

Descriptions

N-Channel Multi-EPI Super Junction Power MOSFET

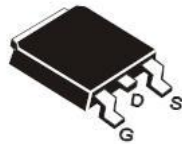
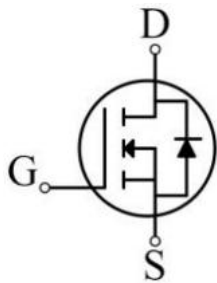
Features

- NEW TECHNOLOGY FOR HIGH VOLTAGE DEVICE
- LOW ON-RESISTANCE AND LOW CONDUCTION LOSSES
- LOW GATE CHARGE
- 100% AVALANCHE TESTED
- ROHS COMPLIANT

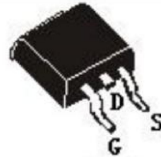
Applications

- POWER FACTOR CORRECTION (PFC)
- SWITCHED MODE POWER SUPPLIES(SMPS)
- UNINTERRUPTIBLE POWER SUPPLY (UPS)

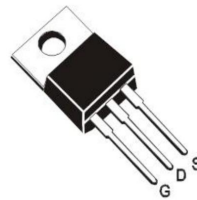
Equivalent Circuit & Pinning



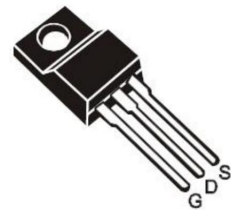
TO-252(DPAK)



TO-263(D²PAK)



TO-220



TO-220FP

Absolute Maximum Ratings(Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	VDS	650	V
gate-source Voltage	VGS	±30	V
Continuous Drain Current TC=25. C	ID	15	A
Continuous Drain Current TC=100. C	ID	9.6	A
Pulsed Drain Current ^①	IDM	45*	A
Total Power Dissipation	Ptot	TO-252/220/263:104	W
		TO-220FPL:30	
Junction Temperature	Tj	150	. C
Storage Temperature	TSTG	-55~150	. C
Single Pulse Avalanche ^② Energy	EAS	326	mJ

Electrical Characteristics(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BVDSS	VGS=0V, ID=250μA	650			V
Breakdown Voltage Temperature Coefficient	ΔBVDSS/ΔTj	ID=250uA, Referenced to 25. C		0.65		V/. C
Gate Threshold Voltage	VGS(TH)	VGS=VDS, ID=800uA	2.5		4.5	V

Thermal Characteristics

PARAMETER	SYMBOL	MAX			UNIT
		TO-252	TO-220/TO-263	TO-220FPL	
Thermal Resistance Junction-case	RthJC	1.2	1.2	3.9	°C/W
Thermal Resistance Junction-ambient	RthJA	110	62	62	°C/W

Electrical Characteristics(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Leakage Current	I_{DSS}	$V_{DS} = 650V$, $V_{GS} = 0V$, $T_J = 25^\circ C$			1	μA
Gate-body Leakage Current	I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 100	nA
Forward Transconductance	g_{fs}	$V_{DS} = 15V$, $I_D = 2.5A$ ^③		3		S
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V$, $I_D = 5.3A$		238	280	m Ω
Input Capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 400V$ F = 250kHz		789		pF
Output Capacitance	C_{oss}			22		
Reverse Transfer Capacitance	C_{rss}			2.3		
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 400V$, $I_D = 5.3A$ $R_G = 10\Omega$ ^③		22		ns
Rise time	T_r			8		
Turn -Off Delay Time	$T_{d(off)}$			57		
Fall time	T_f			10		
Total Gate Charge	Q_g	$I_D = 5.3A$, $V_{DS} = 400V$ $V_{GS} = 10V$ ^③		21		nC
Gate-to-Source Charge	Q_{gs}			4.0		
Gate-to-Drain Charge	Q_{gd}			10.9		
Continuous Diode Forward Current	I_S				15	A
Diode Forward Voltage	V_{SD}	$T_J = 25^\circ C$, $I_F = 5.3A$ $V_{GS} = 0V$ ^③			1.4	V
Reverse Recovery Time	t_{rr}	$V_{DD} = 100V$, $I_F = 5.3A$ di/dt = 100A/ μs ^③		267		ns
Reverse Recovery Charge	Q_{rr}			2.46		μC

