Features

- ➢Super Low Gate Charge
- ➢Green Device Available
- ➢Excellent Cdv/dt effect decline
- ➢Advanced high cell density Trench technology

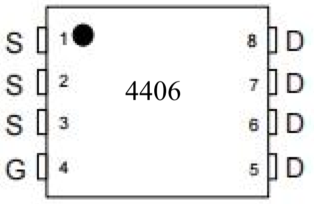
Bvdss	*Rdson*	*ID*
30V	8.5mΩ	13A

Application

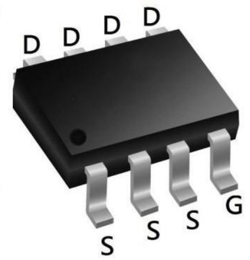
RoHS

- ➢PWM applications
- ➢Load Switch
- ➢Power management

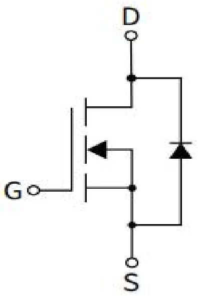
Package



Marking and pin assignment



SOP-8 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
4406	4406	SOP-8	3000

Absolute Maximum Ratings (T$_C$=25℃unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current VGS @ 10V(1)	T_C = 25℃	I_D	13	A
	T_C = 70℃		7.6	A
Pulsed Drain Current(2)		I_{DM}	55	A
Avalanche Current		I_{AS}	20	A
'Single Pulsed Avalanche Energy(3)		E_{AS}	33	mJ
Power Dissipation(4)	T_A = 25℃	P_D	5	W
Operating and Storage Temperature Range		TJ, TSTG	-55 ~ +150	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case(1)	$R_{\theta JC}$	25	℃/W
Junction-ambient (Steady State)(1)	$R_{\theta JA}$	85	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL4406	SOP-8	4	5,6,7,8	1,2,3	Tape Reel

Electrical Characteristics (Tj=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=250μA	30	-	-	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain Cut-off Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.0	1.5	2.5	V
Drain-Source On-State Resistance(3)	$R_{DS(on)}$	V_{GS}=10V, I_D=13A	-	8.8	12	mΩ
		V_{GS}=4.5V, I_D= 10A	-	13	18	
Input Capacitance	Ciss	V_{GS}= 0V, V_{DS} = 15V, f = 1MHz	-	1011	-	pF
Output Capacitance	Coss		-	142	-	
Reverse Transfer Capacitance	Crss		-	119	-	
Total Gate Charge	Qg	V_{GS}=10V, V_{DS}= 15V, I_D= 6A	-	19	-	nC
Gate-Source Charge	Qgs		-	6.3	-	
Gate-Drain Charge	Qgd		-	4.5	-	
Turn-On Time	td(on)	V_{DS}=15V, V_{GS} = 10V, I_D = 13A,R_G= 3 Ω	-	6	-	ns
Rise Time	tr		-	5	-	
Turn-Off Time	td(off)		-	25	-	
Fall Time	tf		-	7	-	
Body Diode Voltage	V_{SD}	I_S=13A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	I_S		-	-	13	A
Maximum Pulsed Drain to Source Diode	I_{SM}		-	-	52	A

Forward Current						
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=13A,dI/dt=100A/us	-	7	-	ns
Body Diode Reverse Recovery Time	T_{rr}		-	6.3	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: TJ=25℃, VGS=15V, RG=25Ω, L=0.5mH, IAS=11.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

