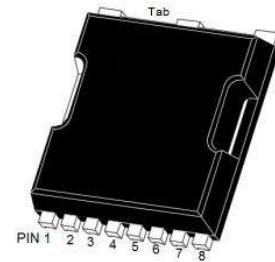


■ PRODUCT CHARACTERISTICS

VDSS	100V
$R_{DS(on)}$ Typ( $V_{GS}@=10V$ )	1.3m $\Omega$
ID	500A



TOLL-8L

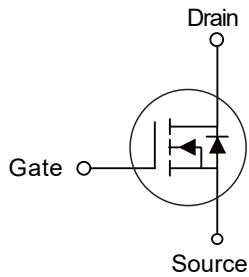
■ FEATURES

Surface-mounted package Advanced trench cell design Super trench

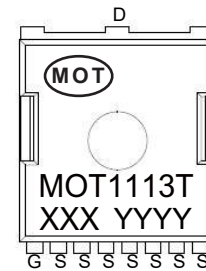
■ APPLICATIONS

High power system inverter  
Light electric vehicles  
BMS  
Drones

■ SYMBOL



Pin configuration (Top view)



XXX = Lot Number  
YYYY = Year Week

Marking

Order information

Device	Package	Shipping
MOT1113T/TR	TOLL-8L	4000/Tape&Reel

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

Parameter	Symbol	Conditions	Min	Max	Unit
Drain-Source Voltage	$V_{DS}$	$T_C = 25^\circ\text{C}$	100	-	V
Gate-Source Voltage	$V_{GS}$	$T_C = 25^\circ\text{C}$	-	$\pm 20$	V
Drain Current ( DC ) *	$I_D$	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	500	A
		$T_C = 100^\circ\text{C}, V_{GS} = 10\text{ V}$	-	366	A
Drain Current ( Pulsed ) ***	$I_{DM}$	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
Drain power dissipation	$P_{tot}$	$T_C = 25^\circ\text{C}$	-	500	W
Storage Temperature	$T_{stg}$		-55	175	$^\circ\text{C}$
Junction Temperature	$T_J$		-55	175	$^\circ\text{C}$
Continuous-Source Current	$I_S$	$T_C = 25^\circ\text{C}$	-	500	A
Single Pulsed Avalanche Energy	$E_{AS}$	$V_{DD}=40\text{V}, L=0.1\text{mH}$	-	2900	mJ
Thermal Resistance- Junction to Ambient**	$R_{\theta JA}$		-	32.8	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case**	$R_{\theta JC}$		-	0.45	