Electrical Characteristic Curve

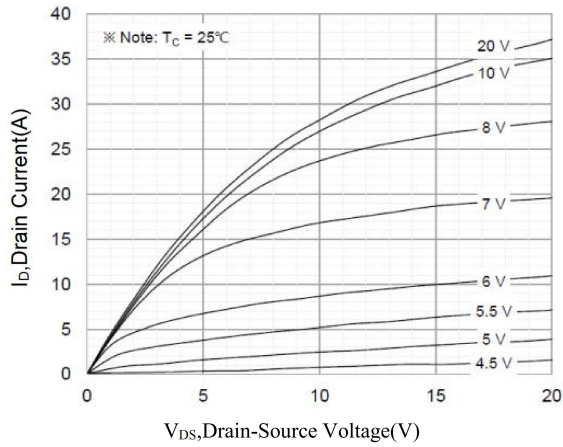


图 1 输出特性曲线

Fig.1 Output Characteristics

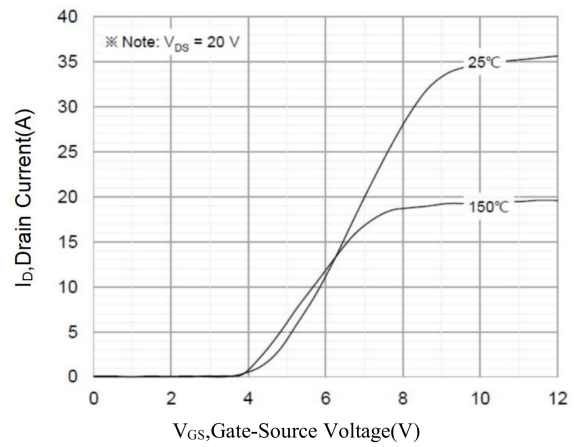


图 2 传输特性曲线

Fig.2 Transfer Characteristics

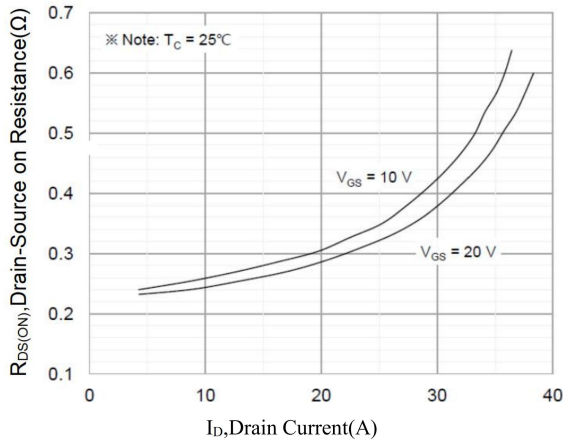


图 3 导通电阻与漏级电流和栅极电压曲线

Fig.3 On-Resistance Vs. Drain Current and Gate Voltage

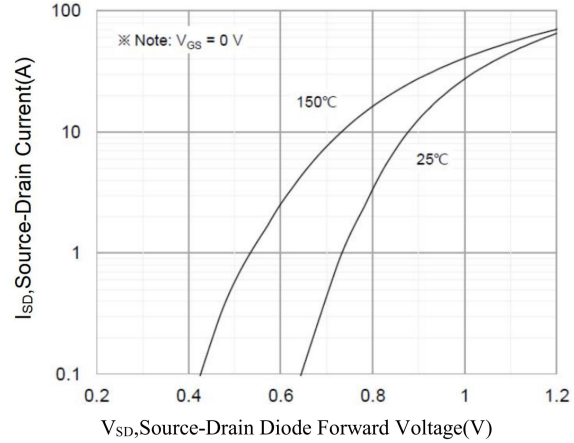


图 4 体二极管正向压降与源漏电流和温度曲线

