



30V Dual N-Channel MOSFETs

General Description

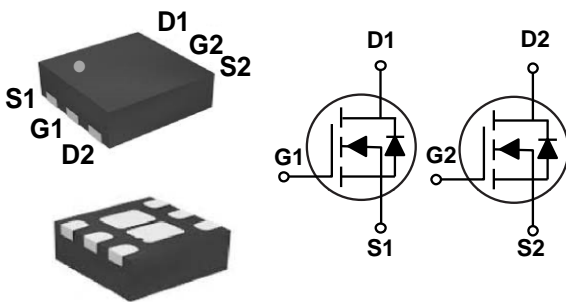
These dual N Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.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

BV _{DSS}	R _{DS(ON)}	I _D
30 V	30 mΩ	5 A

Features

- 30V, 5A, R_{DS(ON)}=30mΩ @V_{GS}=10V
- Green Device Available
- Fast switching
- Improved dv/dt capability

DFN2X2 Dual 2EP Pin Configuration



Applications

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

Absolute Maximum Ratings T_C=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 _A =25°C)	5	A
	Drain Current - Continuous (T _A =70°C)	4	A
I _{DM}	Drain Current - Pulsed (NOTE 1)	20	A
P _D	Power Dissipation (T _A =25°C)	1.25	W
	Power Dissipation - Derate above 25°C	0.01	W/°C
T _J	Operating Junction Temperature Range	-50 to 150	°C
T _{STG}	Storage Temperature Range	-50 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max	Unit
R _{θJA}	Thermal Resistance Junction to Ambient	---	100	°C/W



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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
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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{DS(ON)}	Static Drain-Source On-Resistance (NOTE 3)	V _{GS} =10V, I _D =3A	---	22	30	mΩ
		V _{GS} =4.5V, I _D =2A	---	35	46	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.5	2.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	---	4	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge (NOTE 2、3)	V _{DS} =24V, V _{GS} =10V, I _D =3A	---	5.1	10	nC
Q _{gs}	Gate-Source Charge (NOTE 2、3)		---	0.4	1	
Q _{gd}	Gate-Drain Charge (NOTE 2、3)		---	2.2	4.5	
T _{d(on)}	Turn-On Delay Time (NOTE 2、3)	V _{DD} =15V, V _{GS} =10V, R _G =6Ω, I _D =1A	---	2.6	5	ns
T _r	Rise Time (NOTE 2、3)		---	8.8	16	
T _{d(off)}	Turn-Off Delay Time (NOTE 2、3)		---	18.4	35	
T _f	Fall Time (NOTE 2、3)		---	5.1	10	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1MHz	---	333	660	pF
C _{oss}	Output Capacitance		---	52	100	
C _{rss}	Reverse Transfer Capacitance		---	43	85	
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	0.95	2	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	5	A
I _{SM}	Pulsed Source Current (NOTE 3)		---	---	10	A
V _{SD}	Diode Forward Voltage (NOTE 3)	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1	V

NOTES :

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.



