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

Features

- BV_{DSS} > -240V
- $R_{DS(on)} \le 8.8\Omega$ @ $V_{GS} = -3.5V$
- Low threshold and Fast switching

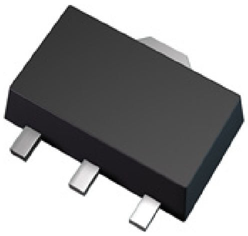
Mechanical Data

- Case: SOT89
- Case Material: Molded Plastic, “Green” Molding Compound.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish e3
- Weight: 0.052 grams (approximate)

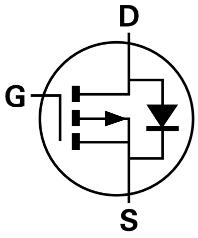
Application

- Electronic hook switches
- Telecoms and Battery powered equipment

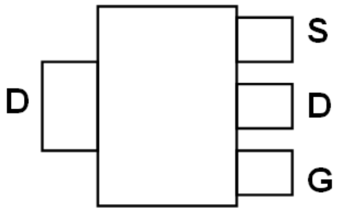
SOT89



Top View



Device symbol



Pin-out Top

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

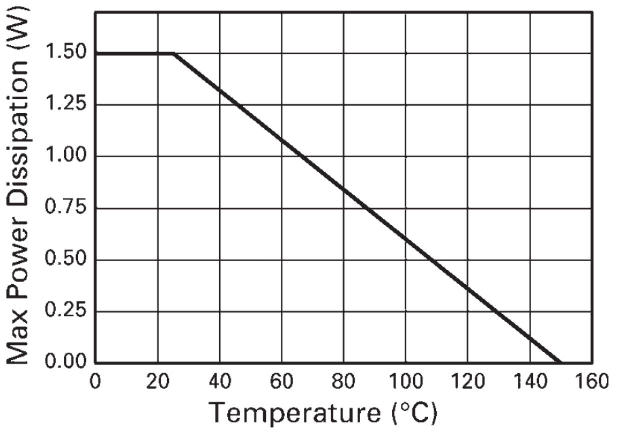
Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-240	V
Gate-Source Voltage	V_{GSS}	±40	V
Continuous Drain Current	I_D	-200	mA
Pulsed Drain Current (Note 8)	I_{DM}	-1.0	A

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

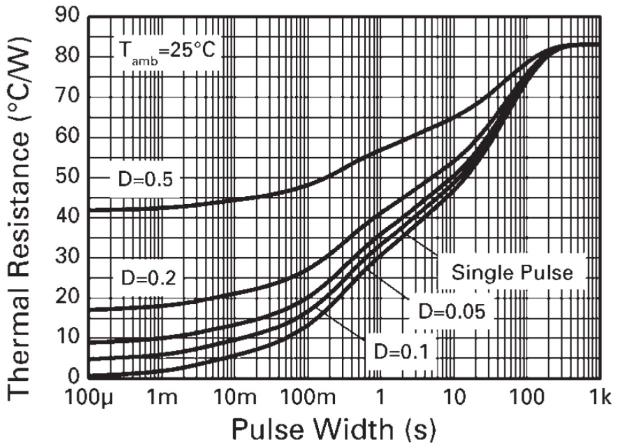
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	1.5	W
	(Note 7)		2.6	W
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	83.3	°C/W
	(Note 7)		47.4	°C/W
Thermal Resistance, Junction to Leads	(Note 9)	$R_{\theta JL}$	3.64	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
6. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
7. For a device surface mounted on FR4 PCB measured at t ≤ 10 sec.
8. Repetitive rating - 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs – pulse width limited by maximum junction temperature.
9. Thermal resistance from junction to solder-point (at the end of the drain lead).

