

# SSG4410

10A, 30V, R<sub>DS(ON)</sub> 13.5mΩ

**N-Channel Enhancement Mode Power Mos.FET**

RoHS Compliant Product

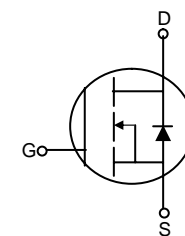
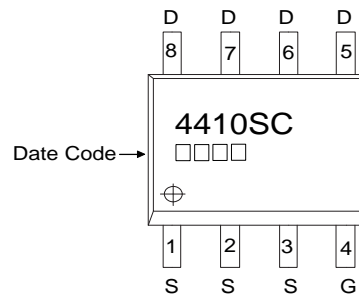
## Description

The SSG4410 provide the designer with the best Combination of fast switching, ruggedized device design, Ultra low on-resistance and cost-effectiveness.

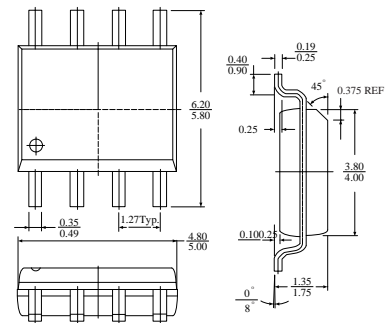
The SOP-8 is universally preferred for all commercial industrial surface mount application and suited for low voltage applications such as DC/DC converters.

## Features

- \* Dynamic dv/dt Rating
- \* Simple drive requirement
- \* Repetitive avalanche rated
- \* Fast switching



## SOP-8



Dimensions in millimeters

## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>A</sub> =25 °C	10	A
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>A</sub> =70 °C	8	A
Pulsed Drain Current <sup>1</sup>	I <sub>DM</sub>	50	A
Total Power Dissipation	P <sub>D</sub> @T <sub>A</sub> =25 °C	2.5	W
Linear Derating Factor		0.02	W/°C
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55~+150	°C

## Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient Max.	R <sub>thj-a</sub>	50	°C/W

## Electrical Characteristics( T<sub>j</sub>=25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA
Breakdown Voltage Temp. Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>j</sub>	-	0.037	-	V/°C	Reference to 25°C, I <sub>D</sub> =1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	-	3.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> =±20V
Drain-Source Leakage Current (T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	1	uA	V <sub>DS</sub> =30V, V <sub>GS</sub> =0
Drain-Source Leakage Current (T <sub>j</sub> =70°C)		-	-	25	uA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	-	11.5	13.5	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =10A
		-	16.5	20		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	20	-	nC	I <sub>D</sub> =10A V <sub>DS</sub> =15V V <sub>GS</sub> =5V
Gate-Source Charge	Q <sub>gs</sub>	-	3	-		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	-	11	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(ON)</sub>	-	7.5	-	nS	V <sub>DD</sub> =25V I <sub>D</sub> =1A V <sub>GS</sub> =5V R <sub>G</sub> =3.3Ω R <sub>D</sub> =25Ω
Rise Time	T <sub>r</sub>	-	10.2	-		
Turn-off Delay Time	T <sub>d(OFF)</sub>	-	29	-		
Fall Time	T <sub>f</sub>	-	33	-		
Input Capacitance	C <sub>iss</sub>	-	955	-	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =15V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	555	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	204	-		
Forward Transconductance	G <sub>fs</sub>	-	20	-	S	V <sub>DS</sub> =15V, I <sub>D</sub> =10A

## Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward On Voltage <sup>2</sup>	V <sub>DS</sub>	-	-	1.3	V	I <sub>S</sub> =1.7A, V <sub>GS</sub> =0V.
Continuous Source Current (Body Diode)	I <sub>S</sub>	-	-	2.3	A	V <sub>D</sub> =V <sub>G</sub> =0V, V <sub>S</sub> =1.3V
Pulsed Source Current (Body Diode)	I <sub>SM</sub>	-	-	50	A	

Notes: 1.Pulse width limited by safe operating area.

