

Descriptions

This is 700V 6A N-Channel Enhancement Mode Power MOSFET

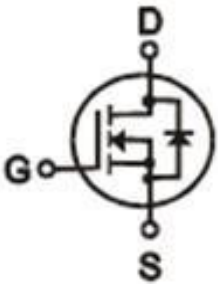
Features

- $V_{DS}=700V, R_{DS(ON)}=1.35\Omega, I_D=6.0A$
- LOW THERMAL RESISTANCE
- FAST SWITCHING
- HIGH INPUT RESISTANCE
- RoHS COMPLIANT

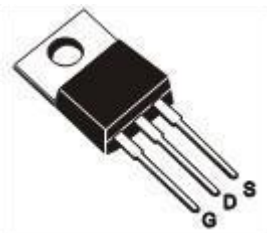
Applications

- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

Equivalent Circuit



Pinning



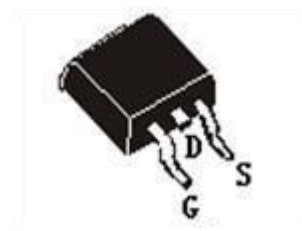
TO-220



TO-220FP(L)



TO-262



TO-263

Absolute Maximum Ratings (TC=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	VDS	700	V
gate-source Voltage	VGS	±30	V
Continuous Drain Current TC=25°C	ID	6.0*	A
Continuous Drain Current TC= 100°C	ID	4.2*	A
Drain Current - Pulsed ①	IDM	24*	A
Power Dissipation	Ptot	TO-220F(L):40	W
		TO-220/262/263:140	
Junction Temperature	Tj	150	°C
Storage Temperature	TSTG	-55-150	°C
Single Pulse Avalanche Energy ②	EAS	324	mJ

Drain current limited by maximum junction temperature

Electronic Characteristics (Tc=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BVDSS	VGS=0V, ID=250μA	700			V
Breakdown Voltage Temperature Coefficient	$\Delta BVDSS / \Delta T_j$	ID=250uA, Referenced to 25° C		0.65		V/° C
Gate Threshold Voltage	VGS(TH)	VGS=VDS, ID=250μA	2.0		4.0	V
Drain-source Leakage Current	IDSS	VDS =700V, VGS =0V, Tj=25。 C			1	μA
		VDS =560V, VGS =0V, Tj=125。 C			10	μA
Forward Transconductance	gfs	VDS =15V, ID=3.0A ③		6.0		S

Electronic Characteristics (Tc=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gate-body Leakage Current (VDS =0)	IGSS	VGS =±30V			±100	nA
Static Drain-source On Resistance	RDS(ON)	VGS =10V, ID=3.0A③		1.35	1.6	Ω
Input Capacitance	Ciss	VGS = 0V, VDS = 25V F = 1.0MHZ	800	1050	1200	pF
Output Capacitance	Coss		40	84	150	
Reverse transfer Capacitance	Crss		5	12	25	
Turn-On Delay Time	Td(on)	VDD=350V, ID =6.0A RG=27Ω ③		30.2		ns
Rise time	Tr			50.3		
Turn -Off Delay Time	Td(off)			118.1		
Fall time	Tf			24.6		
Total Gate Charge	Qg	ID=6.0A, VDS = 560V VGS = 10V③		21	25	nC
Gate-to-Source Charge	Qgs			4.8	8	nC
Gate-to-Drain Charge	Qgd			6.5	10	nC
Continuous Diode Forward Current	IS				6.0	A
Diode Forward Voltage	VSD	Tj=25°C, Is=6.0A VGS =0V ③			1.4	V
Reverse Recovery Time	trr	Tj=25°C, If=6.0A di/dt= 100A/μs③		316		ns
Reverse Recovery Charge	Qrr			3.15		uC

Thermal Characteristics

PARAMETER	SYMBOL	MAX		UNIT
		TO-220/262/263	TO-220F(L)	
Thermal Resistance Junction-case	RthJC	0.89	3.125	°C/W
Thermal Resistance Junction-ambient	RthJA	62.5	62.5	°C/W

(1) Repetitive rating: Pulse width limited by maximum junction temperature

(2) Starting Tj=25°C, VDD =50V, L=18mH, RG =25Ω, IAS=6.0A

(3) Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Electrical Characteristics

