

# BRC5P06MFQ

Rev.A Apr.-2023

## 描述 / Descriptions

SOT23-6 塑封封装 P 沟道 MOS 场效应管。  
P- CHANNEL MOSFET in a SOT23-6 Plastic Package.

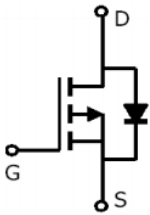
## 特征 / Features

低导通电阻，开关时间快，低导通电压，符合 AEC-Q101 标准高可靠性要求，无卤产品。  
Ultra Low on-resistance. fast switching. Low on voltage, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

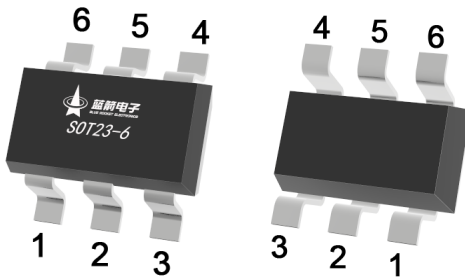
## 用途 / Applications

PWM 应用与负载开关，满足汽车应用的严格要求。  
PWM application & Load switch, Meet the stringent requirements of automotive applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN 1 : D    PIN 2 : D    PIN 3 : G    PIN 4 : S    PIN 5 : D    PIN 6 : D

## 印章代码 / Marking

Marking	Q5P06 ****
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**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit	
Drain-Source Voltage	V <sub>DSS</sub>	-60	V	
Gate-Body Leakage Voltage	V <sub>GSS</sub>	±20	V	
Drain Current - Continuous	I <sub>D</sub>	-5	A	
Power Dissipation (Surface Mounted on FR4 Board, t ≤ 10 sec.)	P <sub>D</sub>	1.5	W	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C	
Maximum Junction-to-Ambient	t ≤ 10s	R <sub>θJA</sub>	118.6	°C/W
Maximum Junction-to-Ambient	Steady-State		161.6	°C/W
Maximum Junction-to-Lead	Steady-State	R <sub>θJL</sub>	83.3	°C/W

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V I <sub>D</sub> =-250μA	-60	-63		V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA	-1	-1.5	-2.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V I <sub>D</sub> =-2A		84	100	mΩ
		V <sub>GS</sub> =-4.5V I <sub>D</sub> =-1A		103	125	mΩ
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-60V V <sub>GS</sub> =0V			-1.0	μA
Gate-Body Leakage.	I <sub>GSS</sub>	V <sub>GS</sub> =-20V			-100	nA
		V <sub>GS</sub> =20V			100	nA
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V I <sub>S</sub> =-1A T <sub>J</sub> =25°C			-1.2	V
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-25V V <sub>GS</sub> =0V f=1.0MHz		885		pF
Output Capacitance	C <sub>oss</sub>			90		
Reverse Transfer Capacitance	C <sub>rss</sub>			64		
Total Gate Charge	Q <sub>g(-10V)</sub>	V <sub>DS</sub> =-30V V <sub>GS</sub> =-10.0V I <sub>D</sub> =-5A		25		nC
Total Gate Charge	Q <sub>g(-4.5V)</sub>			9.6		
Gate-to-Source Charge	Q <sub>gs</sub>			3		
Gate-to-Drain Charge	Q <sub>gd</sub>			7		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-30V V <sub>GS</sub> =-10V R <sub>L</sub> =7.5Ω R <sub>G</sub> =3Ω		8		ns
Turn-On Rise Time	t <sub>r</sub>			4		
Turn-Off Delay Time	t <sub>d(off)</sub>			32		
Turn-Off Fall Time	t <sub>f</sub>			7		

