N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET SIF32N20A

●特点：导通电阻低　开关速度快　输入阻抗高　符合RoHS规范

●FEATURES：■LOW ON-RESISTANCE ■FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT

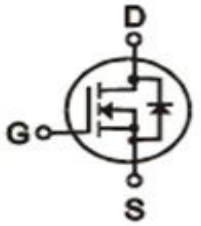
●应用：高效开关电源　LED 电视　整流

●APPLICATION: ■HIGH EFFICIENCY SWITCH MODE POWER SUPPLIES ■LED TV ■COMMUTATION MODE

●最大额定值（Tc=25°C）

●Absolute Maximum Ratings（Tc=25°C）　TO-220/220FP/262/263

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	200	V
-源电压 gate-source Voltage	V_{GS}	±20	V
漏极电流 Continuous Drain Current TC=25℃	I_D	32	A
漏极电流 Continuous Drain Current TC=100℃	I_D	16	A
最大脉冲电流 Drain Current －Pulsed ①	I_{DM}	128	A
耗散功率 Power Dissipation	P_{tot}	TO-220：150 TO-220FP：50 TO-262/263:126	W
最高结温 Junction Temperature	Tj	150	°C
存储温度 Storage Temperature	T_{STG}	-55-150	°C
单脉冲雪崩能量 Single Pulse Avalanche Energy ②	E_{AS}	625	mJ



V_{DS}=200V

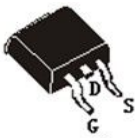
$R_{DS(ON)}$=60 mΩ

I_D=32.0A

TO-220

TO-220FP

TO-262(I²PAK)



TO-263(D²PAK)

●电特性（Tc=25°C）

●Electronic Characteristics（Tc=25°C）

参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
漏-源击穿电压 Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	200			V
击穿电压温度系数 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250uA, Referenced to 25°C		0.2		V/°C
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	2.0		4.0	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	V_{DS} =200V, V_{GS} =0V, Tj=25°C			1	μA
		V_{DS} =200V, V_{GS} =0V, Tj=125°C			10	μA
跨导 Forward Transconductance	gfs	V_{DS} =10V, I_D=15A ③	10.5	16.0		S

●订单信息/ORDERING INFORMATION:

包装形式/PACKING	订货编码/ORDERING CODE	
	普通塑封料/ Normal Package Material	无卤塑封料/Halogen Free
TO-220 条管装/TUBE PACKING	SIF32N20A TO-220-TU	SIF32N20A TO-220-TU-HF
TO-220FP 条管装/TUBE PACKING	SIF32N20A TO-220FP-TU	SIF32N20A TO-220FP-TU-HF
TO-262 或 263 条管装/TUBE PACKING	SIF32N20A TO-262-TU 或 SIF32N20A TO-263-TU	SIF32N20A TO-262-TU-HF 或 SIF32N20ATO-263-TU-HF
TO-263 编带装/TAPE & REEL PACKING	SIF32N20A TO-263-TR	SIF32N20A TO-263-TR-HF

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET SIF32N20A

参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
栅极漏电流 Gate-body Leakage Current (V_{DS} = 0)	I_{GSS}	V_{GS} =±20V			±100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=16A ③		60	75	mΩ
输入电容 Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		2050		pF
输出电容 Output Capacitance	Coss			255		
反向传输电容 Reverse transfer Capacitance	Crss			18		
关断延迟 Turn -Off Delay Time	Td(off)	V_{DD}=100V, I_D =32A R_G= 3.5Ω, R_D=25Ω ③		260		ns
开启延迟时间 Turn-on delay time	Td(on)			30		
开启上升时间 Rise time	Tr			270		
关断下降时间 Fall time	Tf			210		
栅极电荷 Total Gate Charge	Qg	I_D =32A, V_{DS} = 160V V_{GS} = 10V ③		41		nC
栅源电荷 Gate-to-Source Charge	Qgs			10.5		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			13.8		nC
二极管正向电流 Continuous Diode Forward Current	I_S				32.0	A
二极管正向压降 Diode Forward Voltage	V_{SD}	Tj=25°C, Is=32A V_{GS} =0V ③			1.45	V
反向恢复时间 Reverse Recovery Time	trr	Tj=25°C, If=32A di/dt=100A/μs ③		280		ns
反向恢复电荷 Reverse Recovery Charge	Qrr			2.75		uC
输入阻抗 Gate resistance	R_G				7	Ω

