

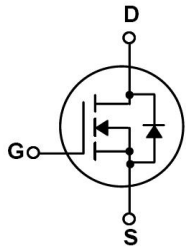
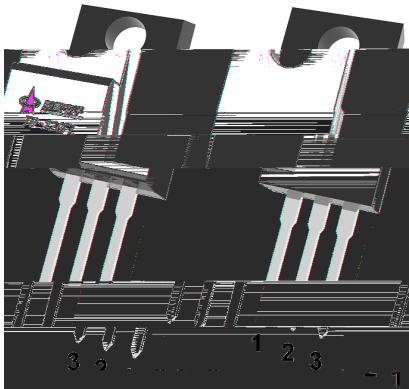
/ Descriptions

TO-220FL N MOS

N-Channel MOSFET in a TO-220FL Plastic Package.

/ Features $V_{DS}=500V$ $I_D=24A$ $R_{DS(ON)}@10V \leq 0.25\Omega$ (Typ. 0.17Ω) $R_{DS(ON)}@6V \leq 0.3\Omega$ (Typ. $0.18m\Omega$)**/ Applications**

Designed for high voltage, high speed power switching applications such as high efficiency switched mode power supplies, active power factor correction.

/ Equivalent Circuit**/ Pinning**

PIN1 G

PIN 2 D

PIN 3 S

/ Marking

See Marking Instructions.

