德普微电子
DEVELOPER MICROELECTRONICS

GENERAL DESCRIPTION

DP8205 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

PRODUCT SUMMARY

V_{DS}	20 V
ID (at VGS=4.5V)	5.0A
RDS(ON) (at VGS = 4.5V)	< 27mΩ
RDS(ON) (at VGS = 2.5V)	< 32mΩ

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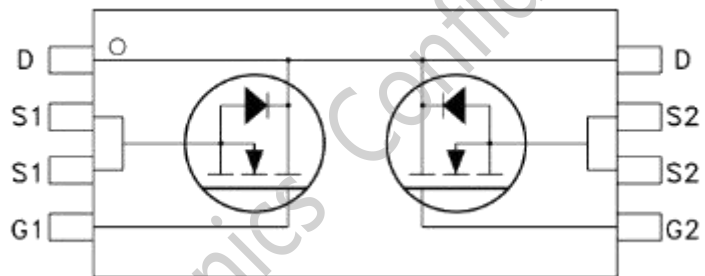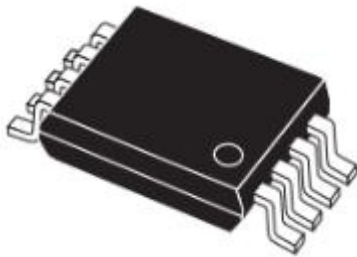
Absolute Maximum Ratings TA=25°C unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous @ T_J=25°C	I_D	5	A
Pulsed[b]	I_{DM}	20	A
Drain-Sourse Diode Forward Current[a]	I_S	2.5	A
Maximum Power Dissipation[a]	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Ambient [a]	$R_{\theta JA}$	100	°C/W

ELECTRICAL CHARACTERISTICS (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ^c	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250µA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	µA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250µA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A	14	20	27	mΩ
		V_{GS}=2.5V, I_D=3.5A	17	26	32	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=7A	-	17.7	-	S
Dynamic Characteristics						
Input Capacitance	C_{Iss}	V_{DS}=8V,	-	802	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V,	-	153	-	pF
Reverse Transfer Capacitance	C_{rss}	F=1.0MHz	-	122	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,	-	18	-	nS
Turn-on Rise Time	t_r	I_D=1A	-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$	V_{GS}=4.5V,	-	43.8	-	nS
Turn-Off Fall Time	t_f	R_{GEN}=10Ω , R_L=10Ω	-	20	-	nS
Total Gate Charge	Q_g	V_{DS}=10V,	-	10.5	-	nC
Gate-Source Charge	Q_{gs}	I_D=4A,	-	2	-	nC
Gate-Drain Charge	Q_{gd}	V_{GS}=4.5V	-	2.5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=1.7A	-	-	1.2	V

Notes:

a. Surface Mounted on FR4 Board ,T<10 sec ;

b. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

c. Guaranteed by Design, not subject to production testing.