Fig.4 Body Diode Forward Voltage Vs. Source-Drain Current and Temperature

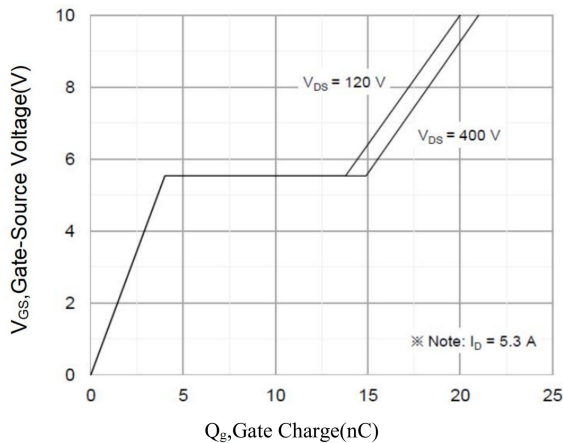


图 5 栅电荷曲线

Fig.5 Gate Charge Characteristics

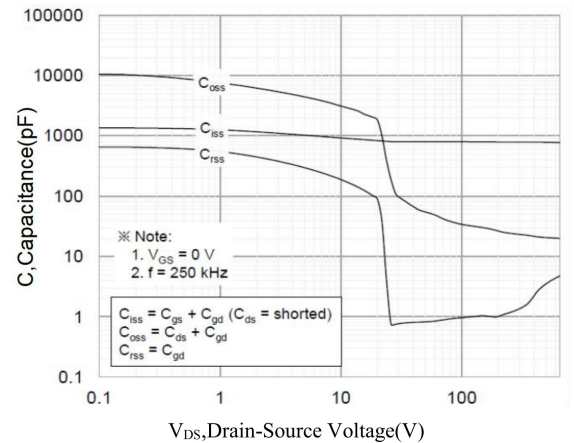


图 6 电容曲线

Fig.6 Capacitance Characteristics

Electrical Characteristic Curve

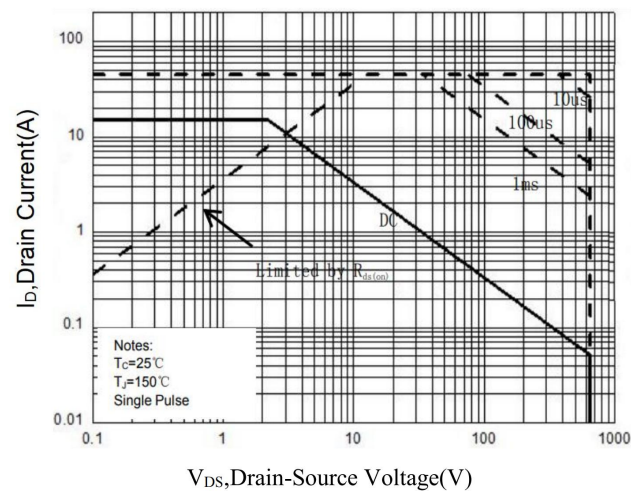


图 7 最大安全工作区域 (TO-220FPL)
Fig.7 Maximum Safe Operating Area (TO-220FPL)

