

SE4410
N-Channel Enhancement Mode Field Effect Transistor

Revision:A

General Description

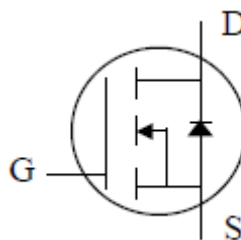
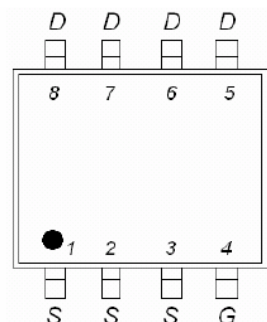
The SE4410 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications

Features

- Low $R_{DS(on)}$ to Minimize Conduction Losses
- Low Capacitance to Minimize Driver Losses
- Optimized Gate Charge to Minimize Switching Losses
- Dual SOIC-8 Surface Mount Package Saves Board Space

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 25	V
Drain Current (Note 1)	Continuous	10	A
	Pulsed	50	
Total Power Dissipation	P_D	2.5	W
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF/ON CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250 μ A, V _{GS} =0 V	30			V
I _{BSS}	Zero Gate Voltage Drain Current	V _{DS} =24 V, V _{GS} =0 V			1	μ A
I _{GSS}	Gate-Body leakage current	V _{DS} =0 V, V _{GS} =±20 V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =-250 μ A	1	-	3	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =10A	-	-	13.5	mΩ
		V _{GS} =4.5V, I _D =5A	-	-	22	
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =10A		20		S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz	-	1160	-	pF
C _{oss}	Output Capacitance		-	240	-	pF
C _{rss}	Reverse Transfer Capacitance		-	165	-	pF
T _{ON}	Turn-On Time	V _{DS} =25V, I _D = 1A,V _{GS} =5 V,RGEN = 3.3 Ω , R _D =25Ω	-	14	-	ns
T _{OFF}	Turn-Off Time		-	21	-	ns
T _r	Turn-on Rise Time		-	16	-	ns
T _f	Turn-on Fall Time		-	25	-	ns
Q _g	Total Gate Charge	V _{DS} =15V,I _D =7.5A,V _{GS} =4.5 V		13.5	-	nC
Q _{gs}	Gate-Source Charge			4		nC
Q _{gd}	Gate-Drain Charge			7		nC
Q _{rr}	BodyDiode Reverse Recovery Charge	I _S =5A, dI/dt=100A/μs		12	-	nC

