

/ Descriptions

TO-220FL N

N-CHANNEL 700V Super-Junction Power MOSFET in a TO-220FL Plastic Package.

/ Features

 $R_{DS(on)} \times Q_g$ 100%

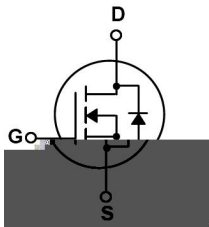
RoHS

Very low $R_{DS(on)} \times Q_g$, 100% avalanche tested, RoHS compliant, HF product.

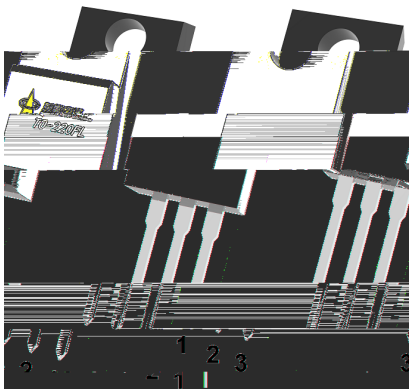
/ Applications

For switch mode power supply, uninterruptible power supply, power factor correction.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

/ Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	700	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	7	A
Drain Current - Pulsed	I_{DM}	28	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	200	mJ
Avalanche Current	I_{AS}	6.1	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	31	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Junction-to-Case	R_{JC}	4	$^\circ\text{C}/\text{W}$
Junction-to-Ambient	R_{JA}	62.5	$^\circ\text{C}/\text{W}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\text{ A}$	700	745		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700V$ $V_{GS}=0V$ $T_J=25^\circ\text{C}$			1.0	A
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{ A}$	2.5	3.4	4.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=3.5A$		495	600	m Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=7A$ T_R T				V

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_S				7	A
Total Gate Charge	Q_g	$V_{DS}=560V \quad I_D=7.0A$ $V_{GS}=10V$		17		nC
Gate-Source Charge	Q_{gs}			6.5		nC
Gate-Drain Charge	Q_{gd}			7		nC
Reverse recovery time	T_{rr}	$V_R=50V, \quad I_F=7.0A,$ $dI_F/dt=100A/s$		250		ns
Reverse recovery charge	Q_{rr}			2.8		uC