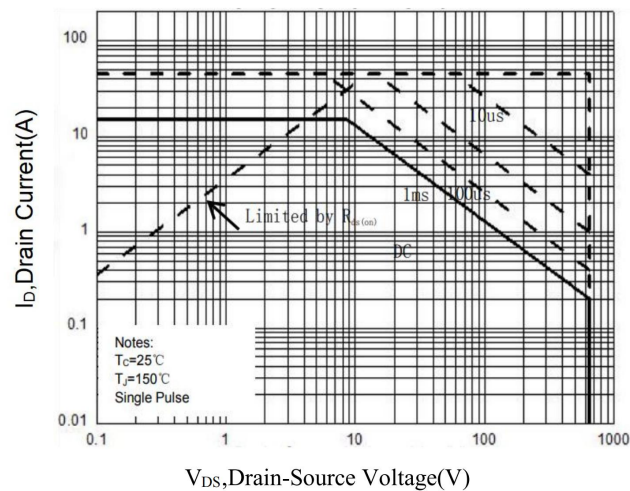
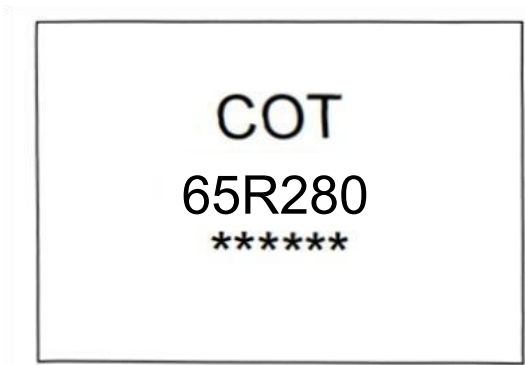


图 8 最大安全工作区域 (TO-252/220/263)
Fig.8 Maximum Safe Operating Area (TO-252/220/263)

Marking Instructions



Note:
COT: Company Code
65R280: Product Type.
*****: *: Inner Code * : Year Code **: Week Code **: Lot Code.

Packaging SPEC

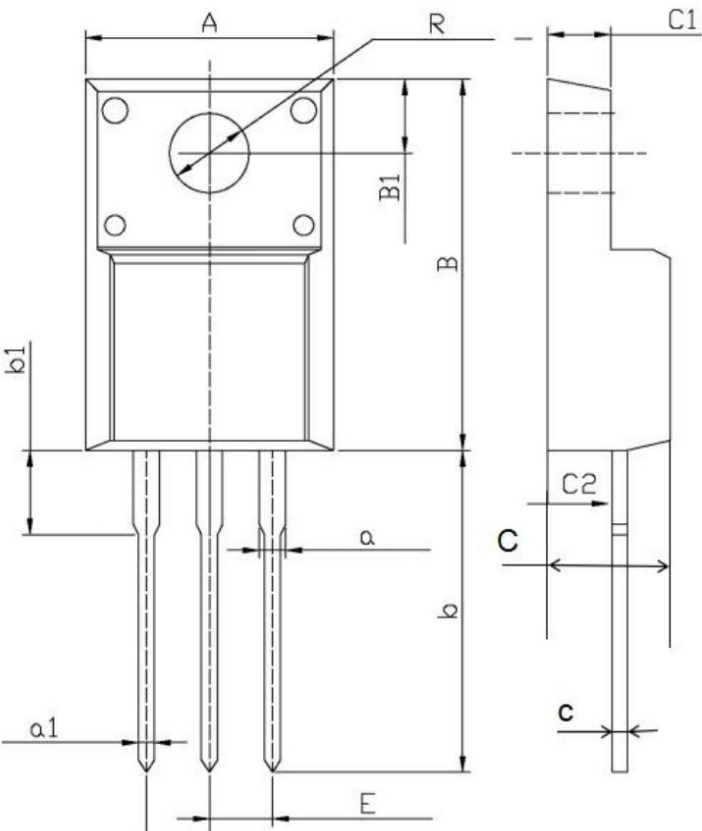
Part	Package	Marking	Packing method
CT65R280EDP	TO-252	65R280	TAPE
CT65R280EFP	TO-220FPL	65R280	TUBE
CT65R280ERA	TO-220	65R280	TUBE
CT65R280EBD	TO-263	65R280	TUBE & TAPE

Package Outline Dimensions

TO-220FPL MECHANICAL DATA

UNIT: mm

symbol	min	nom	max	symbol	min	nom	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	2.60		3.60				LJ