Figure 1. Output Characteristics

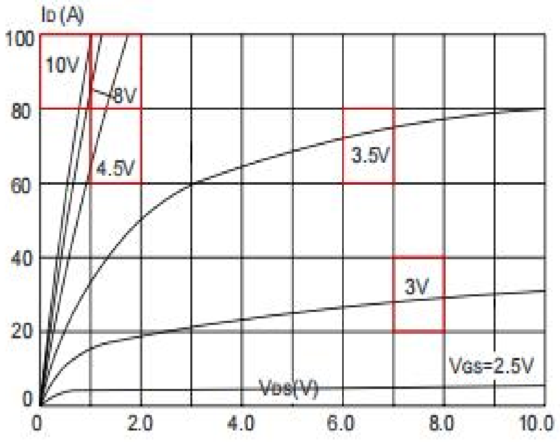


Figure 2. Transfer Characteristics

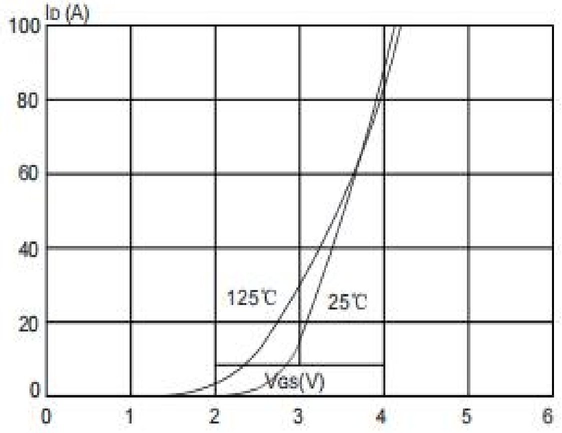


Figure 3:On-resistance vs. Drain Current

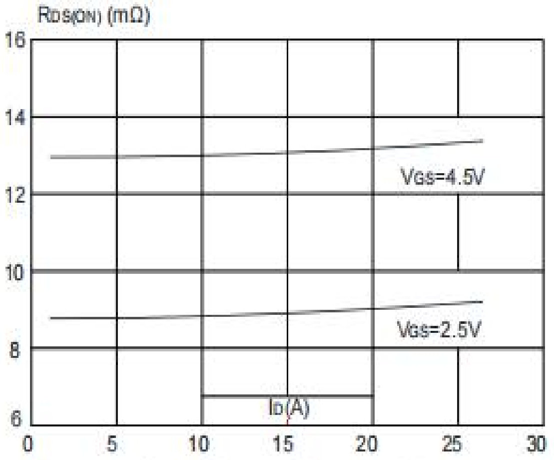


Figure 4: Body Diode Characteristics

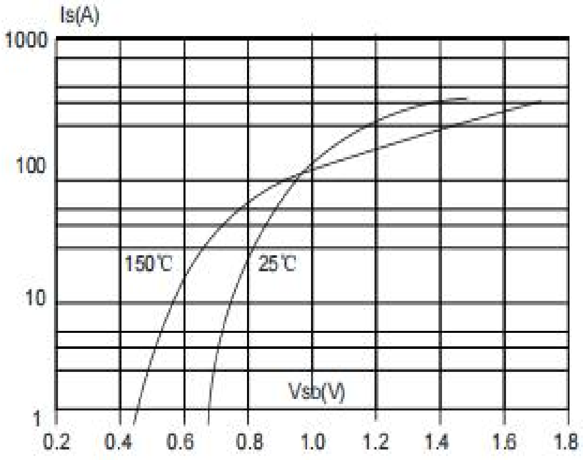


Figure 5: Gate Charge Characteristics

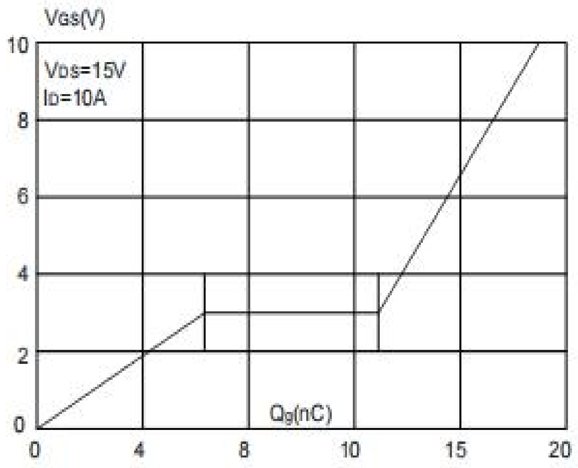


Figure 6: Capacitance Characteristics

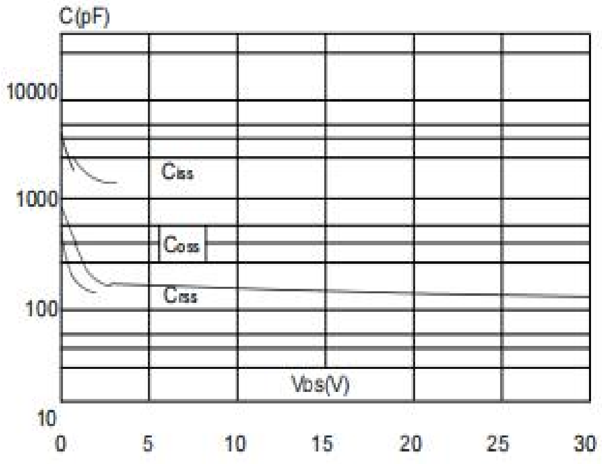


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

