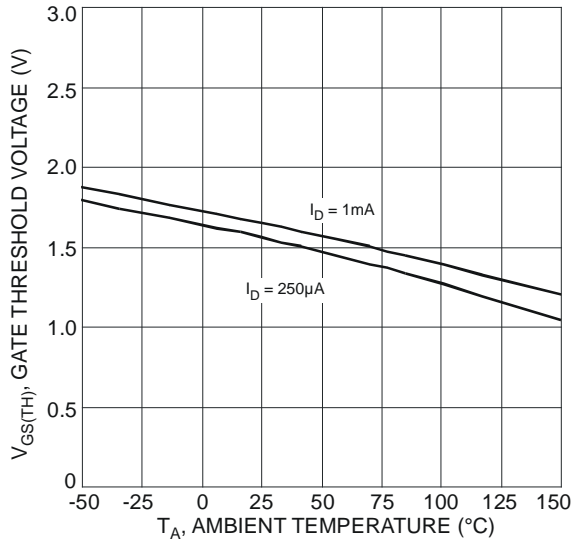


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

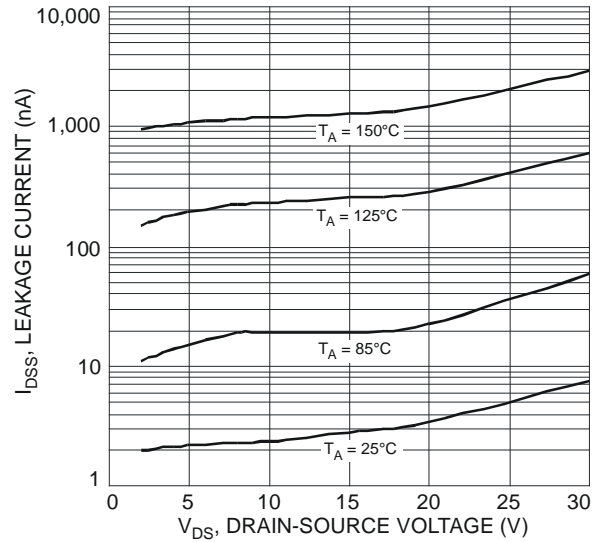


Fig. 8 Typical Drain-Source Leakage Current vs Voltage

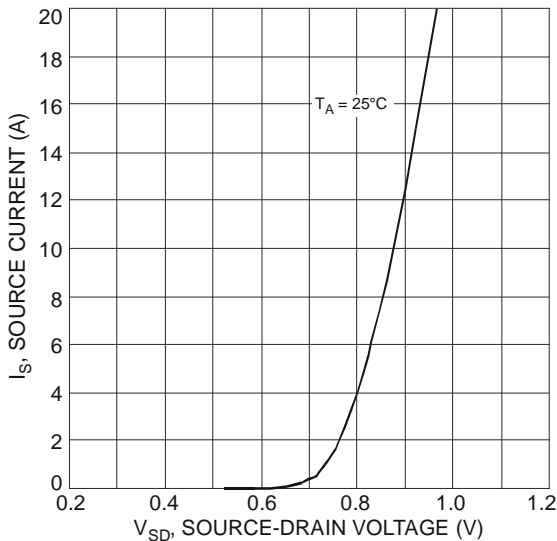


Fig. 9 Diode Forward Voltage vs. Current

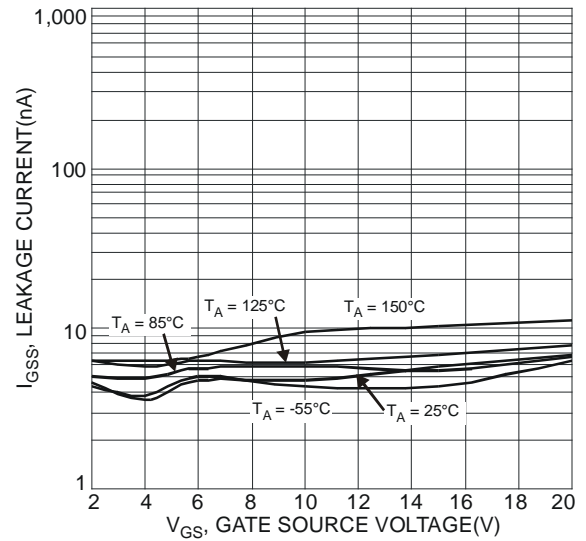


Fig. 10 Gate-Source Leakage Current vs. Voltage

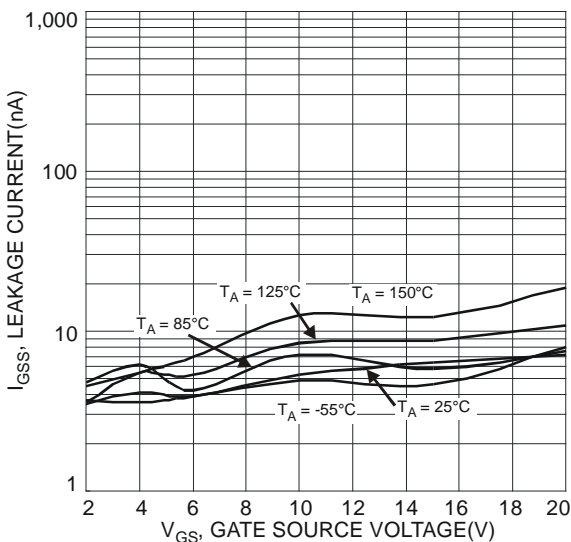