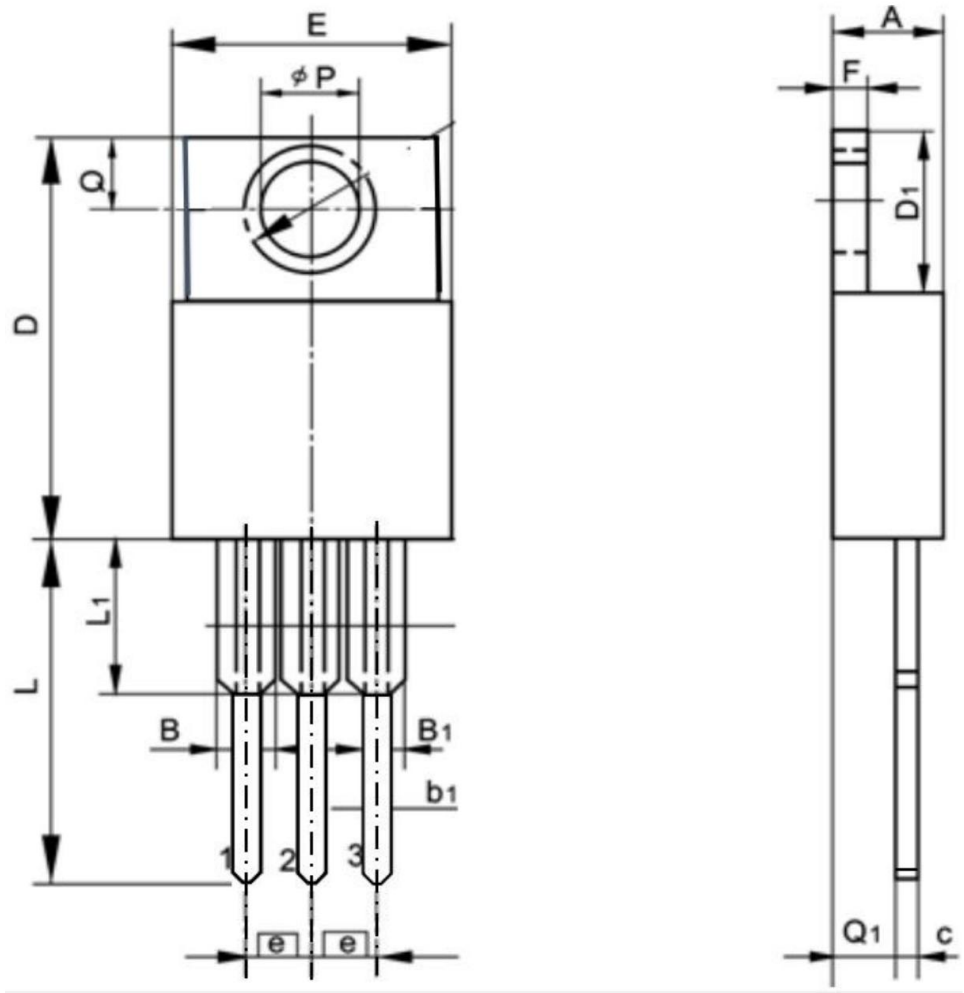


Package Outline Dimensions

TO-220 MECHANICAL DATA

UNIT: mm

symbol	min	nom	max	symbol	min	nom	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

