VFTV010R015NA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
100V	1.5mΩ@10V	380A

Symbol

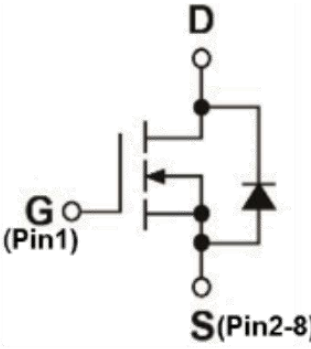


Figure 1 Symbol of VFTV010R015NA

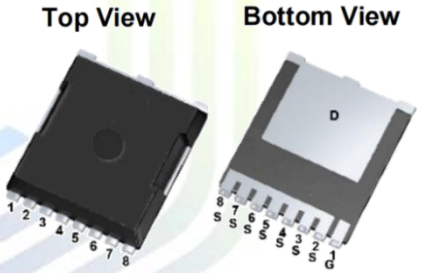
Features

- Surface-mounted package
- Advanced trench cell design
- 100% UIS and Rg Tested

Application

- BMS
- Switched mode power supply
- DC-DC converter
- Solar inverter
- UPS and energy inverter
- Synchronous Rectification for Power Supply

Package Type



TOLL-8

Figure 2 Package Type of VFTV010R015NA

Ordering Information

Product Name	Package
VFTV010R015NA	TOLL-8

Absolute Maximum Ratings (T_J= 25 ºC, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current Note 1	T_C=25ºC	I_D	380	A
Pulsed Drain Current Note 2		I_{DM}	700	A
Max Power Dissipation Note 3	T_C=25ºC	P_D	242	W
Avalanche Current, Single Pulse Note 5		I_{AS}	100	A
Avalanche Energy, Single Pulse Note 5		E_{AS}	2500	mJ
Operation Junction temperature		T_J	-55 to 150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$		0.52		ºC/W
Thermal Resistance, Junction-to-Ambient Note4	$R_{\theta JA}$		52.64		

Notes:

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) P_D is based on max. junction temperature, using junction-case thermal resistance.
4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25 °C.
5) V_{GS} = 10V, V_{DS} = 25V, L=0.5mH, , Starting T_J = 25°C

Electrical Characteristics (T_J= 25 ºC, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		1.2	1.5	mΩ
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,f=1MHz		0.67		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{GS}=0V		11650		pF
Output Capacitance	C_{OSS}	V_{DS}=50V		3724		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		60		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=50V		24		ns
Rise Time	t_r	I_{DS}=1A		13		
Turn-off Delay Time	$t_{d(off)}$	R_{GEN}=1Ω		72		
Fall Time	t_f	V_{GEN}=10V		236		
Switching Characteristics						
Total Gate Charge (10V)	Q_g	V_{GS}=10V		211		nC
Total Gate Charge (4.5V)	Q_g	V_{DS}=50V		57		
Gate to Source Charge	Q_{gs}	I_D=100A		61		
Gate to Drain Charge	Q_{gd}			62		
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=30A			1.2	V
Reverse Recovery Time	t_{rr}	V_{DS}=60V,I_D=100A di/dt=100A/μs		93		ns
Reverse Recovery Charge	Q_{rr}			263		nC
Peak Reverse Recovery Current	I_{rrm}			5.3		A

