

RoHS Compliant Product  
A suffix of "-C" specifies halogen free

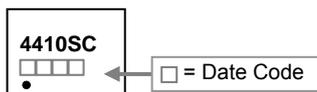
## DESCRIPTION

The SSG4410 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

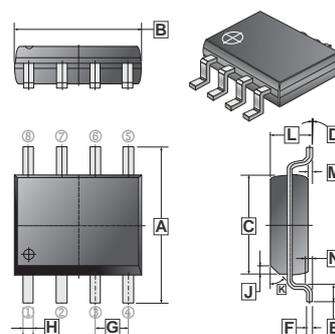
## FEATURES

- Dynamic dv/dt Rating
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching

## MARKING



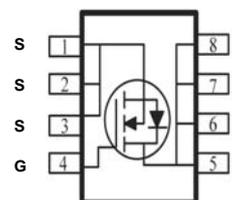
## SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				

## PACKAGE INFORMATION

Package	MPQ	LeaderSize
SOP-8	3K	13' inch



## MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise specified)

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
	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>	2.5	W
Linear Derating Factor		0.02	W / °C
Operating Junction & Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 ~ 150	°C
<b>Thermal Resistance Ratings</b>			
Thermal Resistance Junction-ambient (Max.)	R <sub>θJA</sub>	50	°C / W

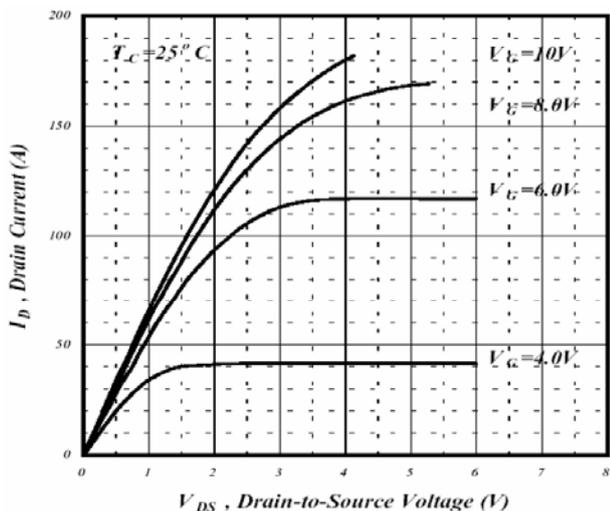
**ELECTRICAL CHARACTERISTICS** (T<sub>J</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA
Breakdown Voltage Temperature 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
Forward Transconductance	g <sub>fs</sub>	-	20	-	S	V <sub>DS</sub> =15V, I <sub>D</sub> =10A
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	μA	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V
Drain-Source Leakage Current(T <sub>J</sub> =55°C)		-	-	25	μA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V
Static Drain-Source On-Resistance	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	V <sub>DS</sub> =15V, I <sub>D</sub> =10A, V <sub>GS</sub> =5V
Gate-Source Chagre	Q <sub>gs</sub>	-	3	-		
Gate-Drain ("Miller") Change	Q <sub>gd</sub>	-	11	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(ON)</sub>	-	7.5	-	nS	V <sub>DS</sub> =25V, V <sub>GS</sub> =5V I <sub>D</sub> =1A, R <sub>D</sub> =25Ω, R <sub>G</sub> =3.3Ω
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>DS</sub> =15V V <sub>GS</sub> =0V f=1.0MHz
Output Capacitance	C <sub>OSS</sub>	-	555	-		
Reverse Transfer Capacitance	C <sub>RSS</sub>	-	204	-		
<b>Source-Drain Diode</b>						
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	1.3	V	I <sub>S</sub> =2.3A, V <sub>GS</sub> = 0V, T <sub>J</sub> =25°C
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) <sup>1</sup>	I <sub>SM</sub>	-	-	50	A	

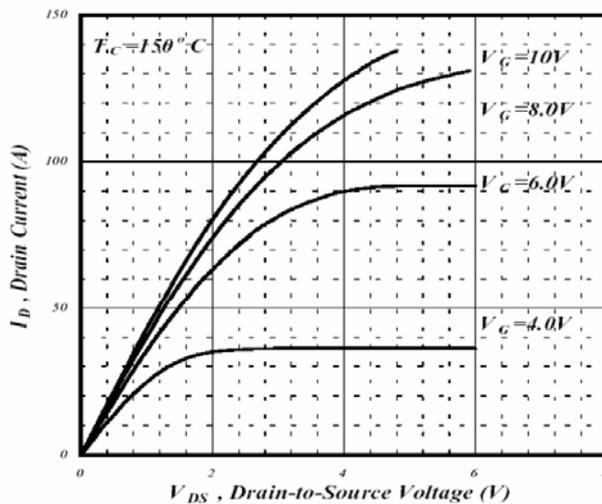
Notes:

1. Pulse width limited by safe operating area.
2. Pulse width ≤ 300 μs, duty cycle ≤ 2%.

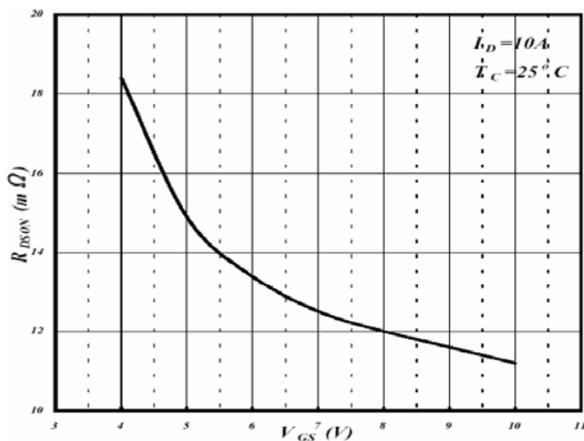
**CHARACTERISTIC CURVES**



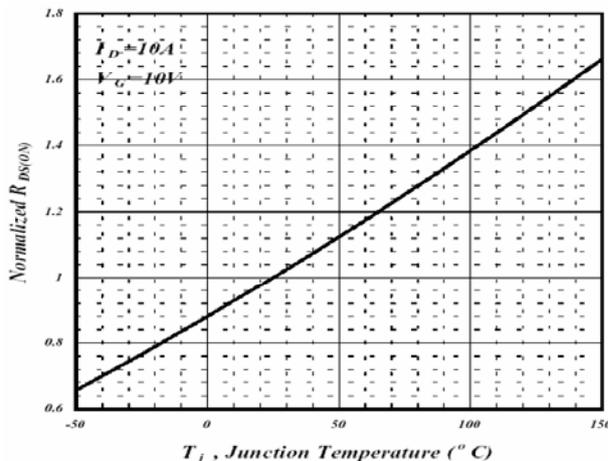
**Fig 1. Typical Output Characteristics**



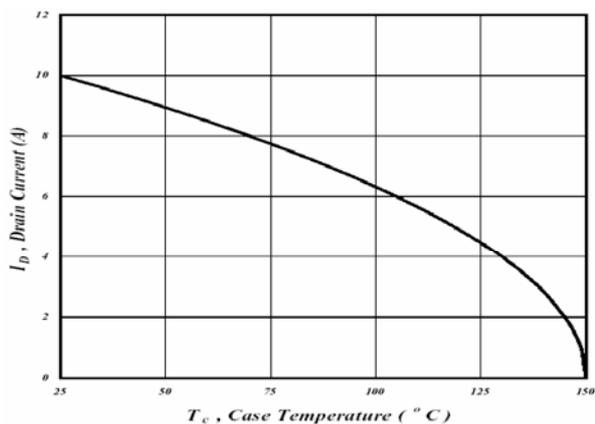
**Fig 2. Typical Output Characteristics**



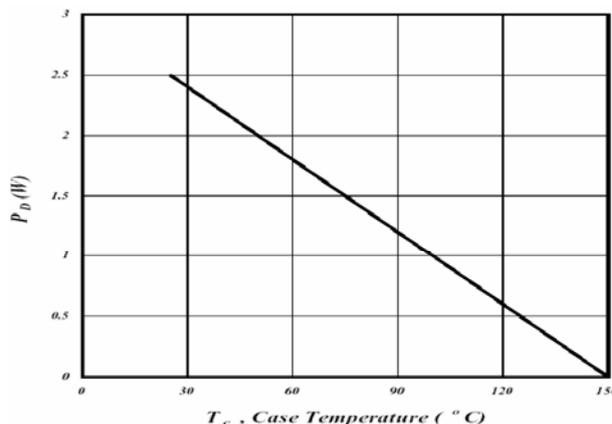
**Fig 3. On-Resistance v.s. Gate Voltage**