/ Electrical Characteristic Curve

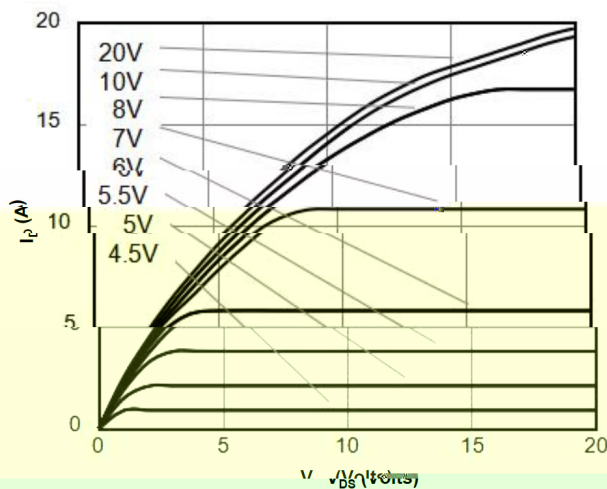


Figure 1: On-Region Characteristics

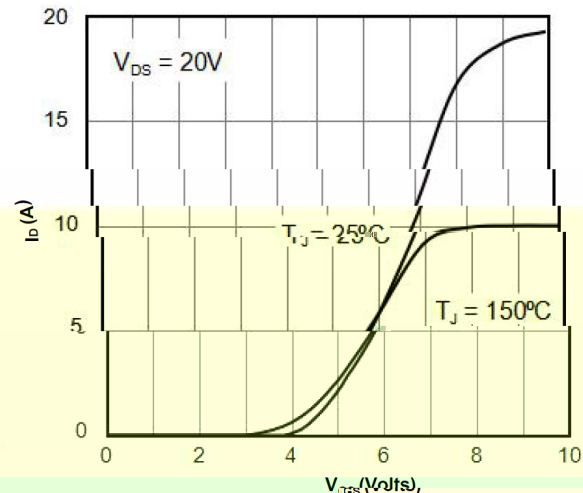


Figure 2: Transfer Characteristics

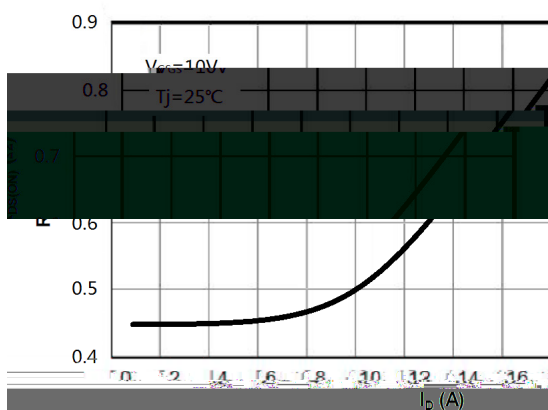


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