Typical Performance Characteristics

Figure 3: Typ. Output Characteristics

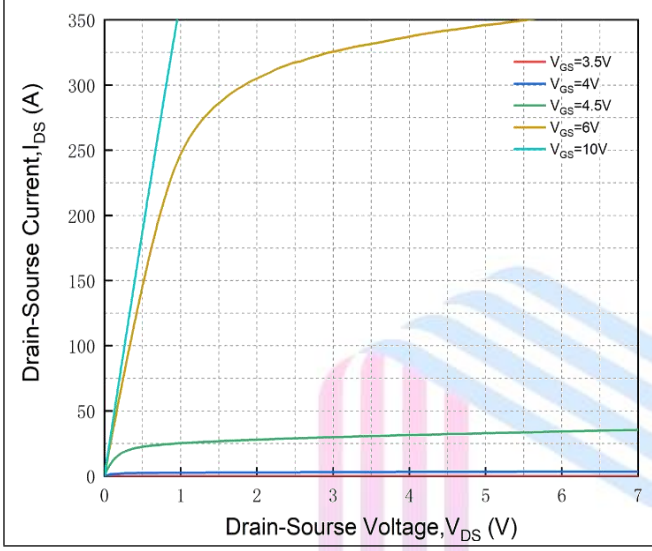


Figure 4: Typ. Transfer Characteristics

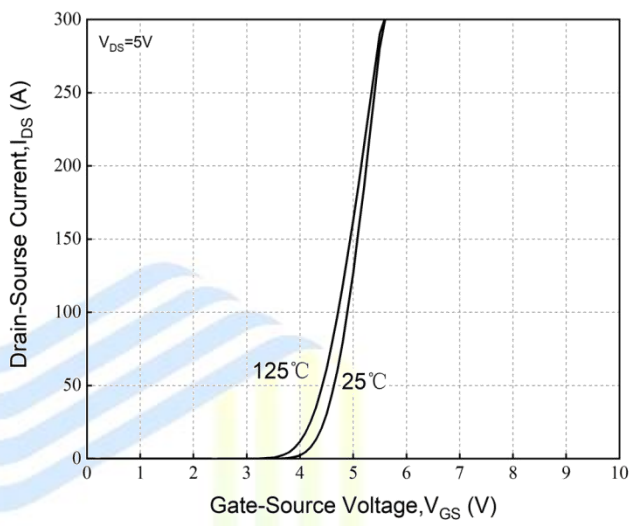


Figure 5: Drain-Source On-State Resistance

