JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

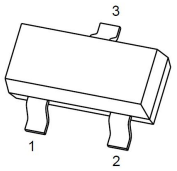
SOT-23 Plastic-Encapsulate MOSFET

CJ2302B N-Channel MOSFET

Key Performance Parameters

$V_{BR(DSS)}$	$R_{DS(on)}$TYP	I_D
20V	29mΩ@4.5V	3.8A
	39mΩ@2.5V	

SOT-23



1.GATE
2.SOURCE
3.DRAIN

DESCRIPTION

This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance.

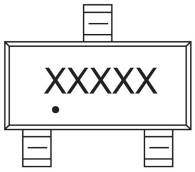
FEATURES

- High density cell design for Low RDS(on)
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

APPLICATIONS

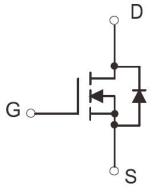
- Load Switch for Portable Devices
- DC/DC Converter

MARKING



XXXXX = 2302B
Solid dot = Green molding compound device.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current	T_A =25℃	I_D⑤	3.8	A
	T_A =75℃		2.9	
Pulsed Drain Current		I_{DM}①②	15.2	A
Power Dissipation		P_D①⑤	1	W
Operating Junction and Storage Temperature Range		T_J,T_{stg}	-55~+150	℃

Thermal Characteristics

Parameter		Symbol	Value		Unit
			Typ	Max	
Thermal Resistance from Junction to Ambient	t≤10s	$R_{\theta JA}$⑤	104	125	℃/W
	Steady State		130	156	℃/W

Typical Characteristics

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Static Characteristics

Parameter	Symbol	Test Condition		Value			Unit
				Min	Typ	Max	
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA		20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	T_J=25℃	-	-	1.0	μA
			T_J=125℃	-	-	100	
Gate-body leakage current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V		-	-	±100	nA
Gate-threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA		0.65	0.95	1.20	V
Static drain-source on-sate resistance	$R_{DS(on)}$③	V_{GS}=4.5V, I_D=3.6A	T_J=25℃	-	29	45	mΩ
			T_J=125℃	-	41	64	
		V_{GS}=2.5V, I_D=3.1A		-	39	78	
Forward tranconductance	g_{FS}	V_{DS}=5V, I_D=3.6A		-	15	-	S

Dynamic Characteristics④

Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=1MHz	-	482	-	pF
Output capacitance	C_{oss}		-	66	-	
Reverse transfer capacitance	C_{rss}		-	53	-	
Total gate charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=3.6A	-	6.42	-	nC
Gate charge at threshold	$Q_{G(th)}$		-	0.64	-	
Gate-source charge	Q_{gs}		-	1.12	-	
Gate-drain charge	Q_{gd}		-	2.33	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, V_{GS}=4.5V, I_D=3.6A, R_g=6Ω	-	5.6	-	ns
Turn-on rise time	t_r		-	4.4	-	
Turn-off delay time	$t_{d(off)}$		-	20.7	-	
Turn-off fall time	t_f		-	6.4	-	

Reverse Diode Characteristics

Drain-source diode forward voltage	V_{SD}③	V_{GS}=0V, I_S=0.94A	-	-	1.2	V
Continuous drain-source diode forward current	I_S①		-	-	3.8	A
Pulsed drain-source diode forward current	I_{SM}①②		-	-	15.2	A

Notes:

①.Limited only by maximum temperature allowed.

②.P_W ≤300μs, Duty cycle ≤1%.

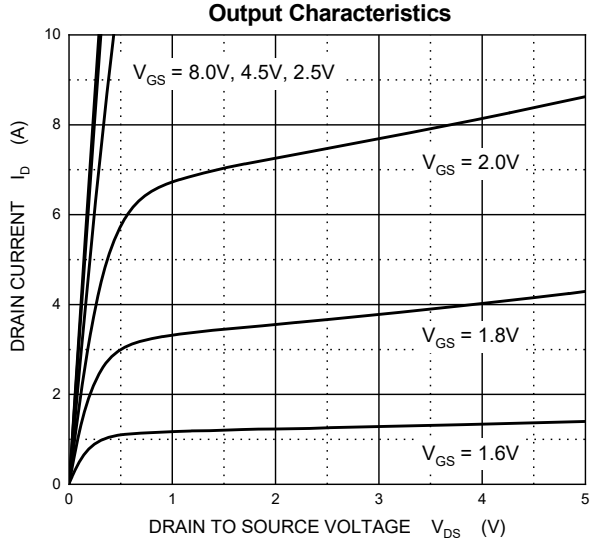
③.Pulse Test : Pulse Width ≤380μs, duty cycle ≤2%.

