

### 描述 / Descriptions

TO-92 塑封封装 N 沟道 MOS 场效应管。N-CHANNEL MOSFET in a TO-92 Plastic Package.

### 特征 / Features

高可靠性，适用无铅及绿色设备(符合 ROHS)，带 ESD 保护。

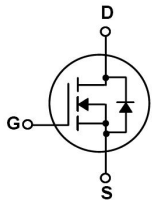
High Reliable;Lead Free and Green Devices Available( RoHS Compliant), ESD protected.

### 用途 / Applications

适用电视机等电源开关电路。

Power management in TV Inverter. Power Switch.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : Source

PIN 2 : Drain

PIN 3 : Gate

### 放大及印章代码 / hFE Classifications & Marking

见印章说明。See Marking Instructions.

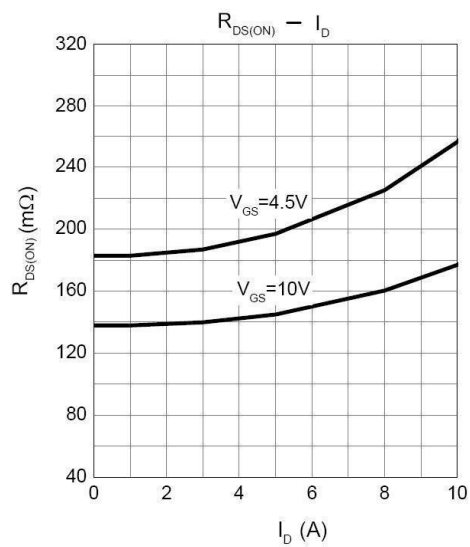
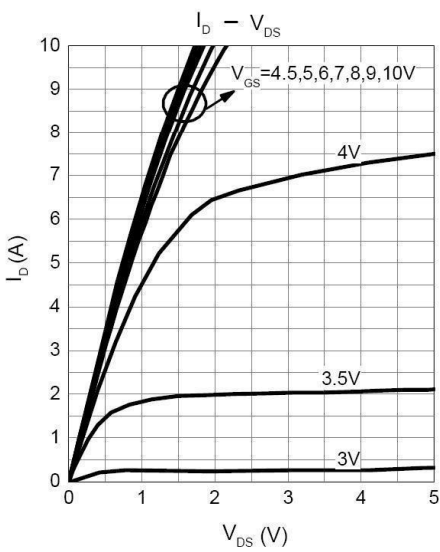
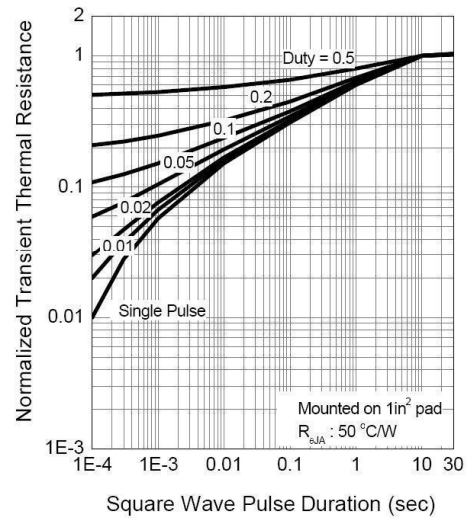
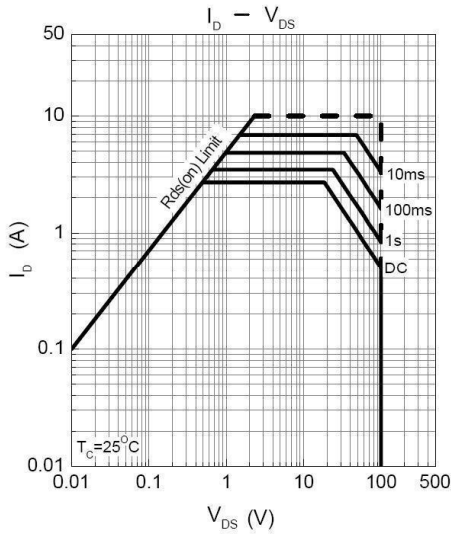
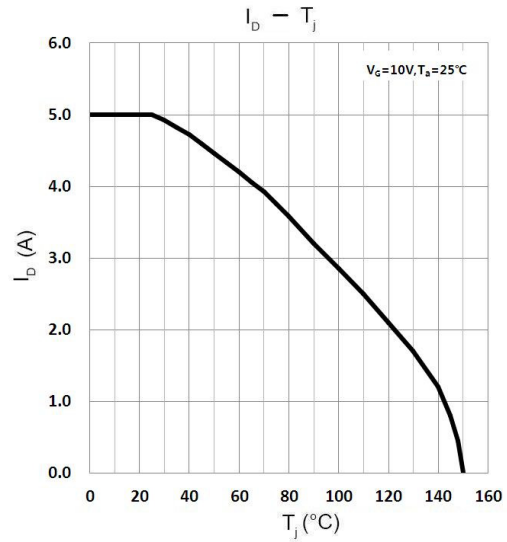
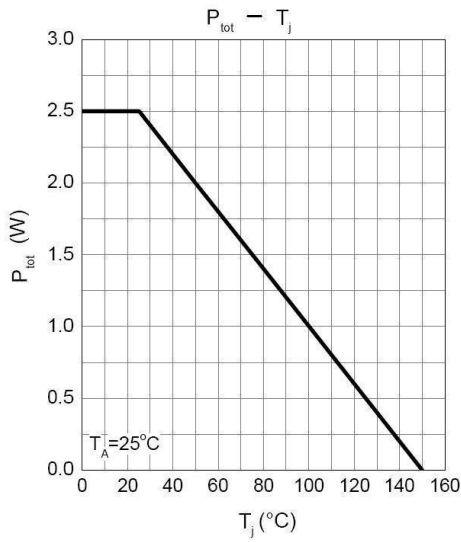
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Drain Current – Continuous	$I_D$	5.0	A
Drain Current - Pulsed	$I_{DM}$	20	A
Gate-Source Voltage	$V_{GSS}$	±20	V
Power Dissipation	$P_D$	0.83	W
Junction Temperature Range	$T_J$	150	°C
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	150	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C

