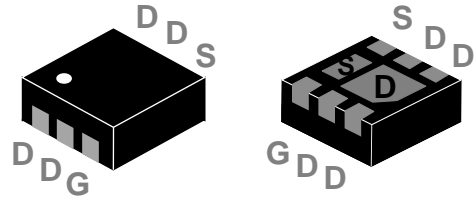


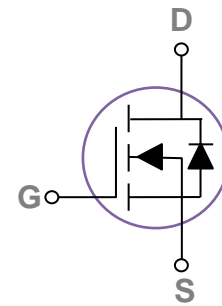
BVDSS	RDSON	ID
30V	19.5mΩ	8.5 A

### DFN2x2-6L Pin Configuration



### Features

- 30V, 8.5A,  $R_{DS(ON)} = 19.5\text{m}\Omega$  @  $V_{GS} = 10\text{V}$
- Improved  $dv/dt$  capability
- Fast switching
- Green Device Available



### Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2<sup>nd</sup> SR

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current – Continuous ( $T_A=25^\circ\text{C}$ )	8.5	A
	Drain Current – Continuous ( $T_A=70^\circ\text{C}$ )	5.4	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	25	A
$P_D$	Power Dissipation ( $T_A=25^\circ\text{C}$ )	1	W
	Power Dissipation – Derate above $25^\circ\text{C}$	16.1	mW/ $^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	$^\circ\text{C}/\text{W}$

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**
**Off Characteristics**

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

**On Characteristics**

R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =4A	---	18	19.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A	---	21	28	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.5	0.8	1.2	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-4	---	mV/°C
gfs	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =2A	---	4	---	S

**Dynamic and switching Characteristics**

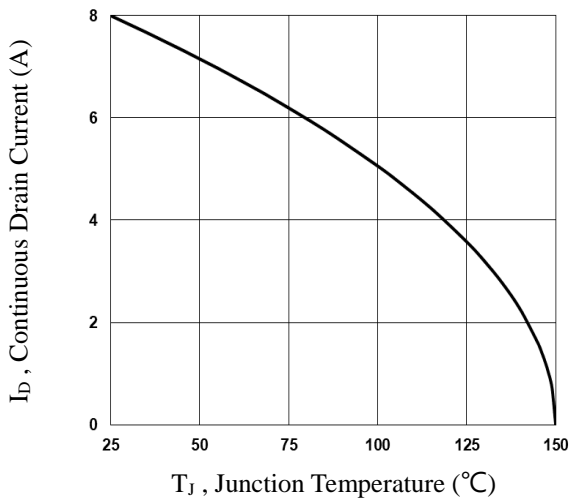
Q <sub>g</sub>	Total Gate Charge <sup>2, 3</sup>	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A	---	5.2	7.8	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>2, 3</sup>		---	0.6	0.9	
Q <sub>gd</sub>	Gate-Drain Charge <sup>2, 3</sup>		---	2	3	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>2, 3</sup>	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω I <sub>D</sub> =4A	---	2.8	4.2	ns
T <sub>r</sub>	Rise Time <sup>2, 3</sup>		---	7.2	11	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>2, 3</sup>		---	15.8	24	
T <sub>f</sub>	Fall Time <sup>2, 3</sup>		---	4.6	7	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, F=1MHz	---	490	750	pF
C <sub>oss</sub>	Output Capacitance		---	80	120	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	55	90	
R <sub>g</sub>	Gate resistance		V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	---	2.2	

**Drain-Source Diode Characteristics and Maximum Ratings**

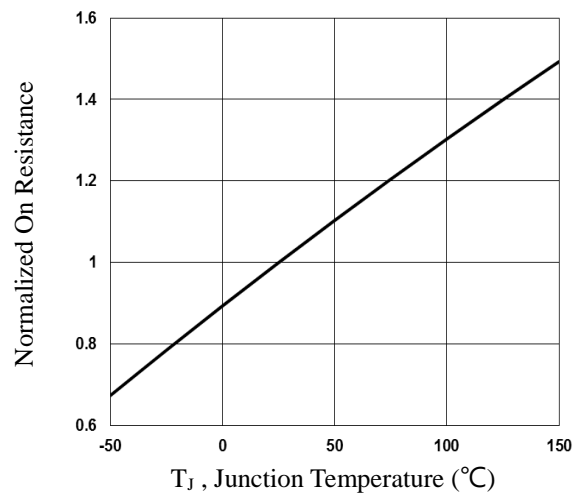
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	8.5	A
I <sub>SM</sub>	Pulsed Source Current <sup>3</sup>		---	---	16	A
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>R</sub> =30V, I <sub>S</sub> =8A	---	130	---	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=100A/μs, T <sub>J</sub> =25°C	---	200	---	nC

