



VMDSEMI

VSTF065R900NA

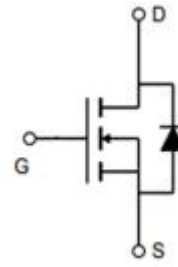
Datasheet



VMDSEMI

General Description
Symbol

$V_{(BR)DSS}$	$R_{DS(ON)_{max}}$	I_D
650V	90mΩ@10V	50A



Symbol of VSTF065R900NA

Features

- Extremely low switching loss
- Excellent stability and uniformity
- RoHS and Halogen-Free Compliant

Application

- PC power
- LED lighting
- Telecom power
- Server power
- Solar/UPS

Package Type


TO-247

Package Type of VSTF065R900NA

Ordering Information

Product Name	Package	Marking
VSTF065R900NA	TO-247	VSTF065R900NA

Absolute Maximum Ratings($T_A=25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ^{Note 1}	I_D	50	A
Pulsed Drain Current ^{Note 2}	$I_{D, pulse}$	150	A
Continuous Diode Forward Current ^{Note 1}	I_S	50	A
Diode Pulsed Current ^{Note 2}	$I_{S, pulse}$	150	A
Max Power Dissipation ^{Note 3}	P_D	568	W
Avalanche Current, Single Pulse ^{Note 4}	I_{AS}	10.4	A
Avalanche Energy, Single Pulse ^{Note 4}	E_{AS}	2693	mJ
MOSFET dv/dt ruggedness, $V_{DS}=0\sim 480\text{V}$	dv/dt	50	V/ns
Reverse diode dv/dt, $V_{DS}=0\sim 480\text{V}$, $I_{SD}\leq I_D$	dv/dt	15	V/ns
Operation and storage temperature	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	0.22	-	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient ^{Note 5}	$R_{\theta JA}$	-	62.5	-	

Notes:

Note1: Calculated continuous current based on maximum allowable junction temperature.

Note2: Pulse width limited by safe operating area.