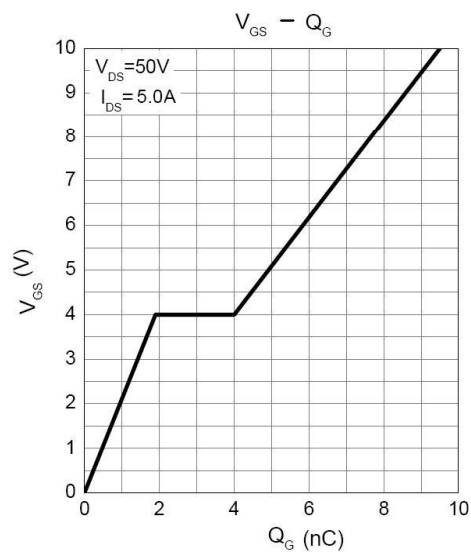
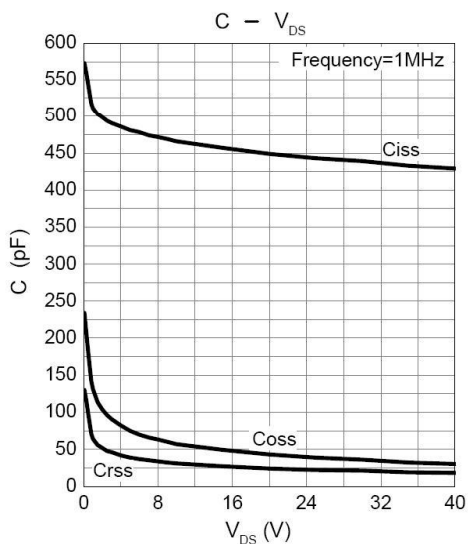
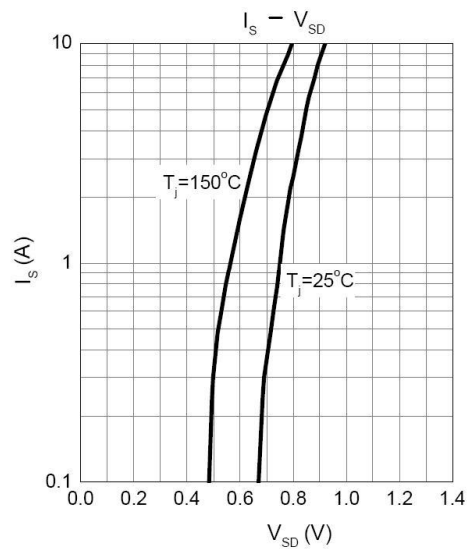
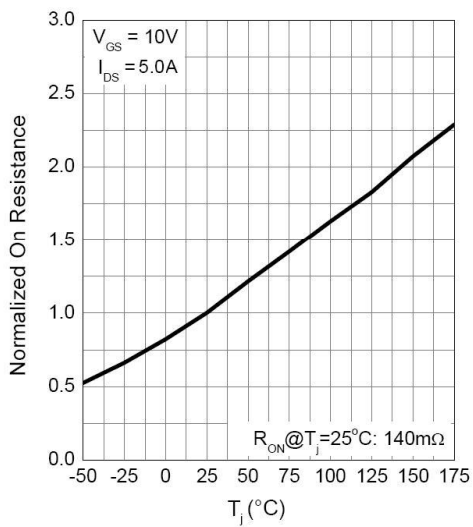
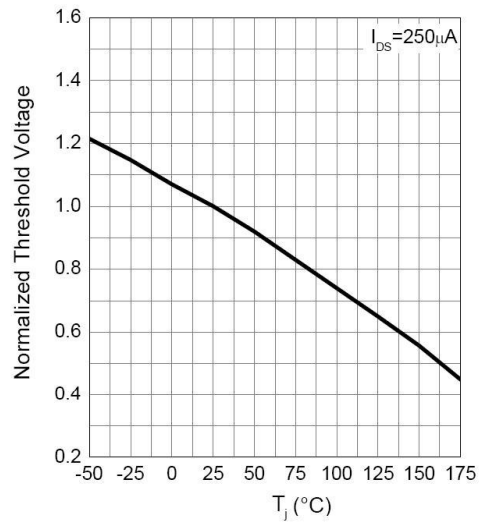
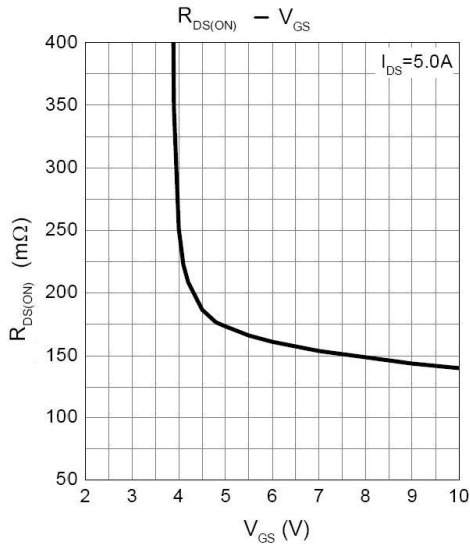
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	$BV_{DSS}$	$V_{GS}=0V$ $I_{DS}=250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V$ $V_{GS}=0V$			1	$\mu A$
		$T_J=85^\circ C$			20	$\mu A$
Gate–Body Leakage.	$I_{GSS}$	$V_{GS}=\pm 16V$ $V_{DS}=0V$			±10	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_{DS}=250\mu A$	1		3	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	$V_{GS}=4.5V$ $I_D=2A$			235	m $\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=10V$ $I_D=5A$			175	m $\Omega$
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_F=3A$		0.8	1.1	V
Reverse Recovery Time	$T_{rr}$	$I_{DS}=5A$		36		ns
Reverse Recovery Charge	$Q_{rr}$	$d_{SD}/dt=100A/\mu s$		49		nC
Input Capacitance	$C_{iss}$	$V_{DS}=0V$ $V_{GS}=30V$ $f=1.0MHz$		440		pF
Output Capacitance	$C_{oss}$			36		pF
Reverse Transfer Capacitance	$C_{rss}$			20		pF
Turn–On Delay Time	$t_{d(on)}$	$I_{DS}=1A$ $V_{GEN}=10V$ $V_{DD}=30V$ $R_L=30\Omega$ $R_G=6\Omega$		11	21	ns
Turn–On Rise Time	$t_r$			10	19	ns
Turn–Off Delay Time	$t_{d(off)}$			21	39	ns
Turn–Off Fall Time	$t_f$			13	24	ns
Total Gate Charge	$Q_g$	$V_{DS}=50V$ $V_{GS}=10V$ $I_{DS}=5A$		9.5	13	nC
Gate- Source Charge	$Q_{gs}$			1.9		nC
Gate- Drain Charge	$Q_{gd}$			2.1		nC