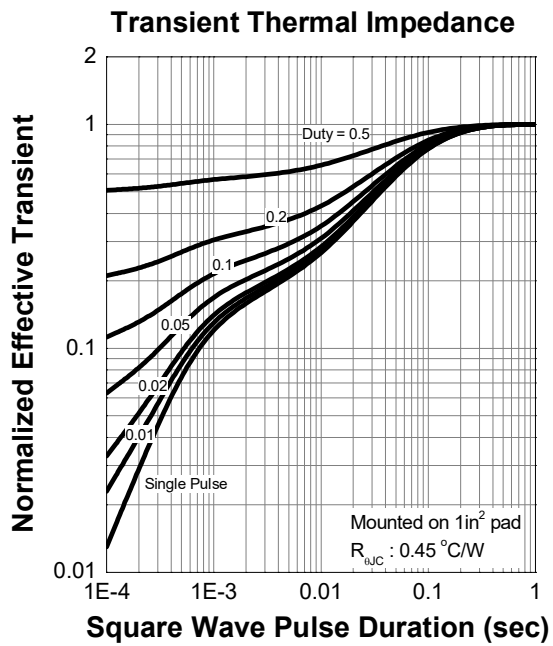
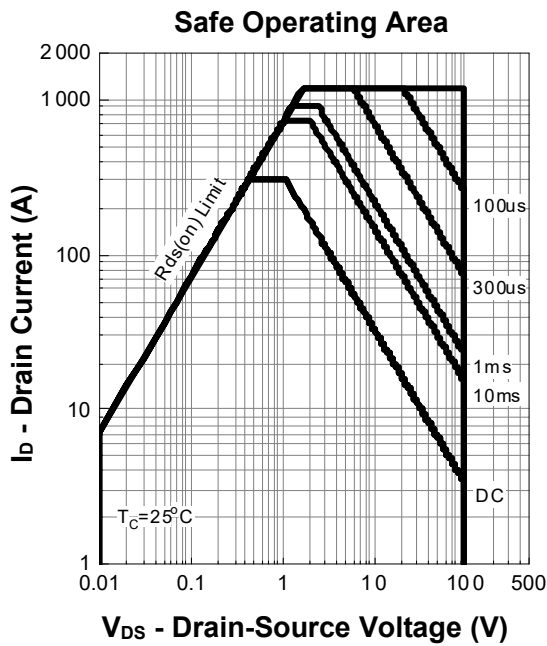
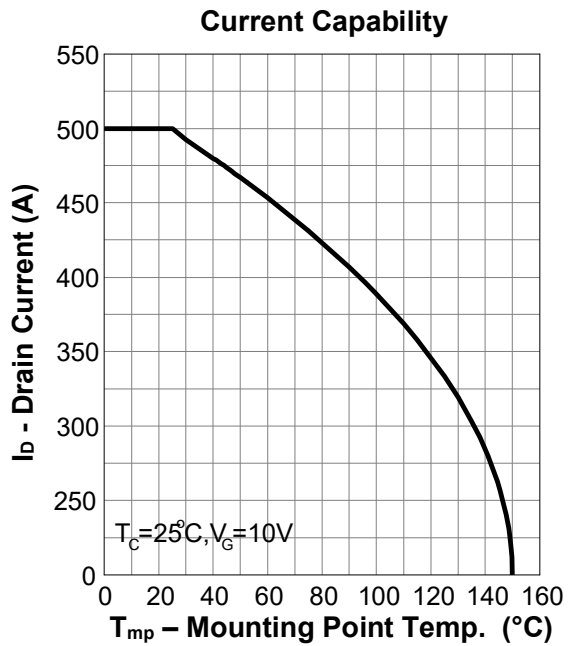
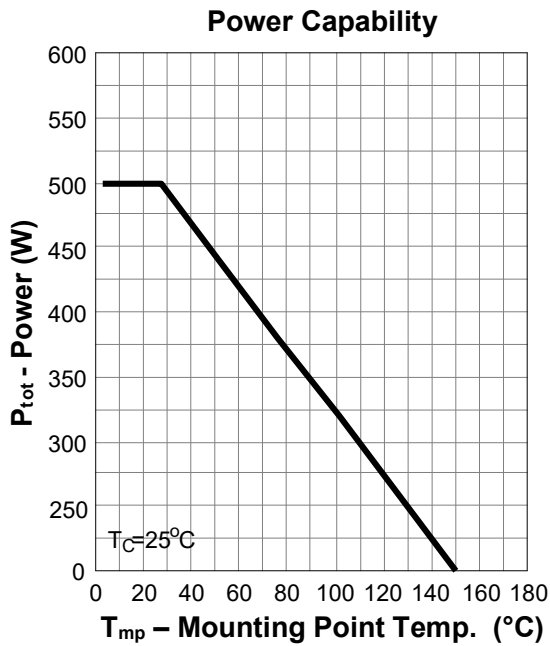
**■ ELECTRICAL CHARACTERISTICS** ( $T_C=25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
Drain Leakage Current	$I_{DSS}$	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
On-State Resistance <sup>a</sup>	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	1.3	1.4	m $\Omega$
		$V_{GS} = 6\text{ V}, I_{DS} = 25\text{ A}$	-	1.6	2.0	
Diode Characteristics						
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
Reverse Recovery Time	$t_{rr}$	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	137	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	347	-	nC
Dynamic Characteristics						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$ Frequency = 1 MHz	-	13574	-	pF
Output Capacitance	$C_{oss}$		-	2036	-	
Reverse Transfer Capacitance <sup>b</sup>	$C_{rss}$		-	196	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 50\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 1\ \Omega,$ $I_{DS} = 50\text{ A}$	-	44	-	nS
Turn-on Rise Time	$t_r$		-	132	-	
Turn-off Delay Time	$t_{d(off)}$		-	154	-	
Turn-off Fall Time	$t_f$		-	137	-	
Gate Charge Characteristics <sup>b</sup>						
Total Gate Charge	$Q_g$	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	161	-	nC
Gate-Source Charge	$Q_{gs}$		-	71	-	
Gate-Drain Charge	$Q_{gd}$		-	58	-	

