MSKSEMI 美森科
SEMICONDUCTOR

ESD　　TVS　　TSS　　MOV　　GDT　　PLED
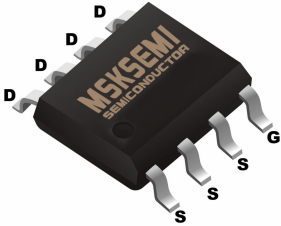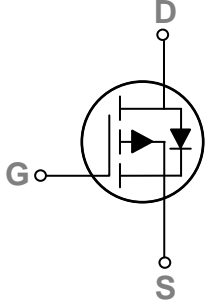
FDS4435BZ(MS)

Product specification

Features

- -30V,-9A, RDS(ON) =16mΩ@VGS = -10V
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

Application

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

BVDSS	RDSON	ID
-30V	16mΩ	-9A

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
SOP-8		MSKSEMI FDS4435BZ MS30

Absolute Maximum Ratings (TA=25℃ 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℃)	-9	A
	Drain Current - Continuous (T_C=75℃)	-5.1	A
I_{DM}	Drain Current - Pulsed[1]	-27	A
P_D	Power Dissipation (T_C=25℃)	2.1	W
	Power Dissipation - Derate above 25℃	0.017	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 125	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	60	℃/W

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Electrical Characteristics (T$_J$=25 ℃, 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
△BV$_{DSS}$/△T$_J$	BV$_{DSS}$ Temperature Coefficient	Reference to 25℃ , I$_D$=-1mA	---	-0.03	---	V/℃
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=-30V , V$_{GS}$=0V , T$_J$=25℃	---	---	-1	uA
		V$_{DS}$=-24V , V$_{GS}$=0V , T$_J$=125℃	---	---	-10	uA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$= ±20V , V$_{DS}$=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R$_{DS(ON)}$	Static Drain-Source On-Resistance	V$_{GS}$=-10V , I$_D$=-8A	---	16	22	mΩ
		V$_{GS}$=-4.5V , I$_D$=-5A	---	22	32	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-1.0	-1.6	-2.5	V
△V$_{GS(th)}$	V$_{GS(th)}$ Temperature Coefficient		---	4	---	mV/℃
gfs	Forward Transconductance	V$_{DS}$=-10V , I$_D$=-3A	---	6.8	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q$_g$	Total Gate Charge[2,3]	V$_{DS}$=-15V , V$_{GS}$=-4.5V , I$_D$=-5A	---	11	---	nC
Q$_{gs}$	Gate-Source Charge[2,3]		---	3.4	---	
Q$_{gd}$	Gate-Drain Charge[2,3]		---	4.2	---	
T$_{d(on)}$	Turn-On Delay Time[2,3]	V$_{DD}$=-15V , V$_{GS}$=-10V , R$_G$=6Ω I$_D$=-1A	---	5.8	---	ns
T$_r$	Rise Time[2,3]		---	18.8	---	
T$_{d(off)}$	Turn-Off Delay Time[2,3]		---	46.9	---	
T$_f$	Fall Time[2,3]		---	12.3	---	
C$_{iss}$	Input Capacitance	V$_{DS}$=-15V , V$_{GS}$=0V , F=1MHz	---	1250	---	pF
C$_{oss}$	Output Capacitance		---	160	---	
C$_{rss}$	Reverse Transfer Capacitance		---	90	---	

