

/ Descriptions

TO-252 MOS -CHANNEL MOSFET in a TO-252 Plastic Package.

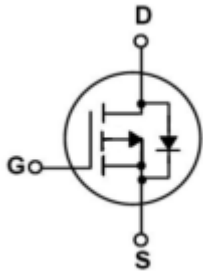
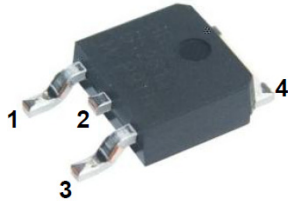
/ Features

Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching.

/ Applications

DC/DC

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

/ Equivalent Circuit**/ Pinning**

PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ h_{FE} Classifications & Marking

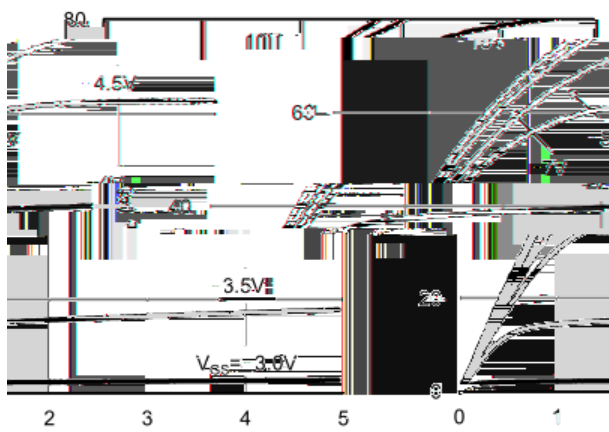
See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-100	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	-30	A
Drain Current	$I_D(T_C=100^\circ\text{C})$	-21.5	A
Drain Current - Pulsed ^C	I_{DM}	-80	A
Gate-Source Voltage	V_{GS}	± 20	V
Avalanche Current ^C	I_{AS}	-27.0	A
Avalanche energy $L=0.5\text{mH}$ ^C	E_{AS}	291.6	mJ
Power Dissipation ^B	$P_D(T_C=25^\circ\text{C})$	53.5	W
	$P_D(T_C=100^\circ\text{C})$	26.5	W
Power Dissipation ^A	$P_{DSM}(T_A=25^\circ\text{C})$	2.5	W
	$P_{DSM}(T_A=70^\circ\text{C})$	1.6	W
Junction and Storage Temperature Range	$T_j \quad T_{stg}$	-55 150	$^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V \quad I_D=-250 \text{ A}$	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V \quad V_{GS}=0V$			-1.0	A
		$V_{DS}=-100V \quad V_{GS}=0V$ $T_J=55^\circ\text{C}$			-5.0	A
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V \quad V_{DS}=0V$			± 0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS} \quad I_D=250 \text{ A}$	-1	-1.7	-3	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	$V_{GS}=-10V \quad I_D=-30A$		46	50	m
	$R_{DS(on)2}$	$V_{GS}=-4.5V \quad I_D=-15A$		49	51	m
Forward Transconductance	g_{FS}	$V_{DS}=-10V \quad I_D=-10A$		25		S
Diode Forward Voltage	V_{SD}	$I_S=-30A \quad V_{GS}=0V$		-0.72	-1.3	V

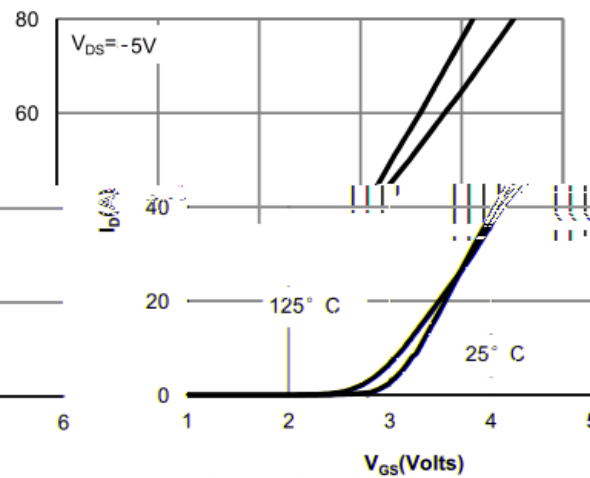
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		5110		pF
Output Capacitance	C_{oss}			198		
Reverse Transfer Capacitance	C_{rss}			131		
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		3.87		
Total Gate Charge	$Q_g(10V)$	$V_{GS}=-10V$ $V_{DS}=-50V$ $I_D=-20A$		16.5	25	nC
Total Gate Charge	$Q_g(4.5V)$			7	12	
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V$ $V_{DS}=-50V$ $R_L=2.5$ $R_{GEN}=23$		7		ns
Turn-On Rise Time	t_r			8		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			3		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-20A$ $dI/dt=500A/ms$		30		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-20A$ $dI/dt=500A/ms$		145		nC
Maximum Junction-to-Ambient ^A	R_{JA}	t				