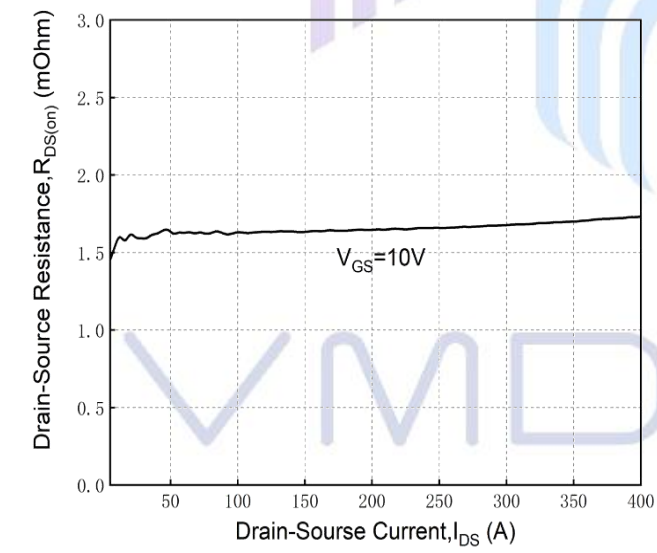


Figure 6: Drain-source on-state resistance

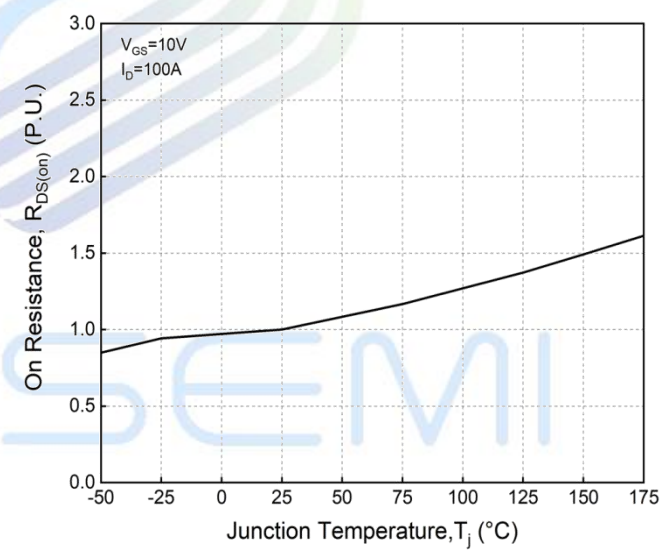


Figure 7: Threshold Voltage

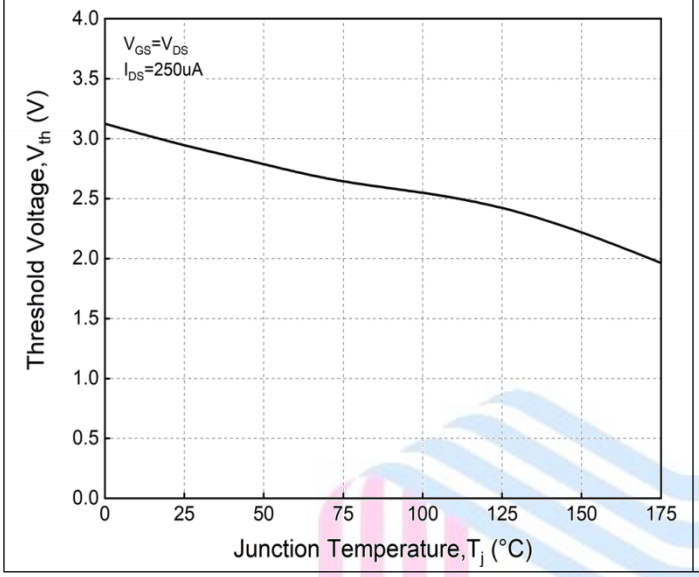


Figure 8: Forward Characteristics of Body Diode

