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

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Product Summary

$V_{(BR)DSS}$	Max $R_{DS(on)}$	Max I_D $T_A = 25°C$ (Note 5)
100V	250mΩ @ V_{GS} = 10V	1.9A
	300mΩ @ V_{GS} = 6V	1.68A

Features and Benefits

- Low On-Resistance
- Fast Switching Speed

Description and Applications

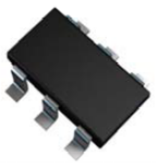
This MOSFET features a unique structure, combining the benefits of low on-resistance and fast switching, making it ideal for high-efficiency, power management applications.

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

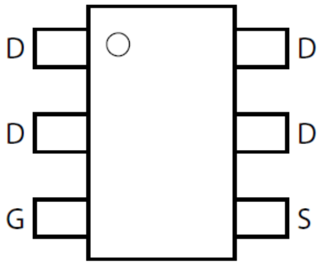
Mechanical Data

- 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: 0.015 grams (Approximate)

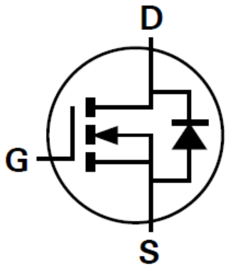
SOT26



Top View



Pinout Top-view



Device symbol

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

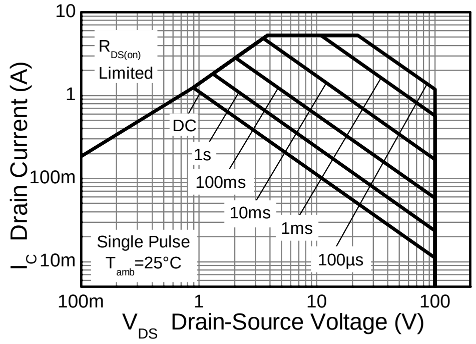
Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	100	V
Gate-Source Voltage			V_{GS}	±20	V
Continuous Drain Current	V_{GS} = 10V	Note 5)	I_D	1.9	A
		T_A=+70°C (Note 5)		1.5	
		(Note 4)		1.5	
		(Note 7)		3.5	
Pulsed Drain Current		(Note 6)	I_{DM}	8.6	A
Continuous Source Current (Body Diode)		(Note 5)	I_S	2.5	A
Pulsed Source Current (Body Diode)		(Note 6)	I_{SM}	8.6	A

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

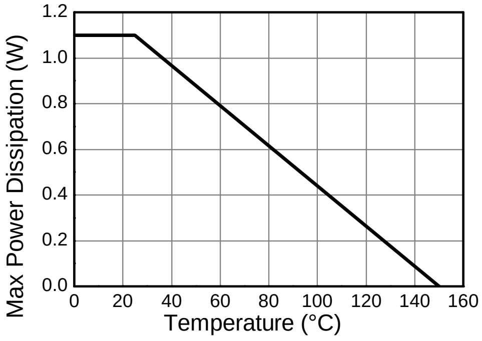
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 4)	P_D	1.1	W
	(Note 5)		1.7	
	(Note 7)		6.3	
Thermal Resistance, Junction to Ambient	(Note 4)	$R_{\theta JA}$	114	°C/W
	(Note 5)		73.5	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	19.7	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
4. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
5. For a device surface mounted on FR4 PCB measured at t ≤ 5 sec.
6. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs - pulse width limited by maximum junction temperature.
7. Thermal resistance from junction to solder-point (at the end of the drain lead).