Typical Characteristics

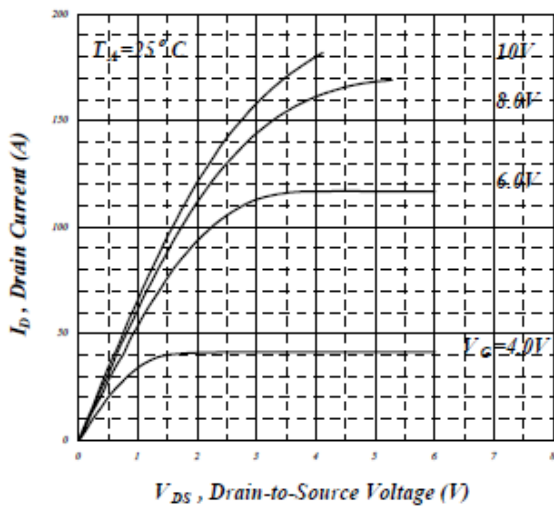


Fig 1. Typical Output Characteristics

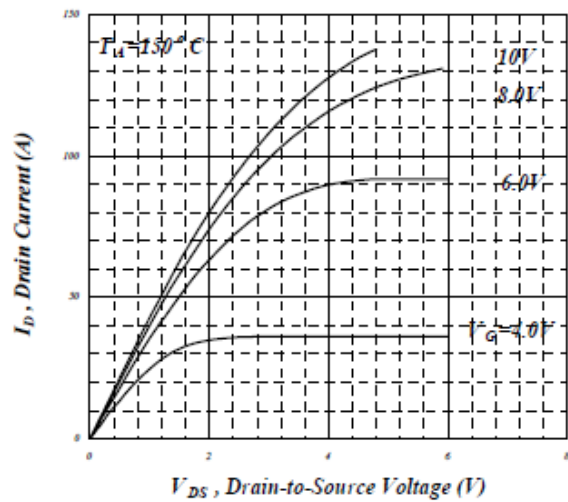


Fig 2. Typical Output Characteristics

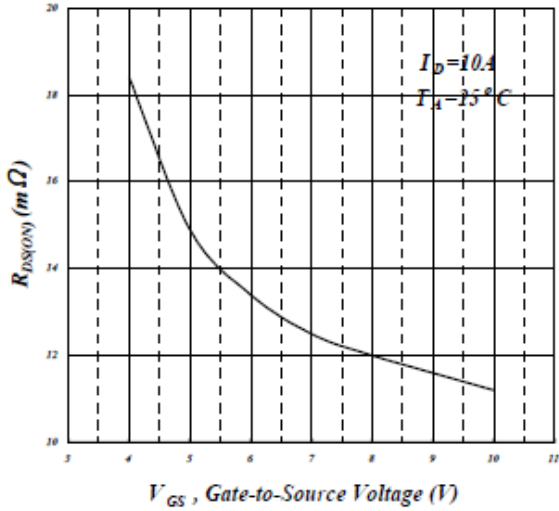


Fig 3. On-Resistance v.s. Gate Voltage

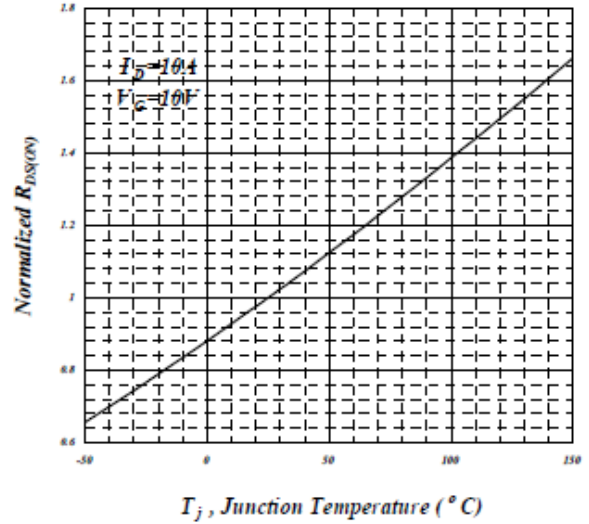


Fig 4. Normalized On-Resistance v.s. Junction Temperature

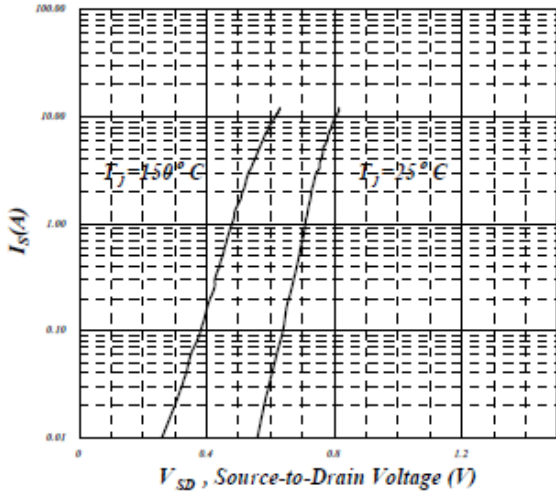


Fig 5. Forward Characteristic of Reverse Diode

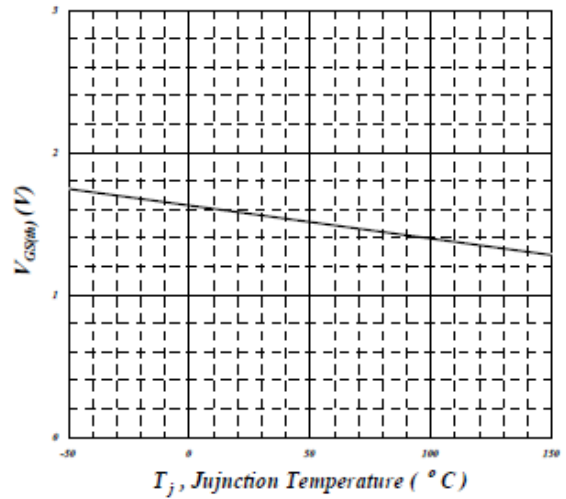


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

