

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	9.5mΩ@10V	10A
	12mΩ@4.5V	

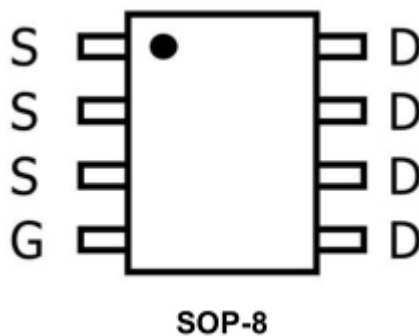
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

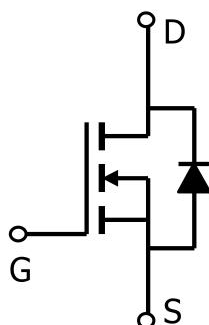
Application

- Advanced trench process technology
- High density cell design for ultra-low on-resistance
- High power and current handing capability
- Ideal for Lion battery pack applications

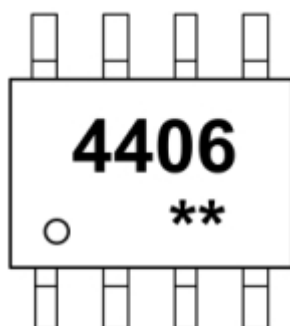
Package



Circuit diagram



Marking



4406 =Device Code
** =Week Code

Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current ¹⁾	I_{DM}	40	A
Power Dissipation	P_D	3	W
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	100	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

Electrical characteristics

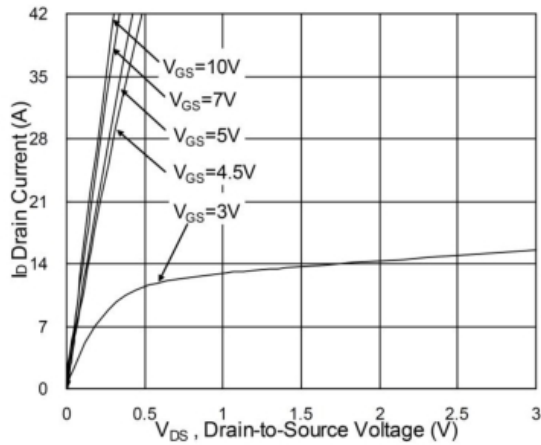
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} = 0V			1	uA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate threshold voltage ³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =12A		9.5	12	mΩ
		V _{GS} =4.5V, I _D =10A		12	16	
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz		1371	1845	pF
Output capacitance	C _{oss}			163	228.2	
Reverse transfer capacitance	C _{rss}			131	183.4	
Switching Characteristics						
Turn-on Delay Time	T _{d(on)}	V _{GEN} =10V, V _{DD} =15V, R _{GEN} =1.2Ω		6.2	12.4	nS
Turn-on Rise Time	T _r			59	061	
Turn-Off Delay Time	T _{d(off)}			27.6	55	
Turn-Off Fall Time	t _f			8.4	16.8	
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _D =11.5A		12.6	17.6	nC
Gate-Source Charge	Q _{gs}			4.2	5.9	
Gate-Drain Charge	Q _{gd}			5.1	7.1	
Source-Drain Diode Characteristics						
Body Diode Voltage ³⁾	V _{SD}	I _S =10A, V _{GS} = 0V			1.2	V

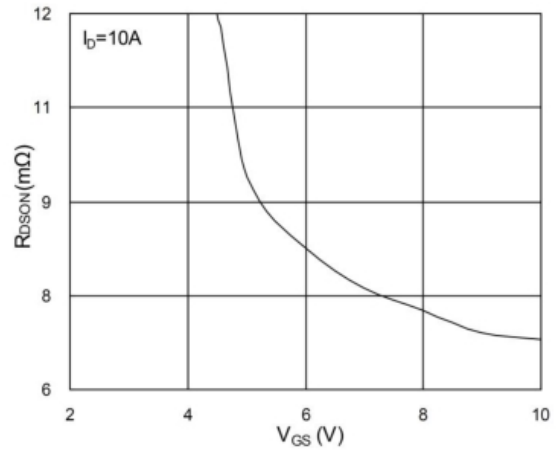
Note :

