

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

AO4430

Product specification

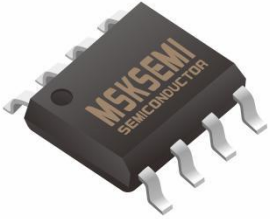
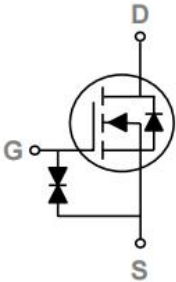

General Features

- 30 V, 16A, $R_{DS(ON)}=4.8m\Omega@V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Application

- Notebook
- Load Switch
- LED applications
- Hand-Held Device

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
		
SOP-8		

Absolute Maximum Ratings (TA=25 °C unless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous (T _C =25°C)	16	A
	Drain Current – Continuous (T _C =100°C)	9.5	A
I _{DM}	Drain Current – Pulsed ¹	60	A
P _D	Power Dissipation (T _C =25°C)	4	W
	Power Dissipation – Derate above 25°C	0.032	W/ °C
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	85	°C/ W
R _{θJC}	Thermal Resistance Junction to Case	---	31	°C/ W

Electrical Characteristics (T_J=25 °C , unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	30	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =1mA	---	0.04	---	V/ °C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =24V , V _{GS} =0V , T _J =125°C	---	---	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =6A	---	4.8	8	mΩ
		V _{GS} =4.5V , I _D =3A	---	7.5	14	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.5	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-4	---	mV/°C
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =10A	---	18	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2,3}	V _{DS} =15V , V _{GS} =4.5V , I _D =10A	---	7.5	---	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	1.3	---	
Q _{gd}	Gate-Drain Charge ^{2,3}		---	4.5	---	
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =15V , V _{GS} =10V , R _G =3.3Ω I _D =15A	---	4.8	---	ns
T _r	Rise Time ^{2,3}		---	12.5	---	
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	27.6	---	
T _f	Fall Time ^{2,3}		---	8.2	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , F=1MHz	---	750	---	pF
C _{oss}	Output Capacitance		---	150	---	
C _{rss}	Reverse Transfer Capacitance		---	110	---	
R _g	Gate resistance	V _{GS} =0V , V _{DS} =0V , F=1MHz	---	2.7	---	Ω

Drain- Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	16	A
I _{SM}	Pulsed Source Current		---	---	32	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	1.2	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