Note :

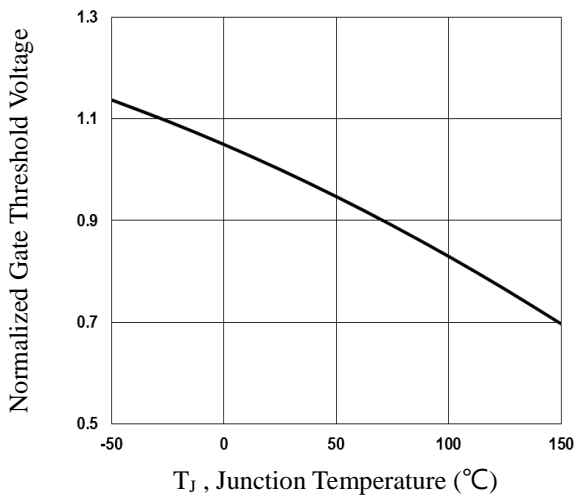
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.



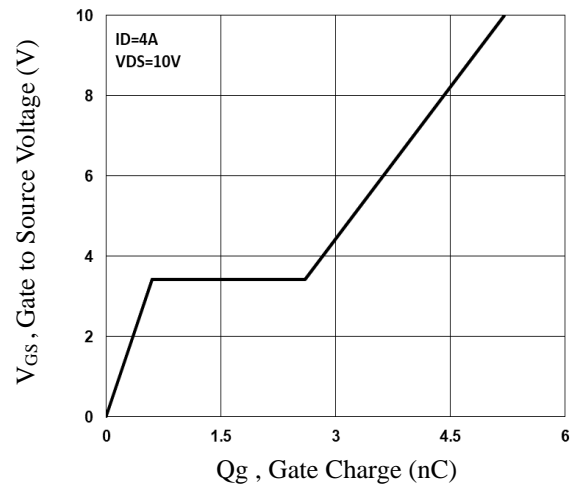
**Fig.1 Continuous Drain Current vs.  $T_J$**



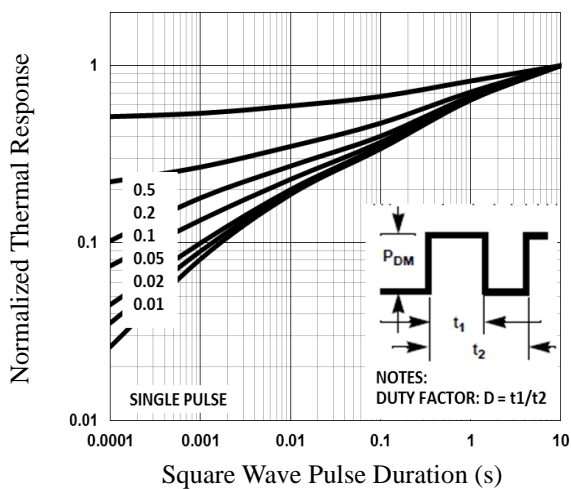
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



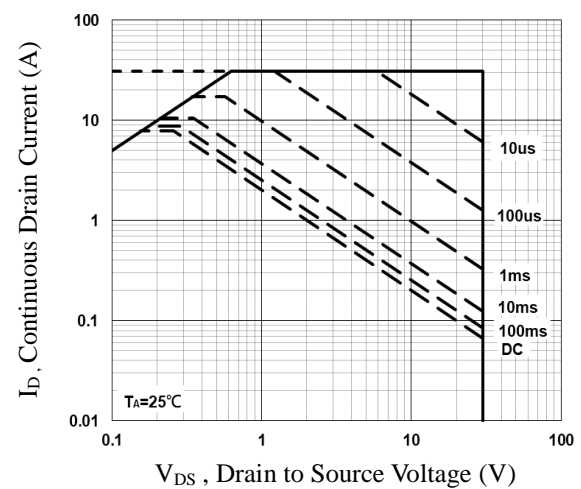
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