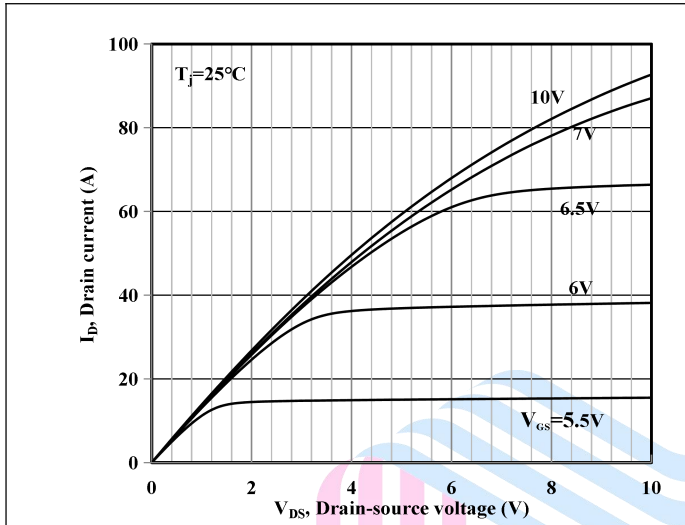
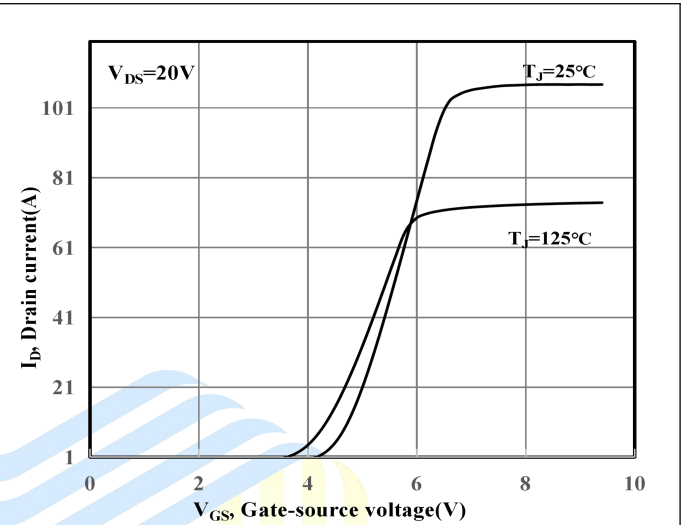
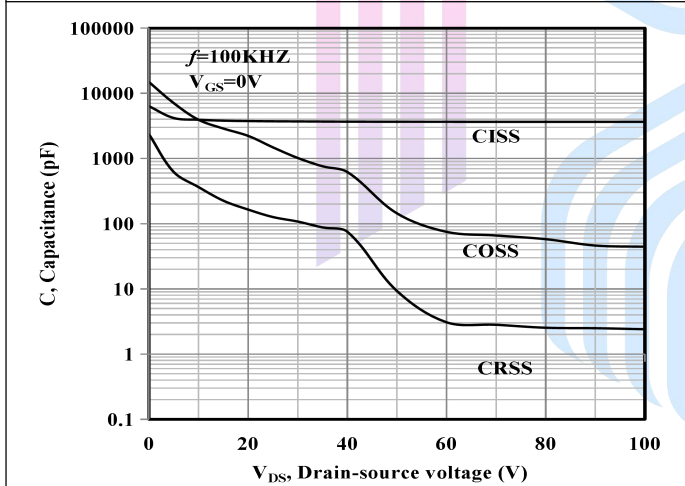
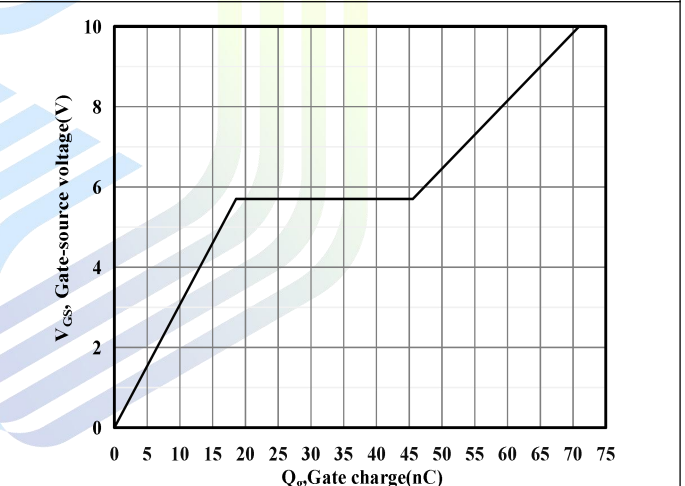
