

# CMP029N10/CMB029N10/CMI029N10/CMF029N10

100V, 2.3mΩ typ., 200A N-Channel MOSFET

## General Description

The 029N10 uses advanced SGT technology to provide excellent RDS(ON). This device is ideal for high-frequency switching and synchronous rectification.

## Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
100V	2.6mΩ	200A

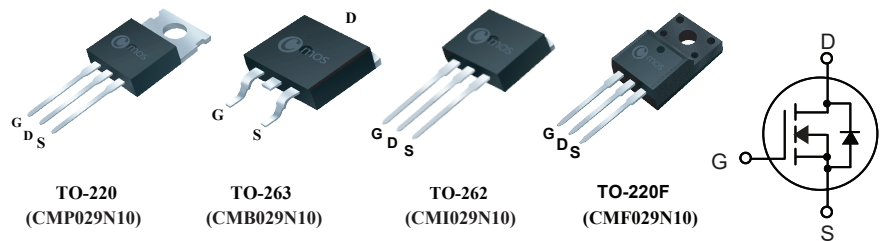
## Applications

- DC/DC Converter
- Switching applications

## Features

- Low on-resistance
- Fast Switching
- RoHS Compliant

## TO-220/263/262/220F Pin Configuration



## Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
V <sub>DS</sub>	Drain-Source Voltage	100		V
V <sub>GS</sub>	Gate-Source Voltage	±20		V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current	200	200*	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current	140	140*	A
I <sub>DM</sub>	Pulsed Drain Current	800	800*	A
EAS	Single Pulse Avalanche Energy (Note 1)	4305		mJ
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	400	45	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150		°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150		°C

\* Drain current limited by maximum junction temperature.

## Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient Max.	40	40	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-case Max.	0.38	3.33	°C/W

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	100	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =28A	---	2.3	2.6	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	2	---	4	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =100V , V <sub>GS</sub> =0V	---	---	1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> = 20A	---	50	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	2	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =50A	---	150	---	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =50V	---	42	---	
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>GS</sub> = 10V	---	30	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =50V	---	35	---	ns
T <sub>r</sub>	Rise Time	I <sub>D</sub> =50A	---	20	---	
T <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>G</sub> =3Ω	---	125	---	
T <sub>f</sub>	Fall Time	V <sub>GS</sub> = 10V	---	50	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	12200	---	pF
C <sub>oss</sub>	Output Capacitance		---	4150	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	650	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	200	A
I <sub>SM</sub>	Pulsed Source Current		---	---	800	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =28A	---	0.78	1.4	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> = 90A , V <sub>GS</sub> =0V	---	101	---	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt =100A/μs	---	338	---	nC

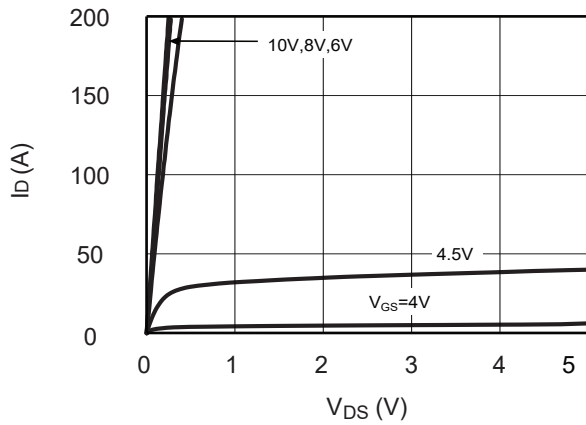
**Notes:**

1.The EAS data shows Max. rating .The test condition is V<sub>DS</sub>=80V , V<sub>GS</sub>=10V , L=5mH , I<sub>AS</sub>=41.5A.

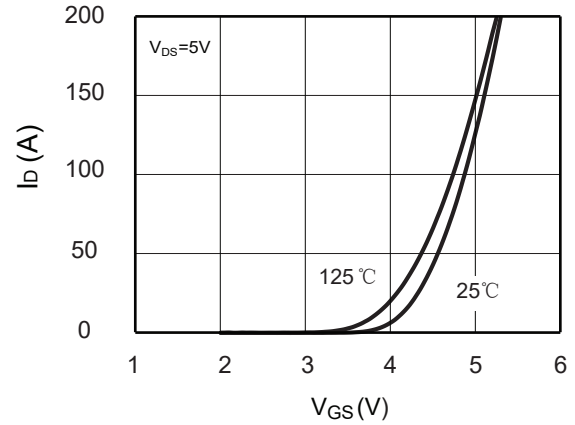
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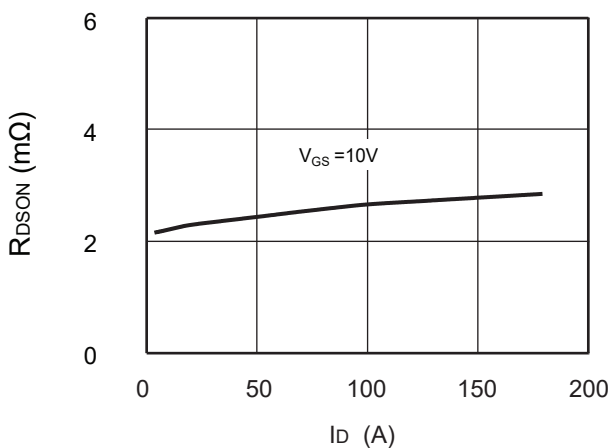
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**Typical Characteristics**