●热特性

●Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX			单位 UNIT
		TO-220	TO-220FP	TO-262/263	
热阻结-壳 Thermal Resistance Junction-case	Rth_{JC}	0.83	2.5	1.0	℃/W
热阻结-环境 Thermal Resistance Junction-ambient	Rth_{JA}	62.5	62.5	62.5	℃/W

注释(Notes):

① 脉冲宽度：以最高结温为限制

Repetitive rating: Pulse width limited by maximum junction temperature

② 初始结温=25°C, V_{DD} =50V, L=1.4 mH, R_G =25Ω, I_{AS}=25.0A

Starting Tj=25°C, V_{DD} =50V, L=1.4 mH, R_G =25Ω, I_{AS}=25.0A

③ 脉冲测试：脉冲宽度≤ 300μs ， 占空比≤ 2 ％

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

● 特性曲线

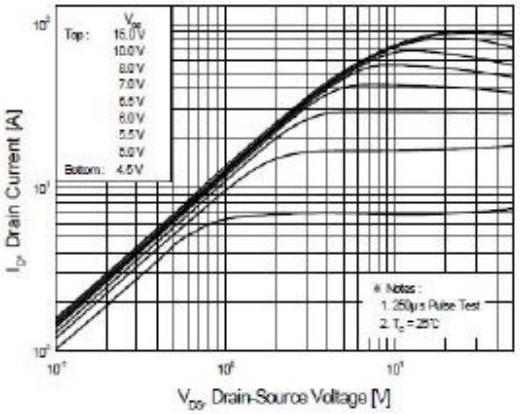


图 1 输出特性曲线, Tc=25℃

Fig1 Typical Output Characteristics, Tc=25℃