**电参数曲线图 / Electrical Characteristic Curve**



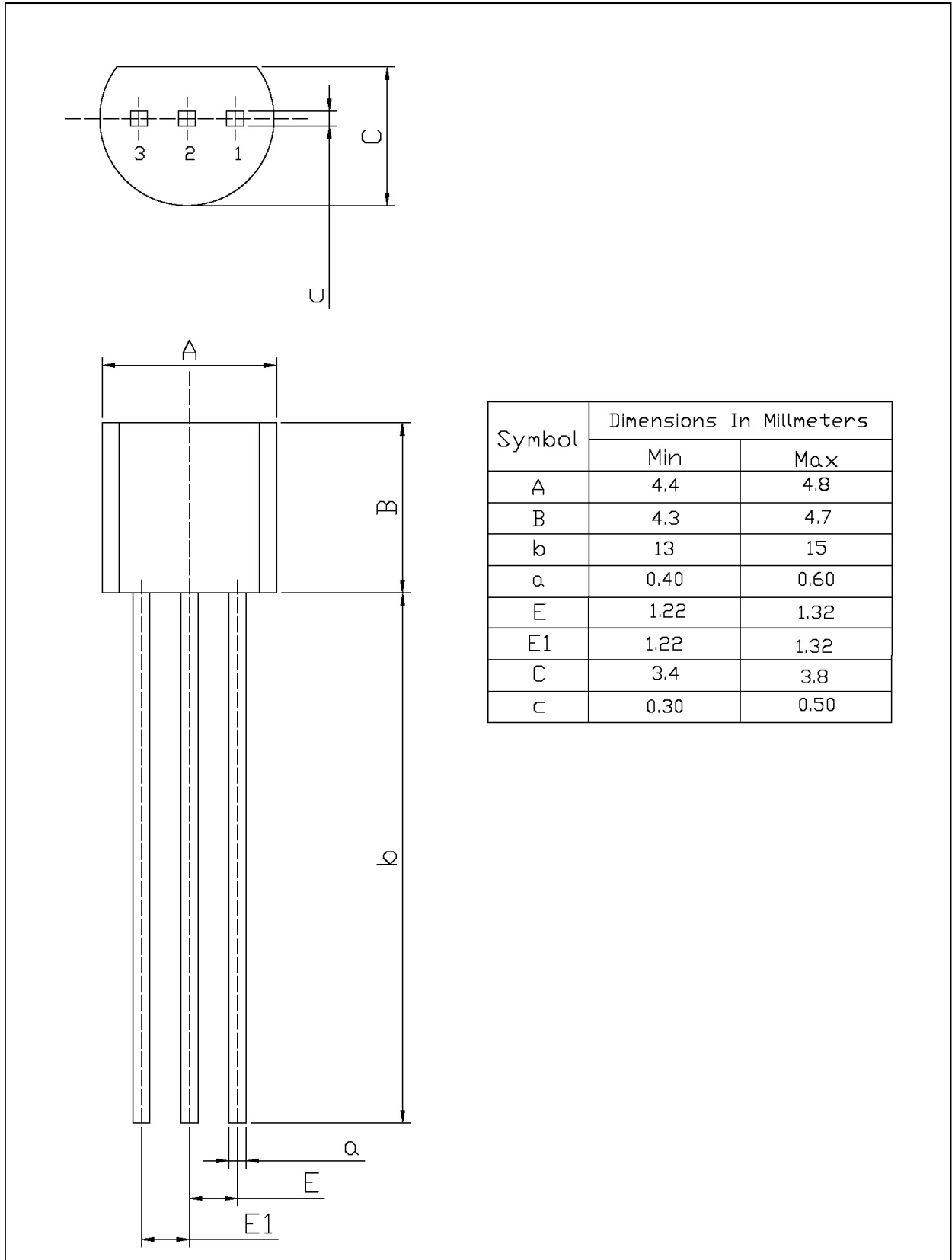
**电参数曲线图 / Electrical Characteristic Curve**