1. Repetitive rating: Pulse width limited by junction temperature.
2. Surface mounted on FR4 board, $t \leq 10s$.
3. Pulse Test: Pulse Width $\leq 80\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

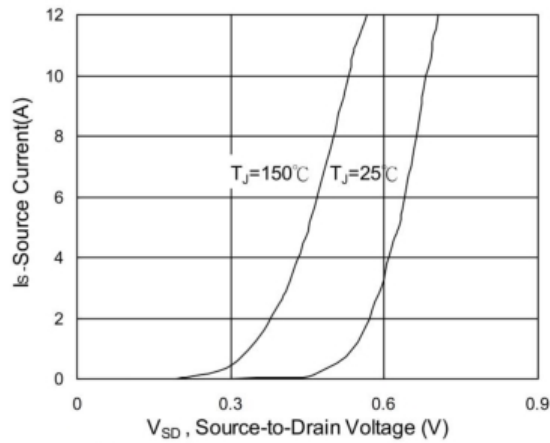
Typical Characteristics



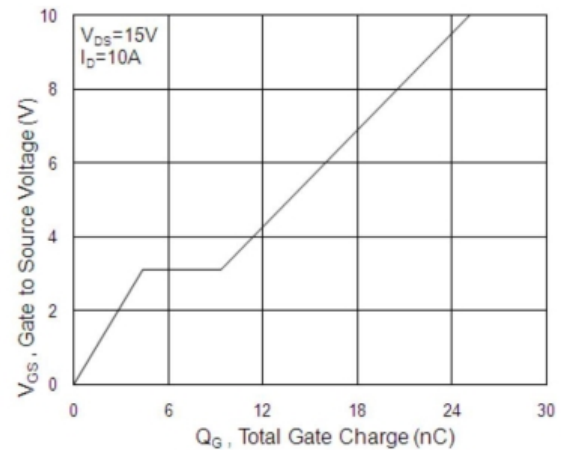
Typical Output Characteristics