电参数曲线图 / Electrical Characteristic Curve

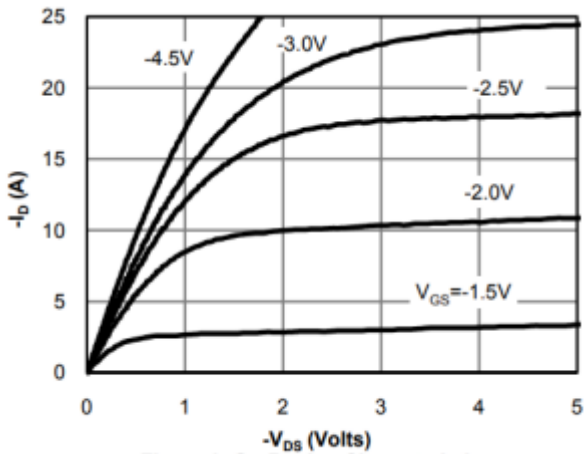


Figure 1: On-Region Characteristics

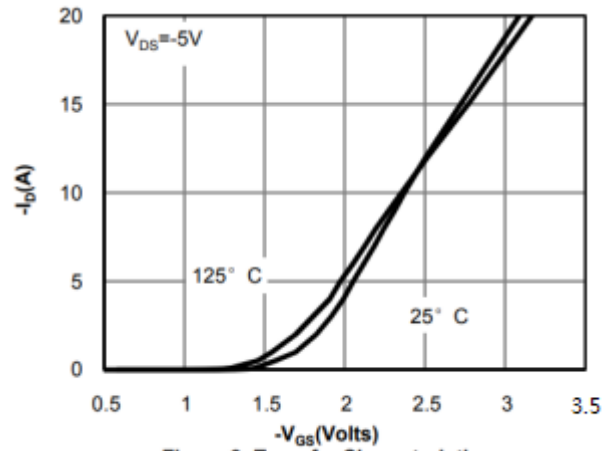


Figure 2: Transfer Characteristics

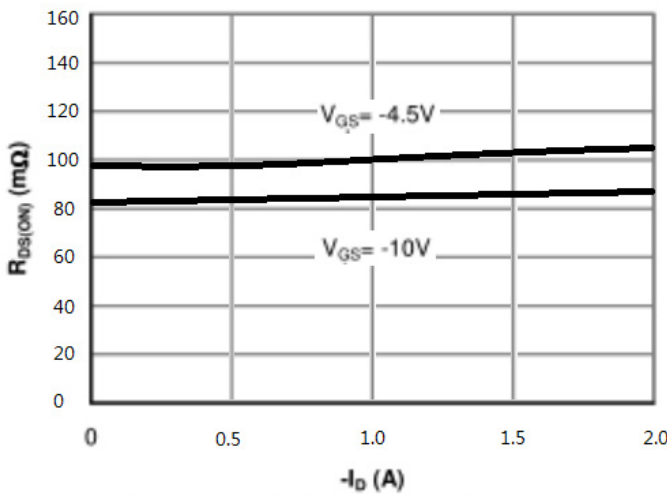


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