/ Electrical Characteristic Curve



V_{DS} (Volts)
ion Characteristics

Fig 1: On-Reg



V_{GS} (Volts)
Figure 2: Transfer Characteristics

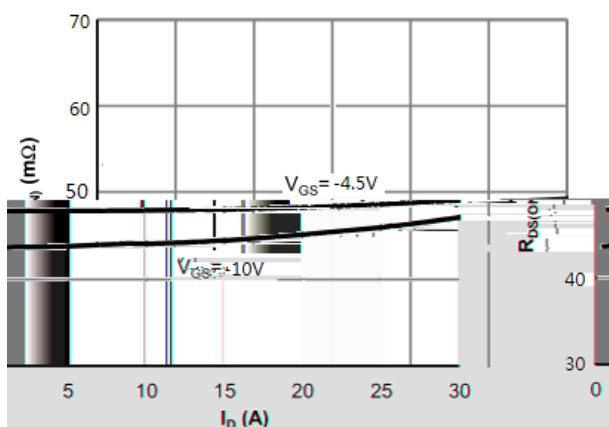


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

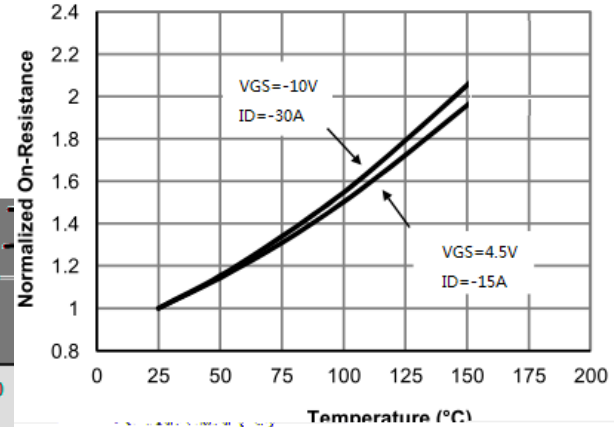
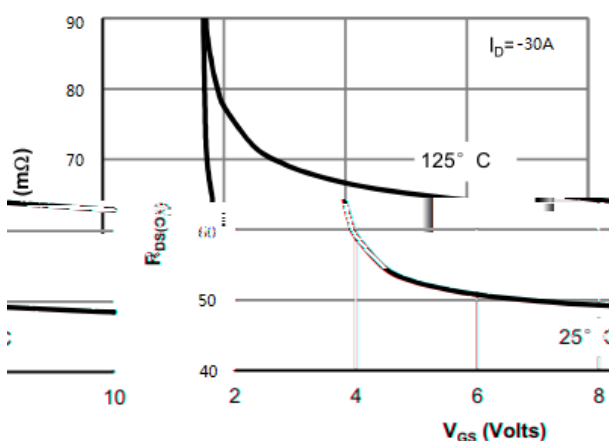