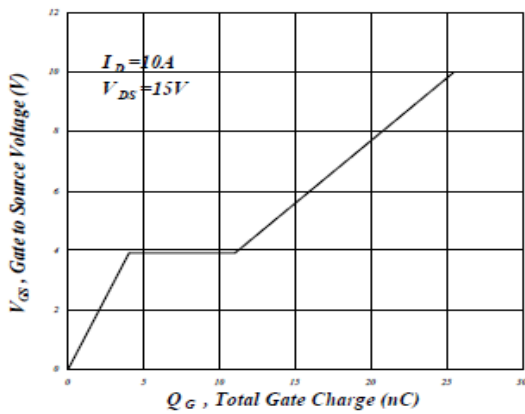


Fig 7. Gate Charge Characteristics

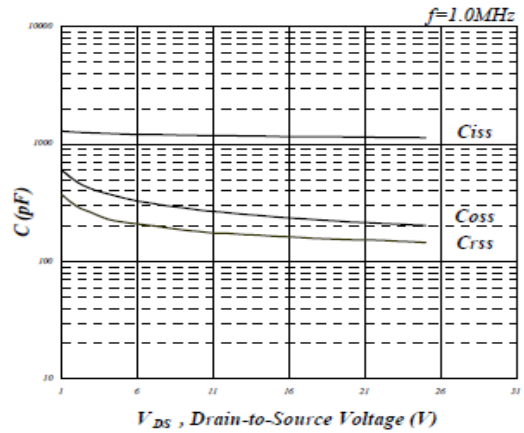


Fig 8. Typical Capacitance Characteristics

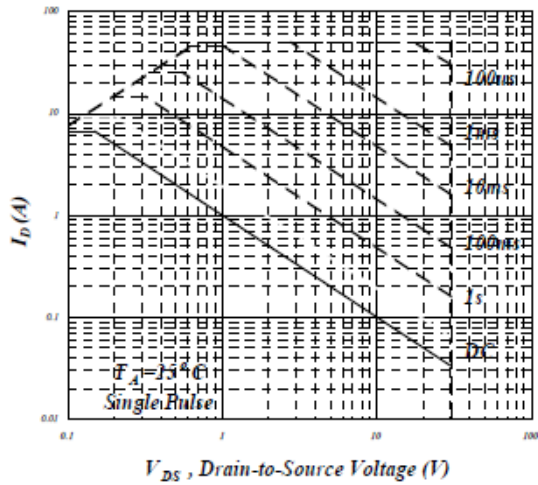


Fig 9. Maximum Safe Operating Area

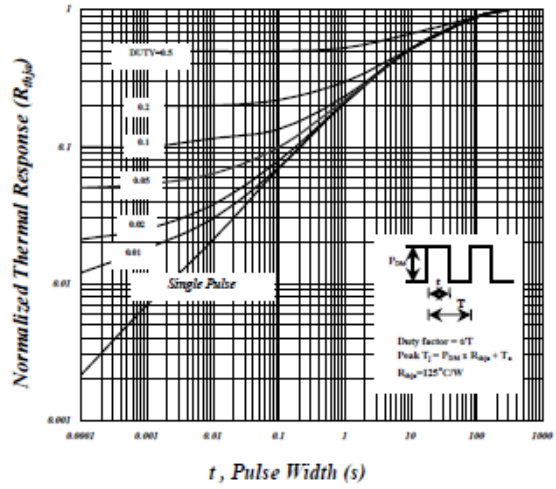


Fig 10. Effective Transient Thermal Impedance

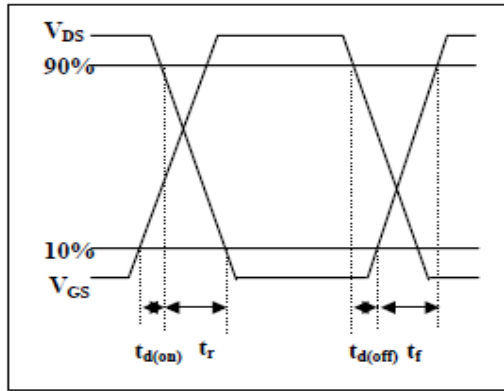


Fig 11. Switching Time Circuit

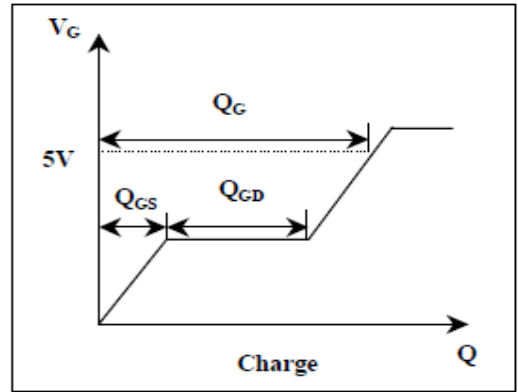
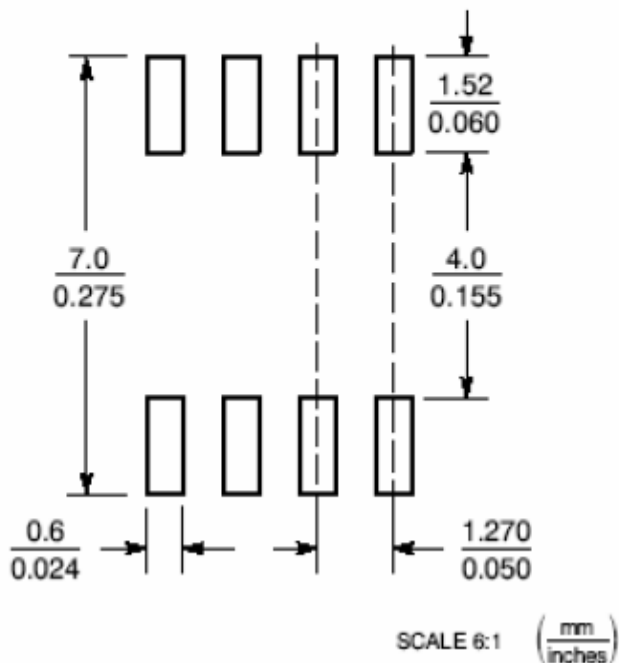


Fig 12. Gate Charge Circuit

\oplus	0.25 (0.010)	M	Z	Y	S	X	S
----------	--------------	---	---	---	---	---	---

SOLDERING FOOTPRINT*



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

The SINO-IC logo is a registered trademark of ShangHai Sino-IC Microelectronics Co., Ltd.

© 2005 SINO-IC – Printed in China – All rights reserved.

SHANGHAI SINO-IC MICROELECTRONICS CO., LTD

Add: Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong, Shanghai 201203, China

Phone: +86-21-33932402 33932403 33932405 33933508 33933608

Fax: +86-21-33932401

Email: webmaster@sino-ic.com

Website: <http://www.sino-ic.com>