④.Guaranteed by design, not subject to production.

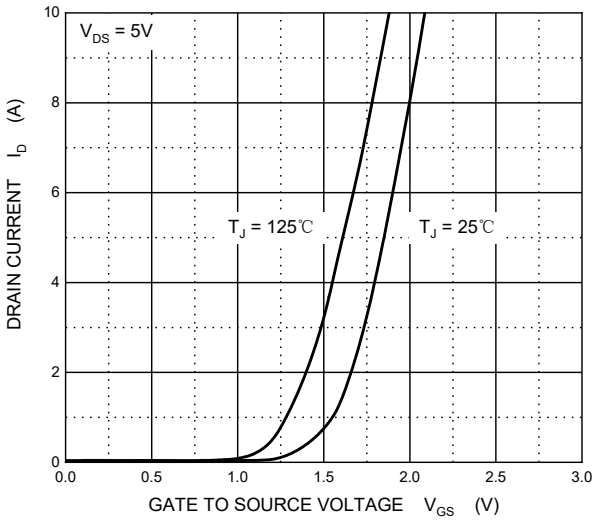
⑤.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.The current rating is based on the t ≤10s thermal resistance rating.

Typical Characteristics

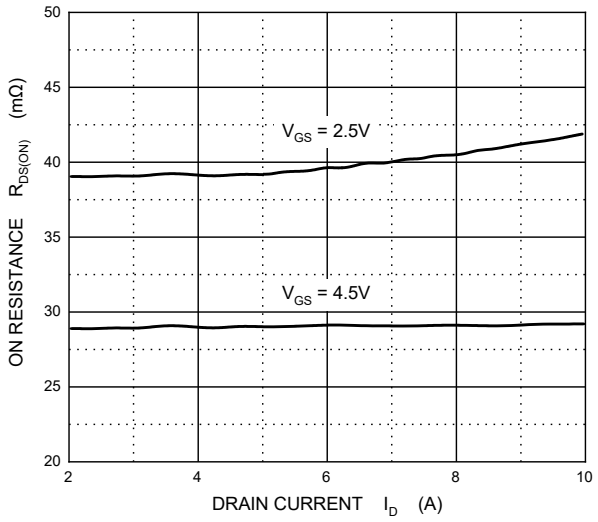
Output Characteristics



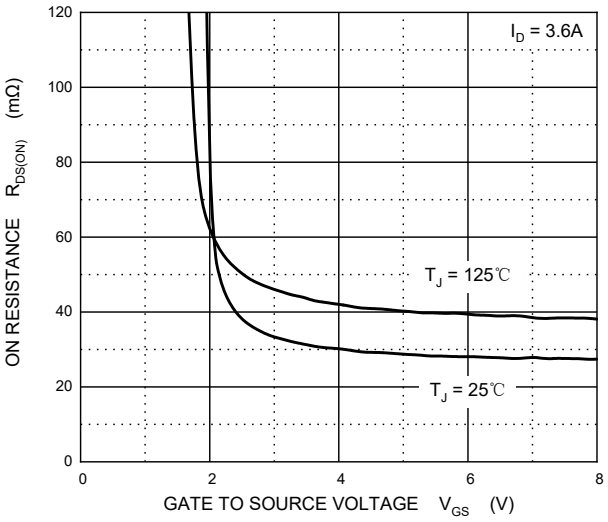
Transfer Characteristics



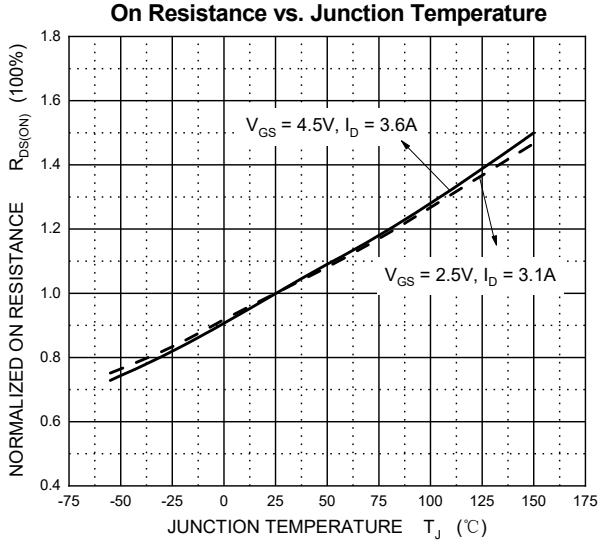
On Resistance vs. Drain Current



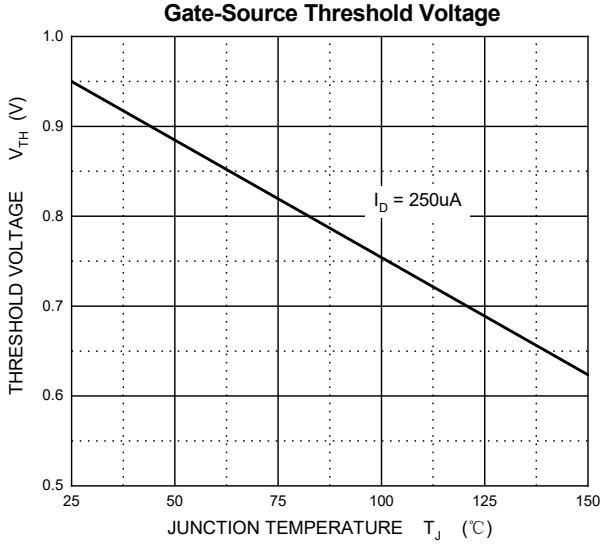
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