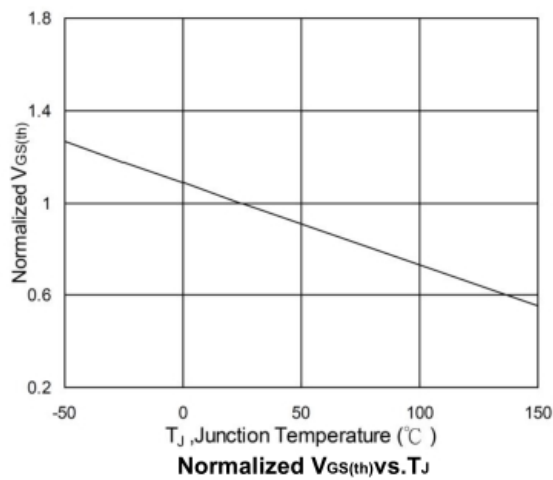
On-Resistance vs. Gate-Source



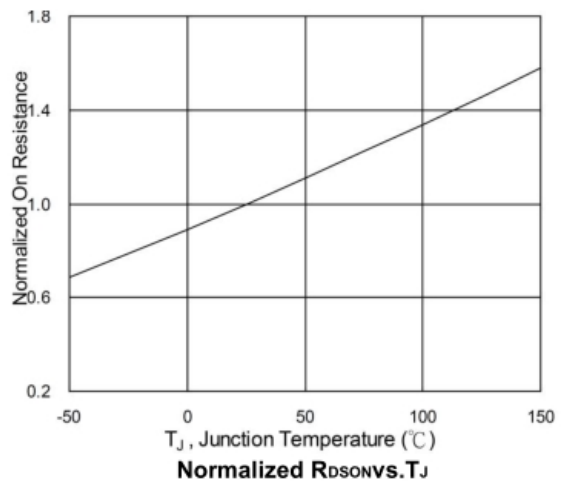
Forward Characteristics of reverse



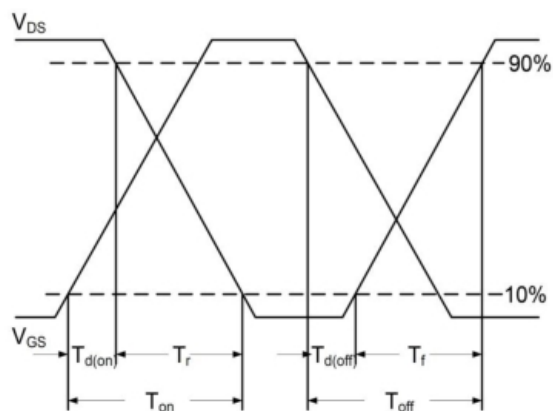
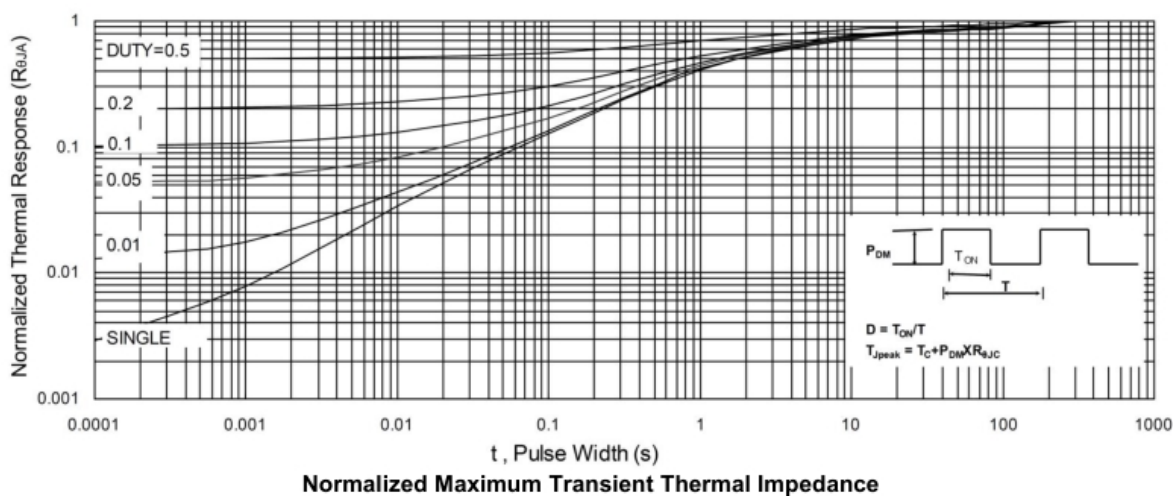
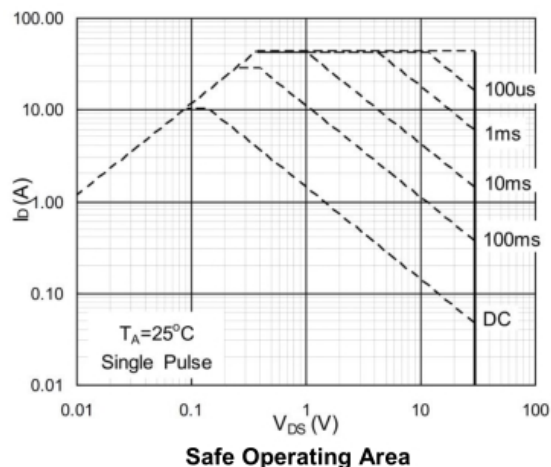
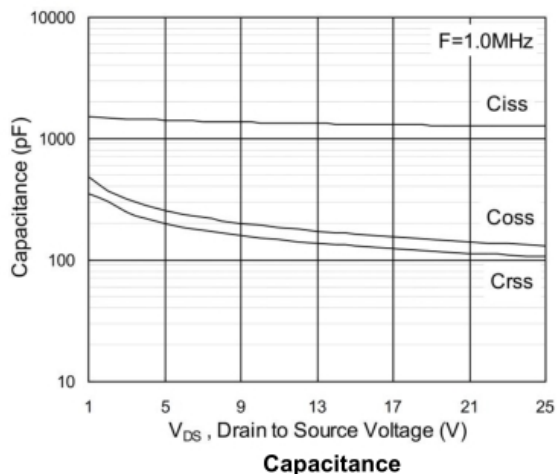
Gate-Charge Characteristics