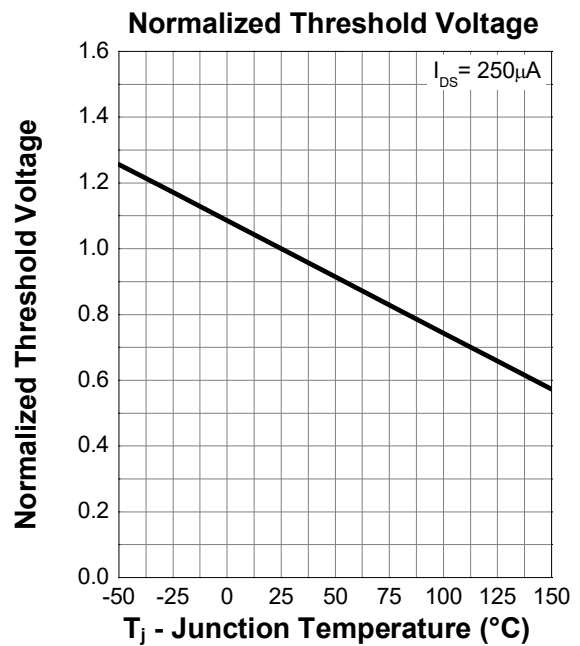
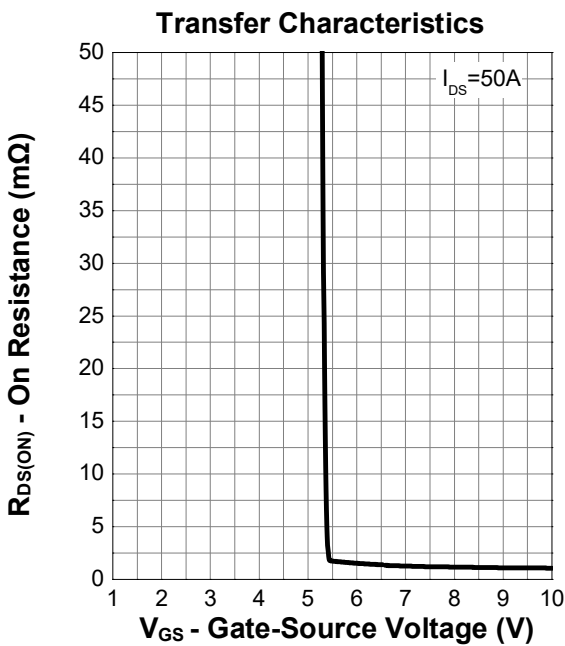
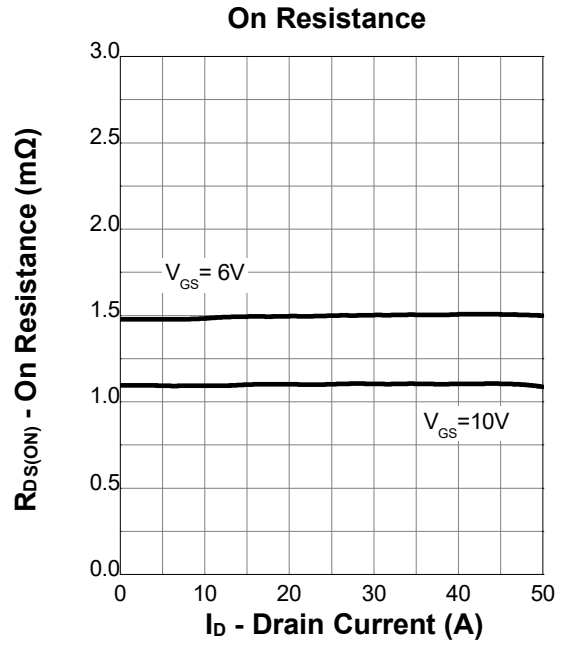
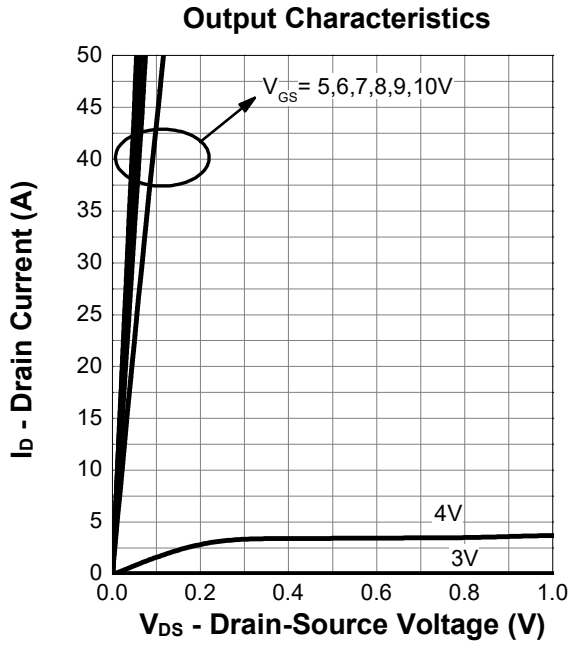
Notes :