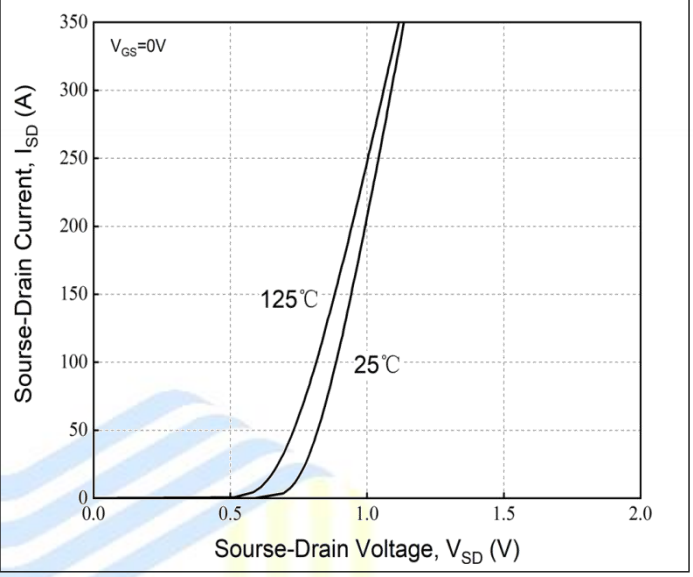


Figure 9: Gate Charge Characteristics

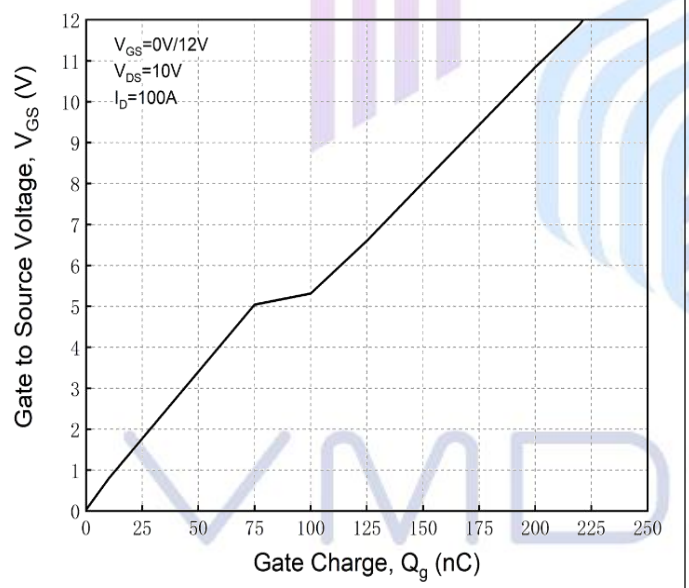


Figure 10: Typ. Capacitances

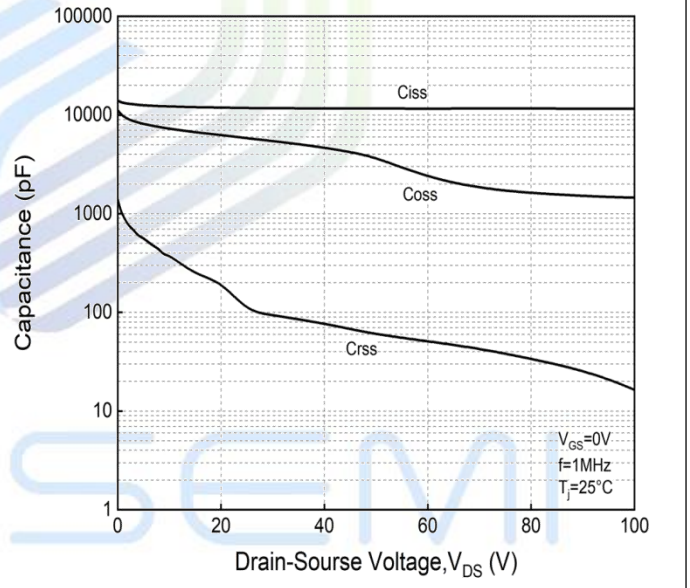


Figure11: Safe Operating Area

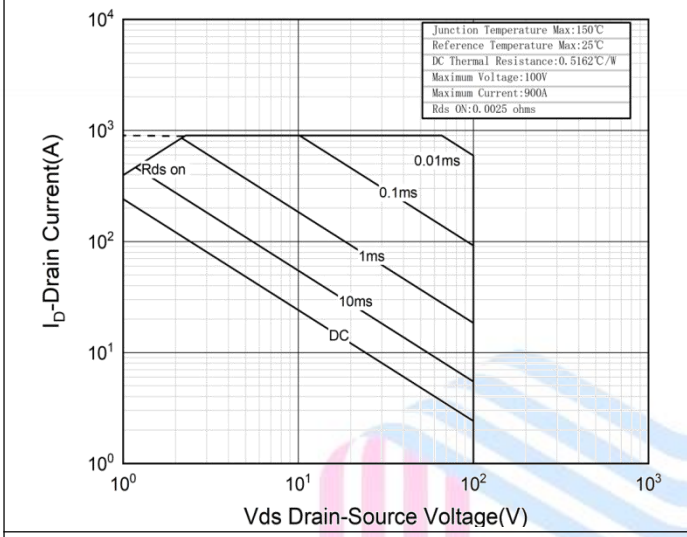