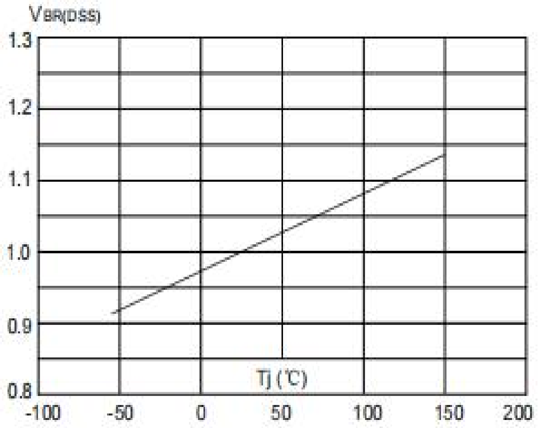


Figure 8: Normalized on Resistance vs. Junction Temperature

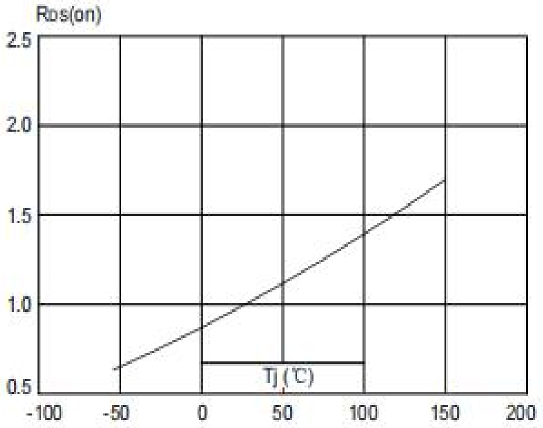


Figure 9: Maximum Safe Operating Area

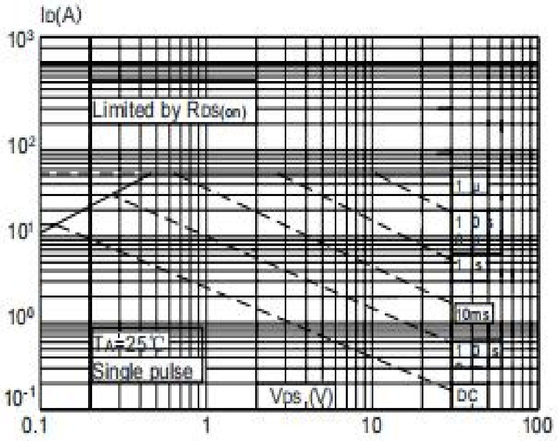


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

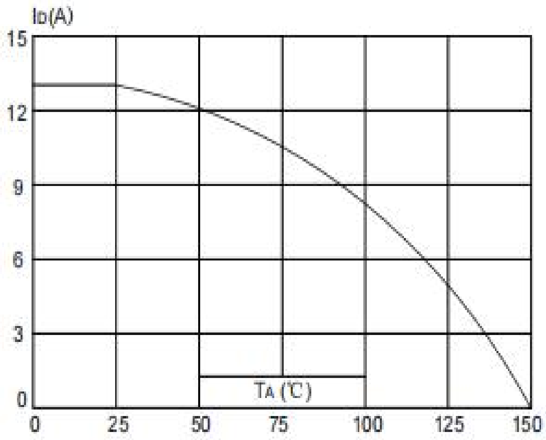
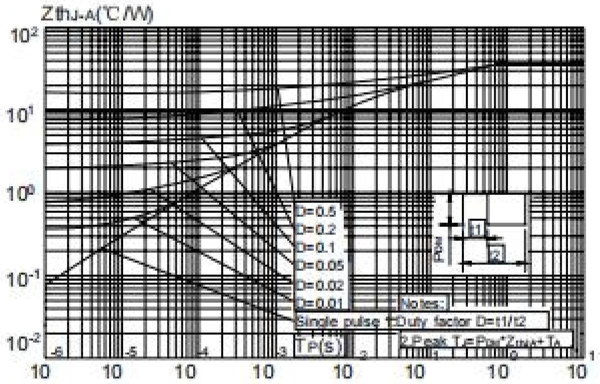
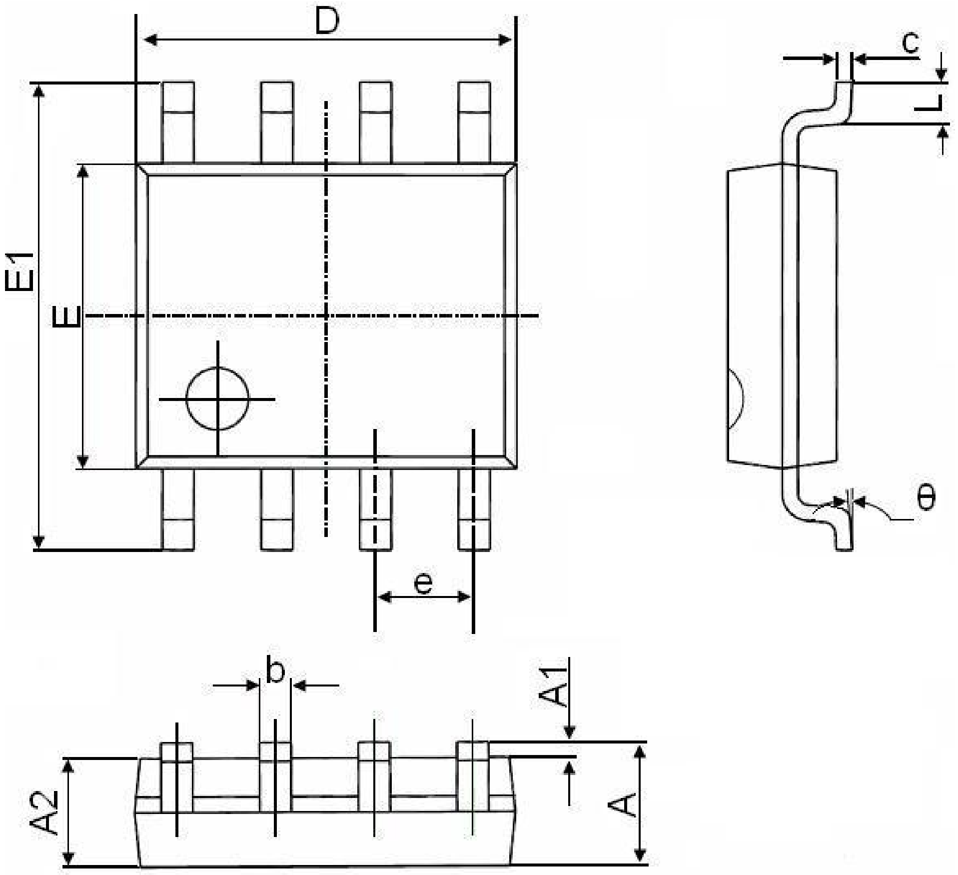


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Dimensions SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Important Notice and Disclaimer

HL Microelectronics reserves the right to make changes to this document and its products and specifications at any time without notice.
Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

HL Microelectronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does HL Microelectronics assume any liability for application assistance or customer product design.

HL Microelectronics does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of HL Microelectronics.

HL Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of HL Microelectronics.