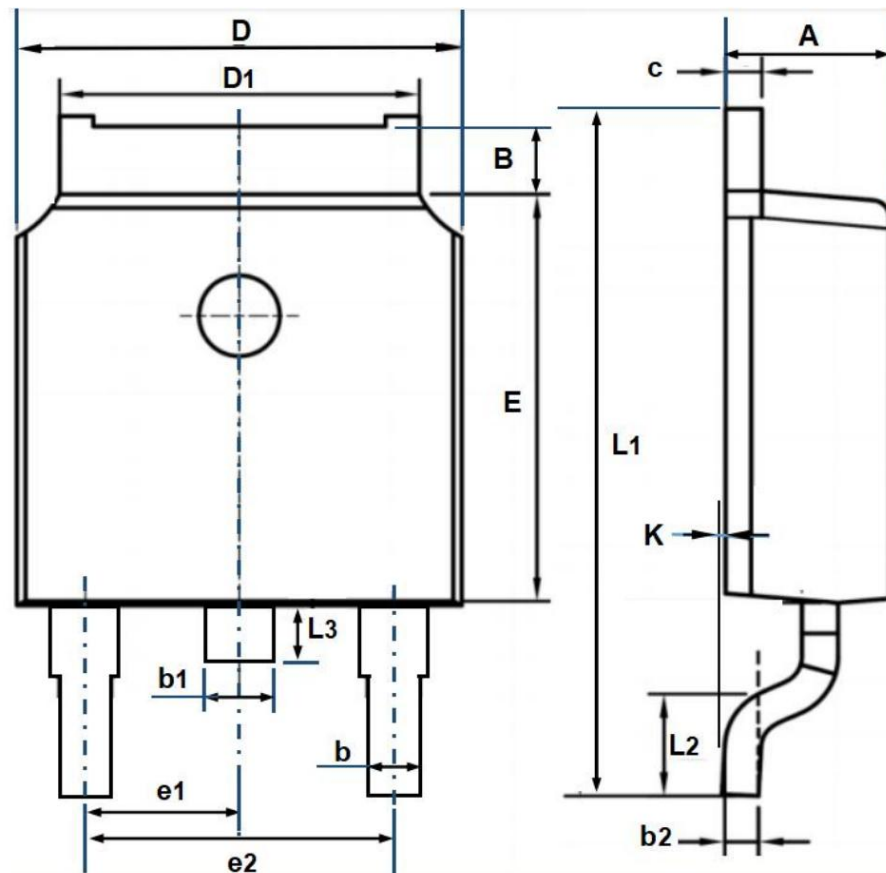


Package Outline Dimensions

TO-252 MECHANICAL DATA

UNIT: mm

symbol	min	max	symbol	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.85	b1	0.90	1.15
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			