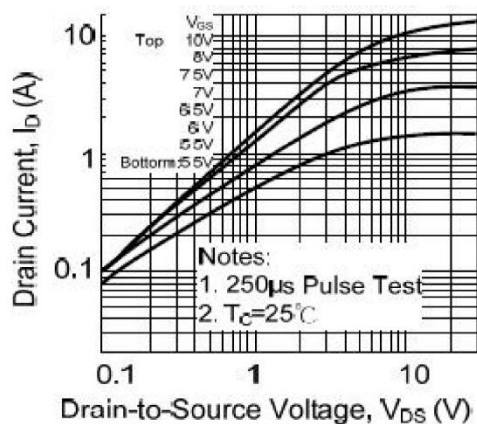
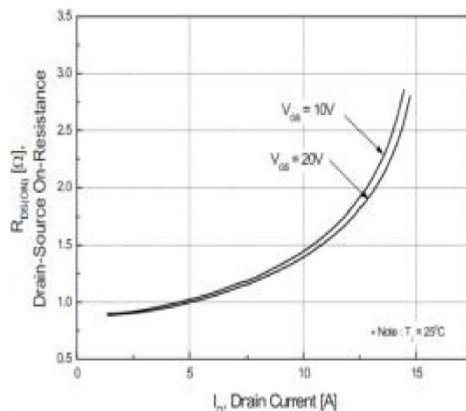
图 1 输出特性曲线, $T_c=25^\circ\text{C}$ Fig1 Typical Output Characteristics, $T_c=25^\circ\text{C}$ 

图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs. Drain Current and Gate Voltage

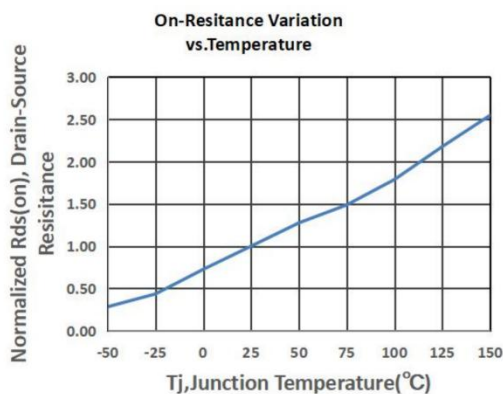


图 3 归一化导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs. Temperature

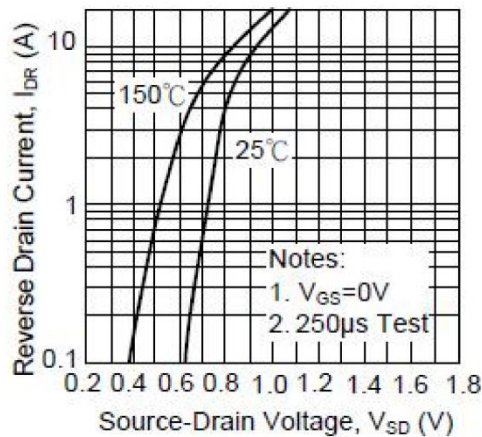


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

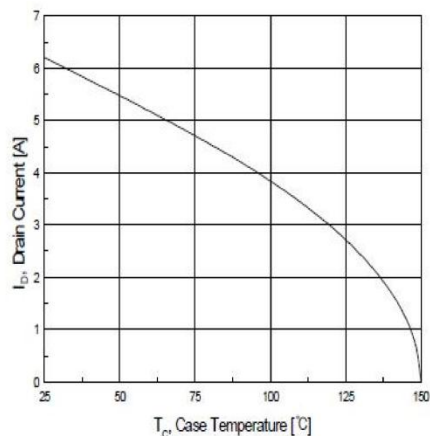


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs. Case Temperature

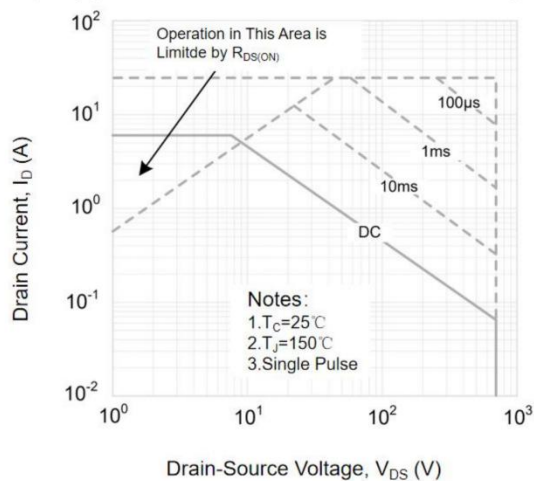


图 6 最大安全工作区曲线

Fig6 Maximum Safe Operating Area

Marking Information



Note:

COT: Company Code

6N70: Product Type.