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DP8205_REV3.4_CN
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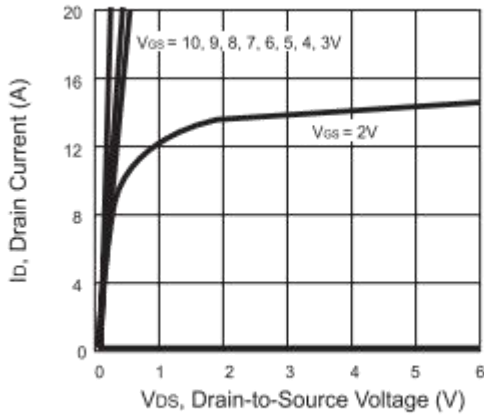# TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS
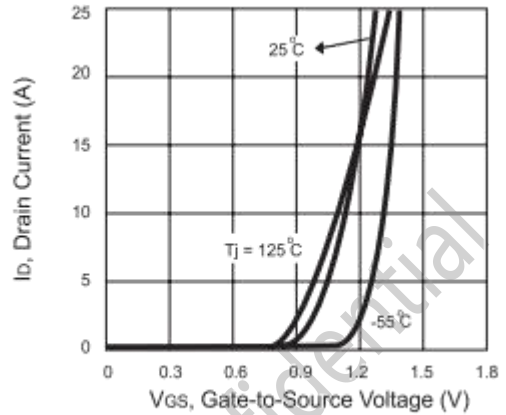
Figure 1. Output Characteristics
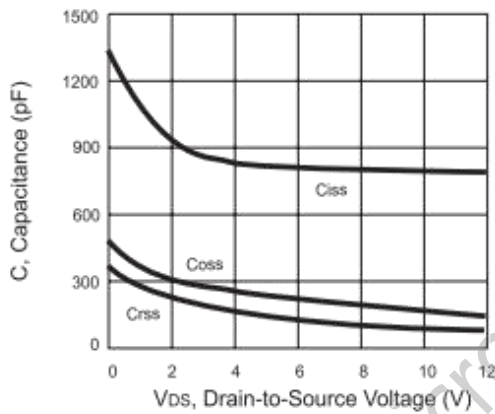
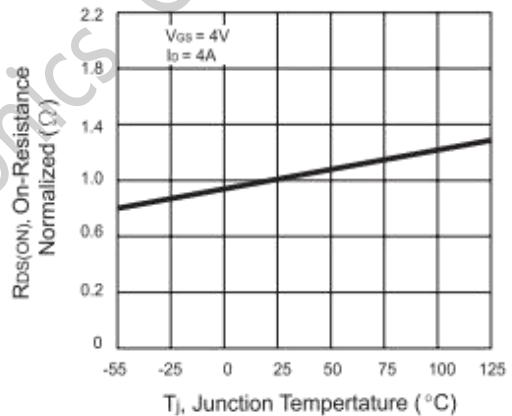Figure 2. Thansfer Characteristics

Figure 3. Capacitance

Figure 4. On-Resistance Variation
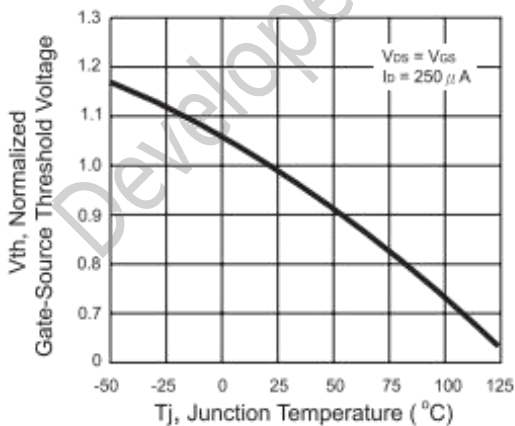with Temperature

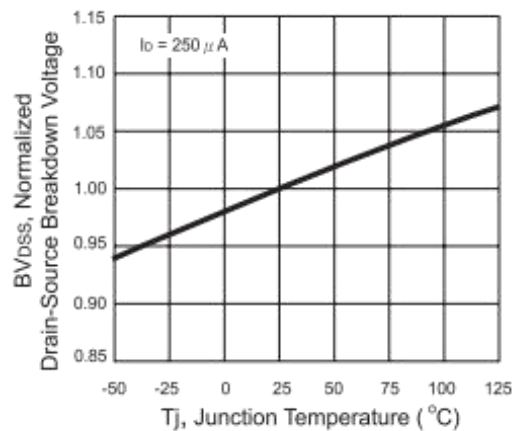Figure 5. Gate Threshold Variation
with Temperature

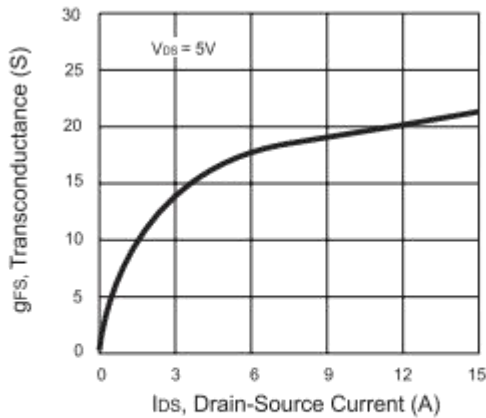Figure 6. Breakdown Voltage Variation
with Temperature