Fig. 11 Gate-Source Leakage Current vs. Voltage

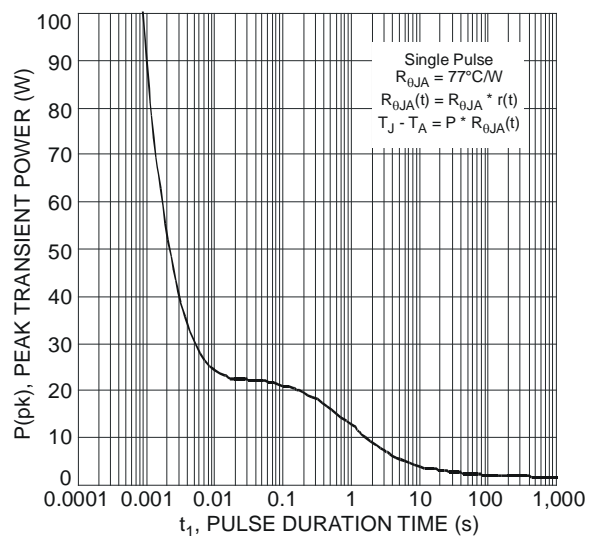


Fig. 12 Single Pulse Maximum Power Dissipation

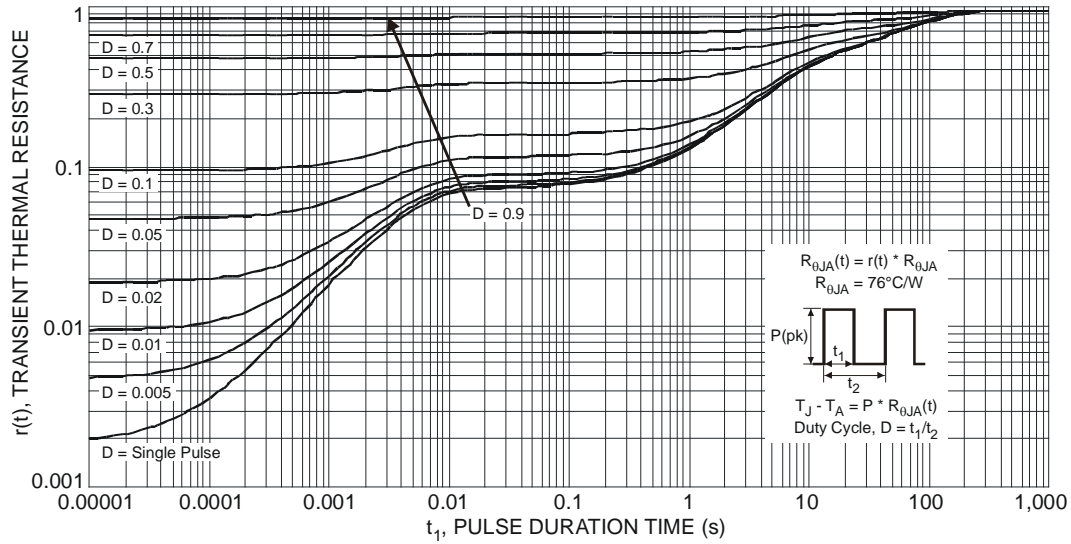
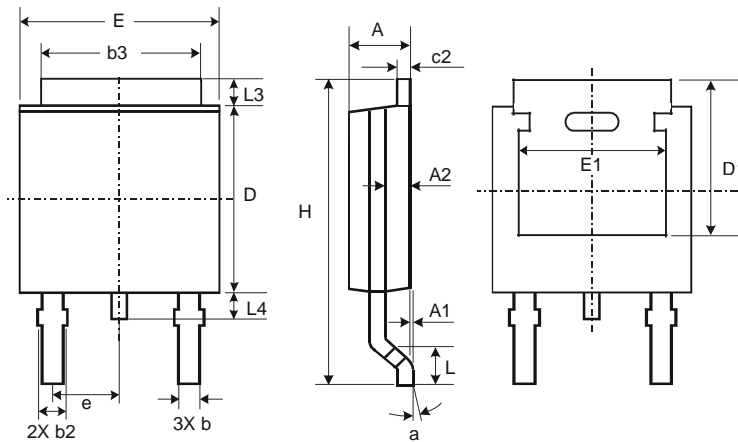


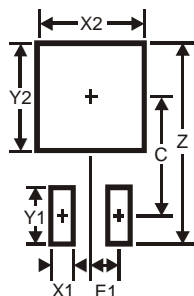
Fig. 13 Transient Thermal Response

Package Outline Dimensions



TO252			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3