*****: *: Inner Code * : Year Code **: Week Code **: Lot Code.

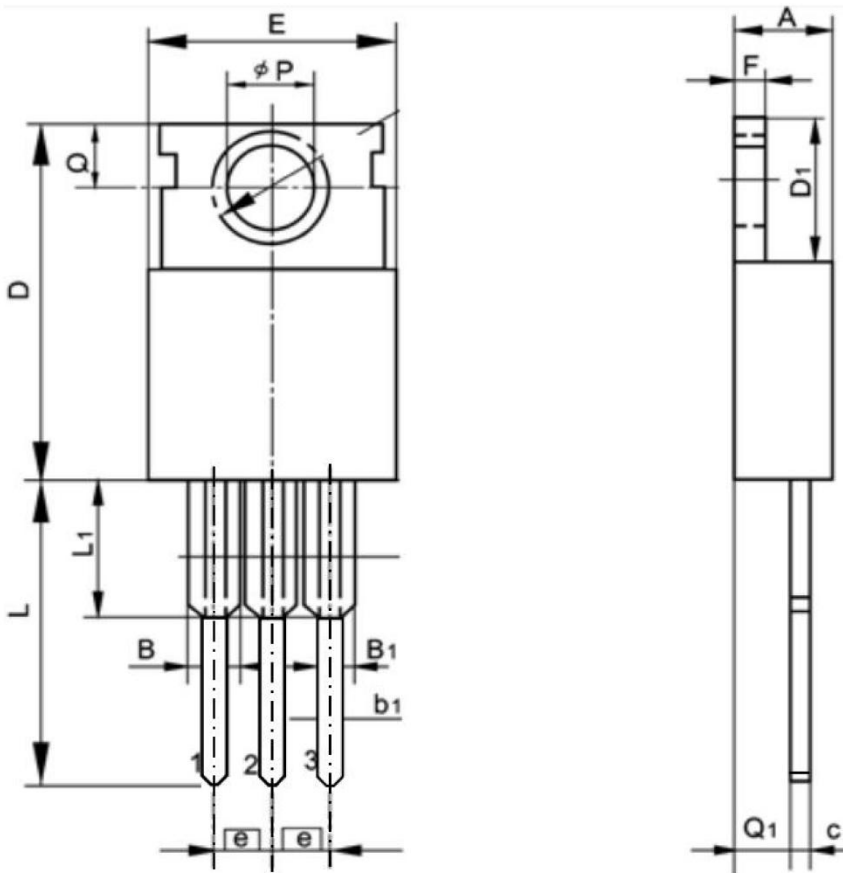
Ordering Information

Part	Package	Marking	Packing method
CT6N70RA	TO-220	6N70	Tube
CT6N70FA	TO-220FP	6N70	Tube
CT6N70FL	TO-220FPL	6N70	Tube
CT6N70A	TO-262	6N70	Tube
CT6N70CB	TO-263	6N70	TAPE & REEL