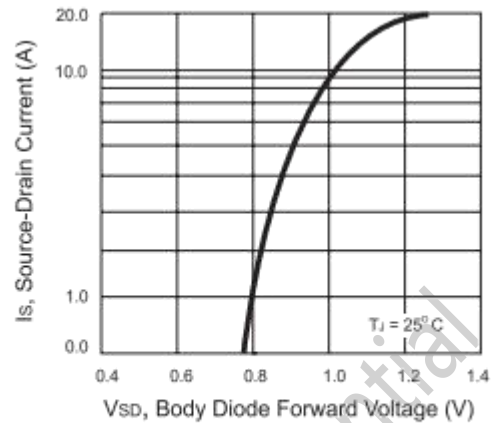Figure 7. Transconductance Variation with Drain Current

Figure 8. Body Diode Forward Voltage Variation with Source Current
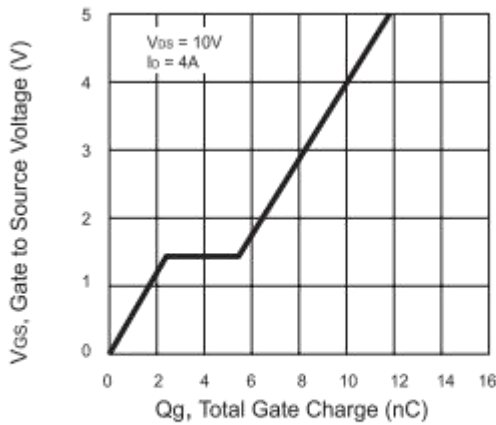
Figure 9. Gate Charge

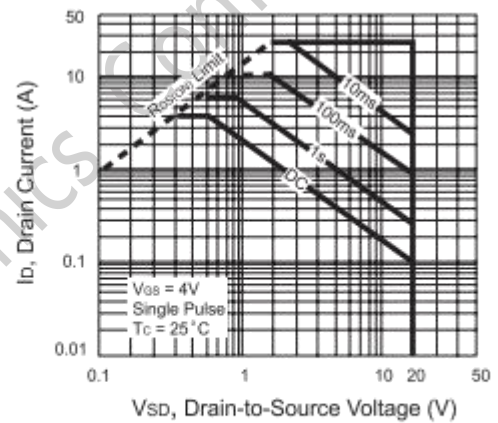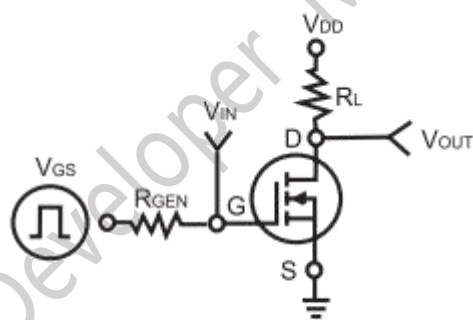Figure 10. Maximum Safe Operating Area