Figure 4: On-Resistance vs. Junction Temperature

Figure



Source Voltage

Figure 5: On-Resistance vs. Gate-Source Voltage

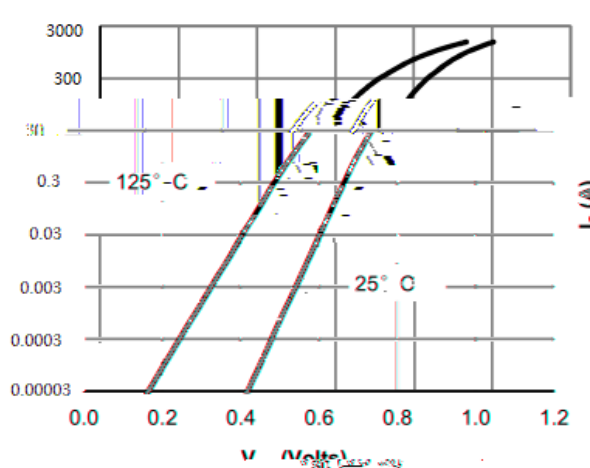
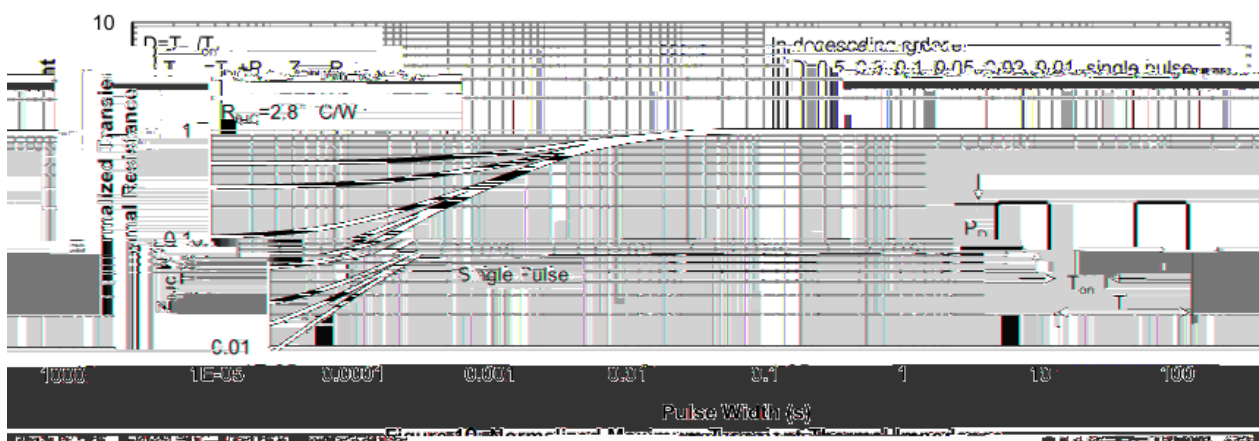
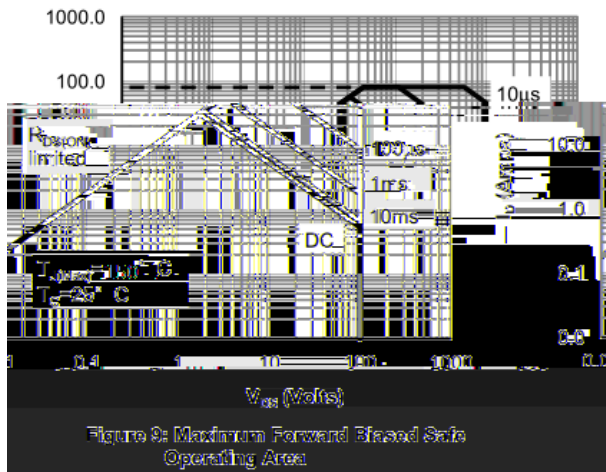
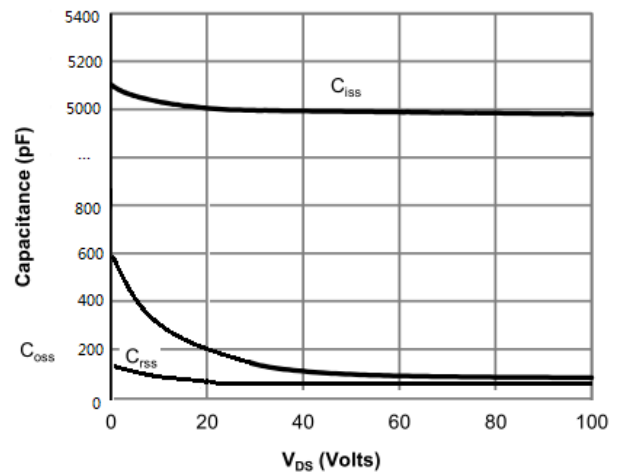
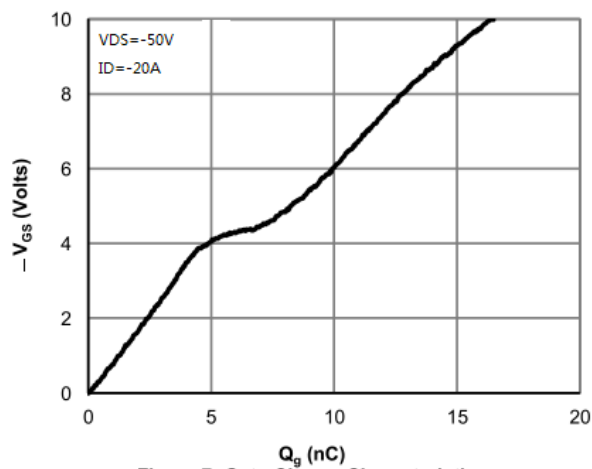
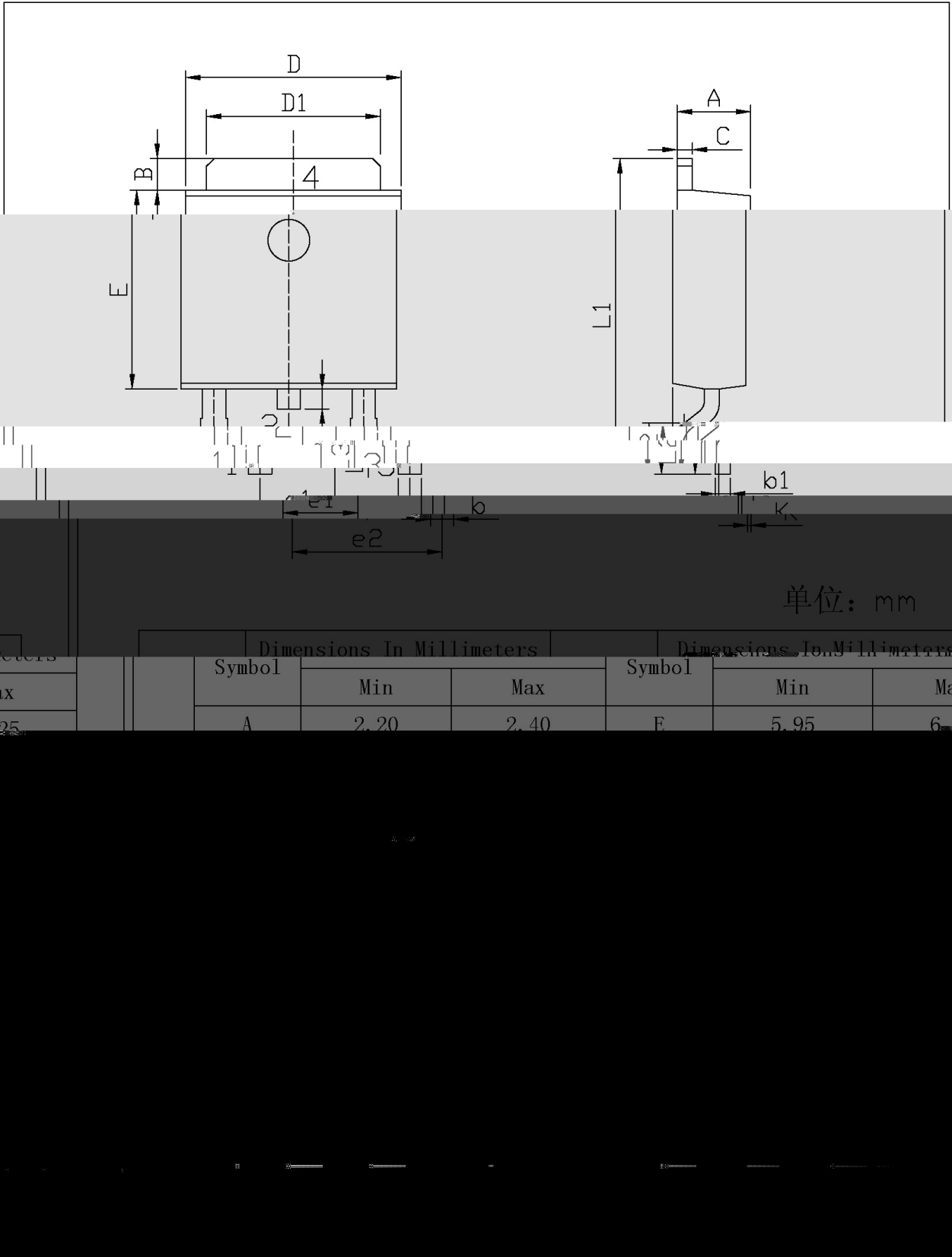