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

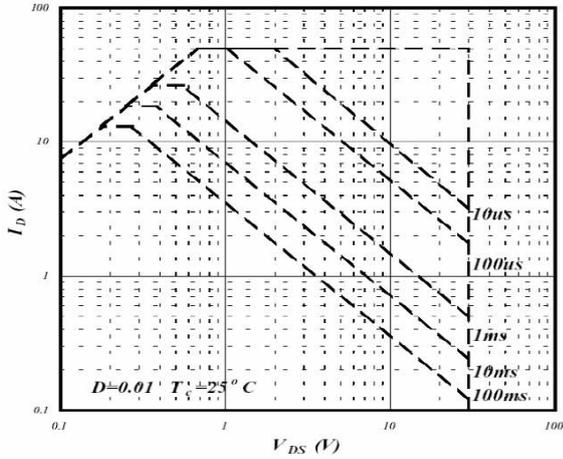


**Fig 5. Maximum Drain Current v.s. Case Temperature**

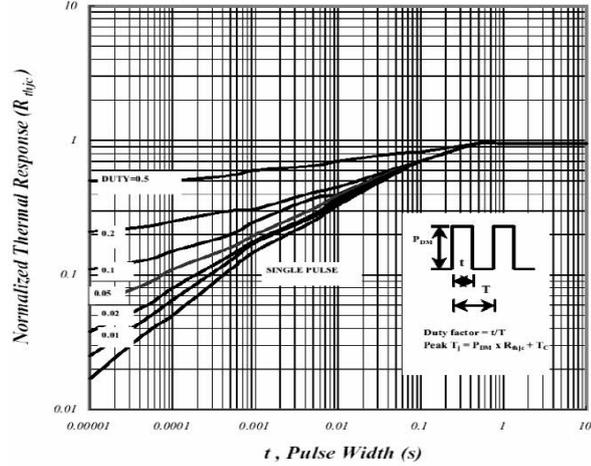


**Fig 6. Type Power Dissipation**

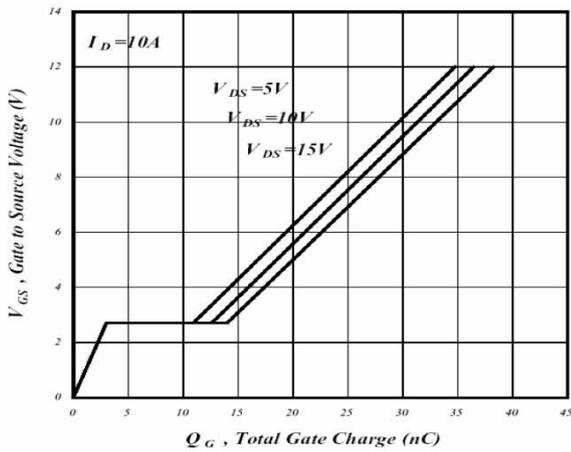
**CHARACTERISTIC CURVES**



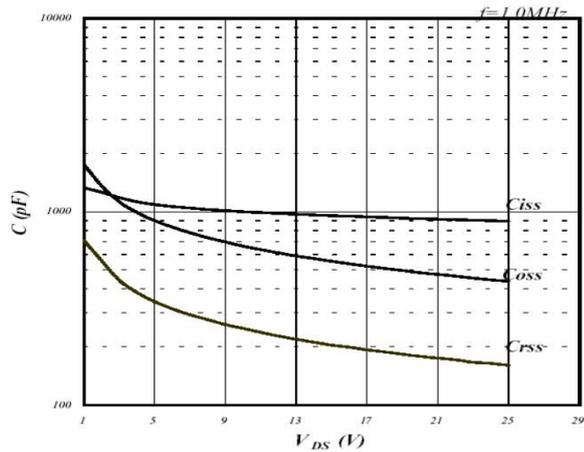
**Fig 7. Maximum Safe Operating Area**



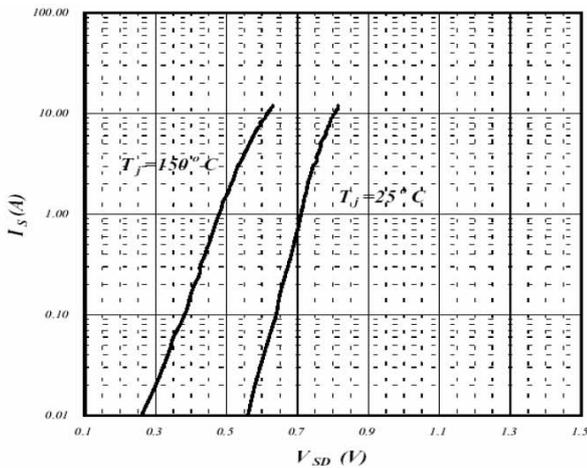
**Fig 8. Effective Transient Thermal Impedance**