Figure12: Power Dissipation

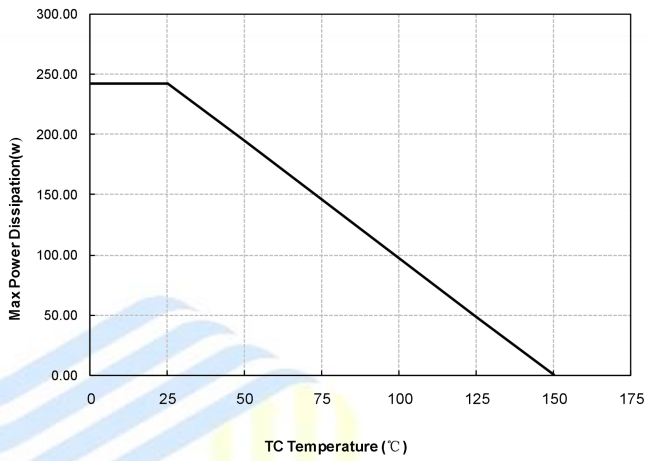


Figure13: Single Pulse Maximum Power Dissipation

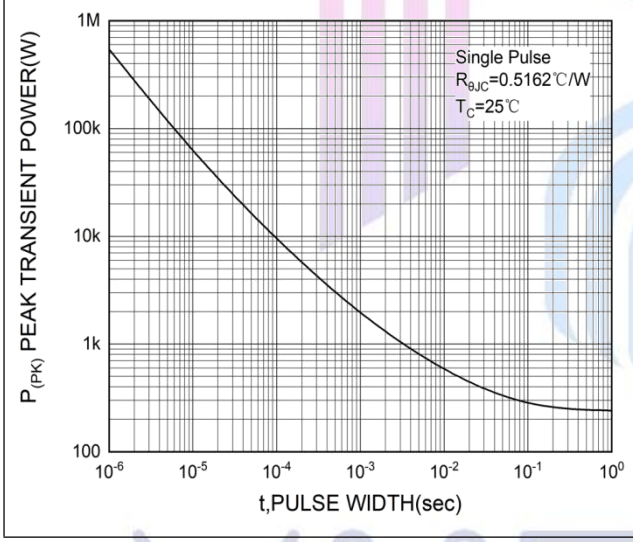
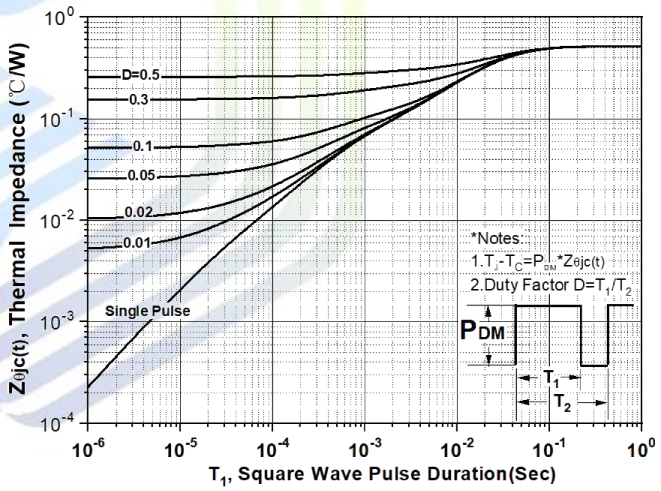
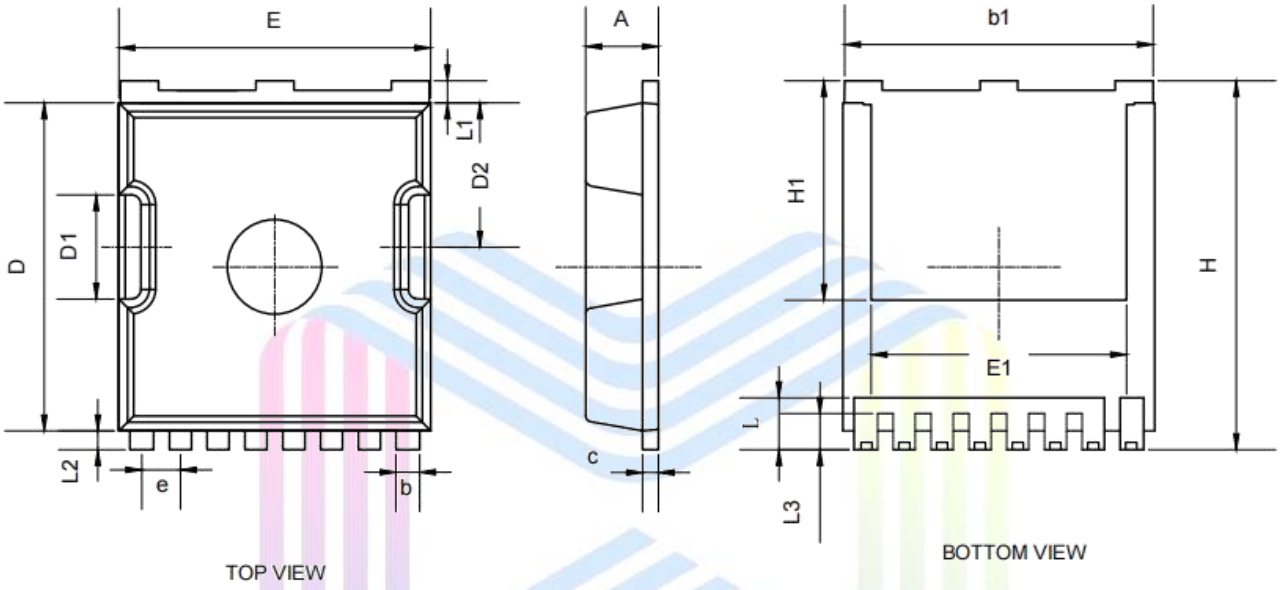