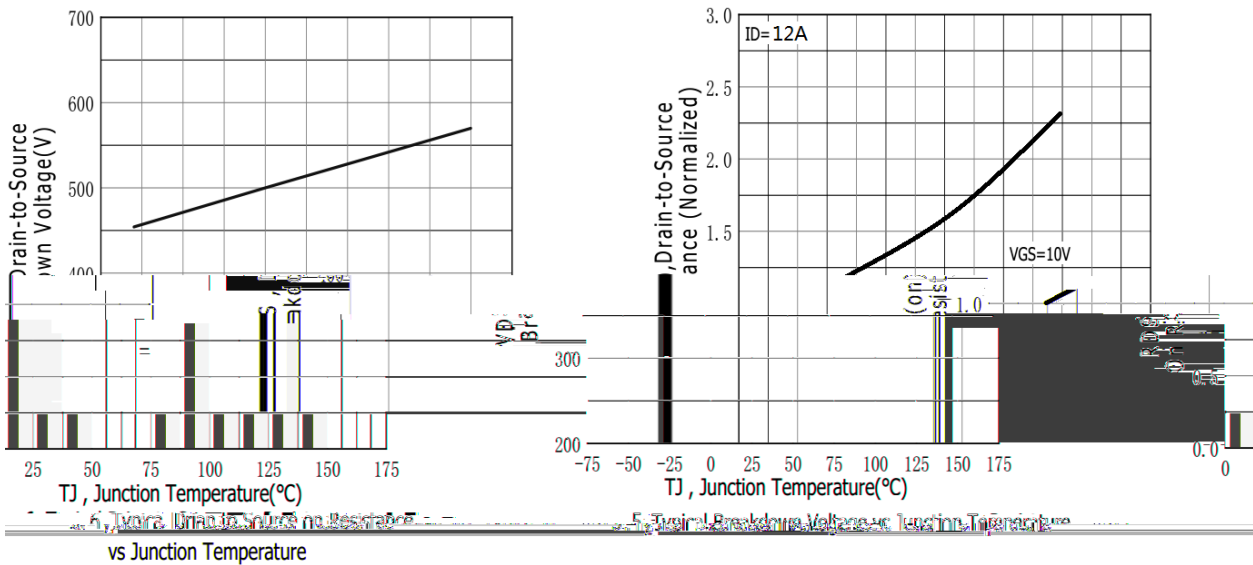
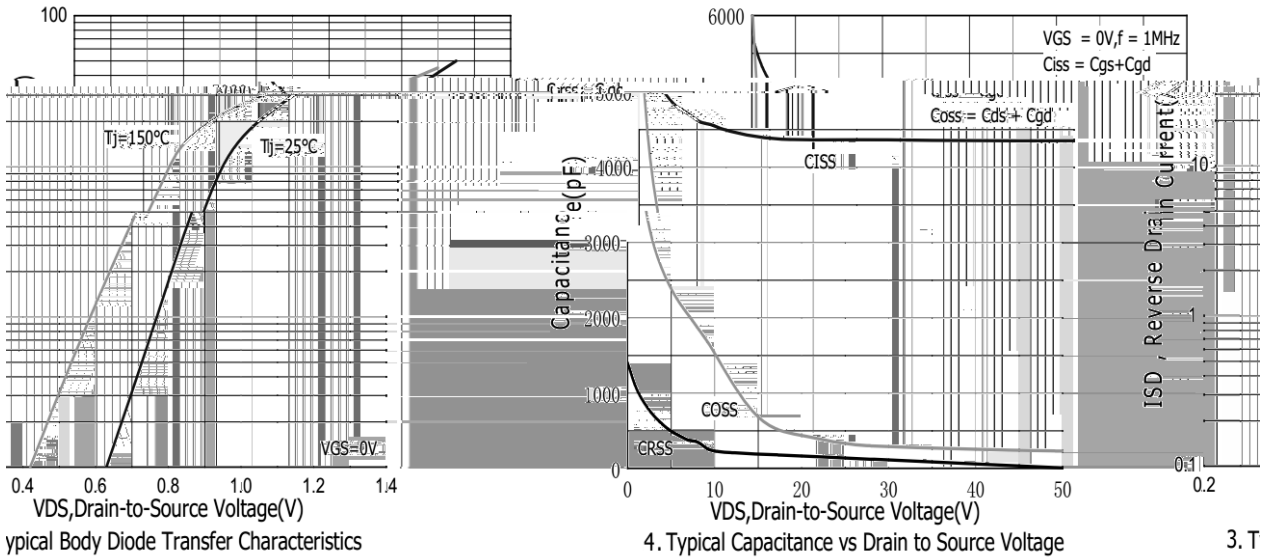
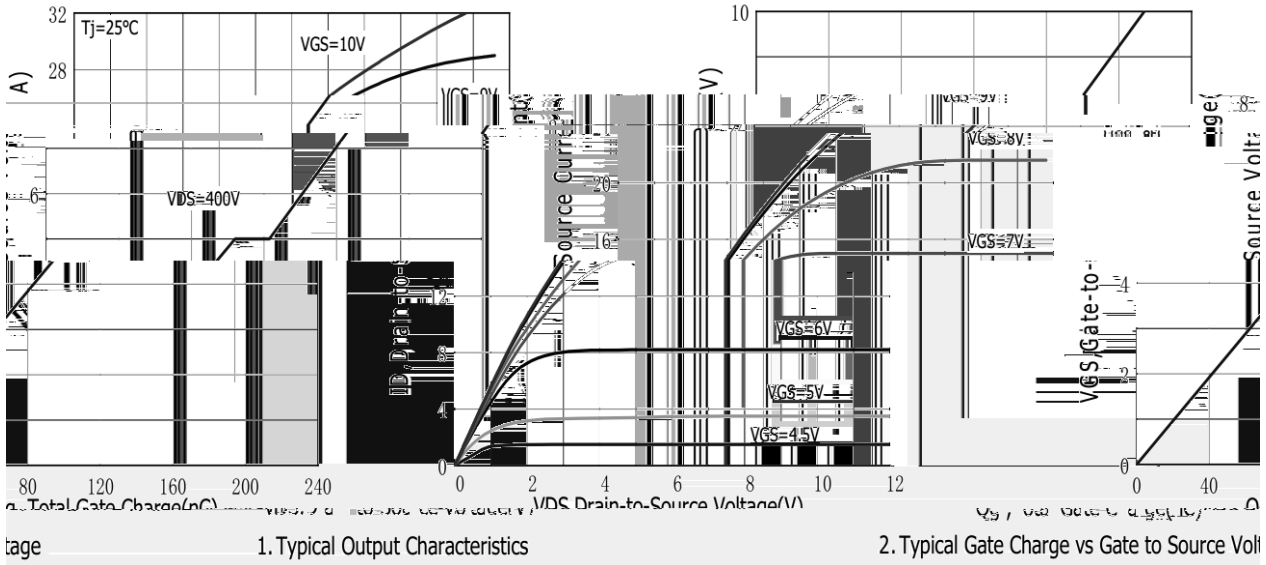
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-to-Source Breakdown Voltage	V_{DS}	500	V
Continuous Drain Current	$I_D(T_c=25^\circ\text{C})$	24	A
Drain Current Pulsed	I_{DM}	90	A
Gate-to-Source Voltage	V_{GS}	± 30	V
Avalanche Current	I_{AS}	21	A
Single Pulse Avalanche Energy	E_{AS}	1960	mJ
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	50	W
Junction Temperature Range	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ\text{C}$
Thermal Resistance Junction-Case	R_{JC}	2.5	$^\circ\text{C/W}$