2.Pulse width ≤300us, dutycycle≤2%.

### Characteristics Curve

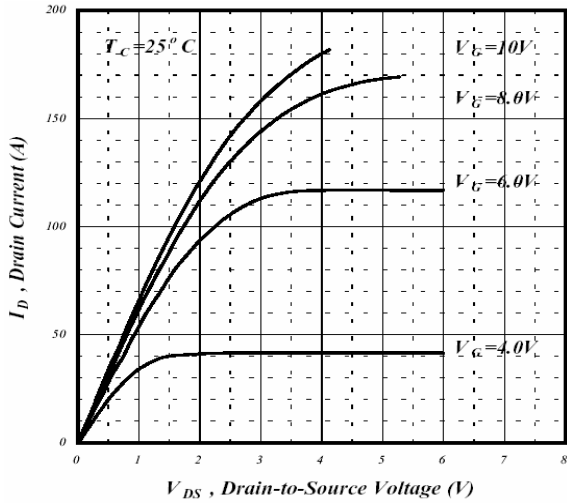


Fig 1. Typical Output Characteristics

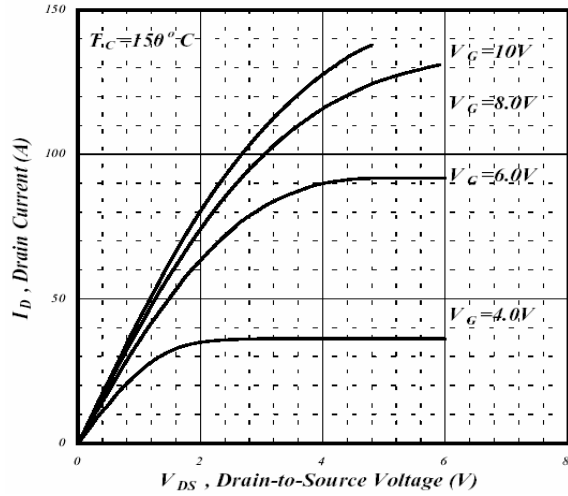


Fig 2. Typical Output Characteristics

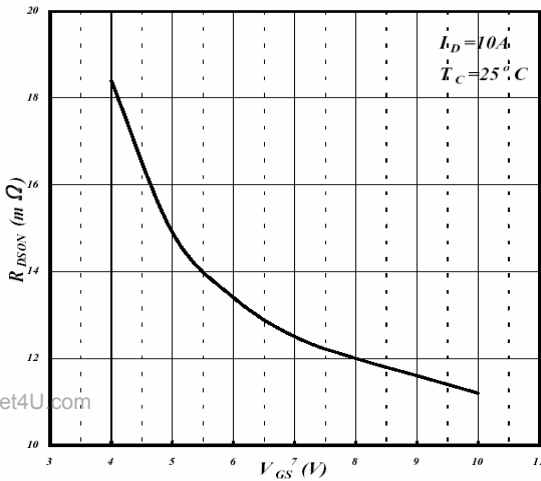


Fig 3. On-Resistance v.s. Gate Voltage

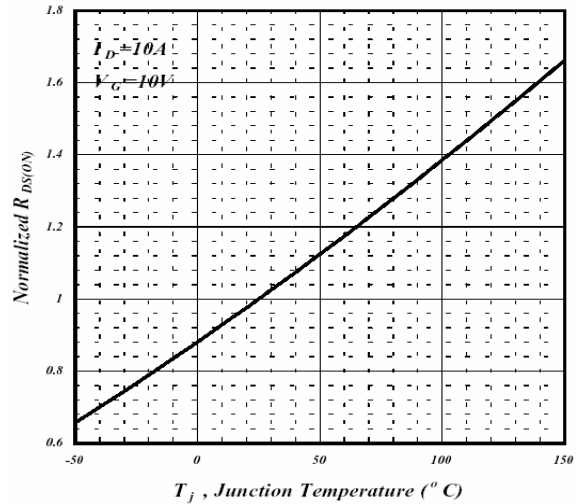