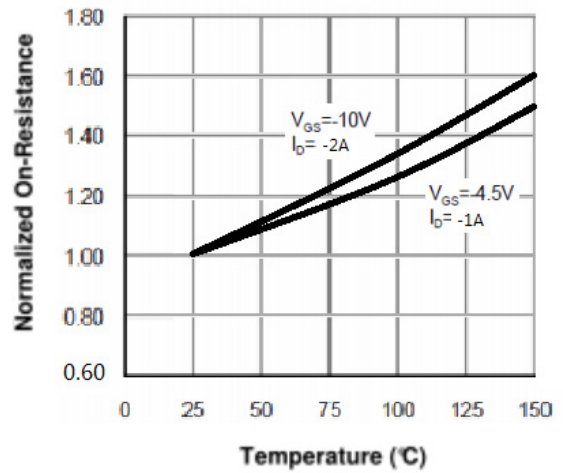


Figure 4: On-Resistance vs. Junction Temperature

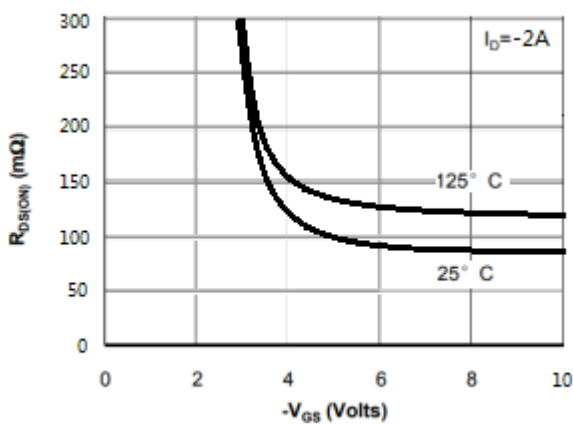


Figure 5: On-Resistance vs. Gate-Source Voltage

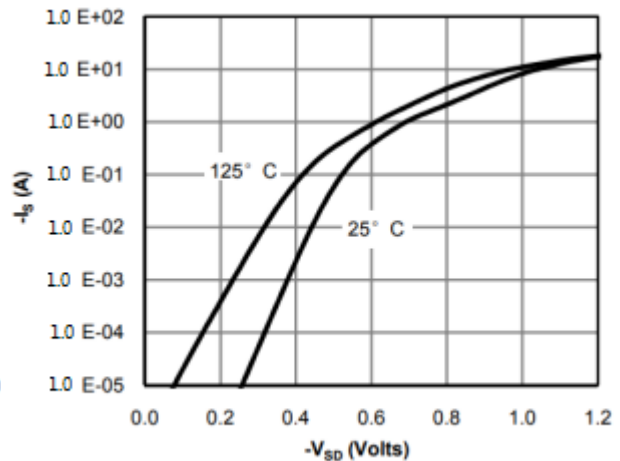


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

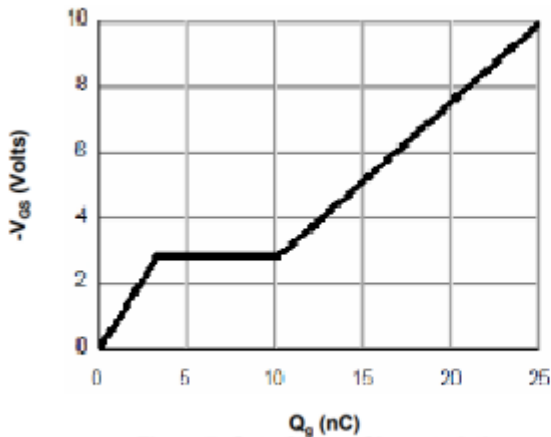