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Characteristics Curves

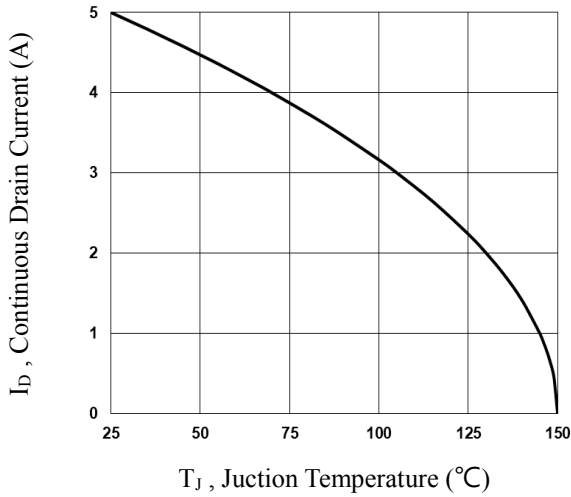


Fig.1 Continuous Drain Current vs. T_J

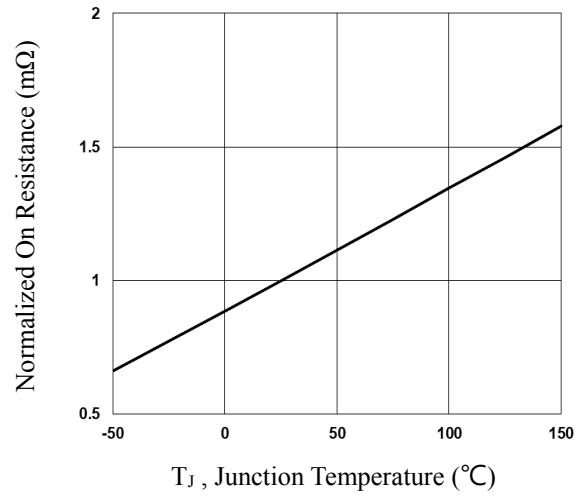


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

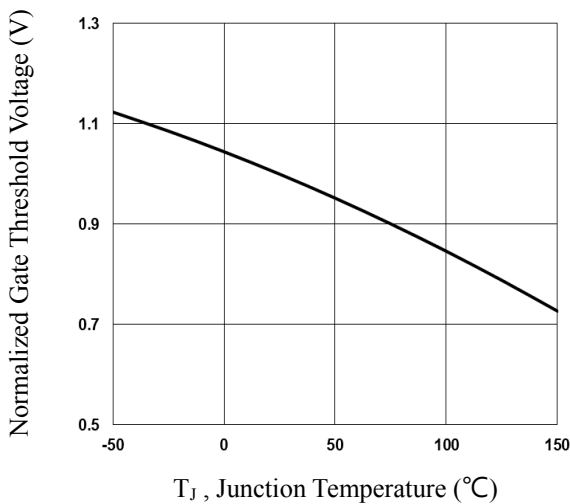


Fig.3 Normalized V_{th} vs. T_J

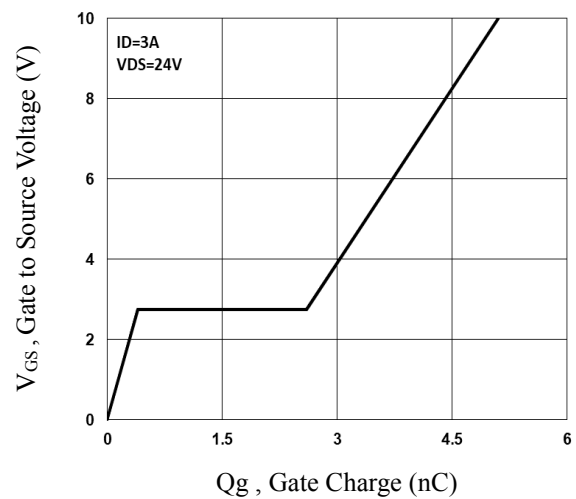


Fig.4 Gate Charge Waveform

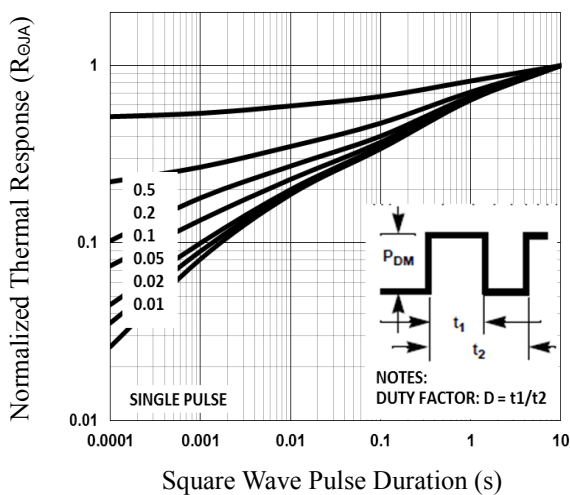


Fig.5 Normalized Transient Response

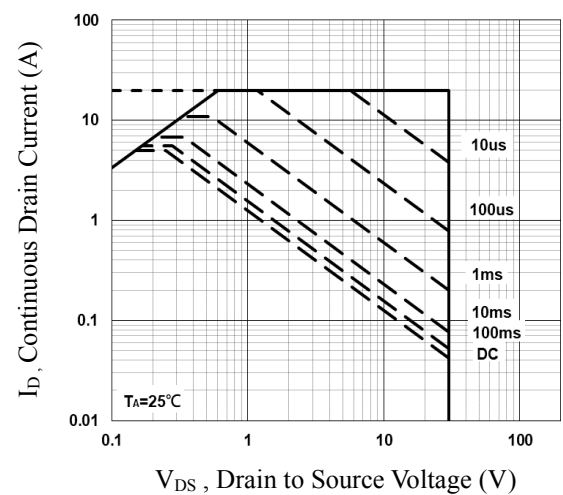


Fig.6 Maximum Safe Operation Area