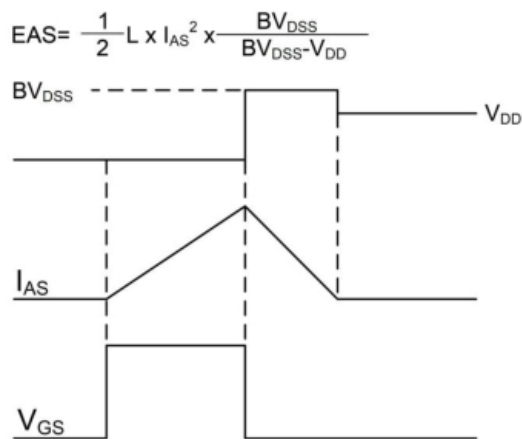
Normalized $V_{GS(th)}$ vs. T_J



Normalized $R_{DS(on)}$ vs. T_J

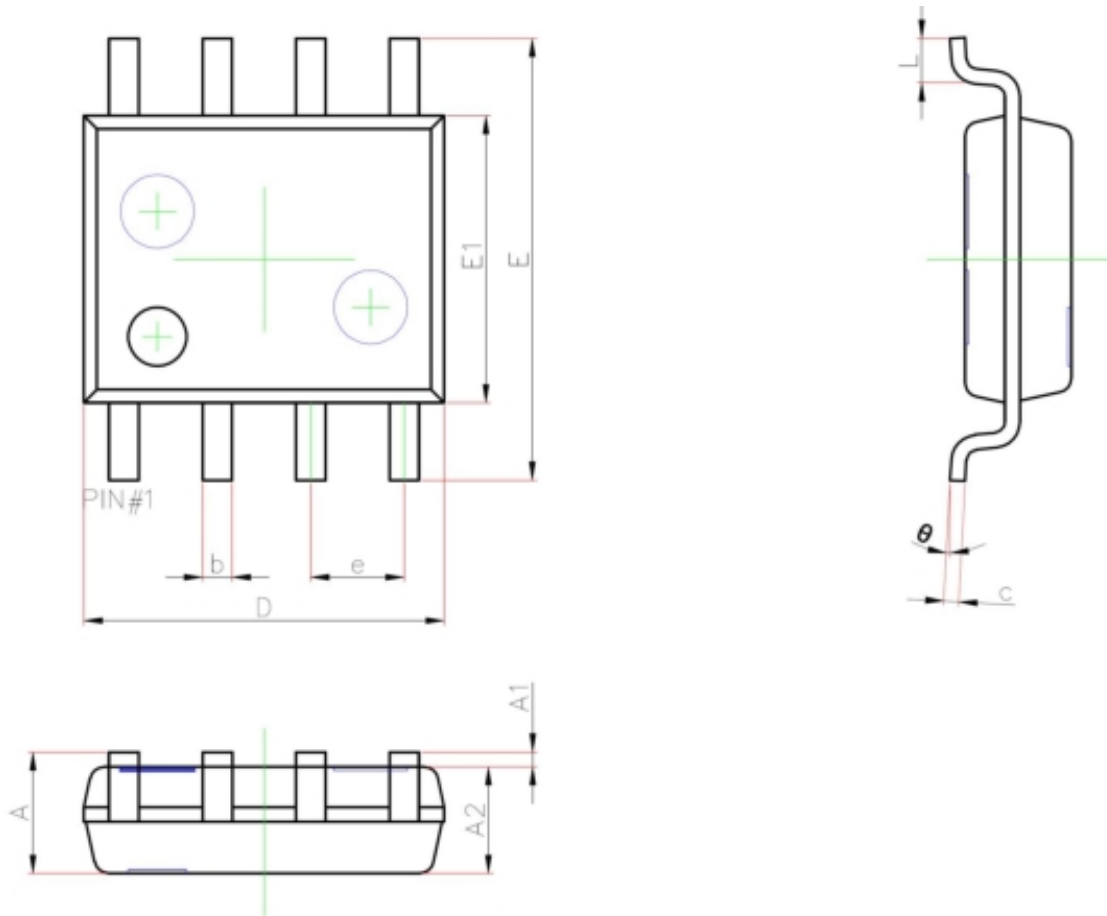


Switching Time Waveform



Unclamped Inductive Switching Waveform

SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°