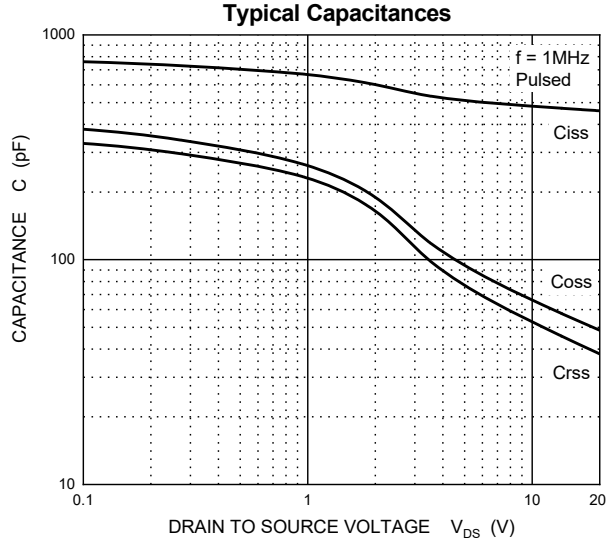


Gate-Source Threshold Voltage

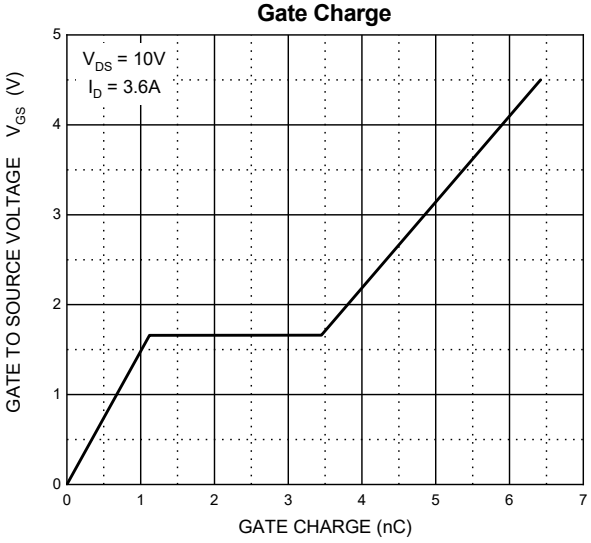


Typical Characteristics

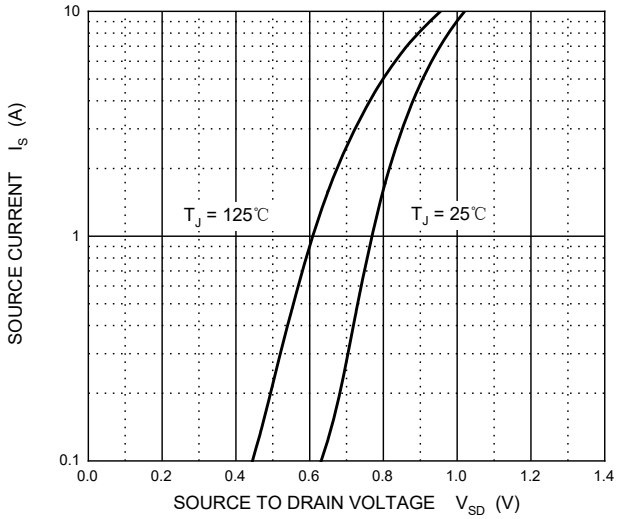
Typical Capacitances



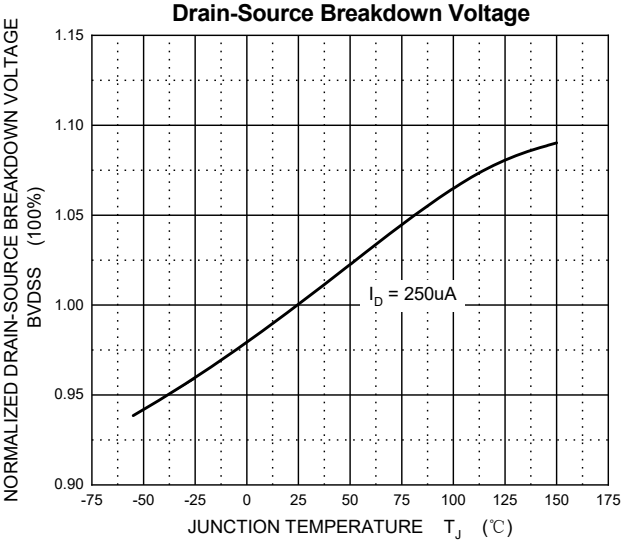
Gate Charge



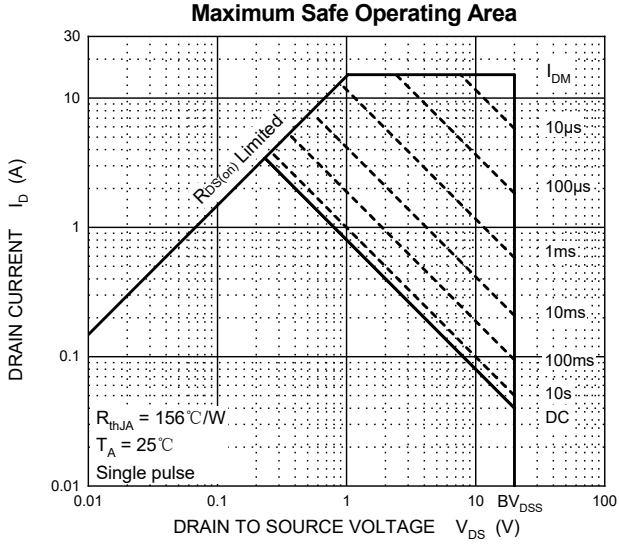
