N-Channel Enhancement Mode MOSFET

Primary characteristics			
Symbol	**Parameter**	**Value**	**Unit**
I_D	Continuous drain current	12	A
V_{DS}	Drain source voltage	30	V
R_{DSON}	Static drain-source on-resistance	9	mΩ max

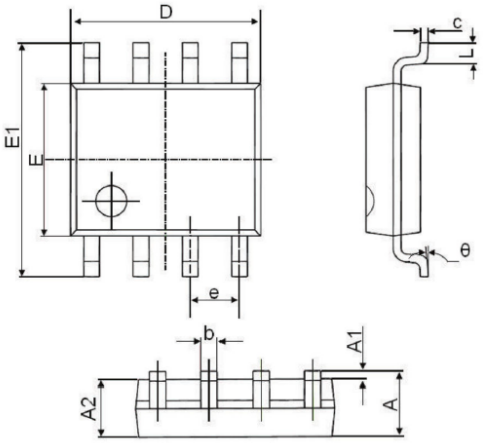
Features

- **SOP-8** case for easy automatic insertion
- Pb-free and **RoHS** compliant
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance

Applications

- Power management functions
- Portable Equipment and Battery Powered

Case dimensions, pin configuration



SOP-8

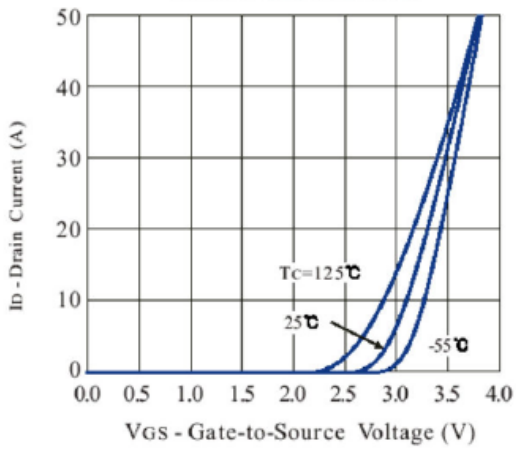
Sym.	A	A1	A2	b	c	D	E	E1	e	l	°
mm	1.35 1.75	0.10 0.25	1.35 1.55	0.33 0.51	0.17 0.25	4.70 5.10	3.80 4.00	5.80 6.20	1.27 (BSC)	0.40 1.27	0° 8°

Maximum ratings (T_A = 25°C unless otherwise noted)			
Characteristic	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	I_D	12	A
Pulsed drain current (T_C=25°C)	I_{DM}	48	A
Power Dissipation	P_D	2.5	W
Maximum junction temperature	T_J	150	°C
Storage temperature range	T_{STG}	-50 ~ 150	°C
Thermal resistance junction-ambient (1 inch^2 pad of 2-oz copper, max.)	$R_{\theta JA}$	50	°C/W

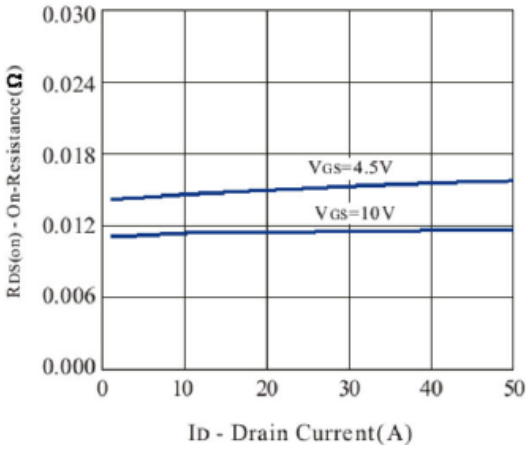
Electrical characteristics (T_J = 25°C)						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Drain-source breakdown voltage	V_{GS}=0V, I_D=250μA	$V_{(BR)DSS}$	30	-	-	V
Zero gate voltage drain current	V_{DS}=24V, V_{GS}=0V	I_{DSS}	-	-	1.0	μA
Gate body leakage current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate threshold voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(TH)}$	1.0	-	3.0	V
Drain-source on-state resistance	V_{GS}=10V, I_D=12A	$R_{DS(ON)}$	-	7	9	mΩ
	V_{GS}=4.5V, I_D=10A		-	9.5	12	
Forward transconductance	V_{DS} =15V, I_D =12A	g_{FS}	-	60	-	S
Dynamic electrical characteristics (T_J = 25°C)						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Input capacitance	V_{DS}=15V V_{GS}=0V f=1.0MHz	C_{ISS}	-	1066	-	pF
Output capacitance		C_{OSS}	-	164	-	
Reverse transfer capacitance		C_{RSS}	-	119	-	
Turn ON delay time	V_{DS}=15V V_{GS}=10V I_D=1A R_{GEN}=6Ω	$t_{d(ON)}$	-	12.5	-	ns
Turn ON rise time		t_r	-	12.3	-	
Turn OFF delay time		$t_{d(OFF)}$	-	44	-	
Turn OFF fall time		t_f	-	10.1	-	
Total gate-charge	V_{DS}=15V V_{GS}=10V I_D=12A	Q_G	-	18.8	-	nC
Gate to source charge		Q_{GS}	-	1.9	-	
Gate to drain (Miller) charge		Q_{GD}	-	4.5	-	
Source-drain diode characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Diode forward voltage	V_{GS}=0V, I_S=2A	V_{DS}	-	-	1.5	V