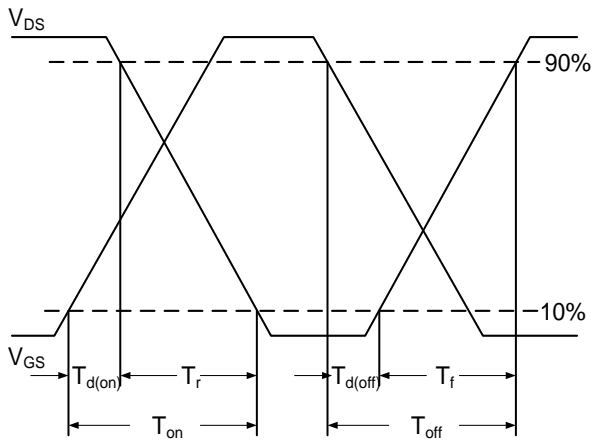
**Fig.4 Gate Charge Waveform**



**Fig.5 Normalized Transient Response**

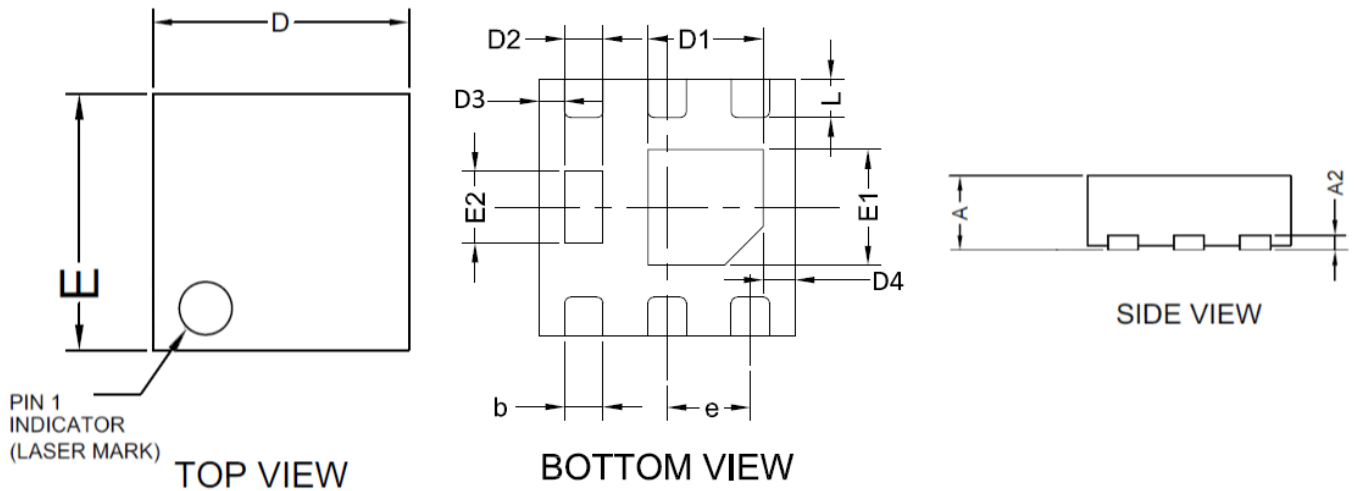


**Fig.6 Maximum Safe Operation Area**



**Fig.7 Switching Time Waveform**

## DFN2x2-6L PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.800	0.500	0.031	0.019
A2	0.250	0.145	0.010	0.006
b	0.350	0.250	0.014	0.010
D	2.100	1.900	0.083	0.075
D1	1.000	0.800	0.040	0.031
D2	0.350	0.250	0.014	0.010
D3	0.200BSC		0.008BSC	
D4	0.200BSC		0.008BSC	
E	2.100	1.900	0.083	0.075
E1	1.050	0.800	0.041	0.031
E2	0.66	0.46	0.026	0.018
e	0.650BSC		0.026BSC	
L	0.350	0.250	0.014	0.010