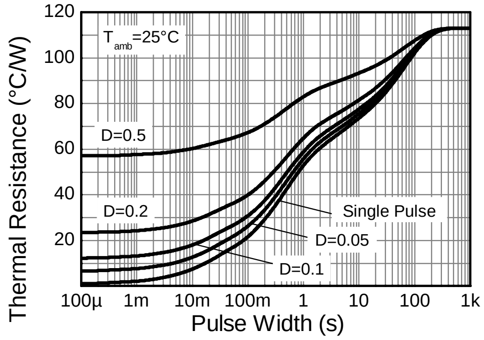
Thermal Characteristics



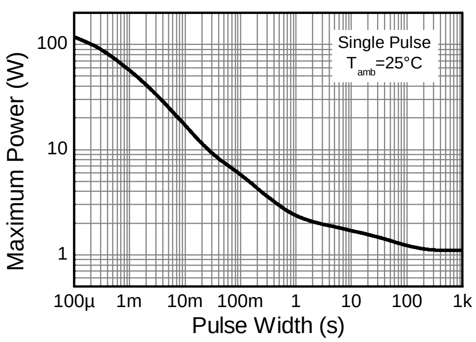
Safe Operating Area



Derating Curve



Transient Thermal Impedance



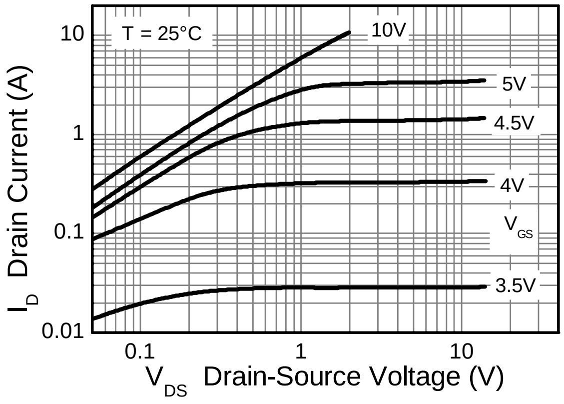
Pulse Power Dissipation

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

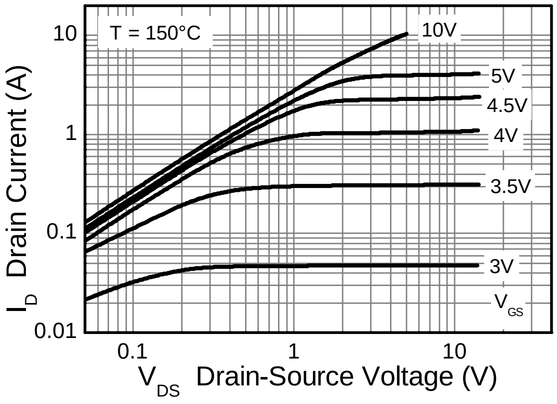
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	0.5	µA	V_{DS} = 100V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	2.0	—	4.0	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 8)	$R_{DS\ (ON)}$	—	—	0.25	Ω	V_{GS} = 10V, I_D = 3.2A
				0.30		V_{GS} = 6V, I_D = 2.6A
Forward Transconductance (Notes 8 & 10)	g_{fs}	—	5.0	—	S	V_{DS} = 15V, I_D = 3.2A
Diode Forward Voltage (Note 8)	V_{SD}	—	0.87	0.95	V	I_S = 3.2A, V_{GS} = 0V
Reverse Recovery Time (Note 10)	t_{rr}		27	—	ns	I_S = 1.2A, di/dt = 100A/µs
Reverse Recovery Charge (Note 10)	Q_{rr}	—	32	—	nC	
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	405	—	pF	V_{DS} = 50V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	28.2	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	14.2	—	pF	
Gate Charge (Note 9)	Q_g	—	4.2	—	nC	V_{GS} = 5V, V_{DS} = 50V I_D = 1.2A
Total Gate Charge (Note 9)	Q_g	—	7.7	—	nC	V_{GS} = 10V, V_{DS} = 50V I_D = 1.2A
Gate-Source Charge (Note 9)	Q_{gs}	—	1.8	—	nC	
Gate-Drain Charge (Note 9)	Q_{gd}	—	2.1	—	nC	
Turn-On Delay Time (Note 9)	$t_{d(on)}$	—	3.4	—	ns	V_{DD} = 30V, V_{GS} = 10V I_D = 1.2A, R_G ≅ 6.0Ω
Turn-On Rise Time (Note 9)	t_r	—	2.2	—	ns	
Turn-Off Delay Time (Note 9)	$t_{d(off)}$	—	8	—	ns	
Turn-Off Fall Time (Note 9)	t_f	—	3.2	—	ns	

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.