Source-Drain Diode Forward Characteristics



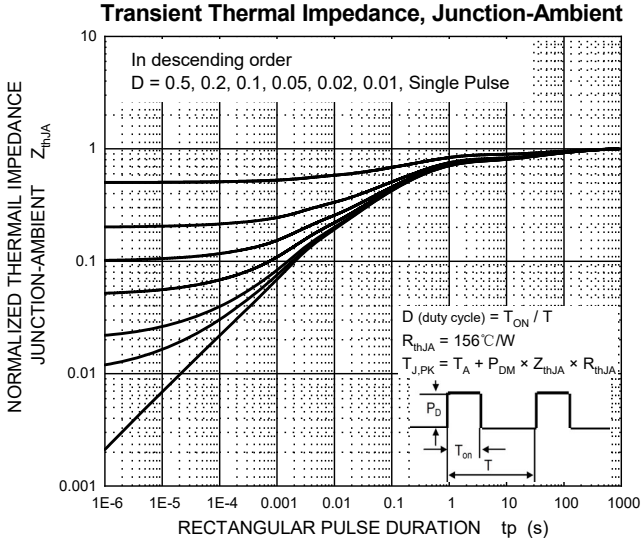
Drain-Source Breakdown Voltage



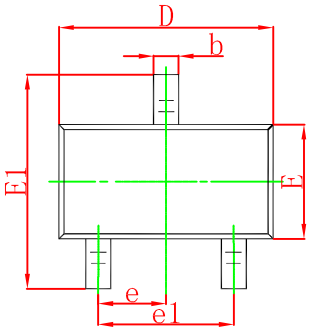
Maximum Safe Operating Area

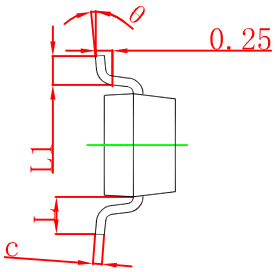


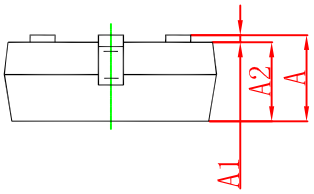
Transient Thermal Impedance, Junction-Ambient