Characteristics Curves

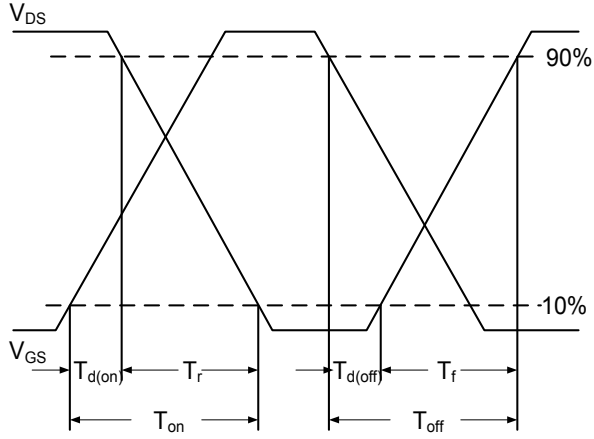


Fig.7 Switching Time Waveform

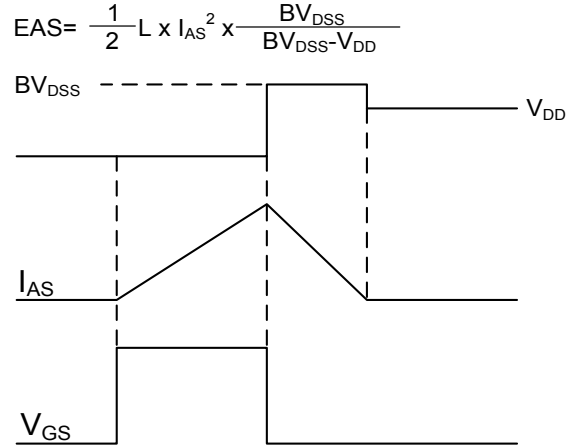
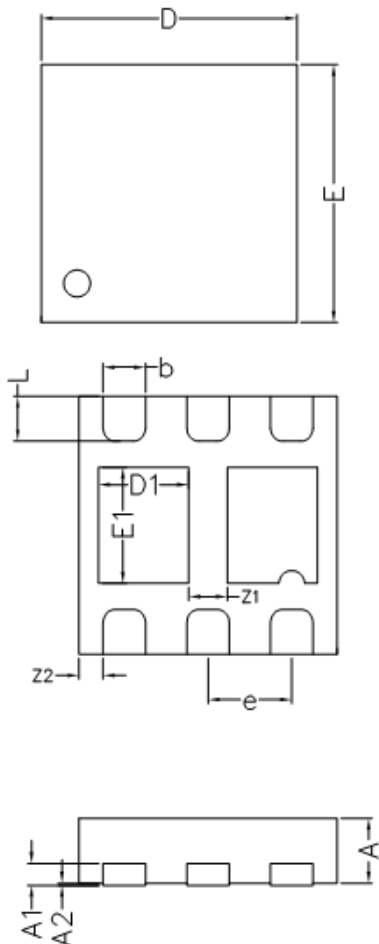


Fig.8 EAS Waveform

Package Outline Dimensions



NOTE: ALL DIMENSIONS IN MM

	MIN	NOM	MAX
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	0.65	0.70	0.75
E1	0.85	0.90	0.95
L	0.30	0.35	0.40
b	0.28	0.33	0.38
e	0.650BSC		
A	0.45	0.50	0.55
A1	0.15REF		
A2	0.00	—	0.05
Z1	0.25	0.30	0.35
Z2	0.135	0.185	0.235

DFN2X2 Dual 2EP



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