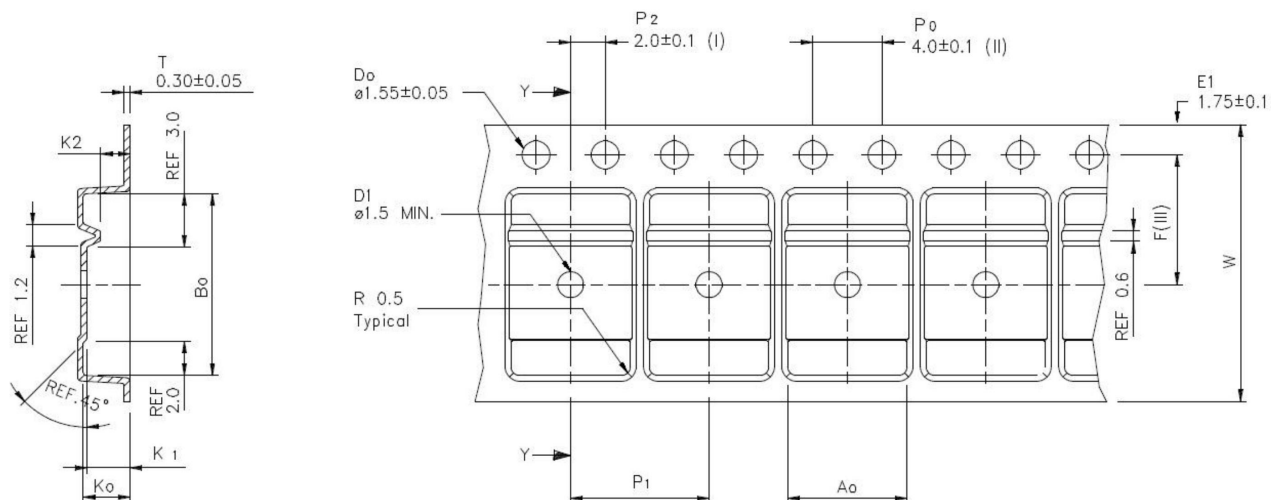


Package Outline Dimensions

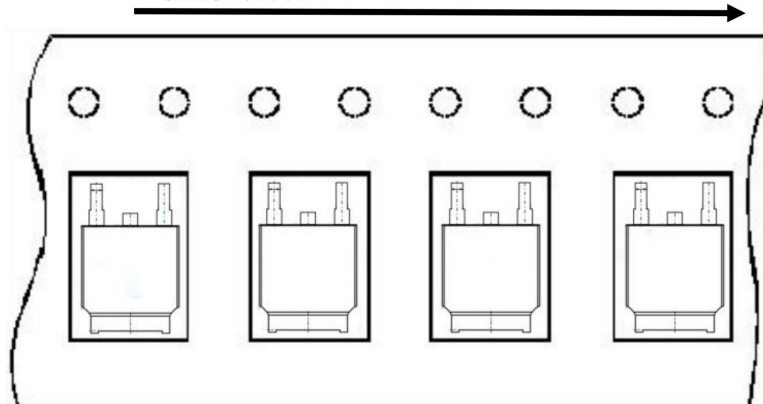
TO-252 TAPE AND REEL DATA

UNIT: mm

symbol	min	nom	max	symbol	min	nom	max
A0	6.80	6.90	7.00	B0	10.40	10.50	10.60
K0	2.60	2.70	2.90	K1	2.40	2.50	2.60
F	7.40	7.50	7.60	K2	1.60	1.70	1.80
W	15.90	16.00	16.10	P1	7.90	8.00	8.10