SOT-23 Package Outline Dimensions

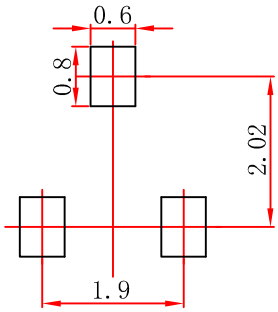






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

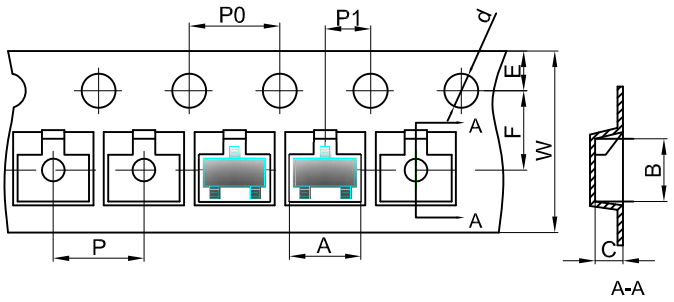
SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

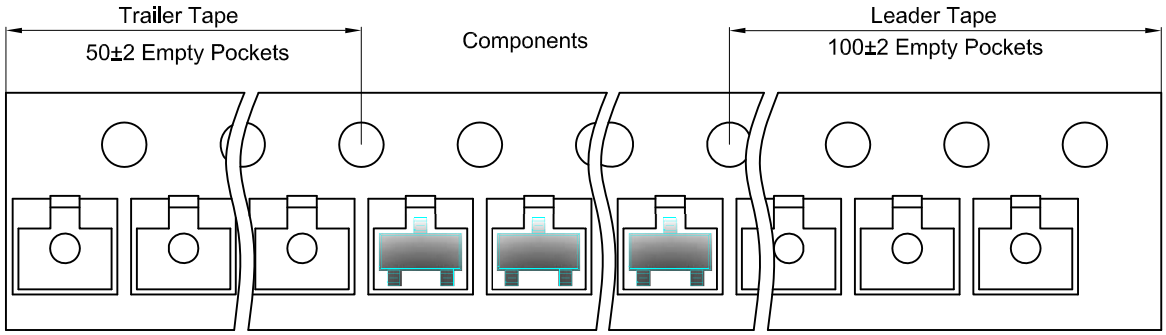


Packaging Description:

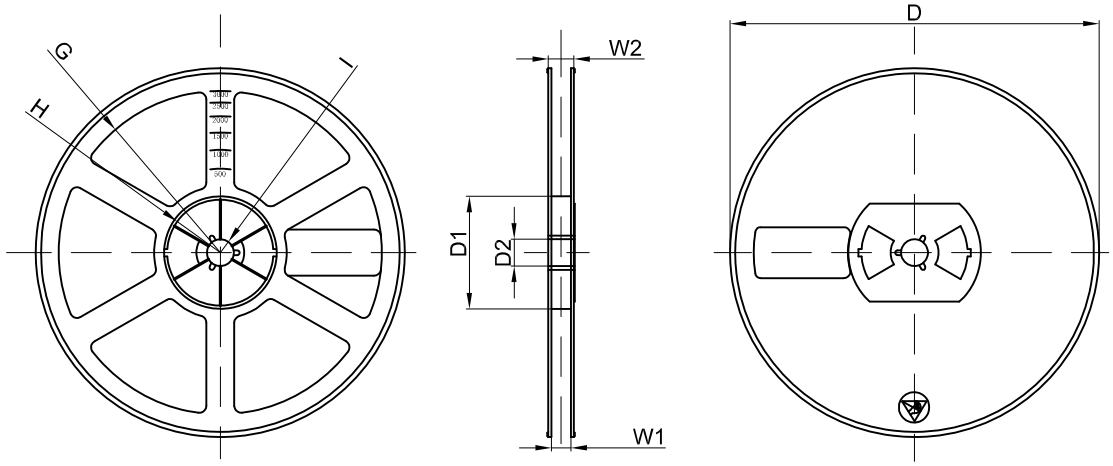
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

DImenslons are In mllllmeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 Inch	45,000 pcs	210×208×205	180,000 pcs	440×440×230	