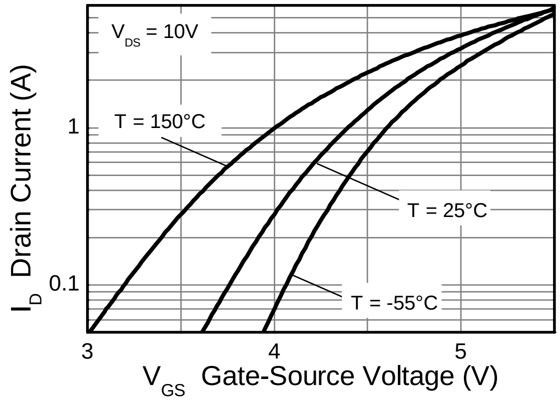
Typical Characteristics



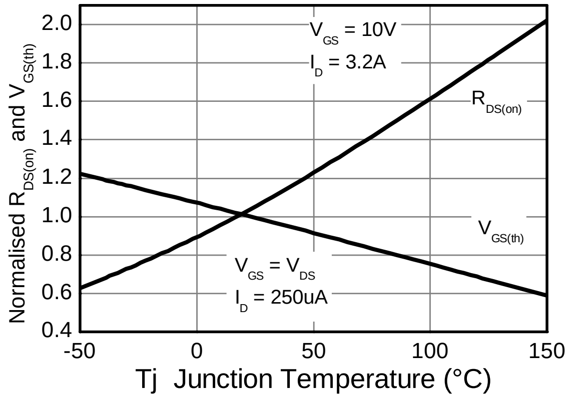
Output Characteristics



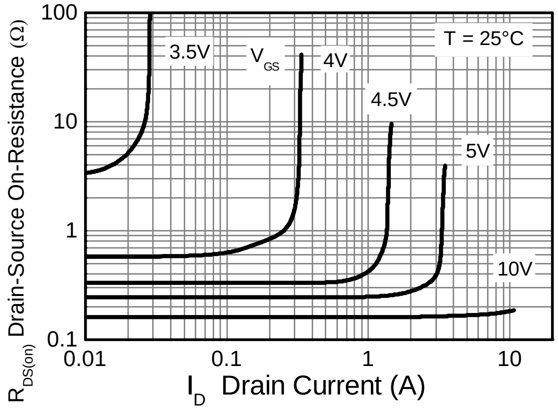
Output Characteristics



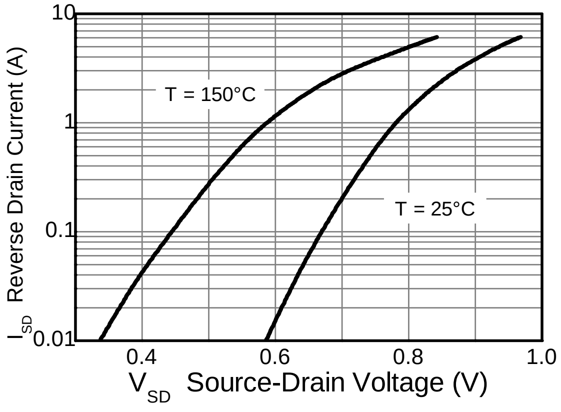
Typical Transfer Characteristics



Normalised Curves v Temperature

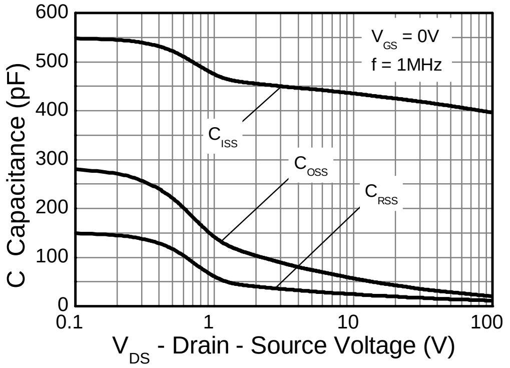


On-Resistance v Drain Current

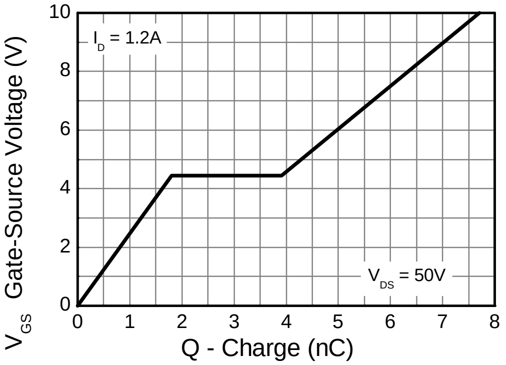


Source-Drain Diode Forward Voltage

Typical Characteristics (continued)