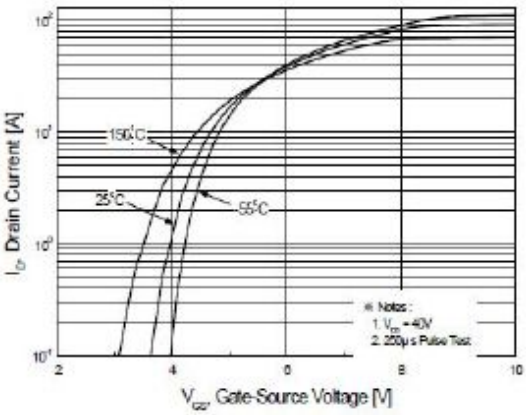


图 2 典型转移特性

Fig2 Typical Transfer characteristics

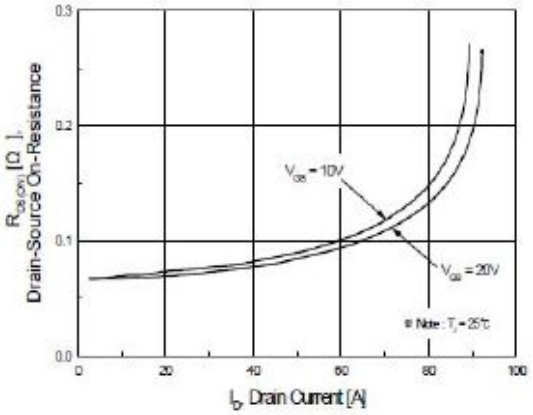


图 3 导通电阻与漏极电流和栅极电压曲线

Fig3 On-Resistance Vs.Drain Current and Gate Voltage

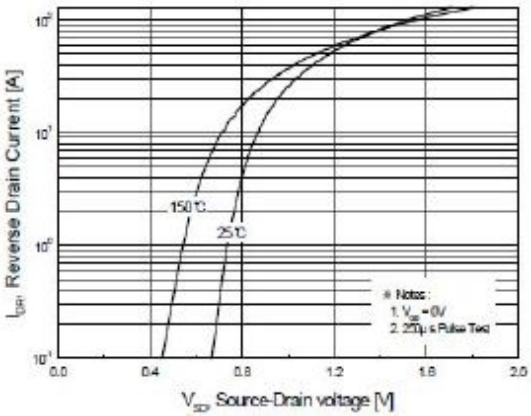


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

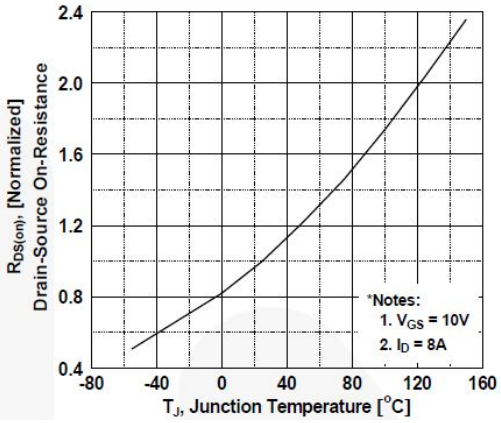


图 5 导通电阻与温度曲线

Fig5 Normalized On-Resistance Vs.Temperature

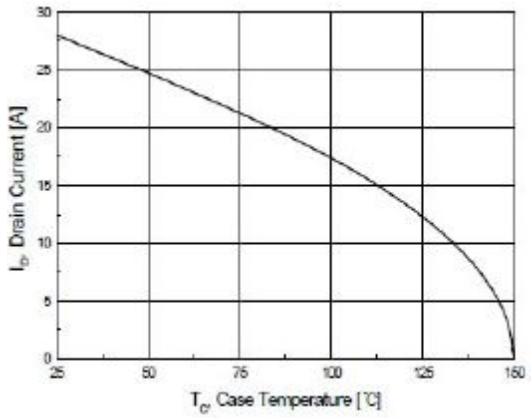


图 6 最大漏极电流与壳温曲线

Fig6 Maximum Drain Current Vs.Case Temperature

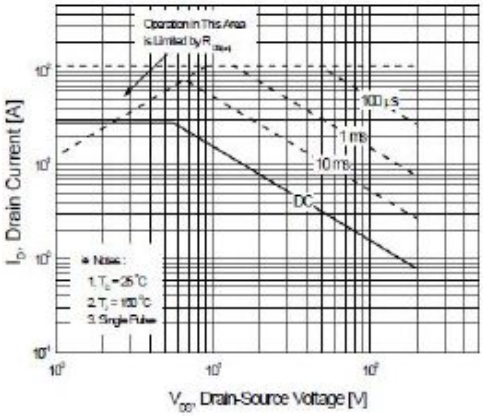


图 7-1 SIF32N20A(TO-220)
最大安全工作区曲线
Fig7-1 Maximum Safe Operating Area

