

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	30mΩ@-4.5V	-5A
	40mΩ@-2.5V	
	70mΩ@-1.8V	

Feature

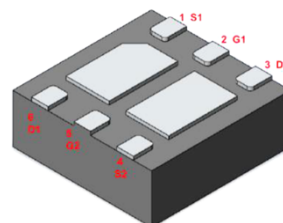
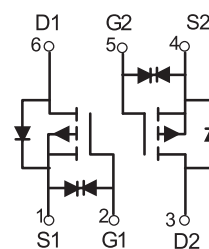
- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

Application

- DC/DC Converter
- Power Management

MARKING:

P3415


DFN2X2-6L

Schematic diagram

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-20	V
Gate - Source Voltage		V_{GS}	± 10	V
Continuous Drain Current ^{1,5}	$T_A = 25^\circ\text{C}$	I_D	-5	A
Pulsed Drain Current ²		I_{DM}	-20	A
Power Dissipation ⁵	$T_A = 25^\circ\text{C}$	P_D	2	W
Thermal Resistance from Junction to Ambient ⁵		$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

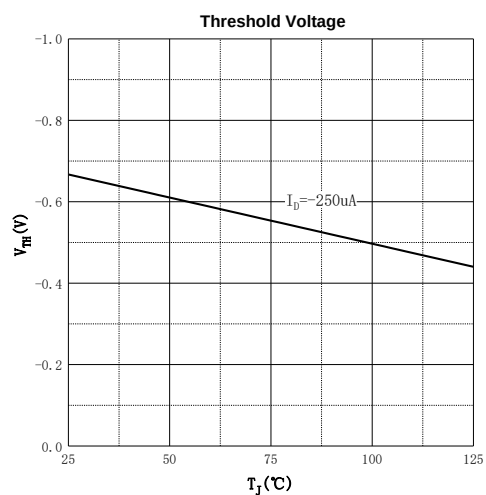
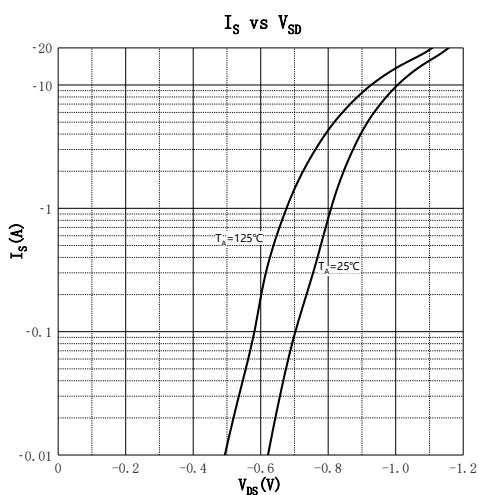
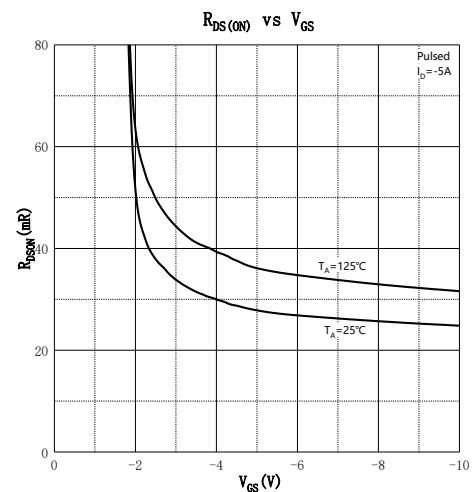
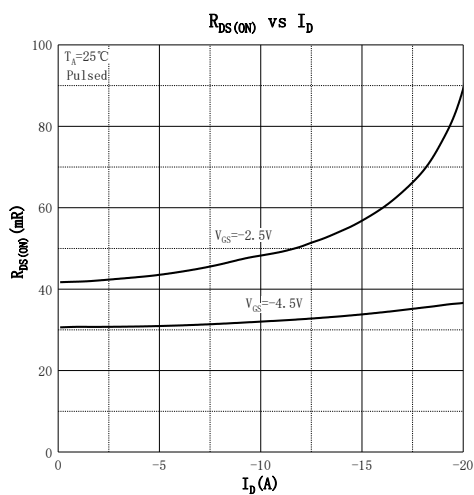
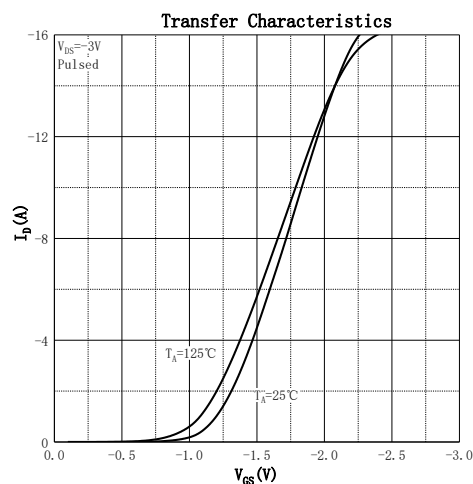
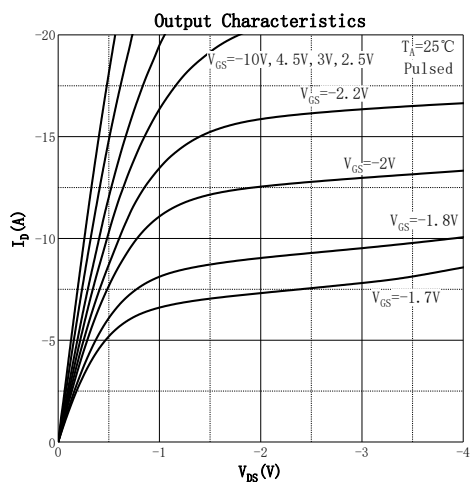
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