Figure 6: Body Diode Characteristics

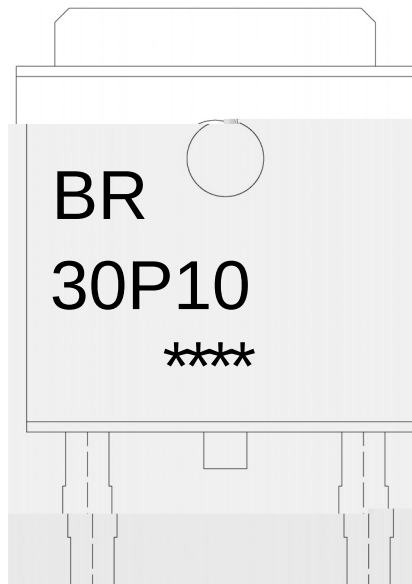
/ Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



BR

30P10

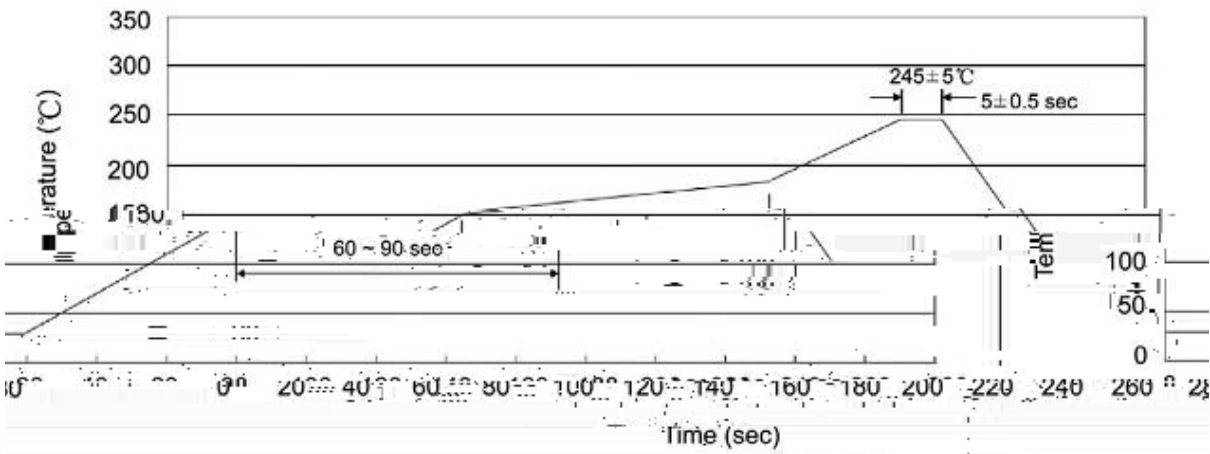
Note:

BR: Company Code

30P10: Product Type Code.

****: Lot No. Code, code change with Lot No.

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Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245 5

5 0.5sec;

2.Peak Temp.:245 5 , Duration:5 0.5sec.
- 3

2 10

/sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260 5 10 1 sec. Temp.:260±5℃ Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	5	25,000	13 ×16	360×360×50	385×257×392