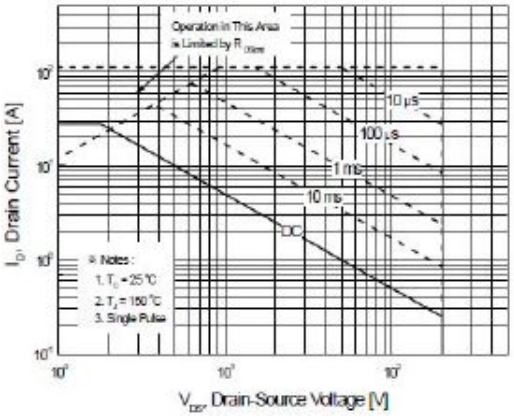


图 7-2 SIF32N20A(TO-220FP)
最大安全工作区曲线
Fig7-2 Maximum Safe Operating Area

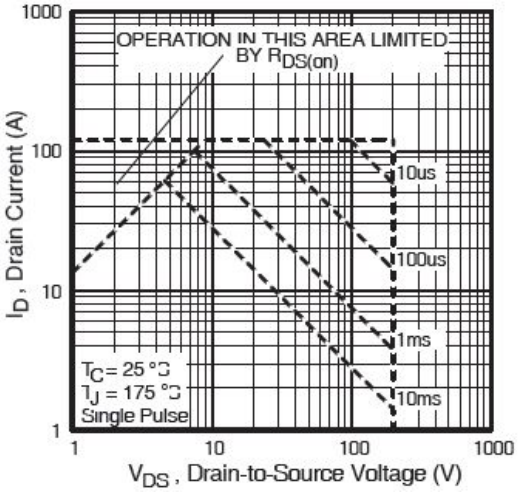
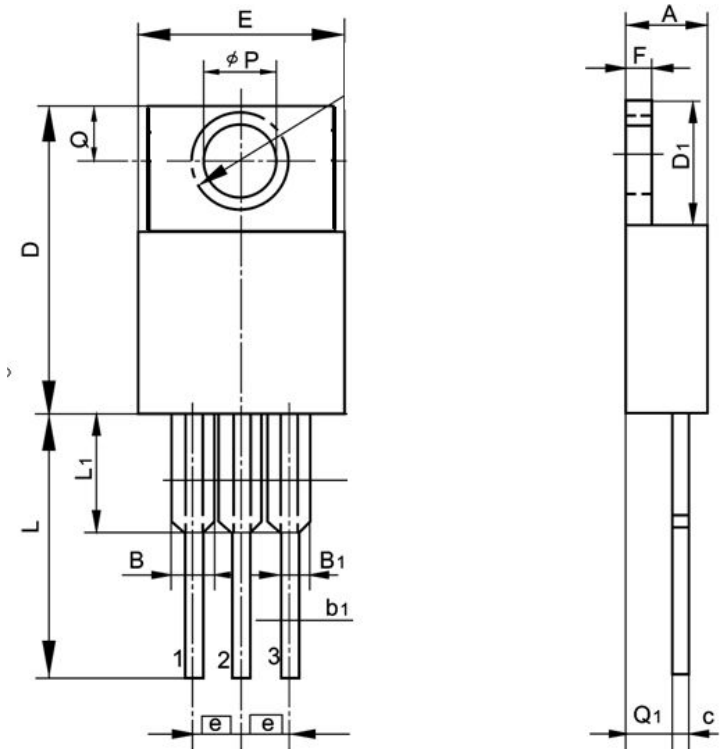


图 7-3 SIF32N20A(TO-262/263)
最大安全工作区曲线
Fig7-3 Maximum Safe Operating Area

TO-220 封装机械尺寸
TO-220 MECHANICAL DATA

单位：毫米/UNIT：mm

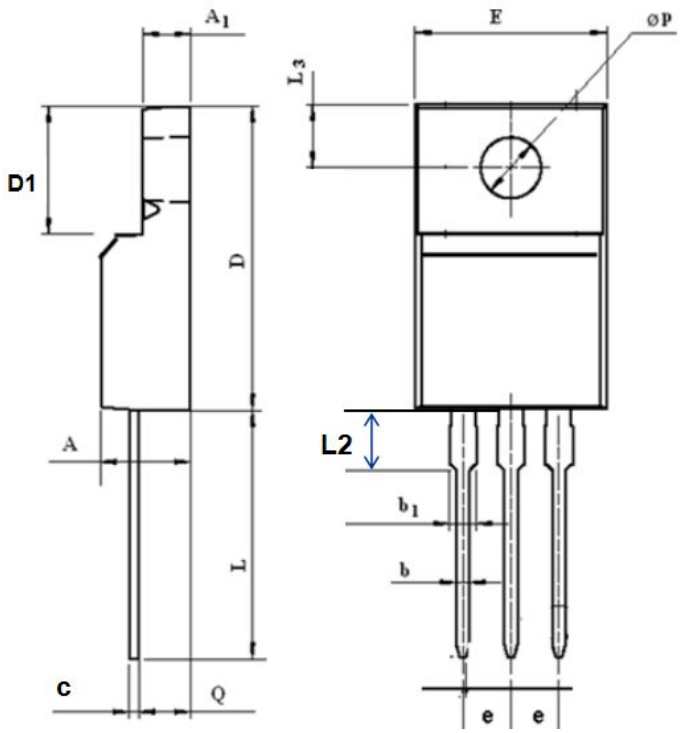
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	4.00		4.80	E	9.90		10.70
B	1.20		1.50	e		2.54	
B1	1.00		1.40	F	1.10		1.45
b1	0.65		1.00	L	12.50		14.50
c	0.35		0.75	L1	3.00	3.50	4.00
D	15.00		16.50	Q	2.50		3.00
D1	5.90		6.90	Q1	2.00		3.00
				ϕP	3.60		3.90



