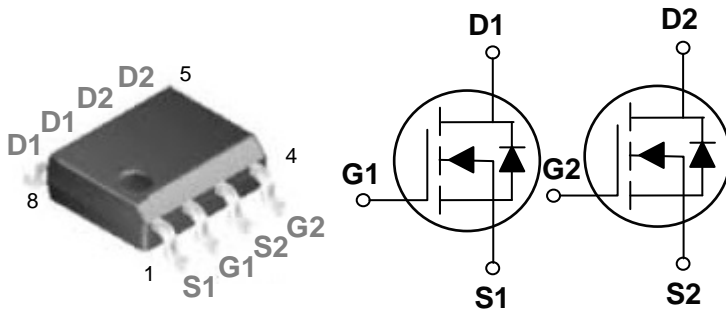


30V Dual N-Channel MOSFETs

General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Dual SOP-8 Pin Configuration



BVDSS	RDSON	ID
30V	20mΩ	7.5A

Features

- 30V,7.5A, $R_{DS(ON)} = 20m\Omega$ @ $V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

Absolute Maximum Ratings (Tc=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)	7.5	A
	Drain Current – Continuous (T _C =100°C)	4.8	A
I_{DM}	Drain Current – Pulsed ¹	30	A
EAS	Single Pulse Avalanche Energy ²	14	mJ
IAS	Single Pulse Avalanched Current ²	17	A
P_D	Power Dissipation (T _C =25°C)	2.1	W
	Power Dissipation – Derate above 25°C	0.017	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
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	60	°C/W



FTK3812

30V Dual N-Channel MOSFETs

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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1\text{mA}$	---	0.04	---	V/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=24V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance ³	$V_{GS}=10V, I_D=6A$	---	15	20	m Ω
		$V_{GS}=4.5V, I_D=3A$	---	23	30	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.5	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4	---	mV/ $^\circ\text{C}$
gfs	Forward Transconductance	$V_{DS}=10V, I_D=6A$	---	13	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge ^{3,4}	$V_{DS}=15V, V_{GS}=4.5V, I_D=5A$	---	4.1	8	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	1	2	
Q_{gd}	Gate-Drain Charge ^{3,4}		---	2.1	4	
$T_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=15V, V_{GS}=10V, R_G=6\Omega$ $I_D=1A$	---	2.6	5	ns
T_r	Rise Time ^{3,4}		---	7.2	14	
$T_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	15.8	30	
T_f	Fall Time ^{3,4}		---	4.6	9	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	---	345	500	pF
C_{oss}	Output Capacitance		---	55	80	
C_{rss}	Reverse Transfer Capacitance		---	32	55	
Rg	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	---	3.2	6.4	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	---	---	7.5	A
I_{SM}	Pulsed Source Current ³		---	---	30	A
V_{SD}	Diode Forward Voltage ³	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V
t_{rr}	Reverse Recovery Time	$V_{GS}=0V, I_S=1A, di/dt=100A/\mu s$	---	---	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J=25^\circ\text{C}$	---	---	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=17A, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