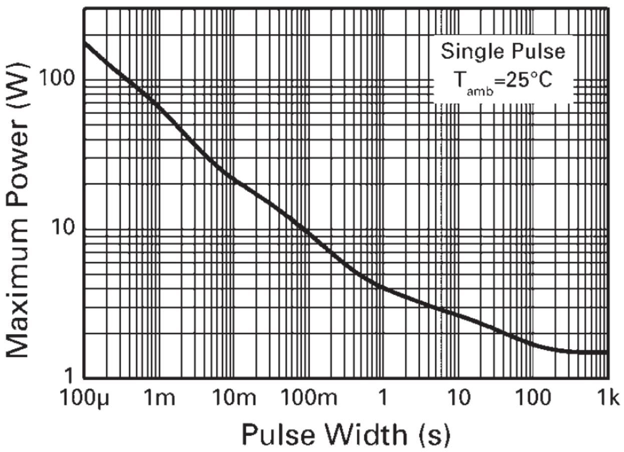
Thermal Characteristics



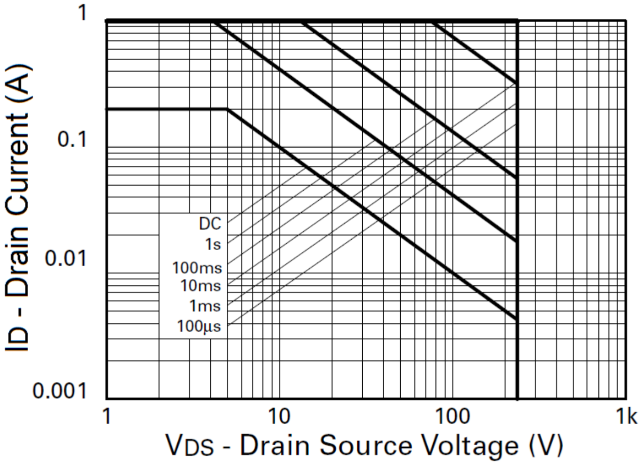
Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation



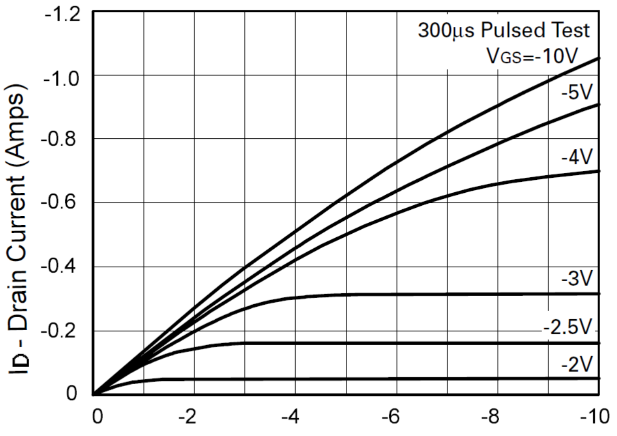
Safe Operating Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

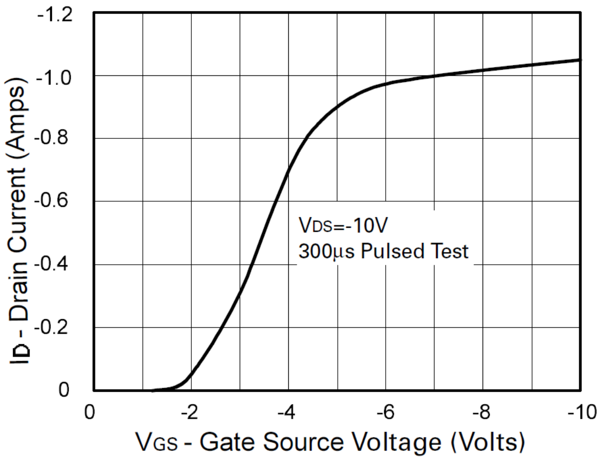
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-240	—	—	V	I_D = -1mA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-10 -100	μA μA	V_{DS} = -240V, V_{GS} = 0V V_{DS} = -190V, V_{GS} = 0V, T_A = +125°C
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±40V, V_{DS} = 0V
ON CHARACTERISTICS						
On state Drain Current (Note 10)	$I_{D(on)}$	-0.75	-1.0	—	A	V_{DS} = -10V, V_{GS} = -10V
Gate Threshold Voltage	$V_{GS(th)}$	-0.7	-1.4	-2.0	V	I_D = -1mA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 10)	$R_{DS(on)}$	—	7.1 8.8	9 11	Ω	V_{GS} = -10V, I_D = -200mA V_{GS} = -3.5V, I_D = -100mA
Forward Transconductance (Notes 10 & 12)	g_{fs}	125	—	—	mS	V_{DS} = -10V, I_D = -200mA
DYNAMIC CHARACTERISTICS (Note 12)						
Input Capacitance	C_{iss}	—	100	200	pF	V_{DS} = -25V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	18	25		
Reverse Transfer Capacitance	C_{rss}	—	5	15		
Turn-On Delay Time (Note 11)	$t_{d(on)}$	—	8	15	ns	V_{DD} = -50V, I_D = -250mA V_{GEN} = -10V
Rise Time (Note 11)	t_f	—	8	15		
Turn-Off Delay Time (Note 11)	$t_{d(off)}$	—	26	40		
Fall Time (Note 11)	t_f	—	20	30		