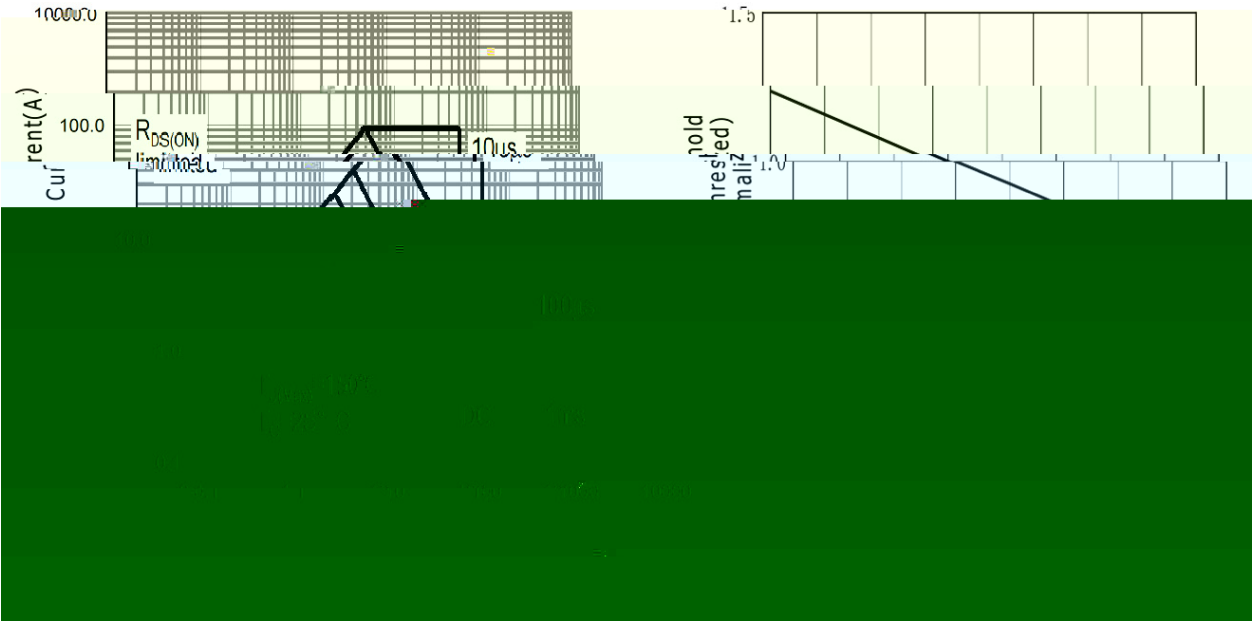
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	V_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	500	550		V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=500V$ $V_{GS}=0V$			1.0	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=12A$		0.17	0.25	Ω
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=6V$ $I_D=6A$		0.18	0.3	Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=24A$			1.4	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		4364		pF
Output Capacitance	C_{oss}			311		
Reverse Transfer Capacitance	C_{rss}			138		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V$ $I_D=24A$ $R_G=10\Omega$		28.8		ns
Rise Time	t_r			5.6		
Turn-Off Delay Time	$t_{d(off)}$			106.4		
Fall Time	t_f			9.6		
Total Gate Charge	Q_g	$V_{DS}=400V$ $I_D=24A$ $V_{GS}=10V$		214		nC
Gate-Source Charge	Q_{gs}			104		
Gate-Drain Charge	Q_{gd}			19		