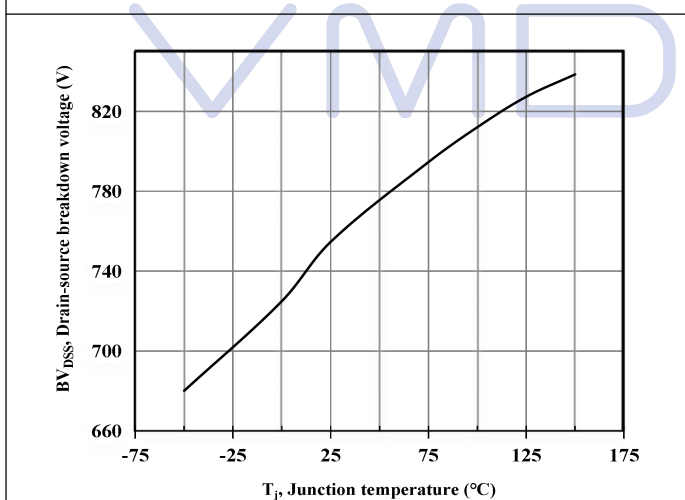
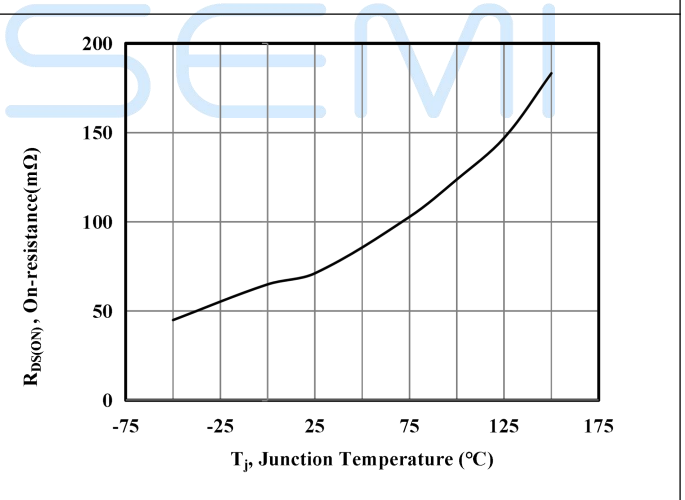
Note3: Based on max. junction temperature, using junction-case thermal resistance.