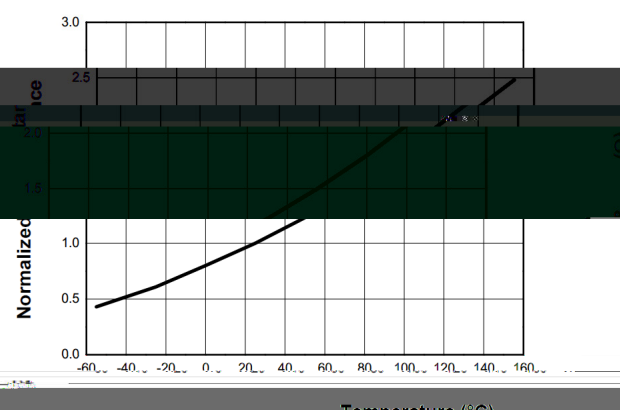


Figure 4: On-Resistance vs. Junction Temperature

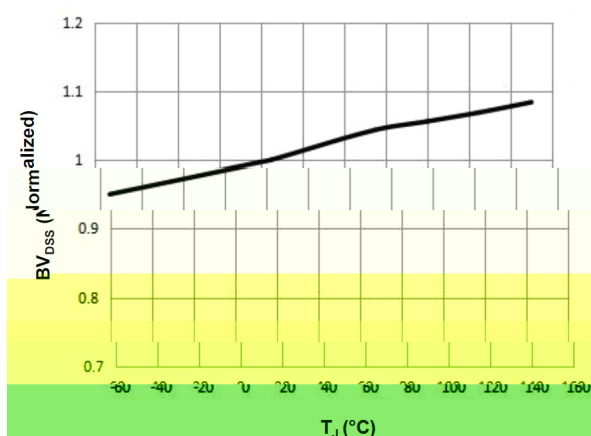


Figure 5: Breakdown vs. Junction Temperature

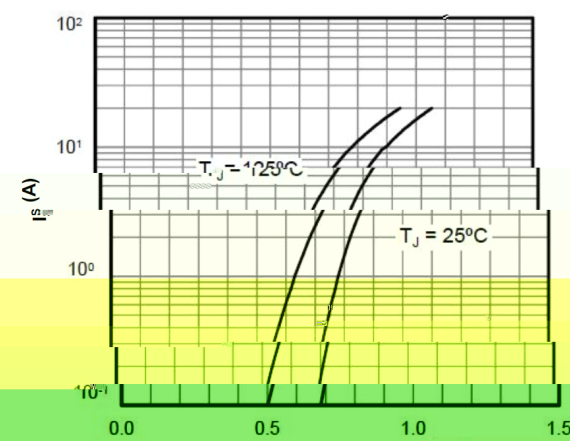


Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve