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

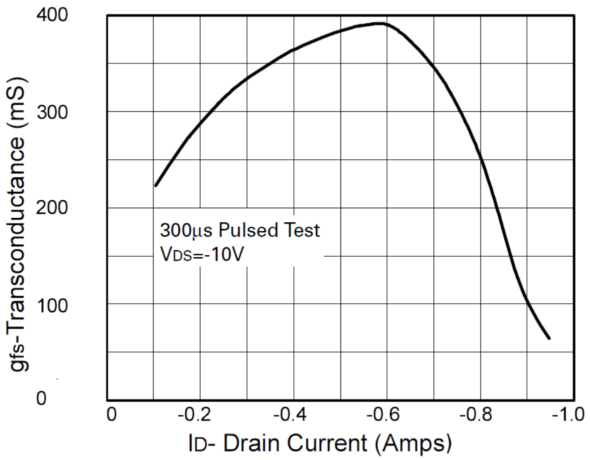
Typical Characteristics



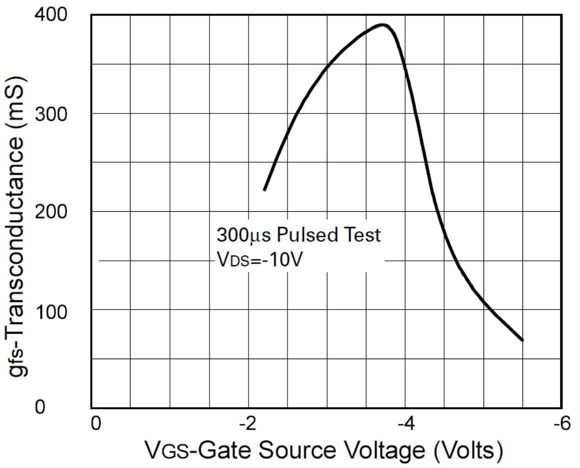
Saturation Characteristics



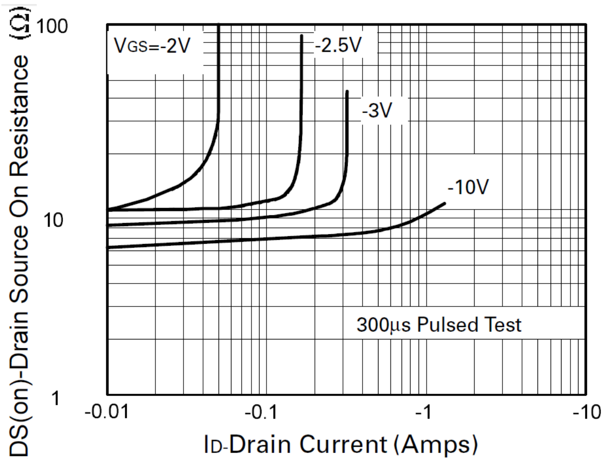
Transfer Characteristics



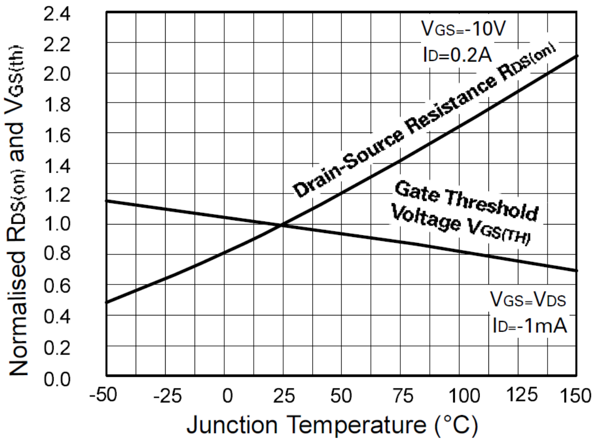
Transconductance v drain current



Transconductance v gate-source voltage

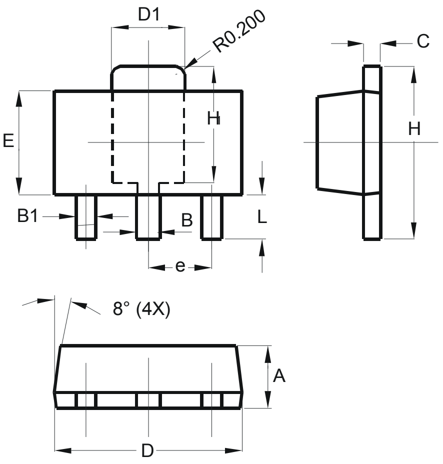


On-resistance vs Drain Current



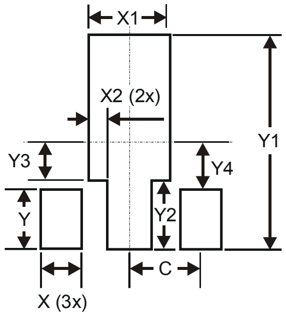
Normalised RDS(on) and VGS(th) vs Temperature

Package Outline Dimensions



SOT89		
Dim	**Min**	**Max**
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500