Figure 7: Gate-Charge Characteristics

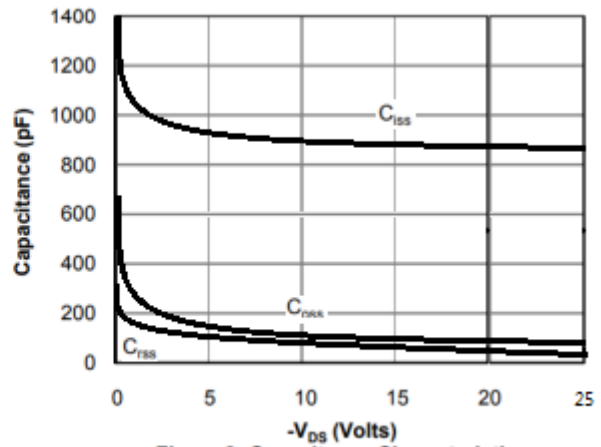


Figure 8: Capacitance Characteristics

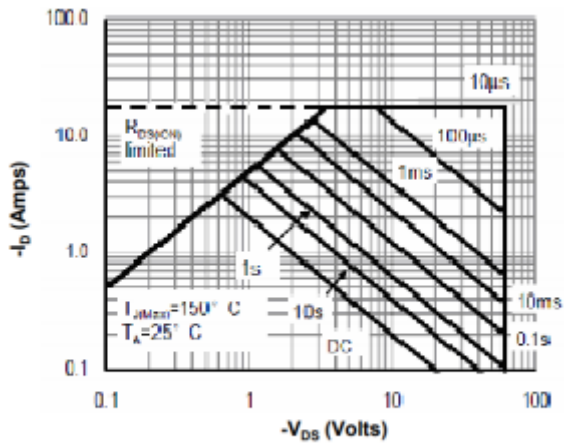


Figure 9: Maximum Forward Biased Safe Operating Area

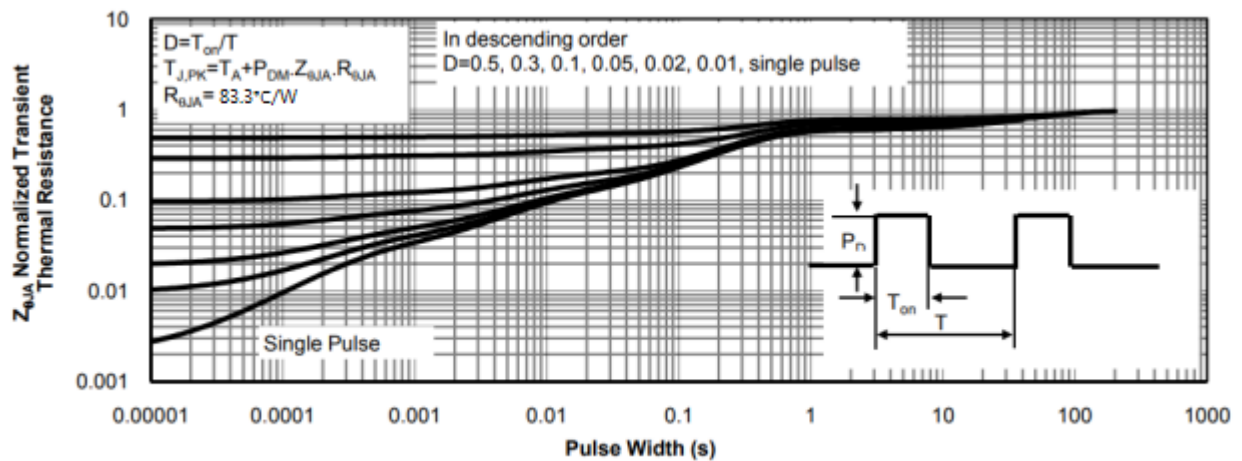
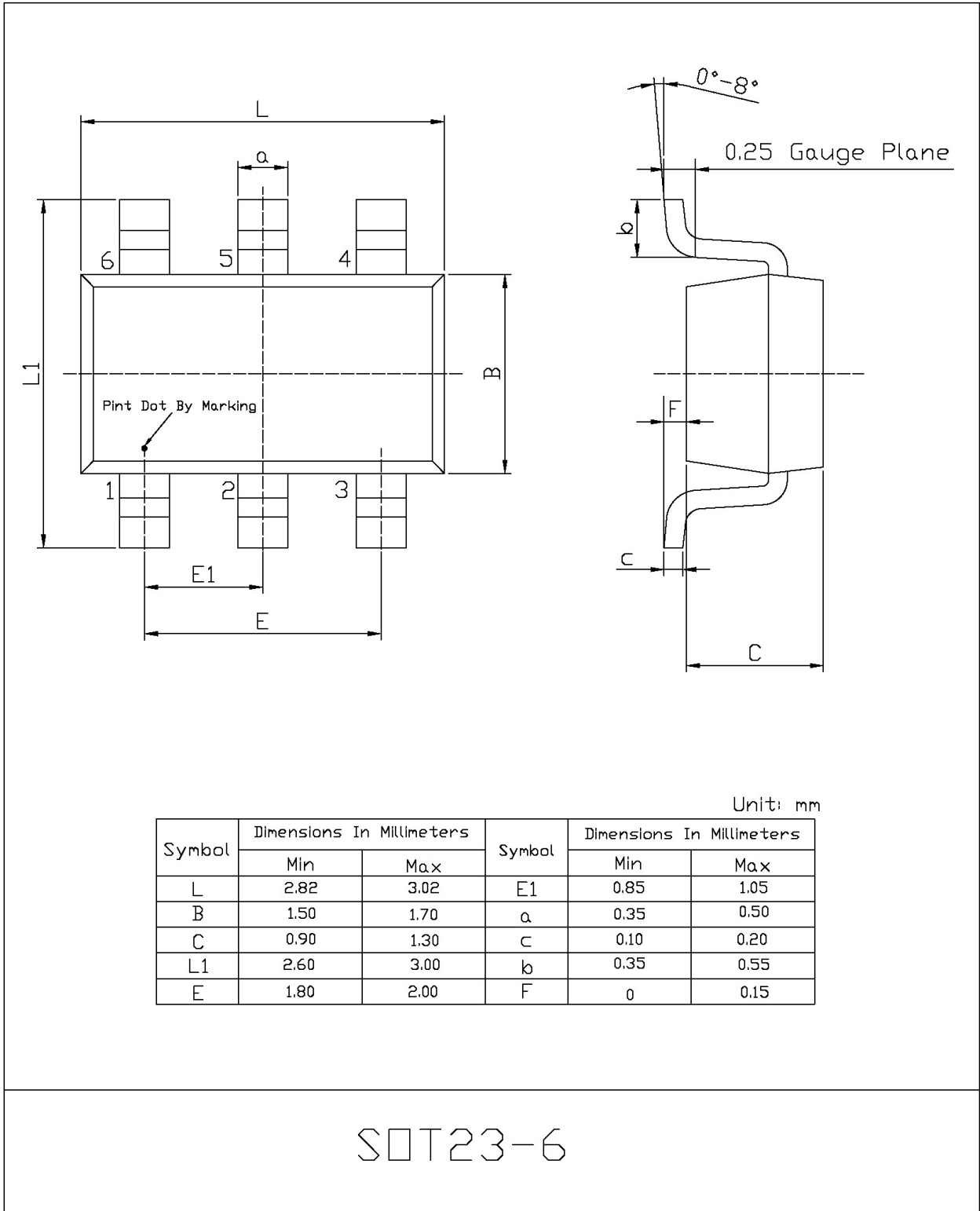