TO-220FP 封装机械尺寸
TO-220FP MECHANICAL DATA

单位:毫米/UNIT：mm

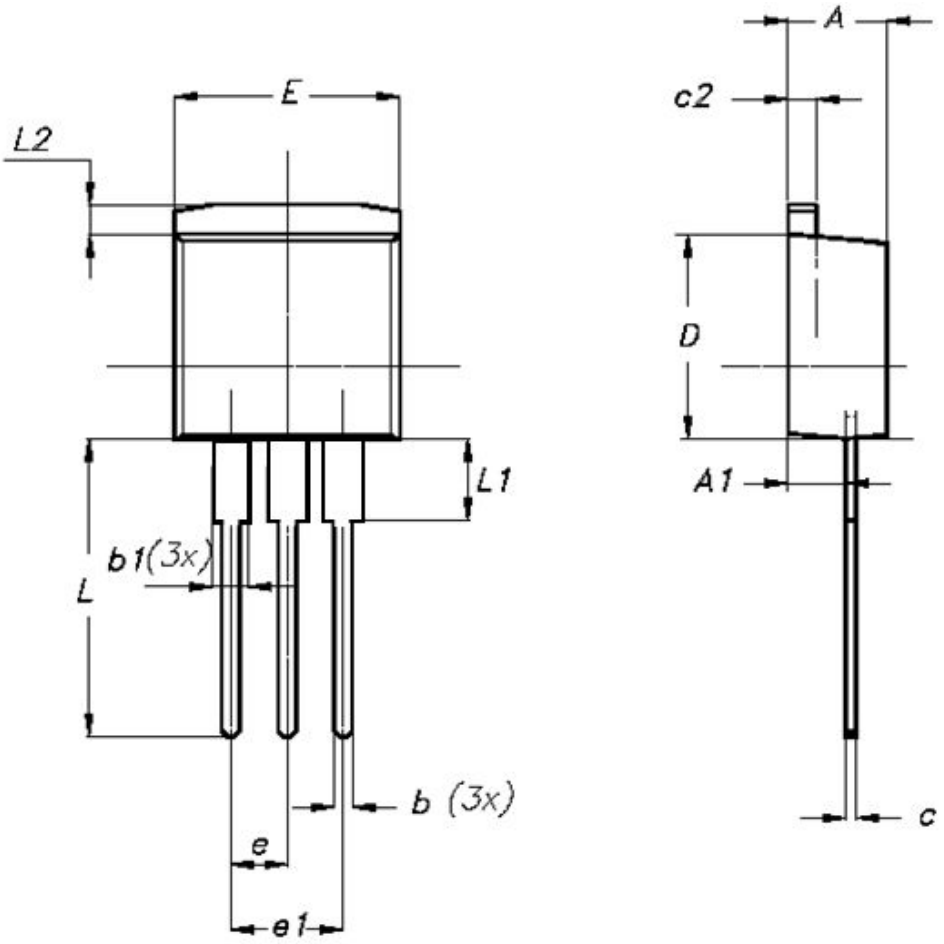
符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	4.40		4.95	E	9.60		10.30
A_1	2.30		2.90	e		2.54	
b	**0.70**		**0.90**	**L**	**12.40**		**14.00**
b_1	**1.18**		**1.45**	**L_2**	**2.30**		**2.60**
c	**0.40**		**0.70**	L_3	3.00		4.00
D	14.50		17.00	øp	3.00		3.50
D1	6.10		9.00	Q	2.30		2.80



TO-262 封装机械尺寸
TO-262 MECHANICAL DATA

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	0.40		0.70	L1	0.80	1.00	1.20
c2	1.10		1.40	L2			1.50
D			9.60				