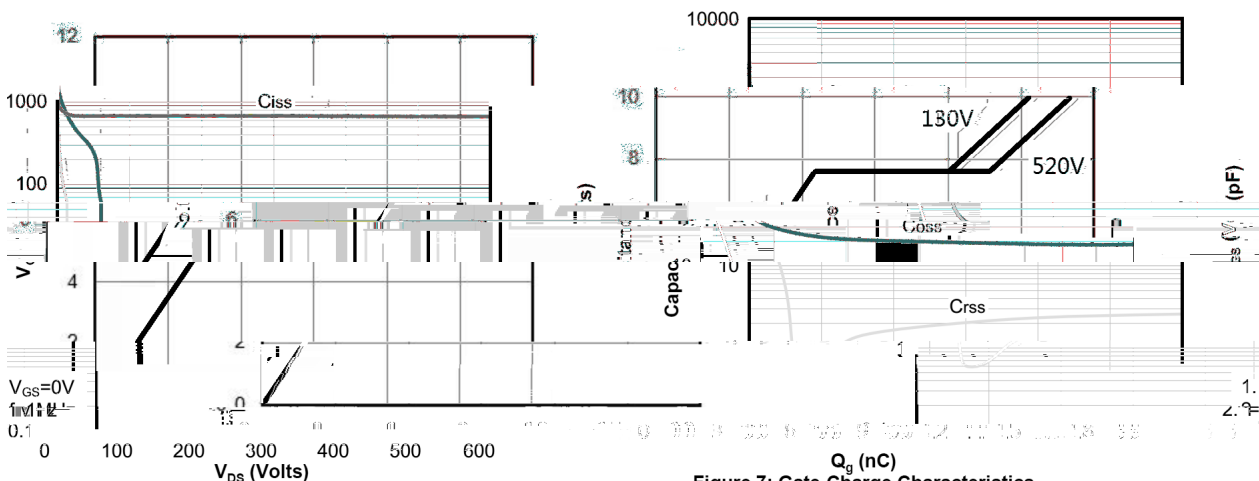


Figure 8: Capacitance Characteristics

Figure 7: Gate-Charge Characteristics

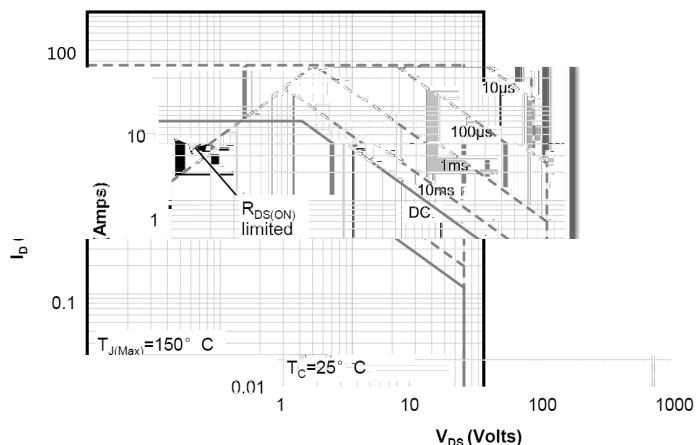
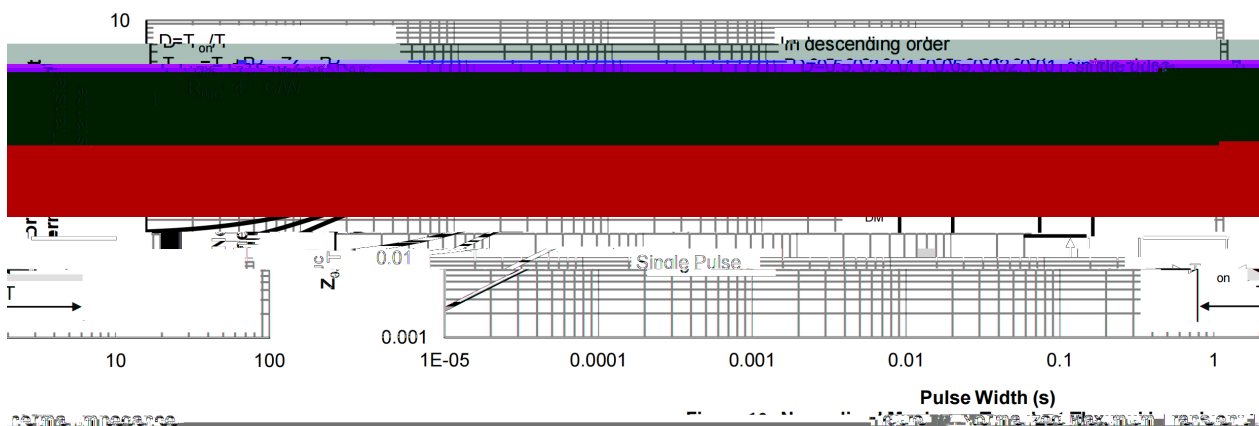
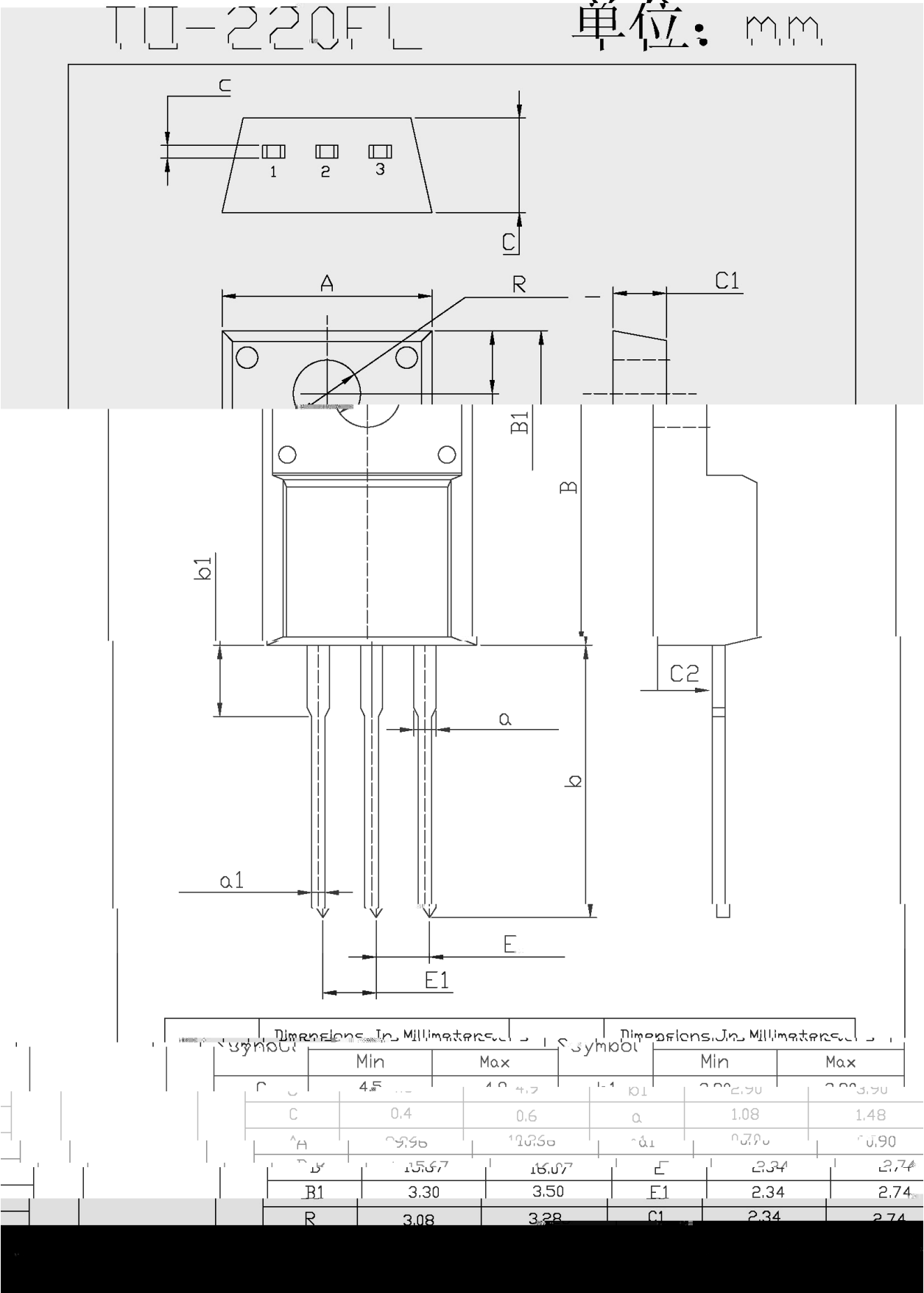