- \* Pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$
- \*\* Surface Mounted on minimum footprint pad area.
- \*\*\* Limited by bonding wire
- a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$
- b : Guaranteed by design, not subject to production testing

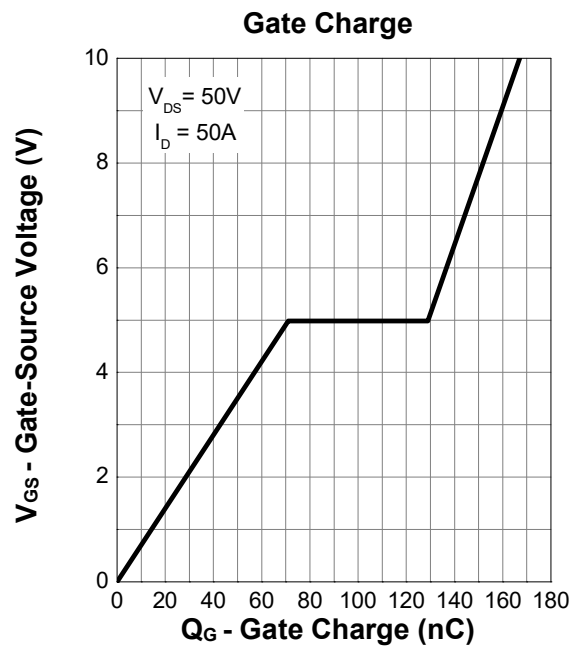
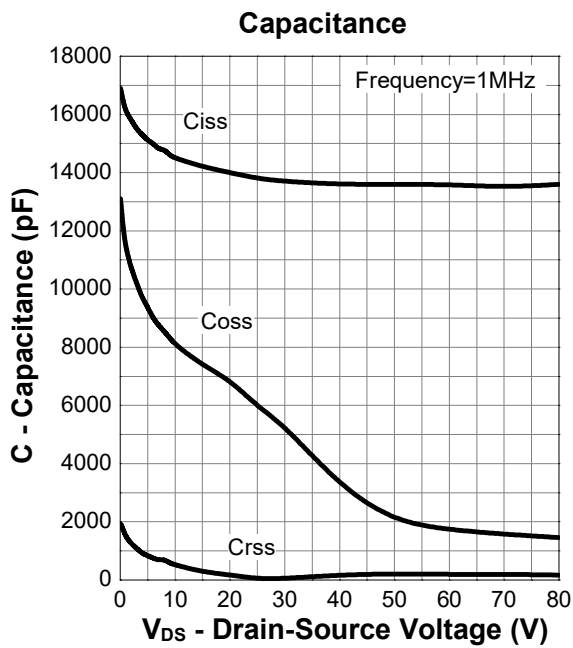
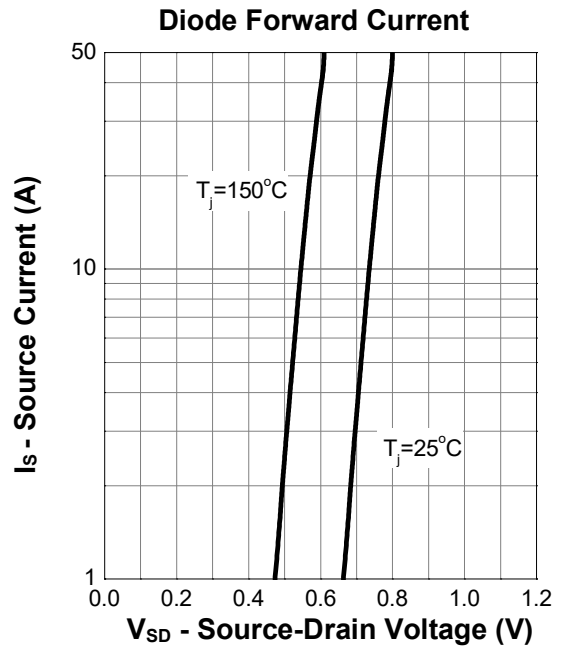
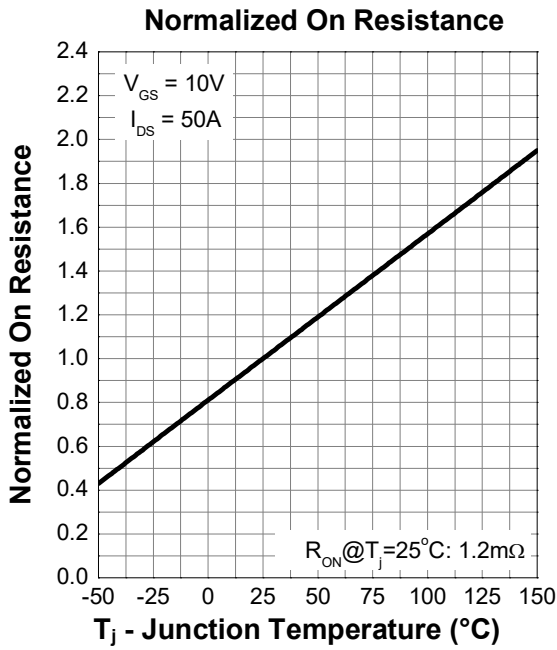
■ TYPICAL CHARACTERISTICS