Mechanical Dimensions for TO-220

单位：毫米/UNIT: mm

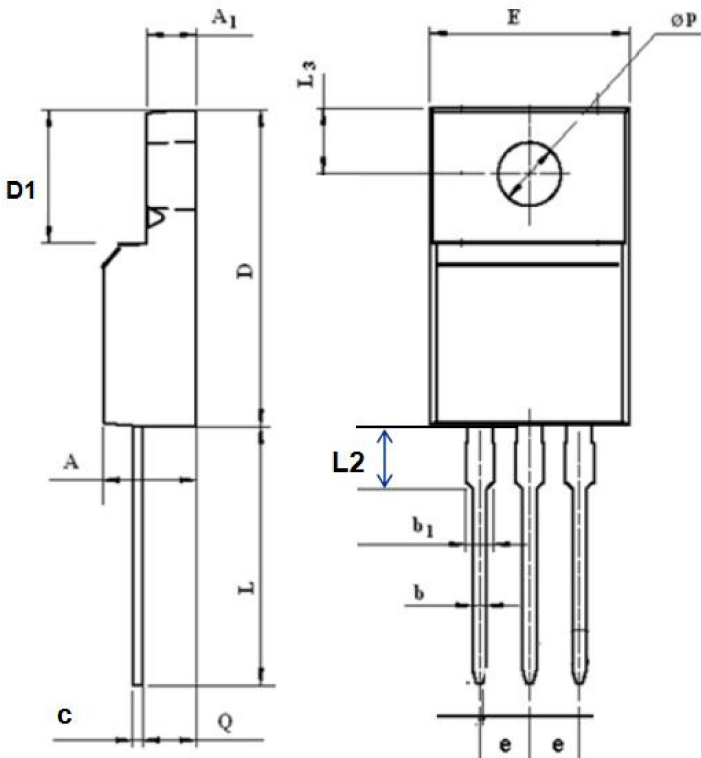
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	4.30		4.70	E	9.80		10.30
B	1.20		1.50	e		2.54	
B1	1.00		1.40	F	1.20		1.40
b1	0.65		1.00	L	12.50		13.50
c	0.35		0.75	L1	2.60		3.50
D	15.00		16.00	Q	2.50		3.00
D1	5.90		6.90	Q1	2.00		3.00
				φP	3.50		3.90



Mechanical Dimensions for TO-220F

单位:毫米/UNIT: mm

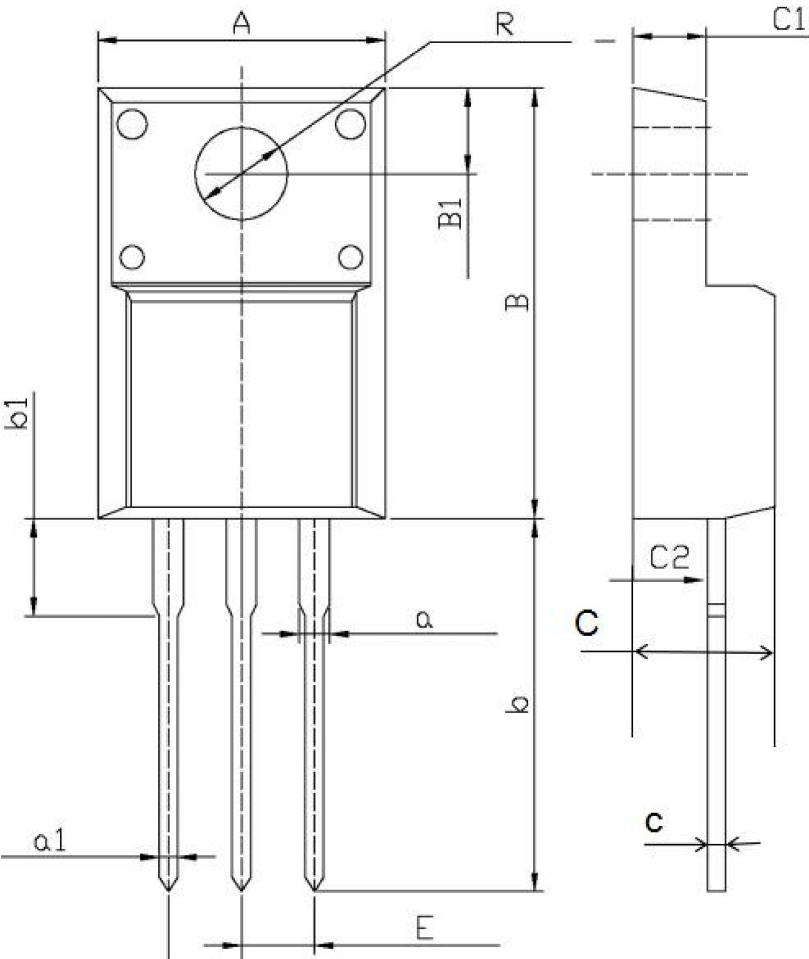
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	4.40		4.95	E	9.60		10.30
A ₁	2.30		2.90	e		2.54	
b	0.70		0.90	L	12.40		14.00
b ₁	1.18		1.45	L ₂	2.30		2.60
c	0.40		0.70	L ₃	3.00		4.00
D	14.50		17.00	øp	3.00		3.50
D1	6.10		9.00	Q	2.30		2.80