30V Dual N-Channel MOSFETs

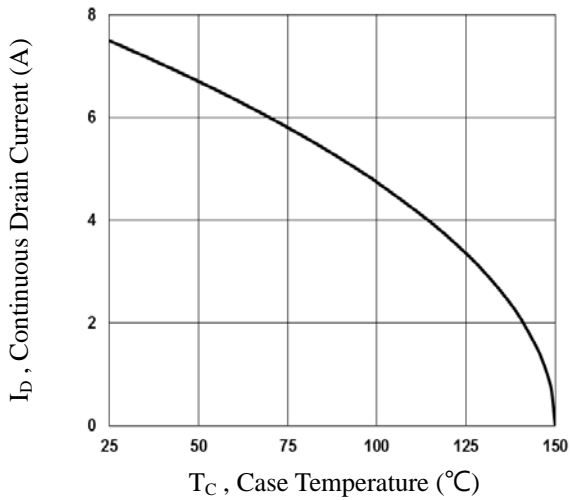


Fig.1 Continuous Drain Current vs. T_c

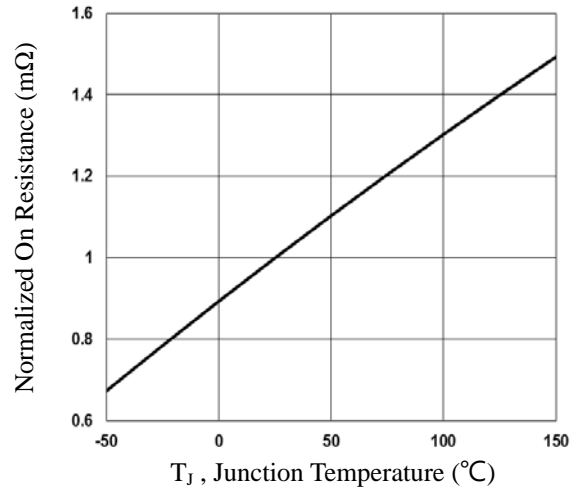


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

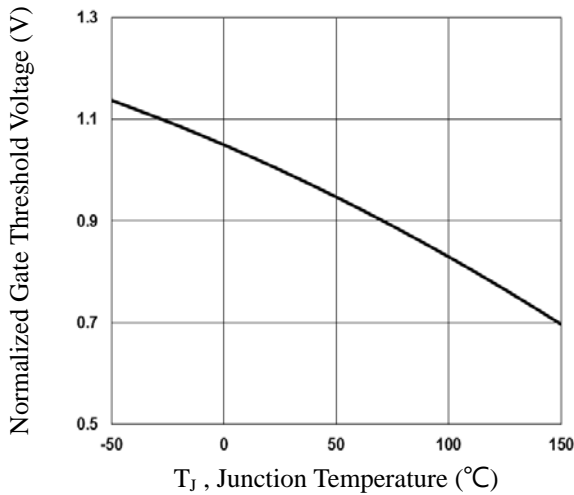


Fig.3 Normalized V_{th} vs. T_j

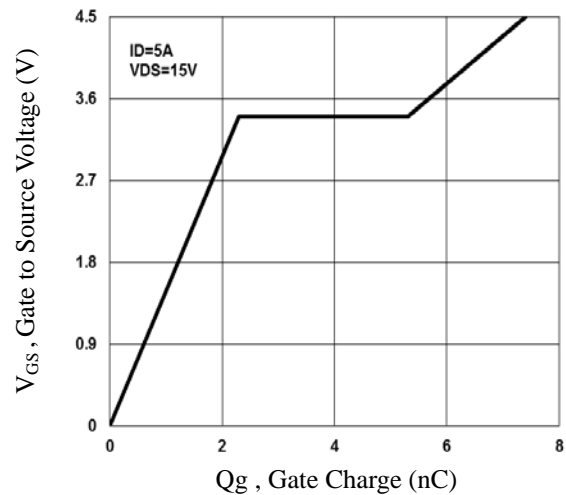


Fig.4 Gate Charge Waveform

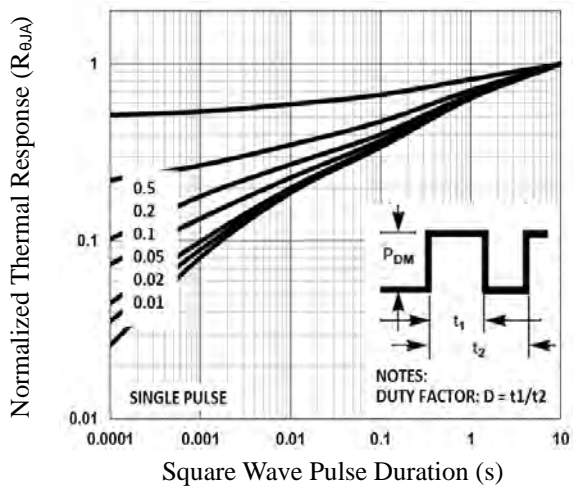