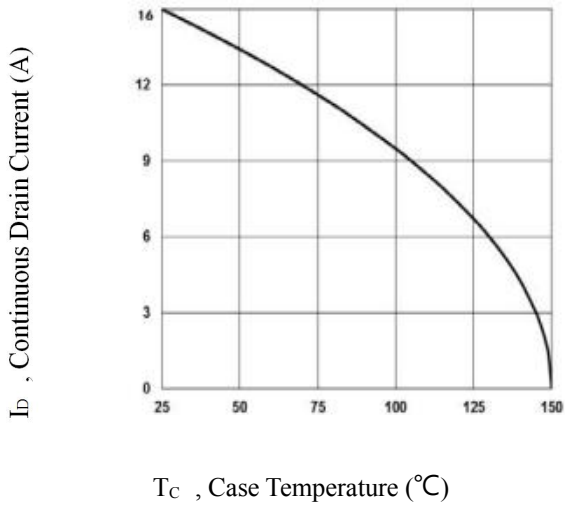


Fig. 1 Continuous Drain Current vs. T_C

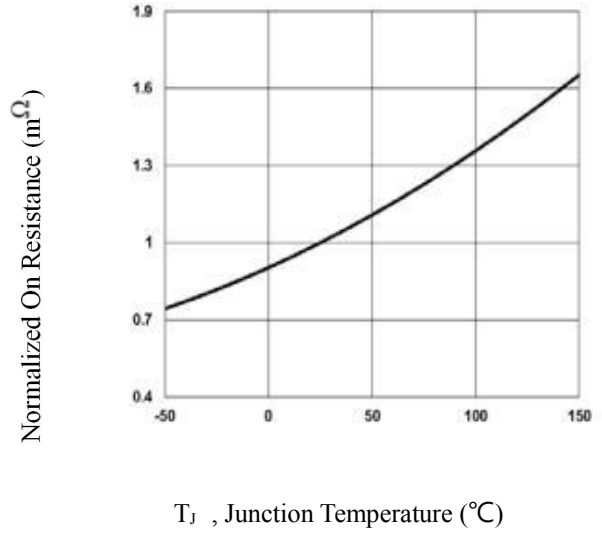


Fig. 2 Normalized RDSON vs. T_J

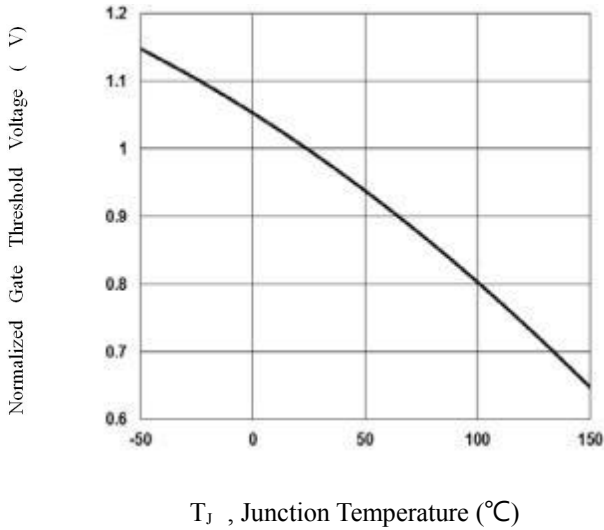


Fig. 3 Normalized V_{th} vs. T_J

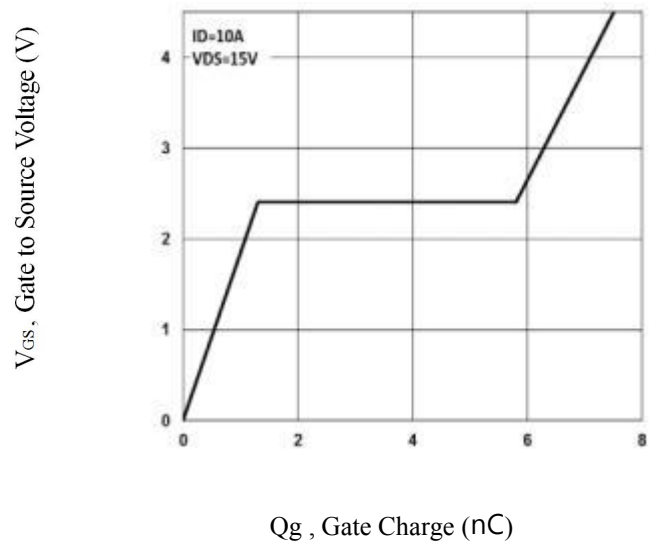


Fig. 4 Gate Charge Waveform

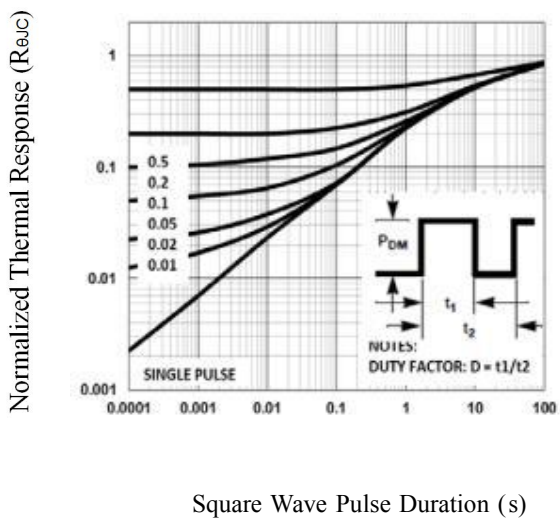


Fig. 5 Normalized Transient Impedance

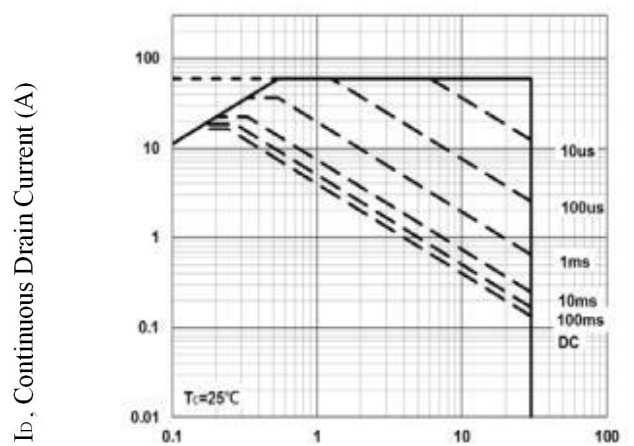


Fig. 6 Maximum Safe Operation Area

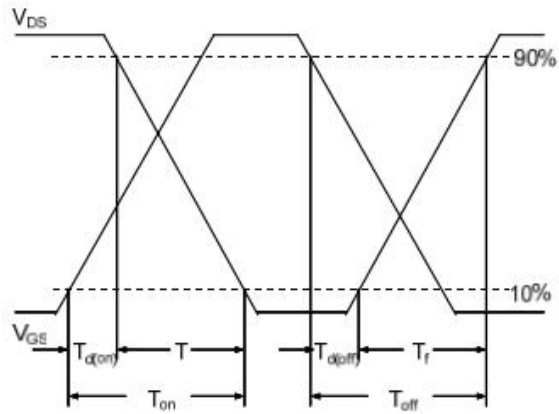
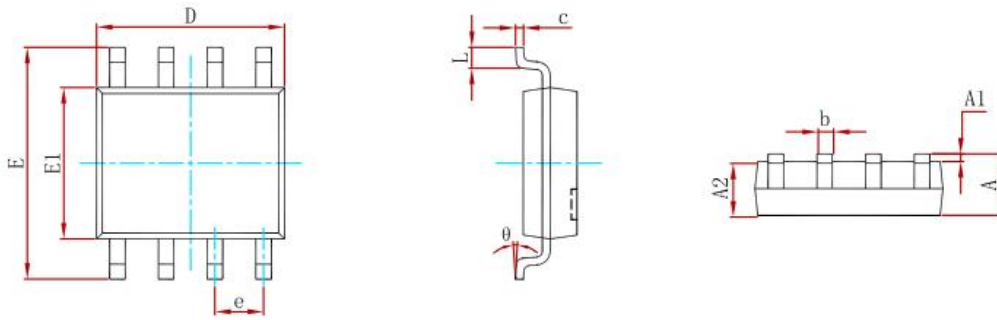


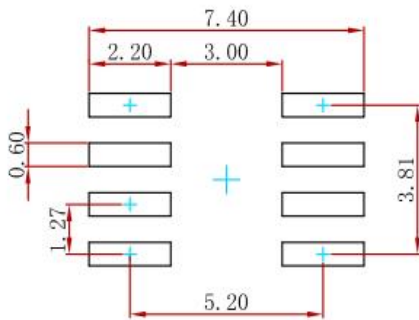
Fig. 7 Switching Time Waveform

PACKAGE MECHANICAL DATA



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	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
AO4430	SOP--8	3000

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