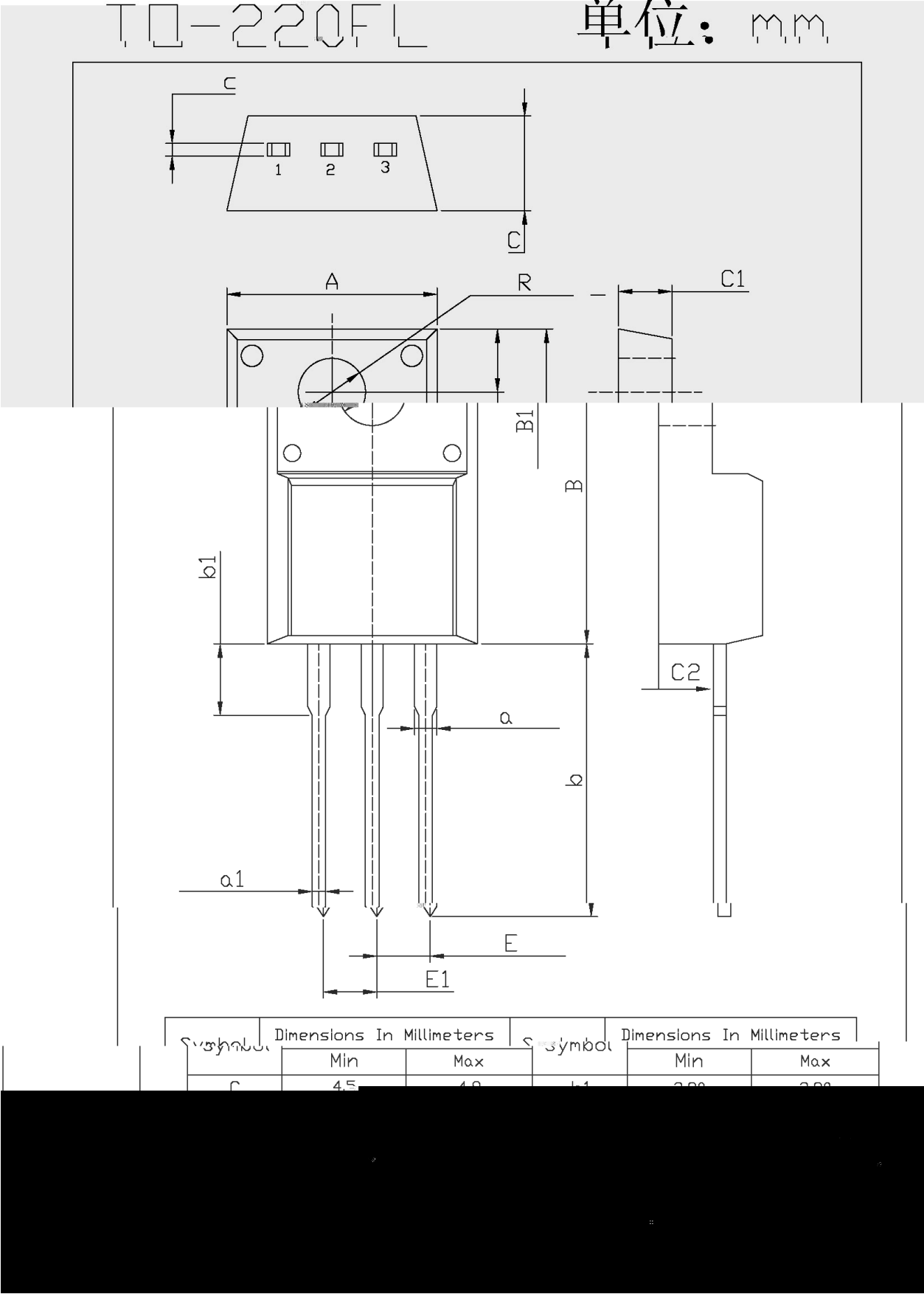
/ Electrical Characteristic Curve

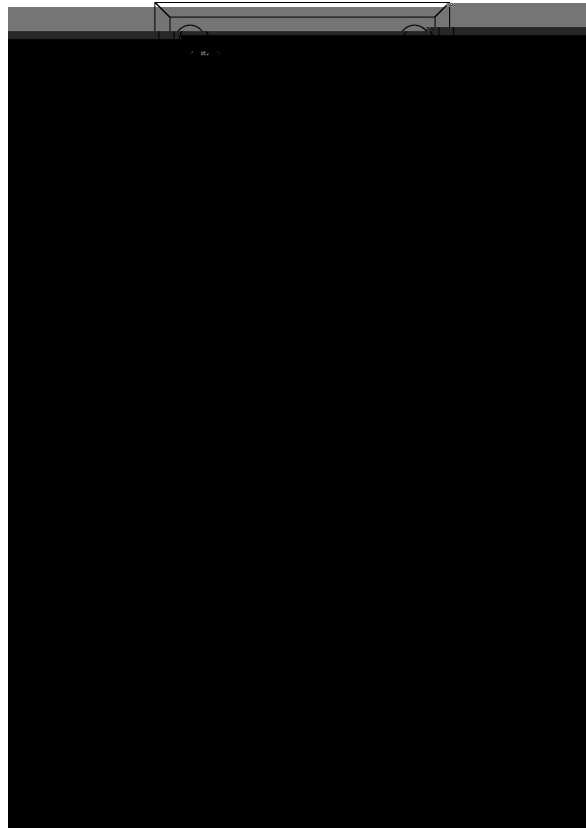


/ Electrical Characteristic Curve

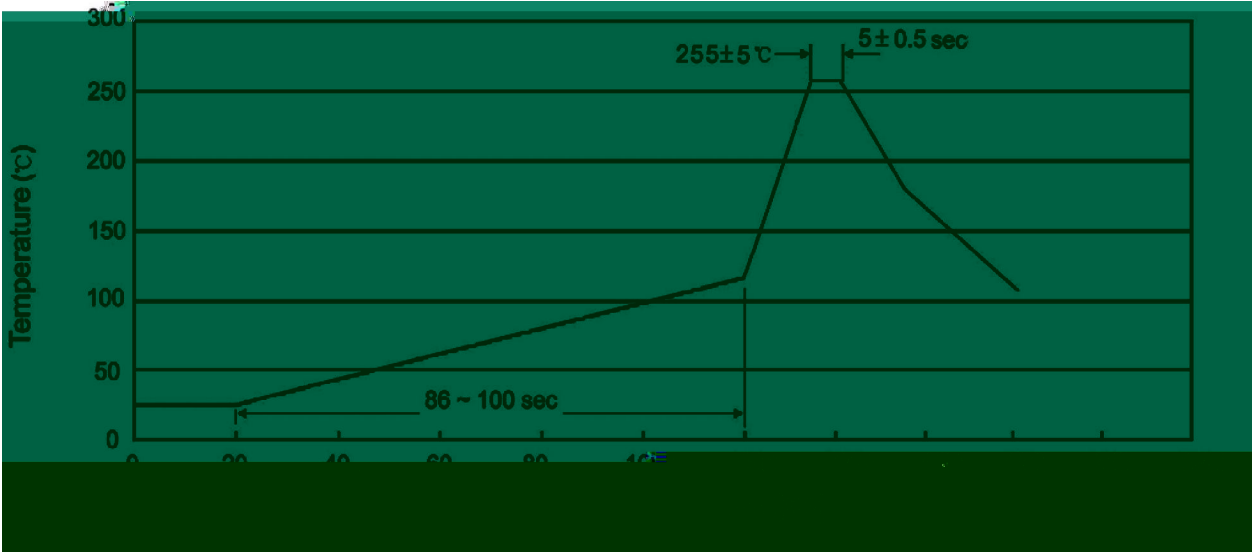


/ Package Dimensions





() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- 1

25 150

60 90sec;
- 2

255±5

5±0.5sec;
- 3

2 10

/sec.
- 1.Preheating:25~150

, Time:60~90sec.
- 2.Peak Temp.:255±5

, Duration:5±0.5sec.
3. Cooling Speed: 2~10

/sec.

/ Resistance to Soldering Heat Test Conditions

270±5 10±1 sec. Temp.:270±5℃ Time:10±1 sec

/ Packaging SPEC.

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-220FL	50	20	1,000	5	5,000	532×33×7.0	555×164×50	575×290×180

/ Notices