Fig.5 Normalized Transient Response

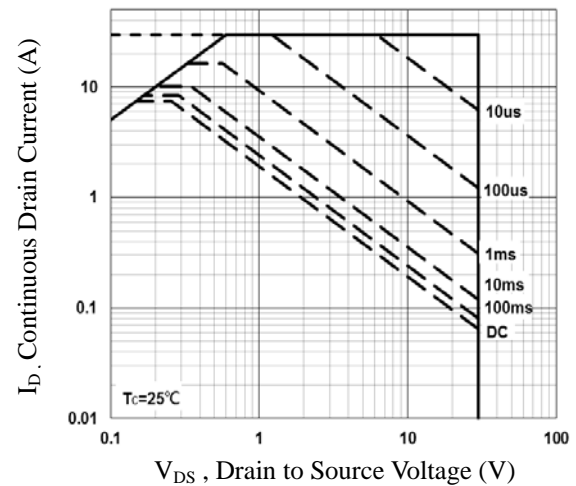


Fig.6 Maximum Safe Operation Area

30V Dual N-Channel MOSFETs

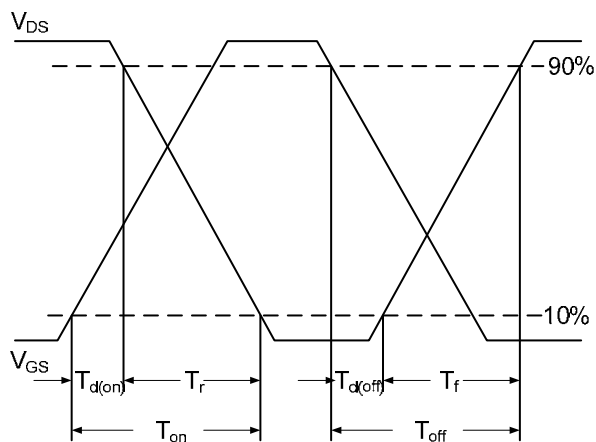


Fig.7 Switching Time Waveform

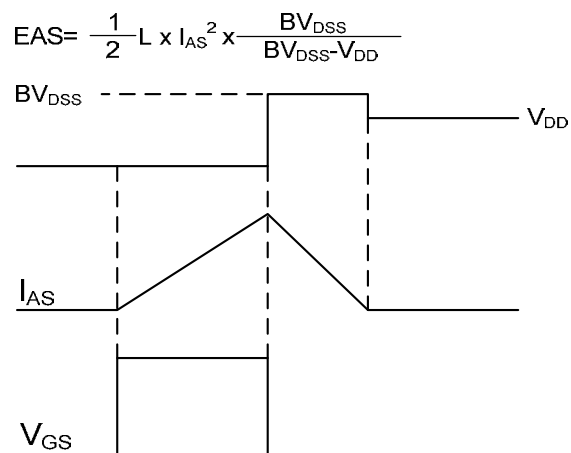
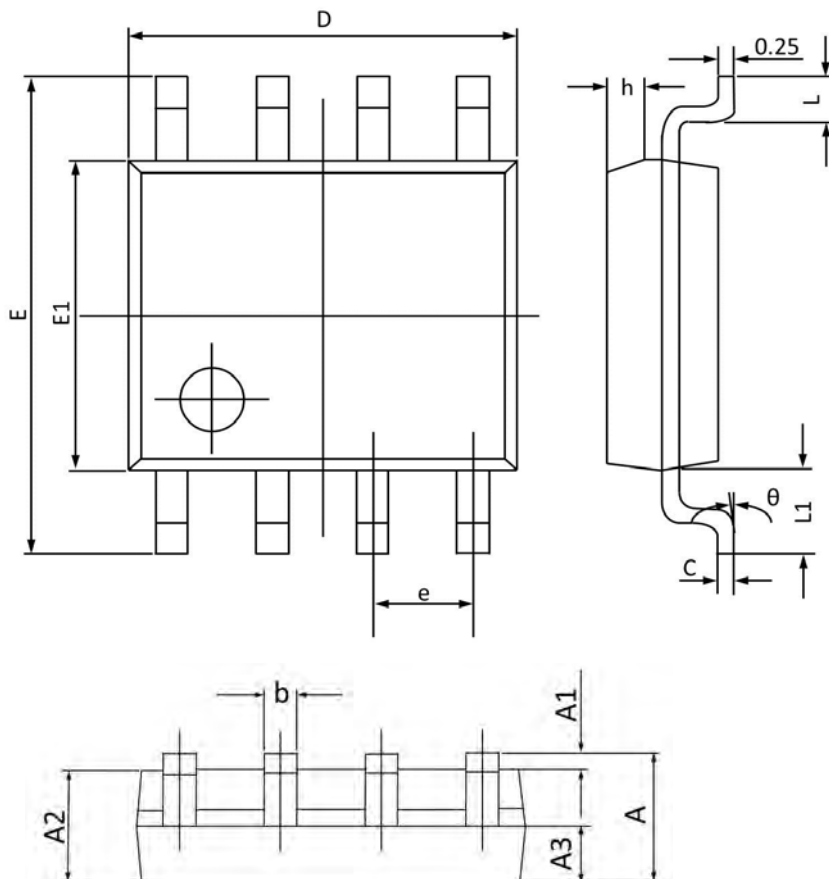


Fig.8 EAS Waveform

30V Dual N-Channel MOSFETs

SOP-8 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°