Figure 10: Normalized Maximum Transient Thermal Impedance

**外形尺寸图 / Package Dimensions**



**印章说明 / Marking Instructions**



说明：

Q： 为汽车无卤产品标识

5P06： 为型号代码

\*\*\*\*： 为生产批号代码，随生产批号变化

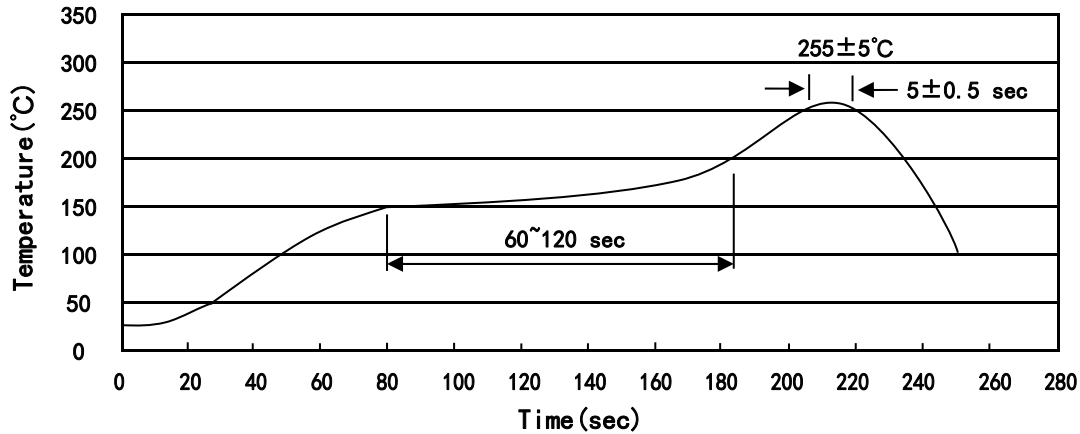
Note:

Q: Automobile halogen-free product Code

5P06 : Product Type

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

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**



说明：

- 1、预热温度 150 ~ 200°C，时间 60 ~ 120sec;
- 2、峰值温度  $255 \pm 5^\circ\text{C}$ ，时间持续为  $5 \pm 0.5 \text{ sec}$ ;
- 3、焊接制程冷却速度为  $2 \sim 10^\circ\text{C}/\text{sec}$ .

Note:

- 1.Preheating:150~200°C, Time:60~120sec.
- 2.Peak Temp.: $255 \pm 5^\circ\text{C}$ , Duration: $5 \pm 0.5 \text{ sec}$ .
3. Cooling Speed:  $2 \sim 10^\circ\text{C}/\text{sec}$ .

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度： $260 \pm 5^\circ\text{C}$

时间： $10 \pm 1 \text{ sec}$ .

Temp.: $260 \pm 5^\circ\text{C}$

Time: $10 \pm 1 \text{ sec}$

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	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
SOT23-5/6	3,000	10	30,000	4	120,000	7" × 8	210×205×205	445×230×435

**使用说明 / Notices**