Figure 11. Switching Test Circuit

Figure 12. Switching Waveforms

Figure 13. Normalized Thermal Transient Impedance Curve
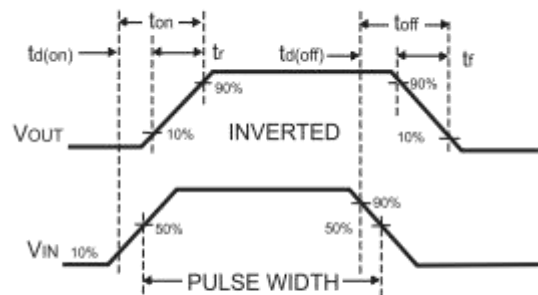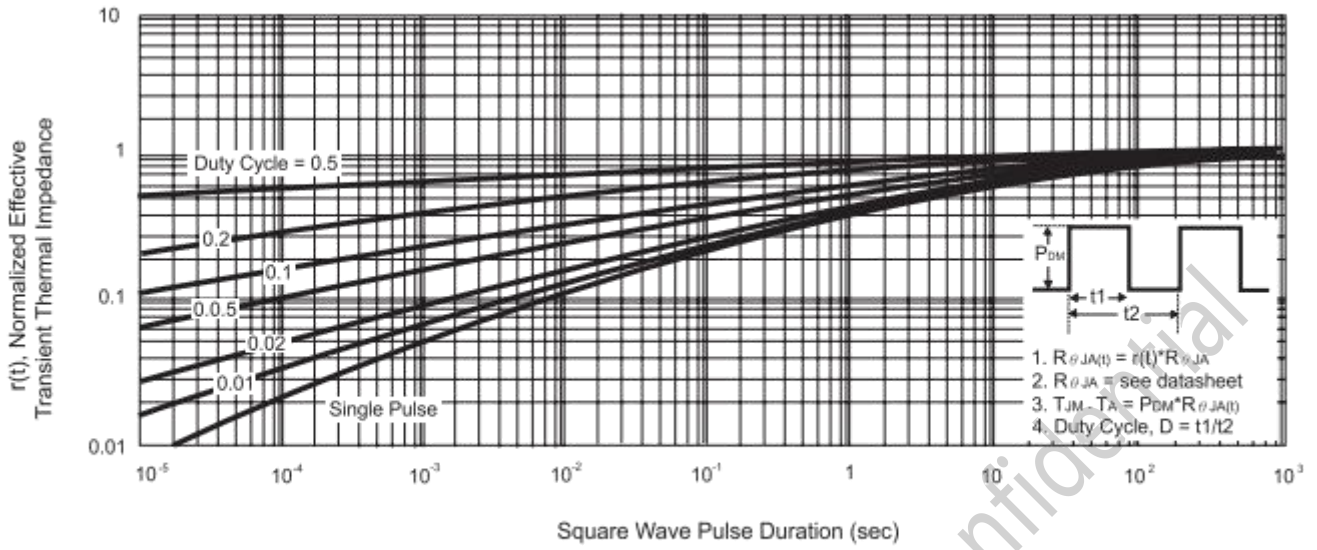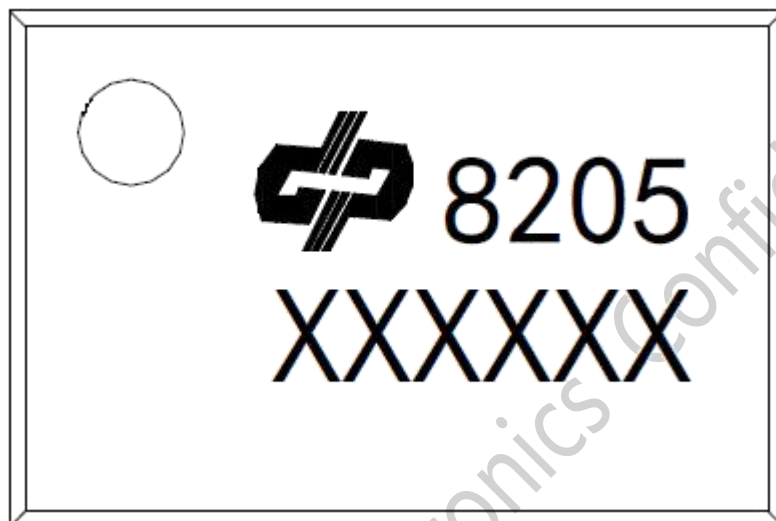
MARKING DESCRIPSION

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NOTE:

Y   —Code of productive year code(the last
        number of the year)

M   —Code of productive month(for example: A
        means January, B means February...)

DD —Productive date(the number of the date)

NN —Lot number of wafer

FOR EXCAMPLE:

8E1103

Means this product was produced in 2018-05-11 ,
and 03 is the wafer lot.