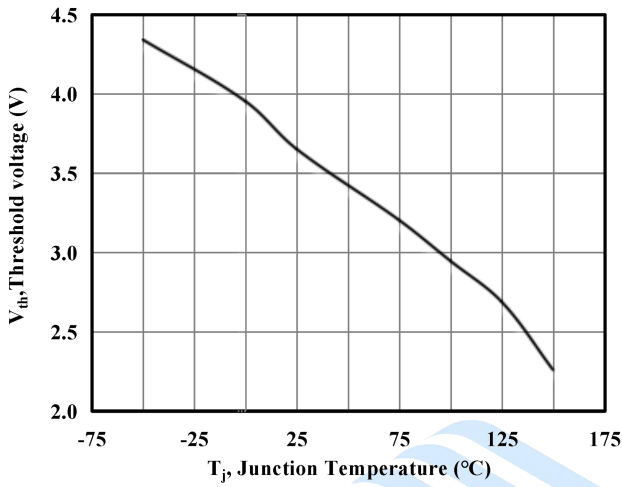
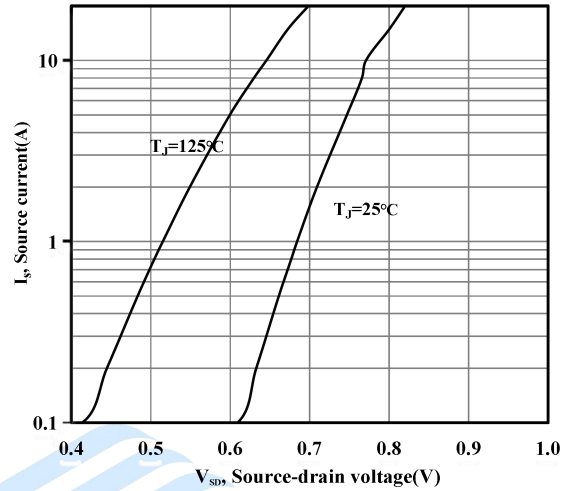
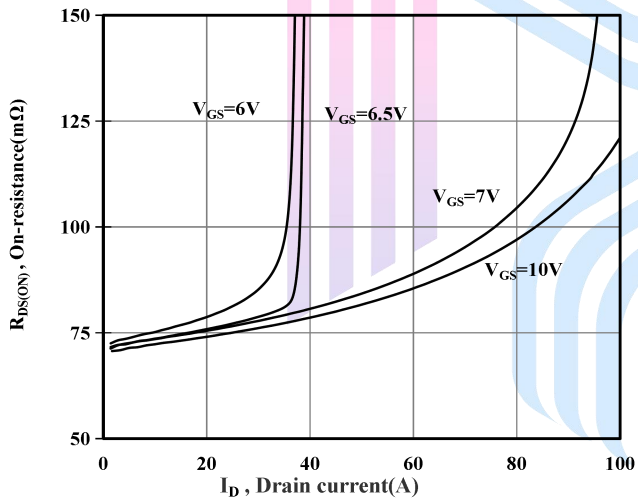
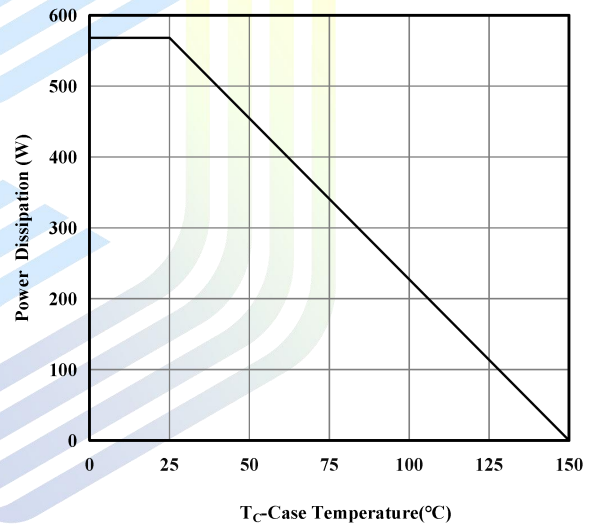
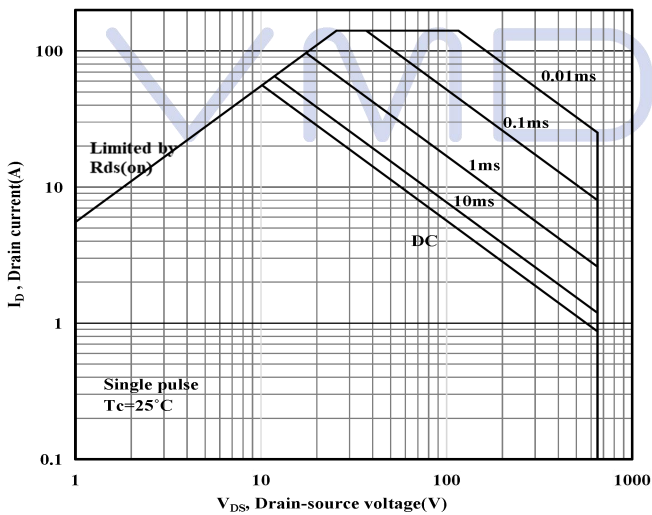
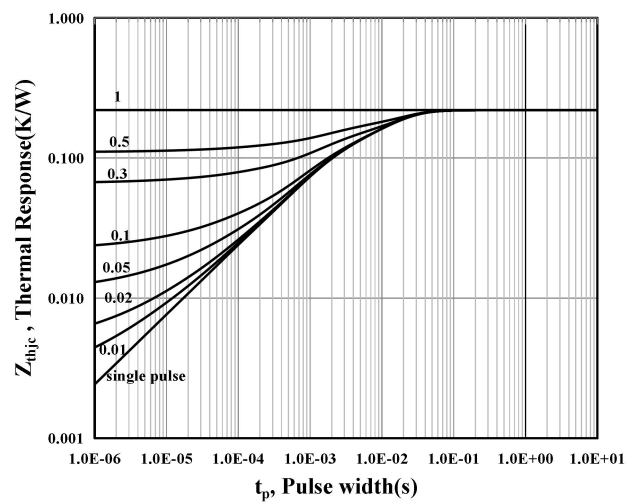
Note4: $V_{DD}=100\text{V}$, $V_{GS}=10\text{V}$, $L=49.9\text{mH}$, $R_G=25\Omega$, starting $T_A=25\text{ }^\circ\text{C}$.