Figure14: Transient Thermal Resistance



Mechanical Dimensions

TOLL- 8 Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	MAX
A	2.15	2.45
b	0.60	0.90
b1	9.65	9.95
c	0.40	0.60
D	10.18	10.58
D1	3.15	3.45
D2	4.40	4.70
E	9.70	10.10
E1	8.10REF	
e	1.20BSC	
H	11.48	11.90
H1	6.95REF	
L	1.55	2.10
L1	0.50	0.90
L2	0.48	0.70
L3	1.15 BSC	

NOTICE

Hangzhou VMD Semiconductor Co., Ltd (VMD) reserves the right to make changes without notice in order to improve reliability, function or design and to discontinue any product or service without notice. Customers should obtain the latest relevant information before orders and should verify that such information is current and complete. All products are sold subject to VMD's terms and conditions supplied at the time of order acknowledgement.

VMD, its affiliates, agents, and employees, and all persons acting on its or their behalf, disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

VMD disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify VMD's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

VMD warrants performance of its hardware products to the specifications at the time of sale, testing, reliability and quality control are used to the extent VMD deems necessary to support this warrantee. Except where agreed upon by contractual agreement, testing of all parameters of each product is not necessarily performed.

VMD does not assume any liability arising from the use of any product or circuit designs described herein. Customers are responsible for their products and applications using VMD's components. To minimize risk, customers must provide adequate design and operating safeguards.

VMD does not warrant or convey any license to any intellectual property rights either expressed or implied under its patent rights, nor the rights of others. Reproduction of information in VMD's data sheets or data books is permissible only if reproduction is without modification or alteration. Reproduction of this information with any alteration is an unfair and deceptive business practice.

VMD is not responsible or liable for such altered documentation. Resale of VMD's products with statements different from or beyond the parameters stated by VMD for that product or service voids all express or implied warrantees for the associated VMD product or service and is an unfair and deceptive business practice.

All Rights Reserved.

Via-Media Semiconductor Limited Company

http://www.vmdsemi.com

Main Sites:

- **Headquarters**

Hangzhou Via-Media Semiconductor Co., LTD.
1305-1306, Building 71, No. 90, Wensan Road, Xihu District, Hangzhou, Zhejiang Province, P.R. China
Tel: +86-0571-8515 0563

- **Chengdu Office**

Chengdu Winhi Semiconductor Co., LTD.
Floor 15, Building 5, No. 171, Hele 2nd Street, Chengdu, Sichuan Province, P.R. China
Tel: +86-028-8505 0771

- **Shanghai**

Shanghai R&D Center.
1506~1508, Xinyin Building, 888 Yishan Road, Shanghai, P.R of China

Tel: +86- 021-54201999

- **Shenzhen**

Shenzhen Sales office
Room 4A15, Block AB, Tianxiang Building, Chegongmiao, Futian District, Shenzhen, P.R of China
Tel: +86-0755- 82570682

- **Xi'an**

Xi'an R&D Center
1703B, Building A, Greenland Center, Jinye Road, High-Tech Zone, Xi'an, Shaanxi, P.R of China