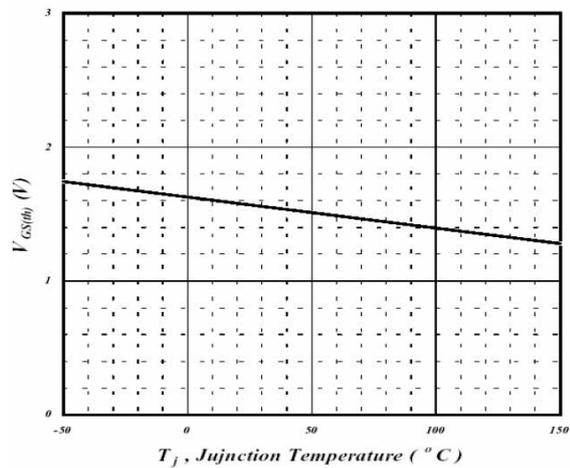
**Fig 9. Gate Charge Characteristics**



**Fig 10. Typical Capacitance Characteristics**

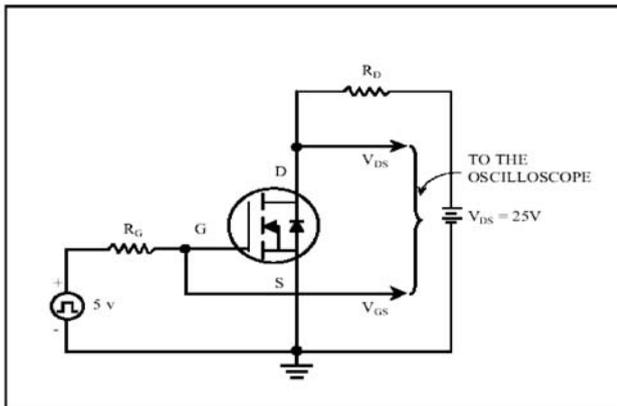


**Fig 11. Forward Characteristics of Reverse Diode**

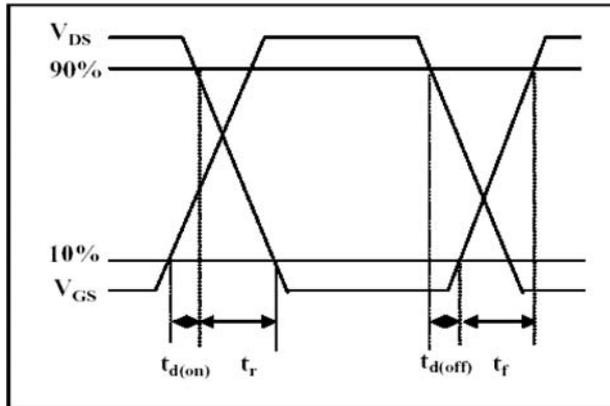


**Fig 12. Gate Threshold Voltage v.s. Junction Temperature**

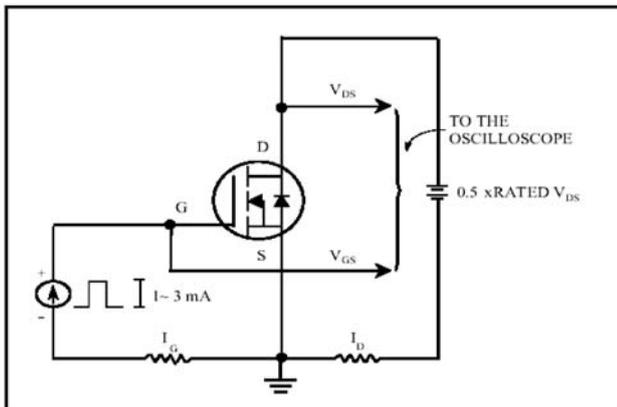
**CHARACTERISTIC CURVES**



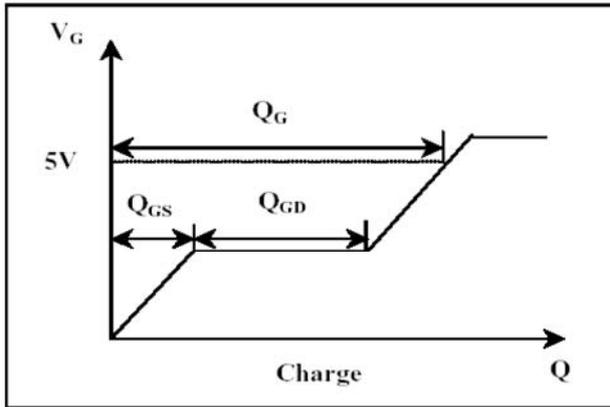
**Fig 13. Switching Time Circuit**



**Fig 14. Switching Time Waveform**



**Fig 15. Gate Charge Circuit**



**Fig 16. Gate Charge Waveform**