Note5: When mounted on 1 inch square copper board, $t\leq 10\text{sec}$. The value in any given application depends on the user's specific board design.

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

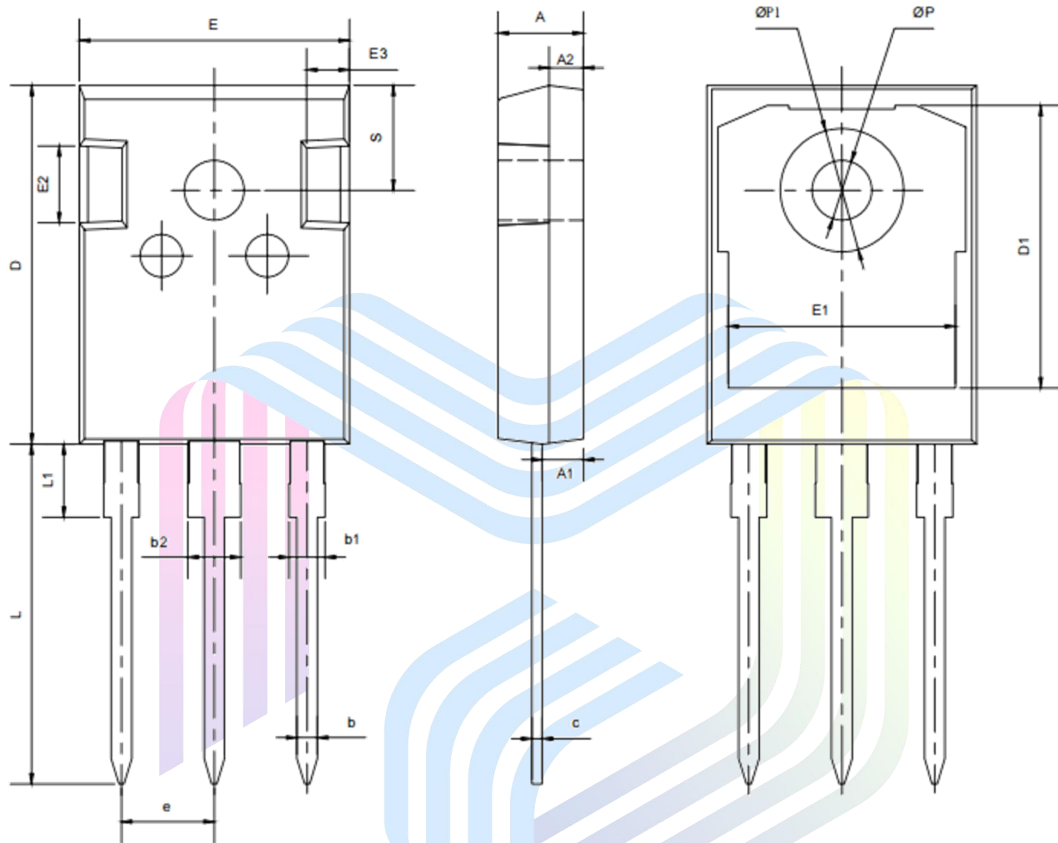
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	Forward	$I_{GSSF}, V_{GS}=30V, V_{DS}=0V$	-	-	100	nA
	Reverse	$I_{GSSR}, V_{GS}=-30V, V_{DS}=0V$	-	-	-100	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.8	3.7	4.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=23.5A$	-	70	90	$m\Omega$
Gate Resistance	R_G	$F=1MHz, \text{Open Drain}$	-	4.2	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=50V$	-	3667	-	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$	-	144.3	-	pF
Reverse Transfer Capacitance	C_{rss}	$f=100kHz$	-	9.3	-	pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=400V$	-	23.71	-	ns
Rise Time	t_r	$I_D=20A$	-	11.53	-	
Turn-off Delay Time	$t_{d(off)}$	$R_G=2\Omega$	-	67.52	-	
Fall Time	t_f	$V_{GS}=10V$	-	7.37	-	
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DS}=400V$ $I_D=20A$ $V_{GS}=0 \text{ to } 10V$	-	18.57	-	nC
Gate to Drain Charge	Q_{gd}		-	26.97	-	
Gate Charge Total	Q_g		-	70.92	-	
Gate Plateau Voltage	$V_{plateau}$		-	5.7	-	V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A$	-	0.69	-	V
Reverse Recovery Time	t_{rr}	$V_R=400V$	-	468	-	ns
Reverse Recovery Charge	Q_{rr}	$I_S=20A$	-	8.33	-	μC
Peak Reverse Recovery Current	I_{rrm}	$di/dt=100A/\mu s$	-	35	-	A

Electrical Characteristics Diagrams

Figure 1. Typ. output characteristics

Figure 2. Typ. transfer characteristics

Figure 3. Typ. capacitances

Figure 4. Typ. gate charge

Figure 5. Drain-source breakdown voltage

Figure 6. Drain-source on-state resistance


Figure 7. Threshold voltage

Figure 8. Forward characteristic of body diode

Figure 9. Drain-source on-state resistance

Figure 10. Power dissipation

Figure 11. Safe operation area $T_c=25^\circ\text{C}$

Figure 12. Max. transient thermal impedance

Mechanical Dimensions

TO-247 Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	MAX
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.11	1.36
b1	1.91	2.21
b2	2.91	3.21
c	0.51	0.75
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.00	13.60
E2	4.80	5.60
E3	2.10	2.70
e	5.44BSC	
L	19.62	20.22
L1	-	4.30
φP	3.40	3.80
φP1	-	7.30
S	6.15BSC	

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 warranty. 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 warranties 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