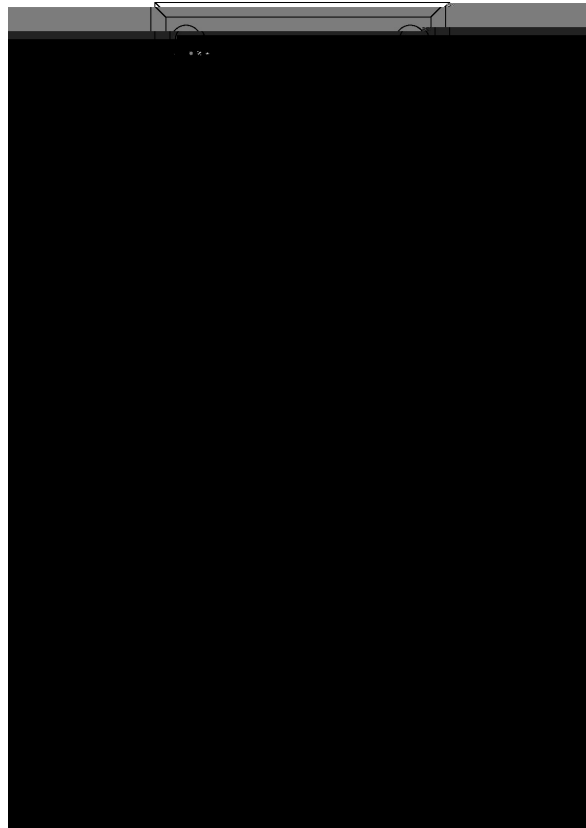
Figure 9 : Maximum Forward Biased Safe Operating Area



/ Package Dimensions



/ Marking Instructions



BR

70R600C

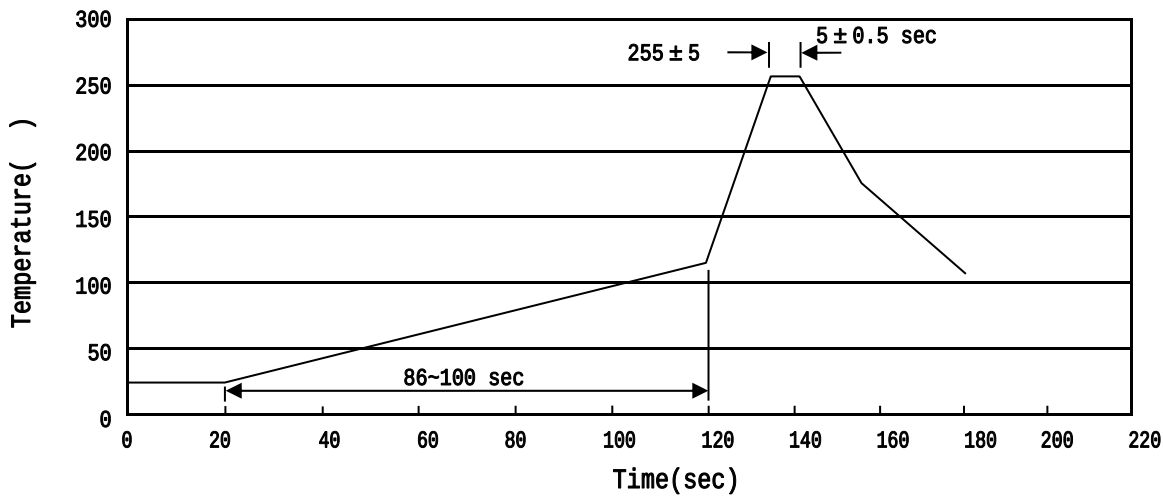
Note:

BR: Company Code

70R600C: Product Type Code

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

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



Note:

- 1

25 150

60 90sec;

1.Preheating:25~150 , Time:60~90sec.
- 2

255 5

5 0.5sec;

2.Peak Temp.:255 5 , Duration:5 0.5sec.
- 3

2 10 /sec.

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