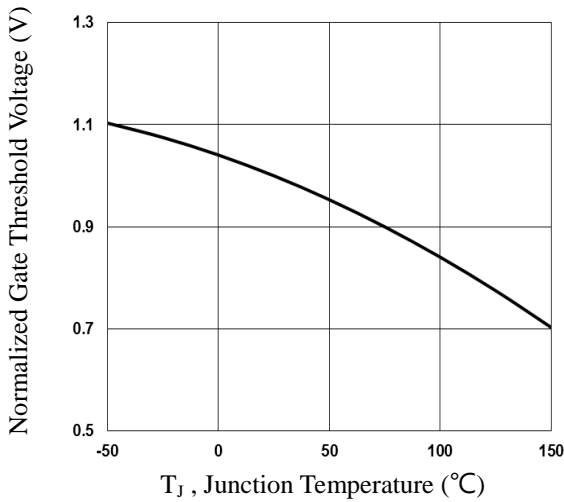| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I$_S$	Continuous Source Current	V$_G$=V$_D$=0V , Force Current	---	---	-9	A
I$_{SM}$	Pulsed Source Current		---	---	-16	A
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=-1A , T$_J$=25℃	---	---	-1.3	V

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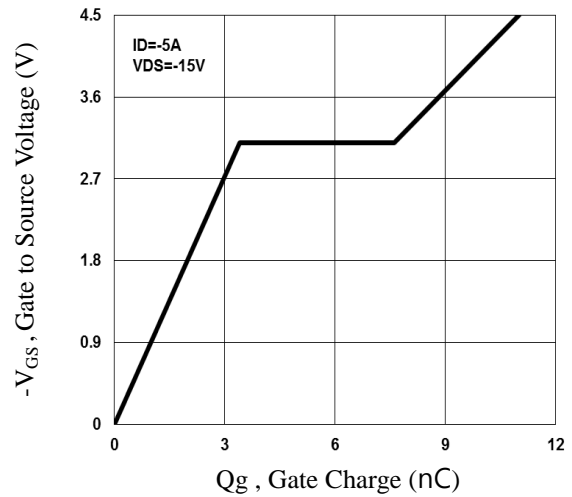3. Essentially independent of operating temperature.

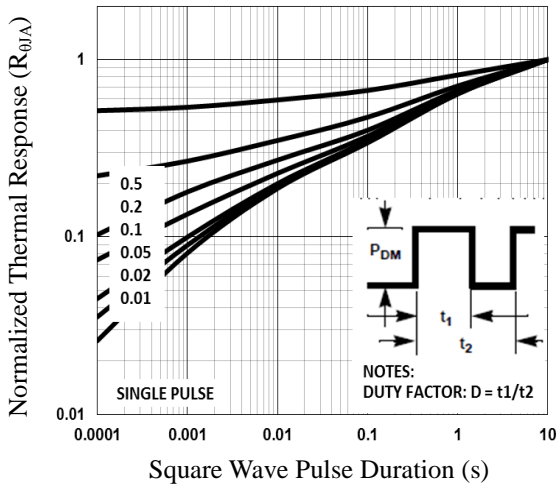**Fig.1   Continuous Drain Current vs. T_C**
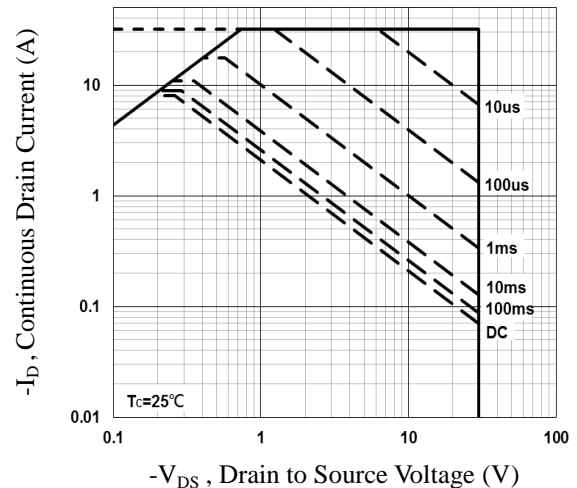