外形尺寸图 / Package Dimensions

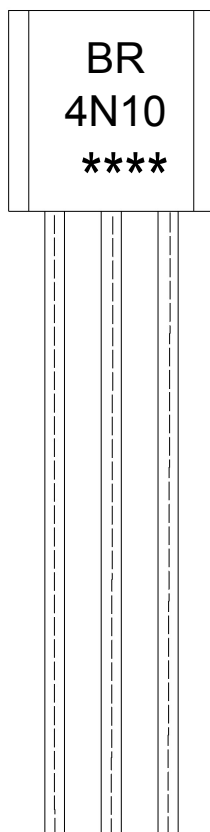
TO-92

Unit: mm



Symbol	Dimensions In Millimeters	
	Min	Max
A	4.4	4.8
B	4.3	4.7
b	13	15
a	0.40	0.60
E	1.22	1.32
E1	1.22	1.32
C	3.4	3.8
c	0.30	0.50

**印章说明 / Marking Instructions**



说明：

BR: 为公司代码

4N10 : 为型号代码

\*\*\*\* : 为生产批号代码，随生产批号变化。

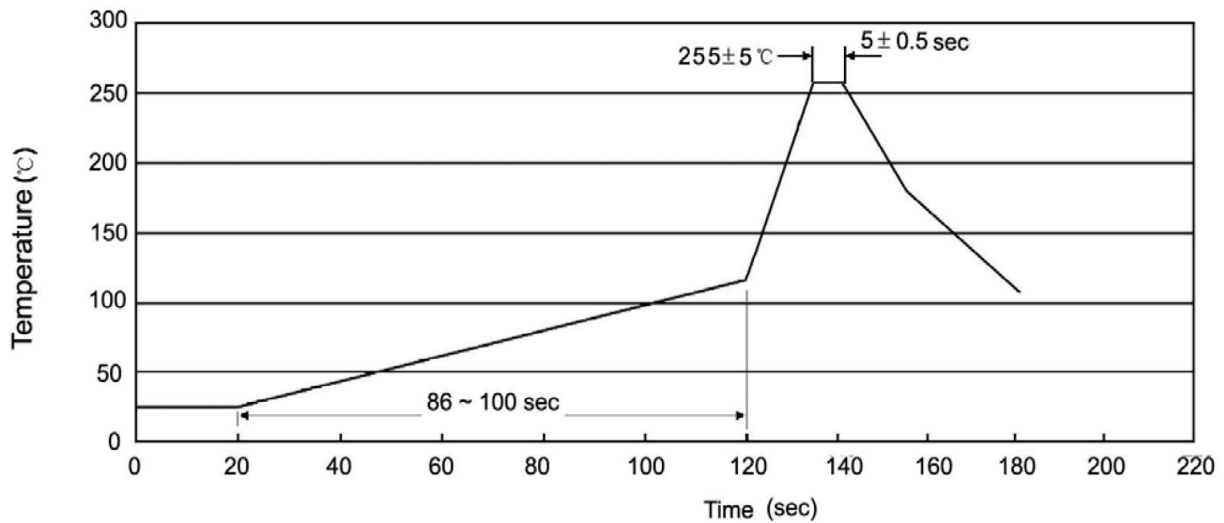
Note:

BR: Company Code.

4N10: Product Type.

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

**波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)**



说明：

- 1、预热温度 25 ~ 150°C，时间 60 ~ 90sec；
- 2、峰值温度 255±5°C，时间持续为 5±0.5sec；
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:25~150°C, Time:60~90sec.
- 2.Peak Temp.:255±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

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

温度：270±5°C

时间：10±1 sec.

Temp:270±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
T0-92	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195
	1,000	10	10,000	10	100,000	135×190	237×172×102	560×245×375

编带包装 / AMMO

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)	
	Units/tape 只/纸带	Tape/Inner Box 纸带/盒	Rows/Inner Box 纸带层/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Inner Box 盒	Outer Box 箱
T0-92	3,000	1	120	10	30,000	328×230×42	小箱 480×346×235, 大箱 547×407×268

**使用说明 / Notices**