Typical characteristics

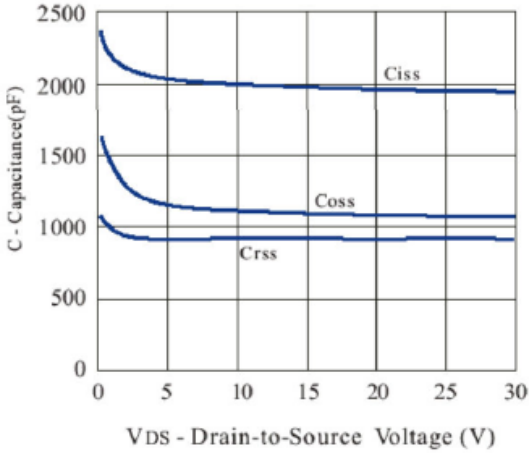
Transfer characteristics



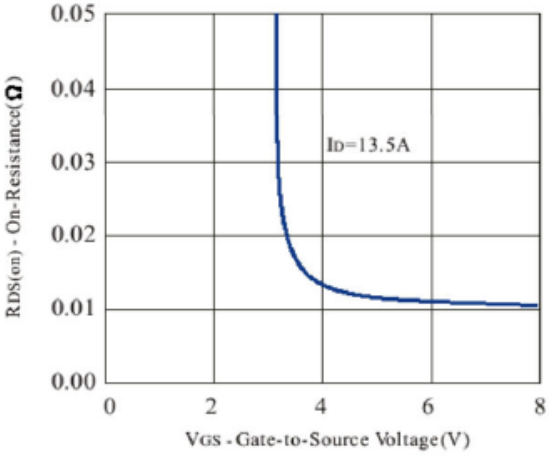
On-Resistance vs. Drain Current



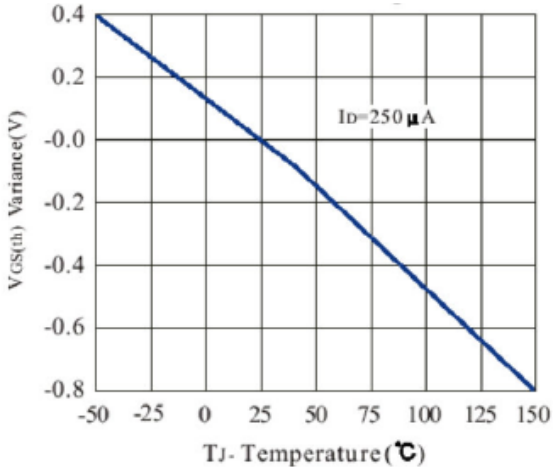
Capacitance



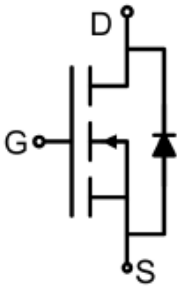
On-Resistance vs. Gate-to-Source Voltage



Threshold voltage



Circuit diagram



Ordering information				
Part Number	**Marking**	**Package**	**Shipping Quantity**	**Dimensions**
AKS4406S	4406	SOP-8	**4000 pcs / tape & reel**	---

Disclaimer

Akyga semi reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Akyga semi or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on Akyga semi data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Akyga semi does not assume any liability arising out of the application or use of any product or circuit. Akyga semi products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Akyga semi. Customers using or selling Akyga semi components for use in such applications do so at their own risk and shall agree to fully indemnify Akyga semi and its subsidiaries harmless against all claims, damages and expenditures.