Fig.2   Normalized RDSON vs. T_J

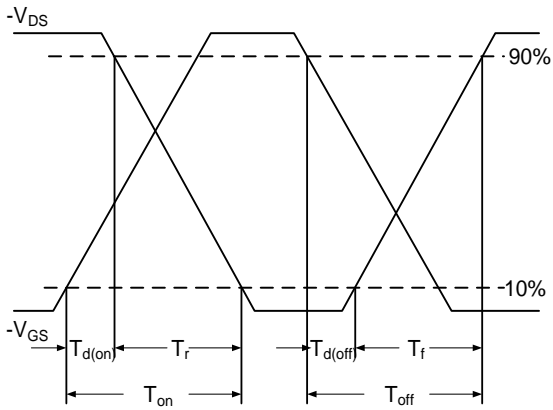**Fig.3   Normalized V_{th} vs. T_J**

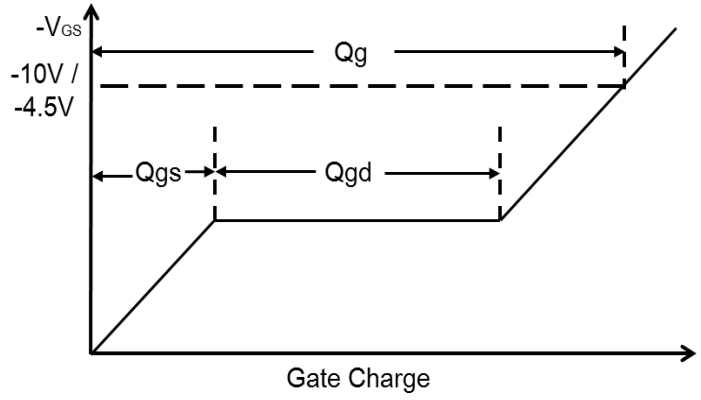**Fig.4   Gate Charge Waveform**

Fig.5   Normalized Transient Impedance
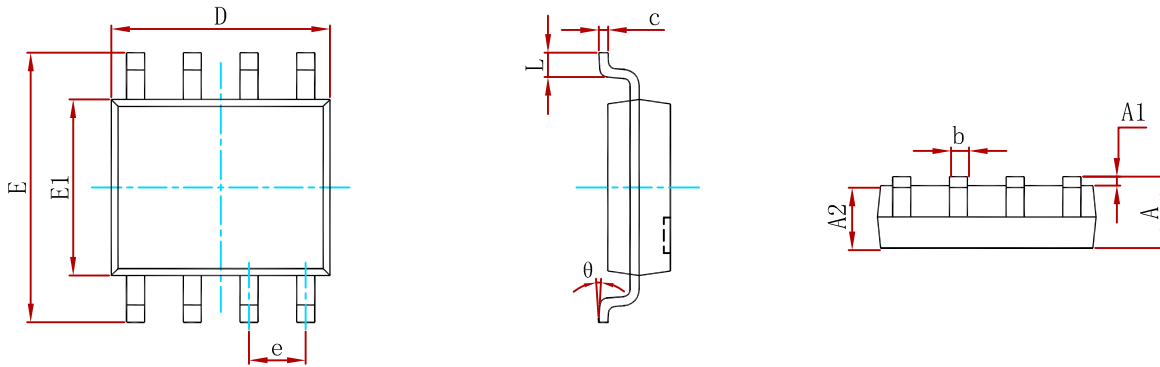

Fig.6   Maximum Safe Operation Area

Fig.7　Switching Time Waveform
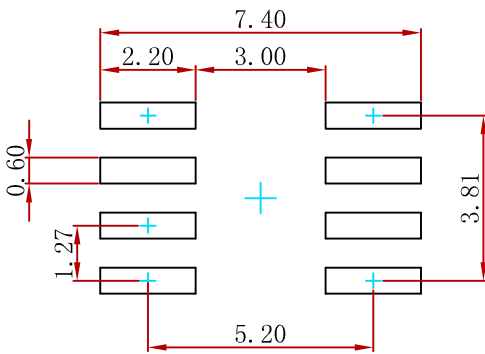

Fig.8　Gate Charge Waveform

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
FDS4435BZ(MS)	SOP-8	3000