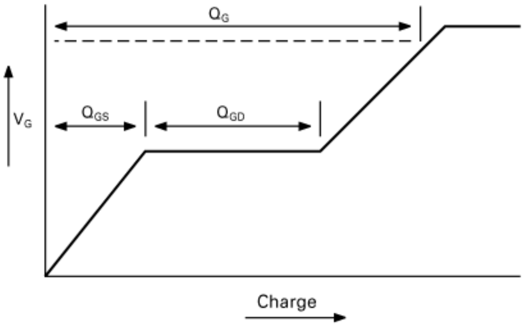


Capacitance v Drain-Source Voltage

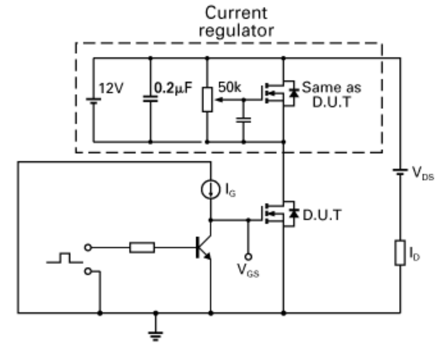


Gate-Source Voltage v Gate Charge

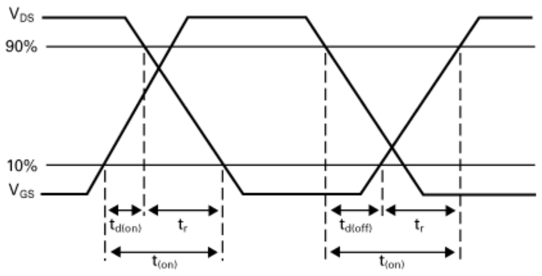
Test Circuits



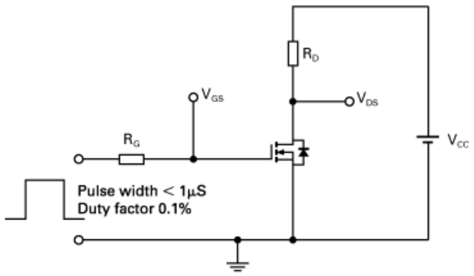
Basic gate charge waveform



Gate charge test circuit

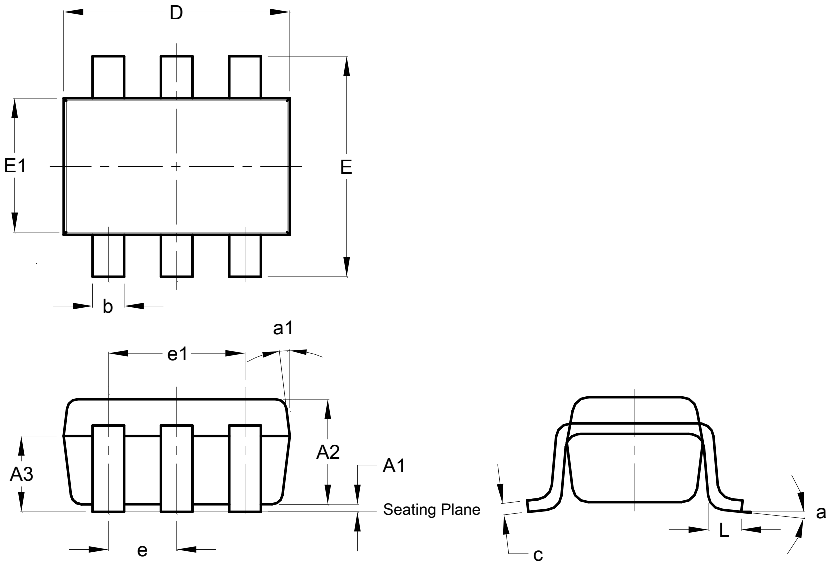


Switching time waveforms



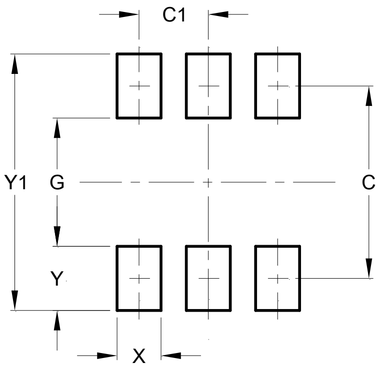
Switching time test circuit

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