PACKAGE OUTLINE DIMENSIONS

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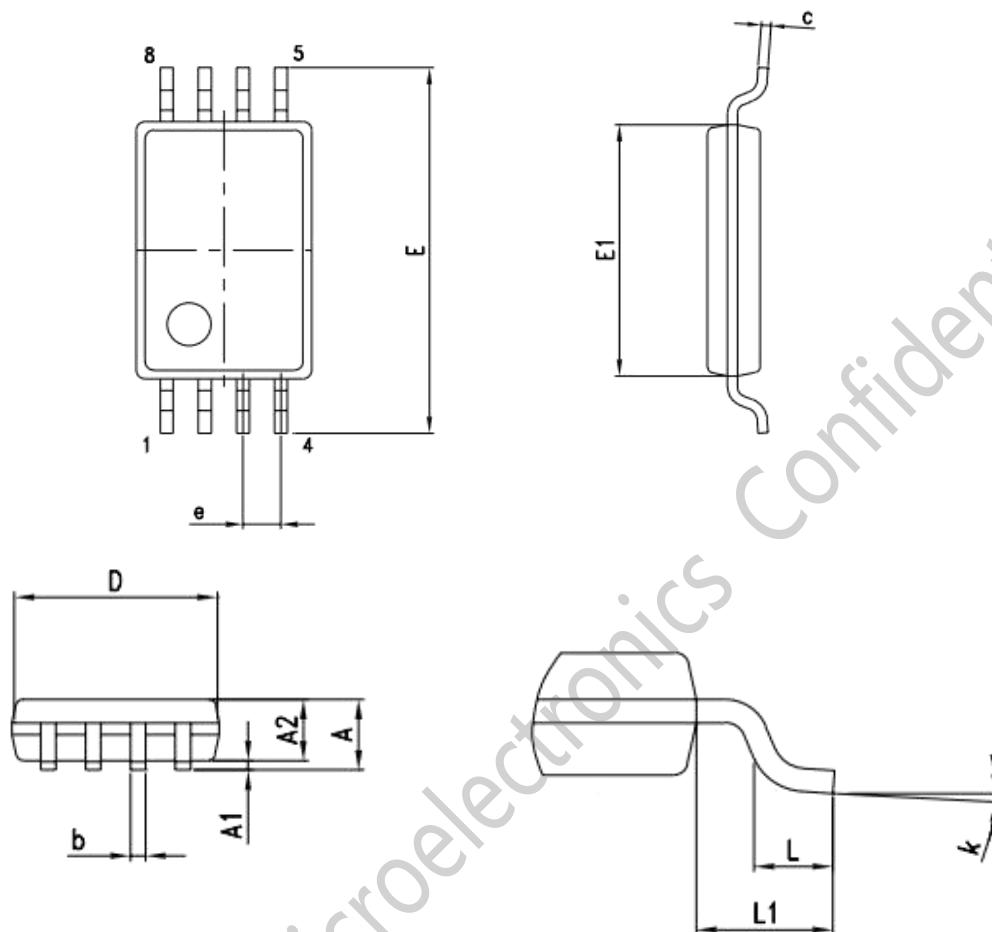
DIM.	mm.			inch.		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.05		1.20	0.041		0.047
A1	0.05		0.15	0.002		0.006
A2	0.80		1.05	0.032		0.041
b	0.19		0.30	0.008		0.012
c	0.090		0.20	0.003		0.007
D	2.90		3.10	0.114		0.122
E	6.20		6.60	0.240		0.260
E1	4.30		4.50	0.170		0.177
e		0.65			0.025	
L	0.45		0.75	0.018		0.030
L1		1.00			0.039	
k	0°		8°	0.192		0.208