Fig 4. Normalized On-Resistance v.s. Junction Temperature

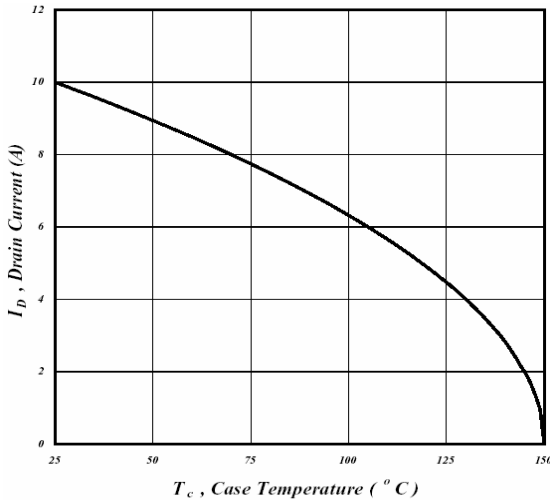


Fig 5. Maximum Drain Current v.s. Case Temperature

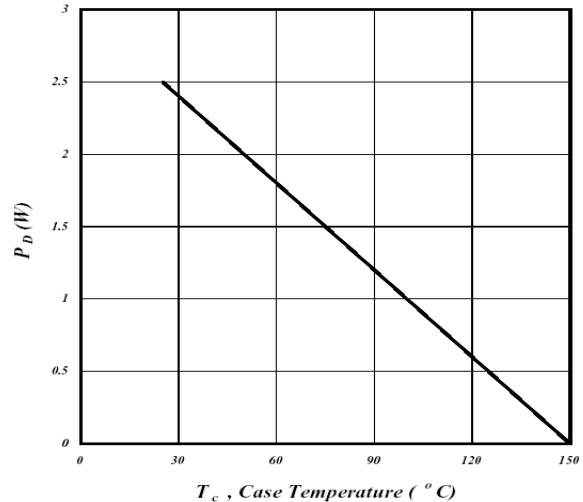


Fig 6. Type Power Dissipation

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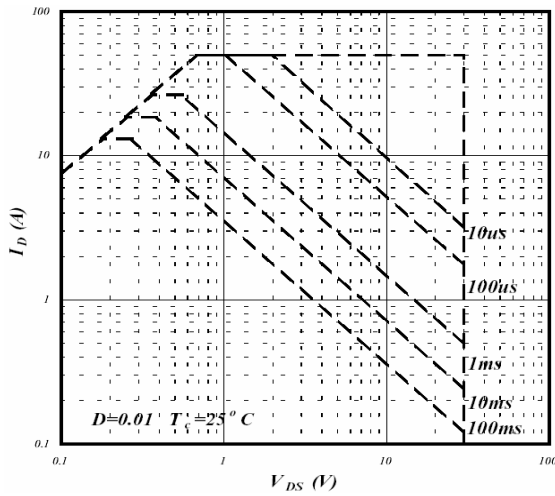