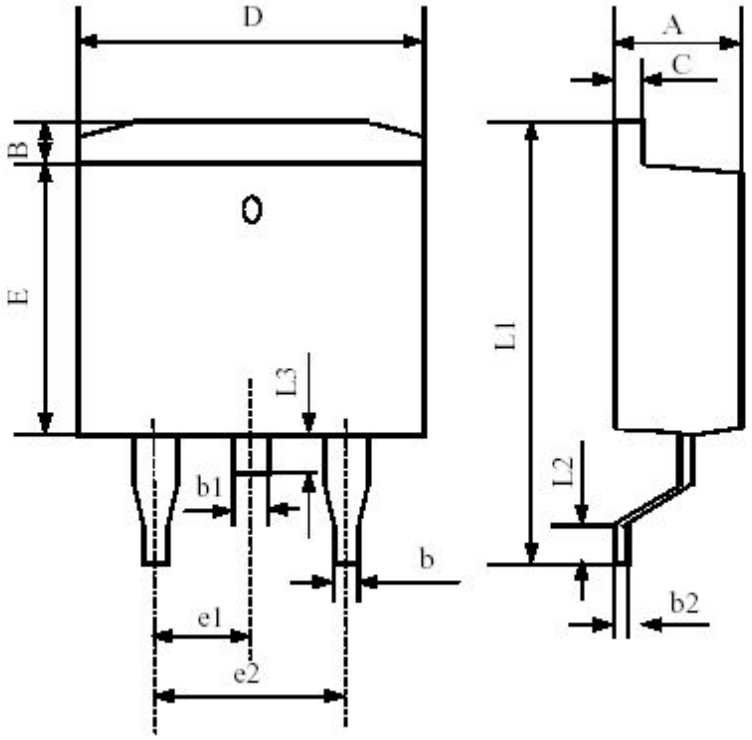


TO-263 封装机械尺寸

TO-263(D2PAK) MECHANICAL DATA

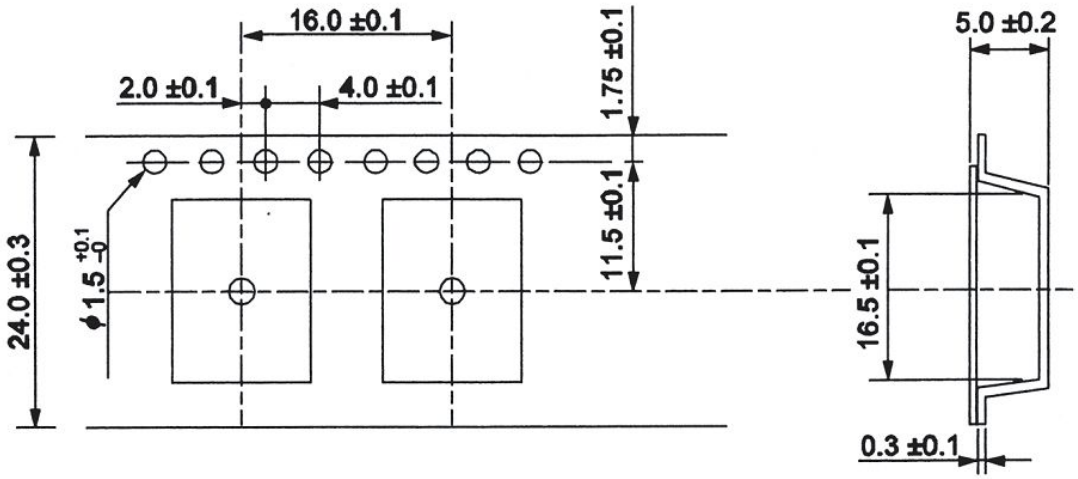
单位：毫米/UNIT：mm

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				

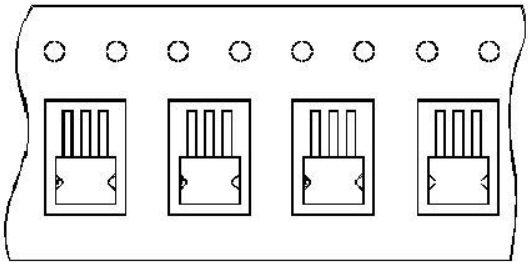


TO-263 编带规格尺寸
TO-263 TAPE AND REEL DATA

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