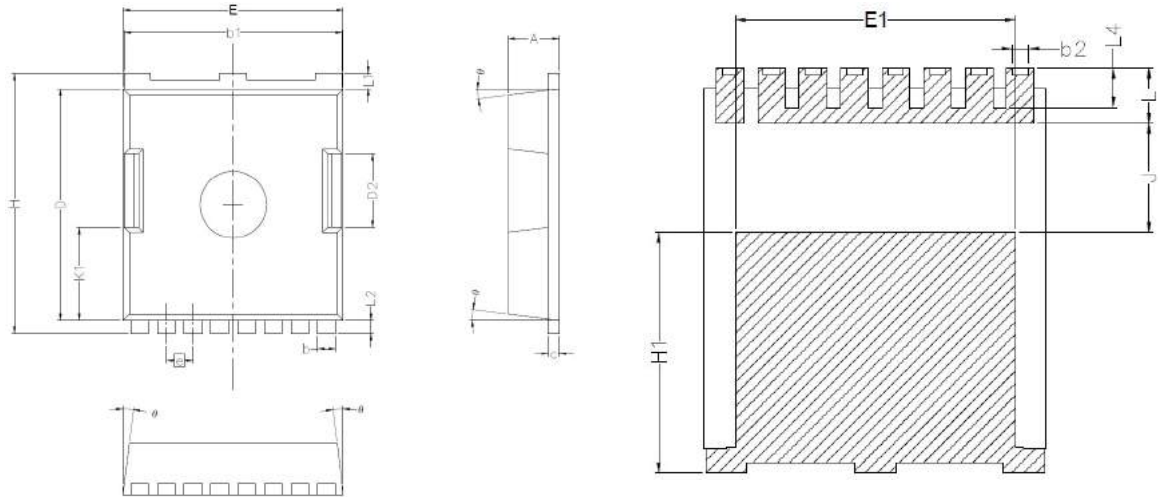
■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



■ TOLL-8L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimesions In Millimeters	
	Min.	Max.
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°

- The information contained hSurface-mounted package Advnced terch cell design Super trencherein is subject to change without notice.
- GUANGDONG INMARK ELECTRONICS CO. LTD(MOT) exerts the greatest possible effort to ensure high quality and reliability. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing MOT products, to comply with the standards of safety in making a safe design for the entire system, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue. In developing your designs, please ensure that MOT products are used within specified operating ranges as set forth in the most recent MOT products specifications.
- The MOT products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These MOT products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of MOT products listed in this document shall be made at the customer's own risk.
- Thank you for your interest in Renmao Electronics. If you need any business inquiries, please contact us.
- Shenzhen Headquarters:  
19th Floor, Shencheng Investment Center Building, Guiyuan Street, Luohu District, Shenzhen  
E-mail:sales@mot-mos.com

Shenzhen Base:  
Renmao Industrial Park, No. 2 Songgang Avenue, Bao'an District, Shenzhen

Jiangsu base:  
Hongshi Intelligent Industrial Park, No. 33, the Taihu Lake Road, Tinghu District, Yancheng City

Taipei Design Center:  
10th Floor, No. 107, Section 1, Chengde Road, Taipei

Nanjing Design Center:  
Block B, Tianyu Xi'an Garden, No. 688 Longmian Avenue, Jiangning District