TAPE SIZE

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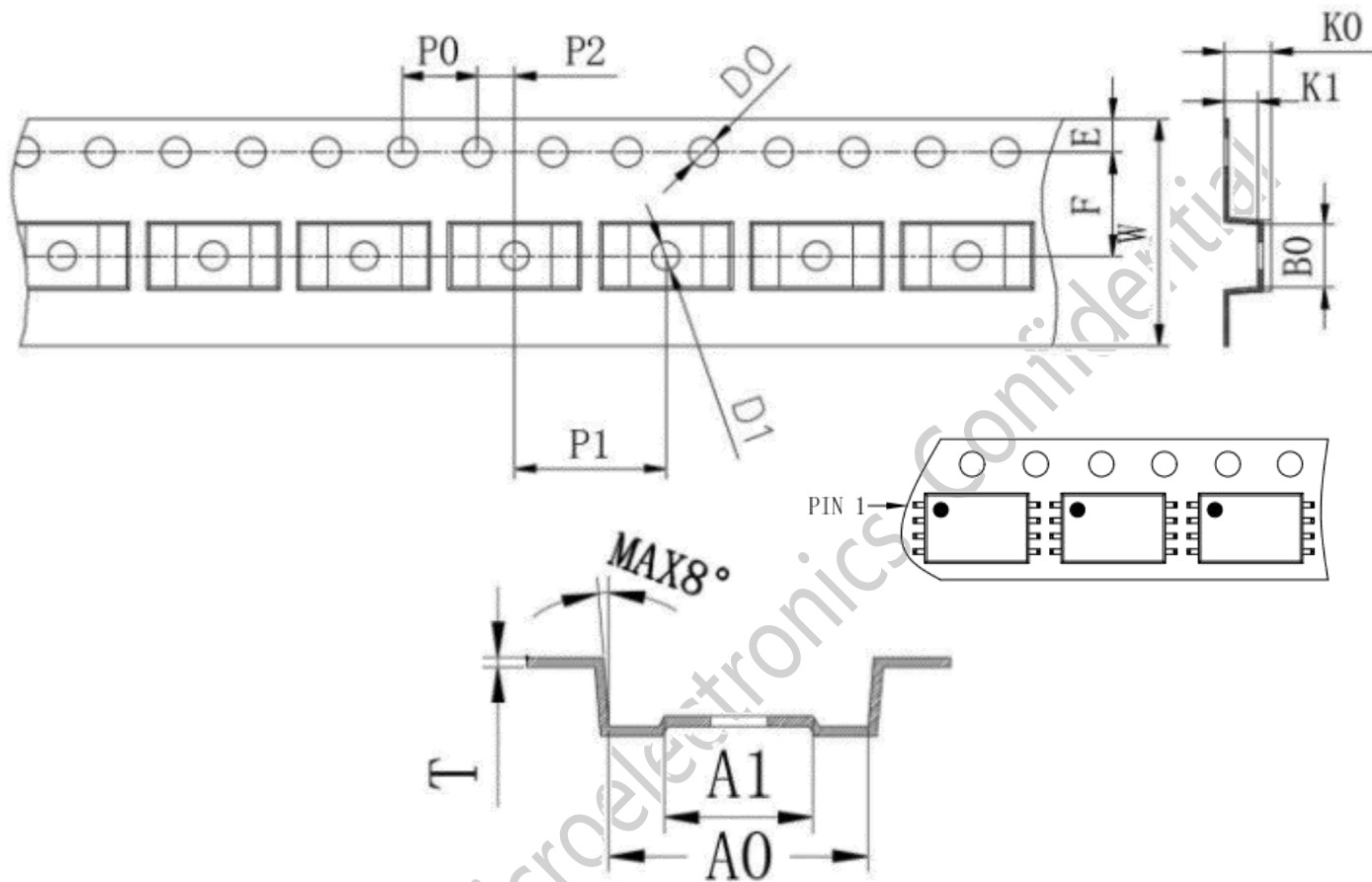
SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	6.90±0.10	3.30±0.10	1.60±0.10	4.00±0.10	8.00±0.10	2.00±0.05
SYMBOL	T	E	F	D0	D1	W
SPEC	0.25±0.05	1.75±0.10	5.50±0.05	1.55±0.05	1.50±0.10	12.00 +0.30 −0.10

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