使用供带方向/USER DIRECTION OF FEED



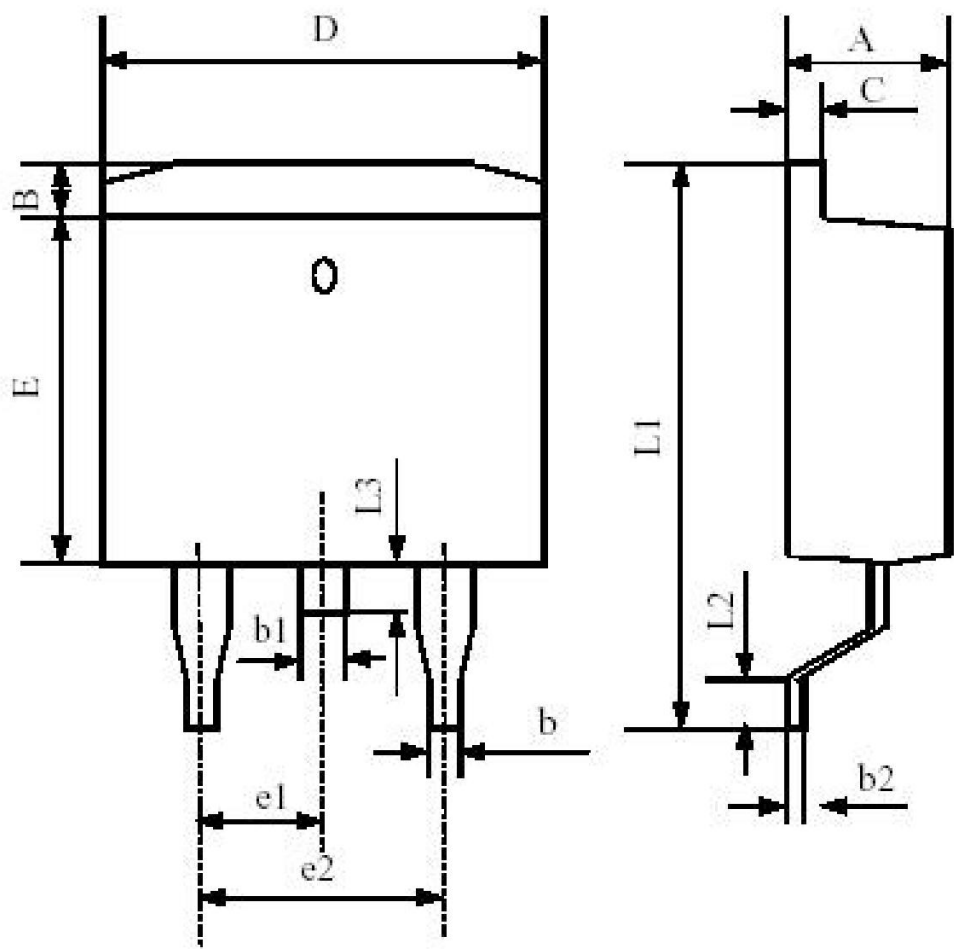
编带器件定位/UNIT ORIENTATION

Package Outline Dimensions

TO-263 MECHANICAL DATA

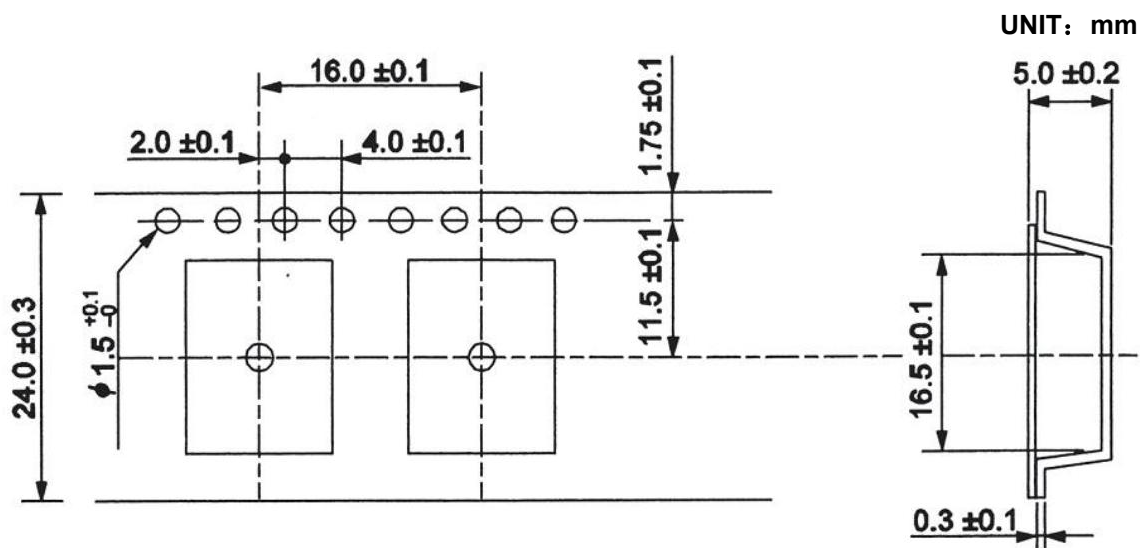
UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	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				

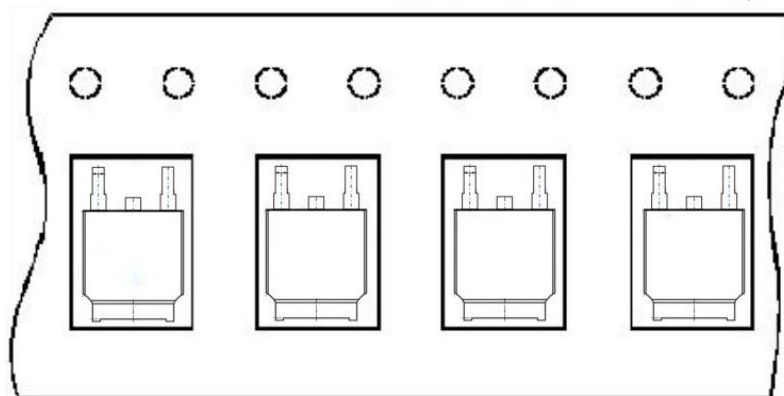


Package Outline Dimensions

TO-263 TAPE AND REEL DATA



使用供带方向/USER DIRECTION OF FEED



编带器件定位/UNIT ORIENTATION