Mechanical Dimensions for TO-220FL

单位:毫米/UNIT: mm

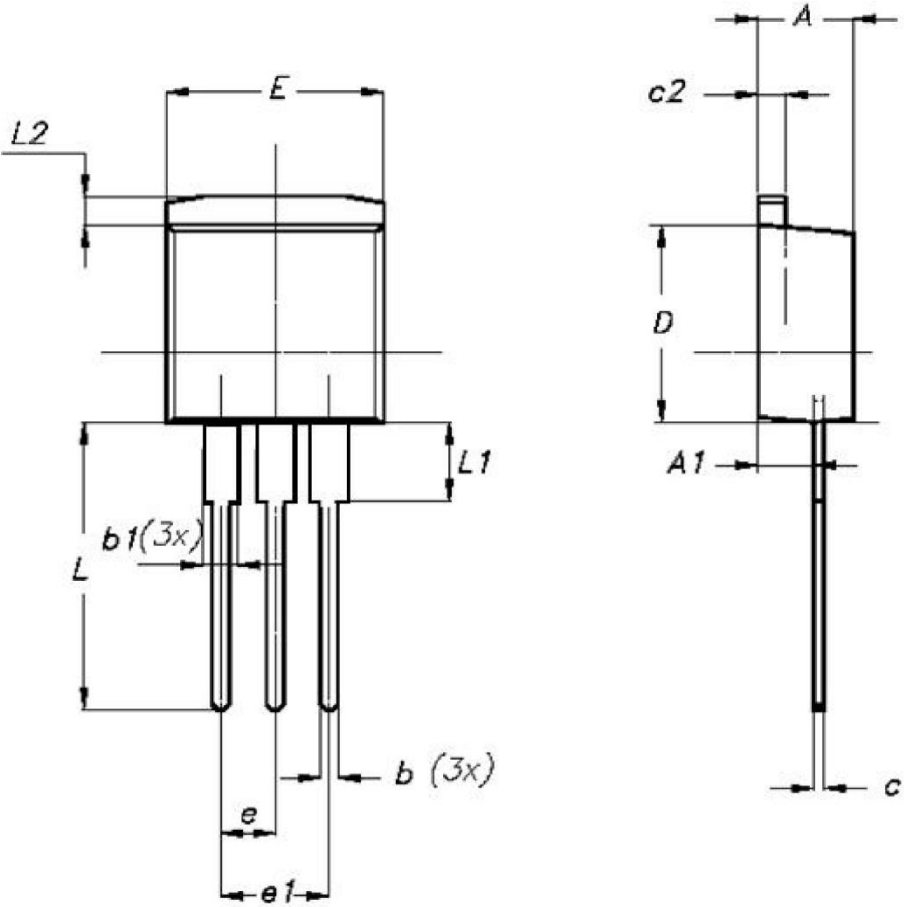
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	9.90		10.36	a	1.08		1.48
B	15.40		16.40	a1	0.70		0.90
B1	3.05		3.55	E	2.34		2.75
C	4.40		5.00	C1	2.25		2.85
c	0.40		0.60	C2	2.45		3.05
b	12.40		13.50	R	2.90		3.35
b1	2.90		3.90				L