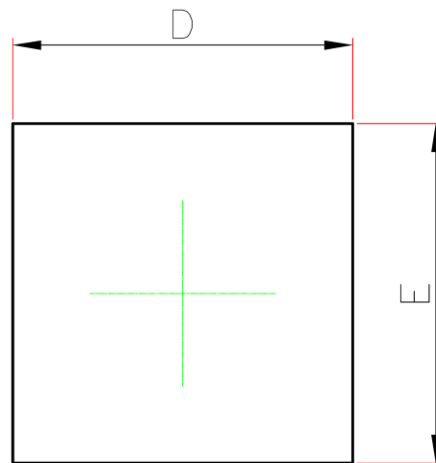
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±8V, V _{DS} = 0V			±5	μA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.3	-0.6	-1	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -4.0A		30	50	mΩ
		V _{GS} = -2.5V, I _D = -4.0A		40	60	
		V _{GS} = -1.8V, I _D = -2.0A		70	100	
Forward Transconductance	g _{FS}	V _{DS} = -4.5V, I _D = -4.0A	2			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		820		pF
Output Capacitance	C _{oss}			138		
Reverse Transfer Capacitance	C _{rss}			123		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		5		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -20V, V _{GS} = -4.5V, I _D = -2.0A		11		nC
Gate-Source Charge	Q _{gs}			1.2		
Gate-Drain Charge	Q _{gd}			4.7		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10V, V _{GS} = -4.5V, R _L = 2Ω, R _G = 3Ω		9.4		ns
Turn-On Rise Time	t _r			18		
Turn-Off Delay Time	t _{d(off)}			80		
Turn-Off Fall Time	t _f			40		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = -1.0A			-1.2	V

Notes :

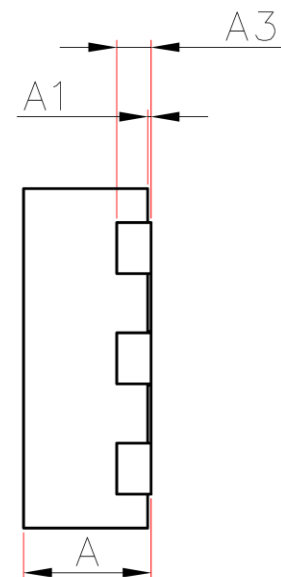
- 1.The maximum current rating is limited by Chip.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.
- 5.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics

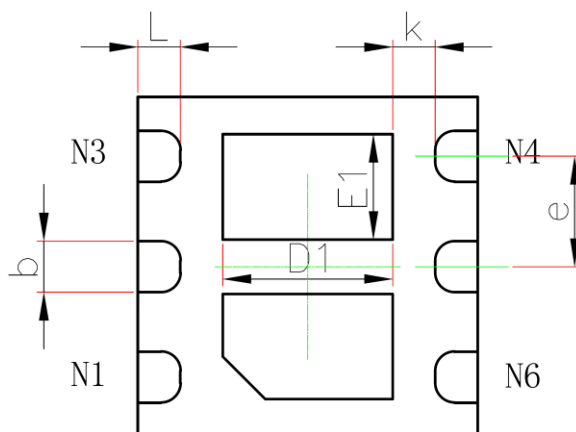


DFN2X2-6L Package Information


TOP VIEW



SIDE VIEW



BOTTOM VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0	0.050	0	0.002
A3	0.203REF		0.008REF	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.700	1.100	0.028	0.043
E1	0.520	0.720	0.020	0.028
k	0.200MIN		0.008MIN	
b	0.250	0.350	0.010	0.014
e	0.65BSC		0.026TYP	
L	0.174	0.326	0.007	0.013

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.