Fig 7. Maximum Safe Operating Area

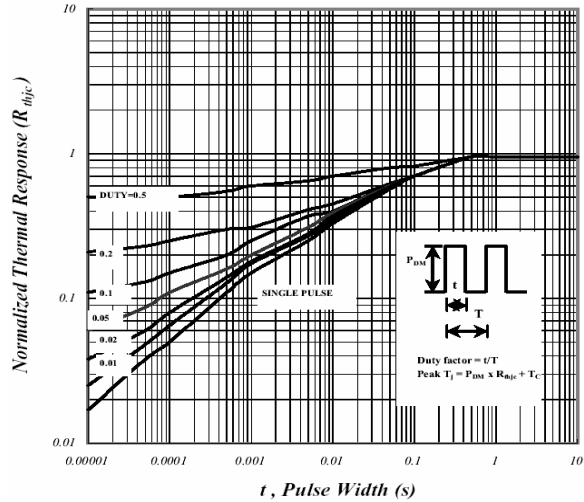


Fig 8. Effective Transient Thermal Impedance

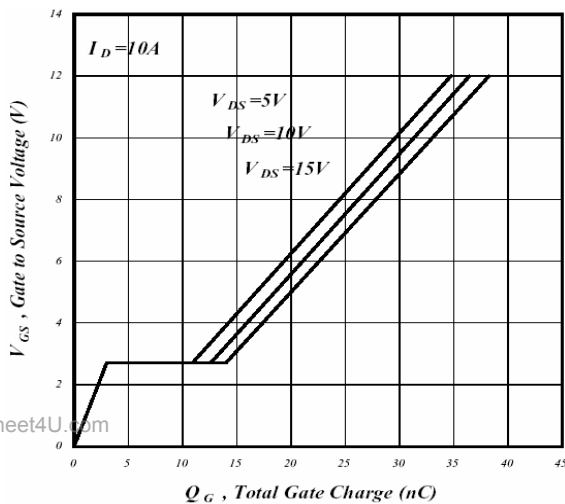


Fig 9. Gate Charge Characteristics

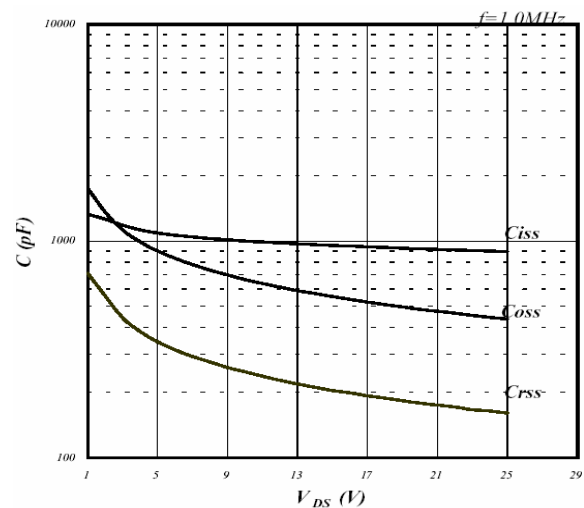


Fig 10. Typical Capacitance Characteristics

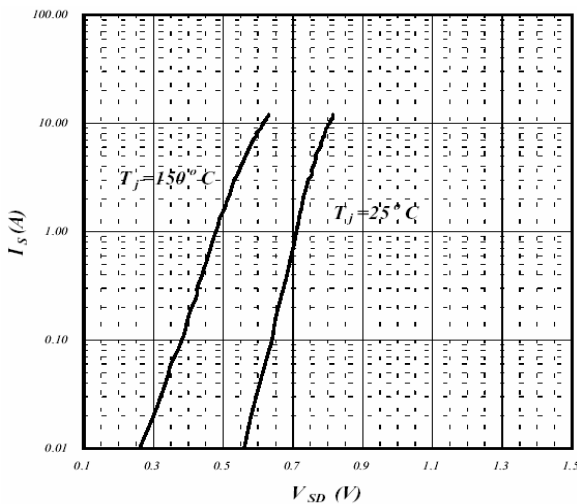


Fig 11. Forward Characteristics of Reverse Diode

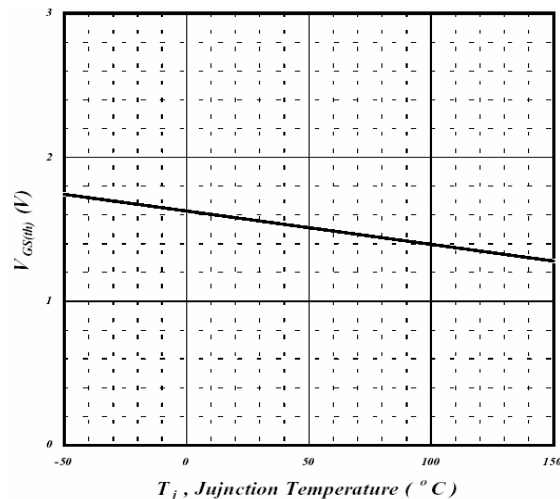