Mechanical Dimensions for TO-262

单位：毫米/UNIT: mm

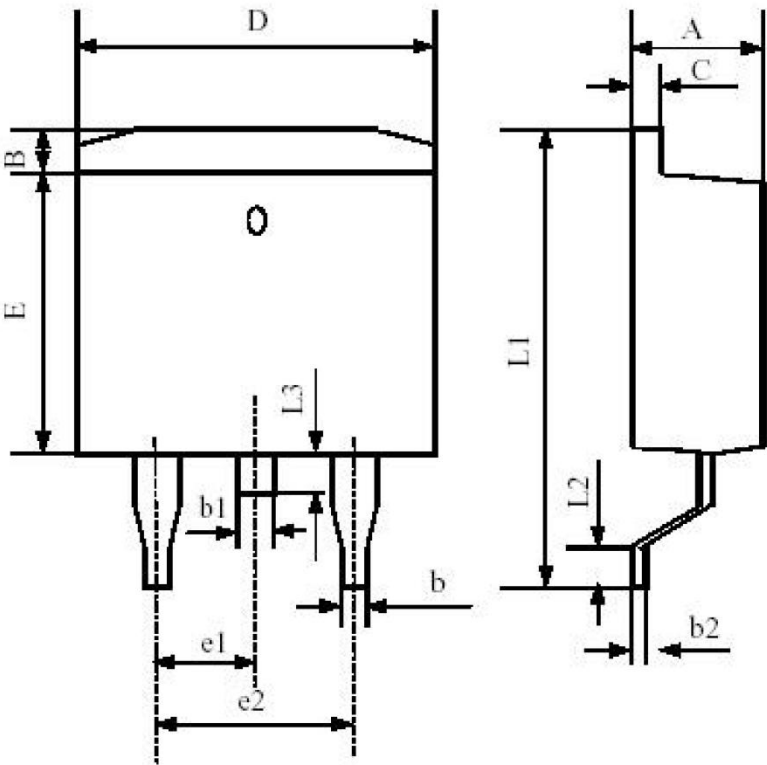
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	3.80		4.80	e		2.54	
A1	2.00		2.80	e1			5.30
b	0.60		1.00	E	9.90		10.70
b1	1.20		1.40	L	12.50		14.50
c	0.37		0.60	L1	0.80	1.00	1.20
c2	1.10		1.40	L2			1.60
D			9.60				



Mechanical Dimensions for TO-263 (Tube)

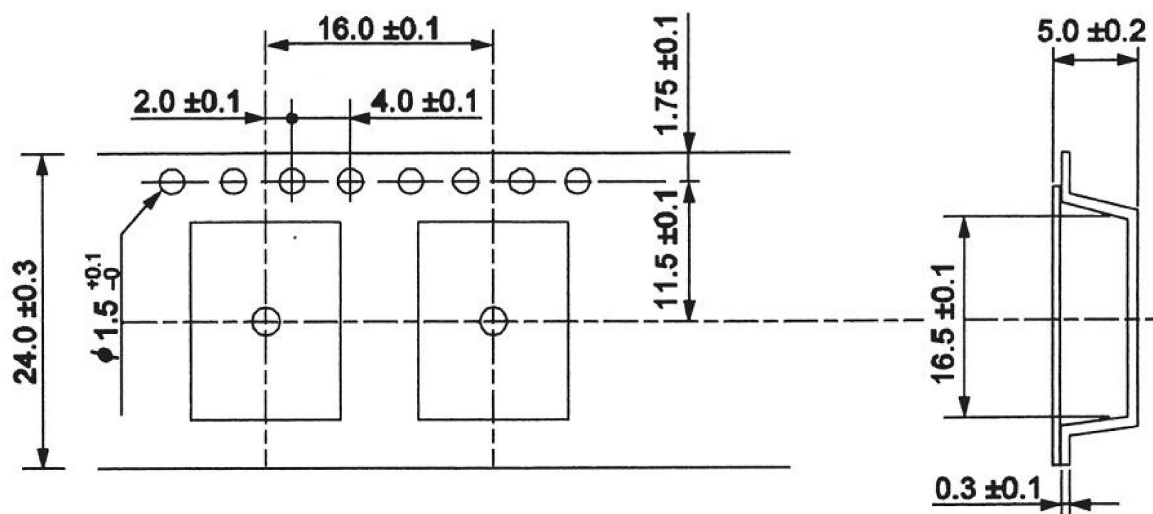
单位：毫米/UNIT：mm

符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.30		1.75
D	9.95		10.25				

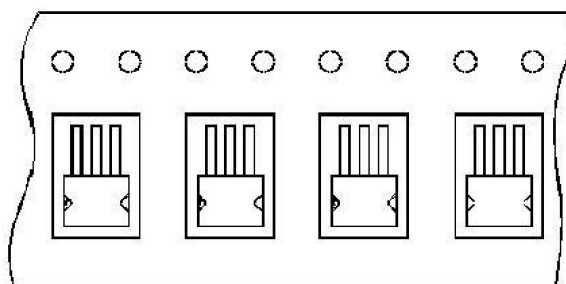


Mechanical Dimensions for TO-263 (Tape & Reel)

单位:毫米/UNIT: mm



使用供带方向/USER DIRECTION OF FEED



编带器件定位示意图/UNIT ORIENTATION