Fig 12. Gate Threshold Voltage v.s. Junction Temperature



Elektronische Bauelemente

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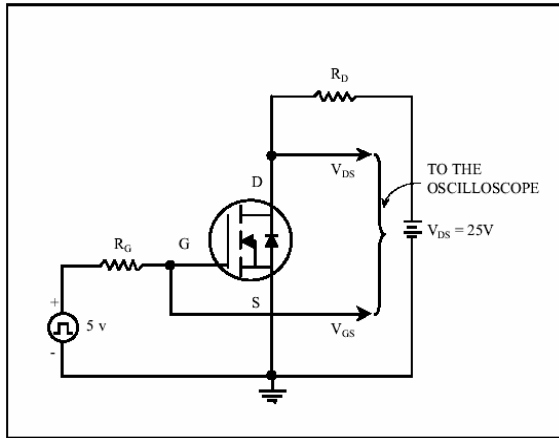


Fig 13. Switching Time Circuit

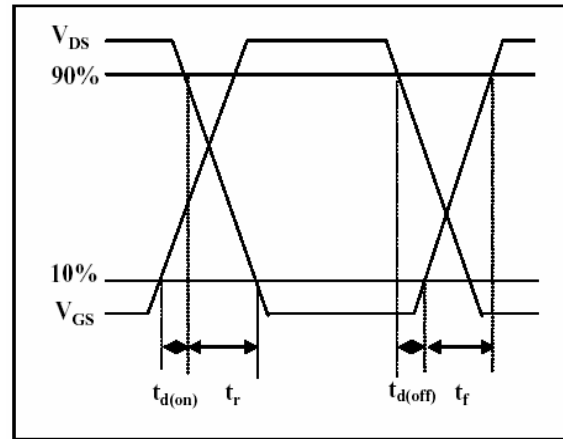


Fig 14. Switching Time Waveform

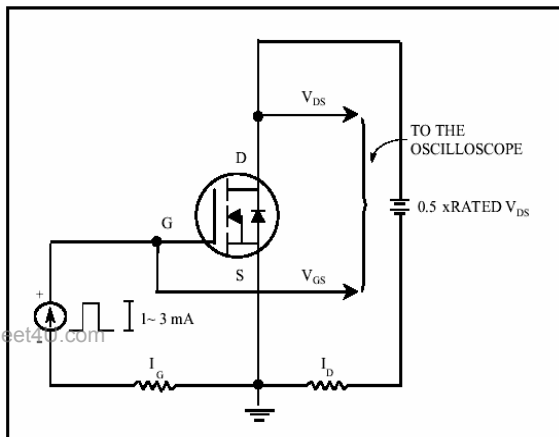


Fig 15. Gate Charge Circuit

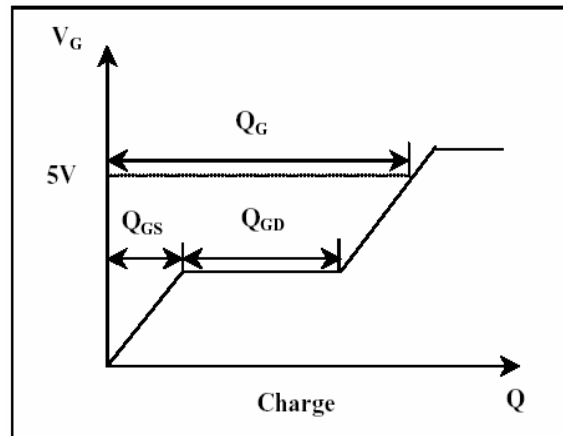


Fig 16. Gate Charge Waveform