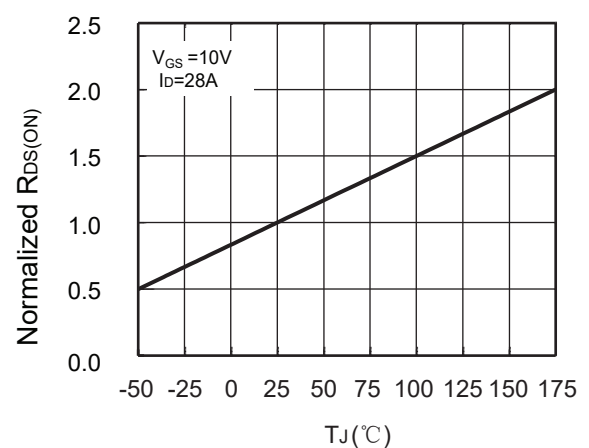
Output Characteristics



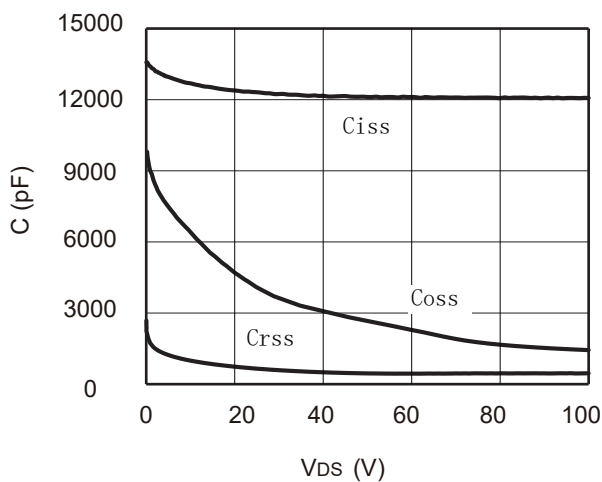
transfer characteristics



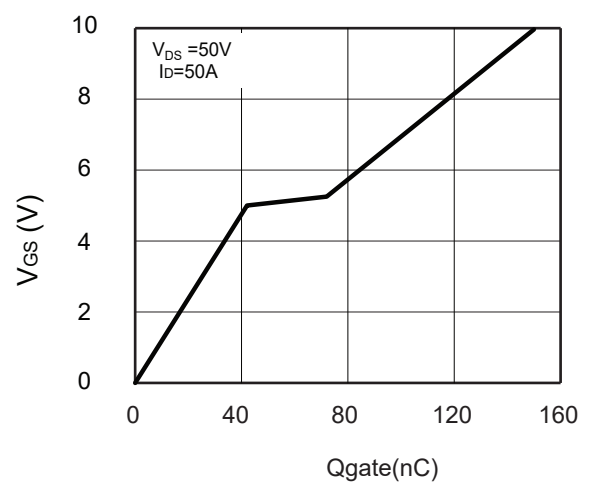
drain-source on-resistance



On-Resistance vs. Junction Temperature

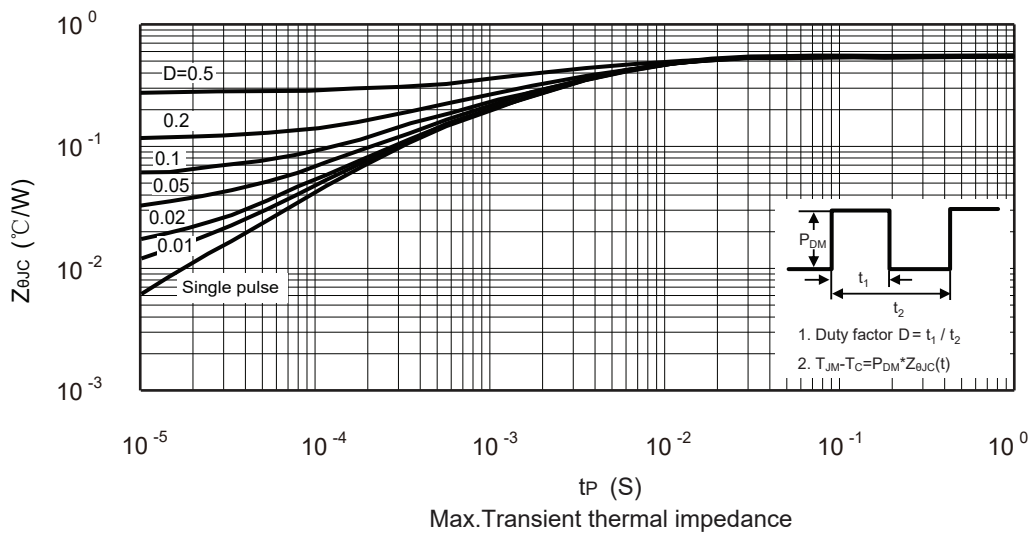
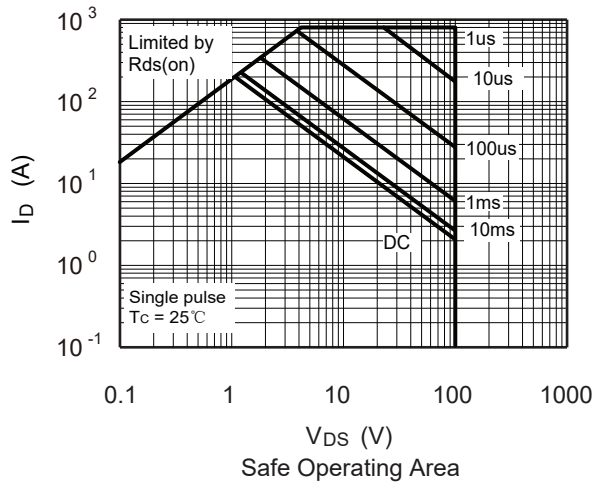


Capacitance Characteristics



Gate charge vs gate-source voltage

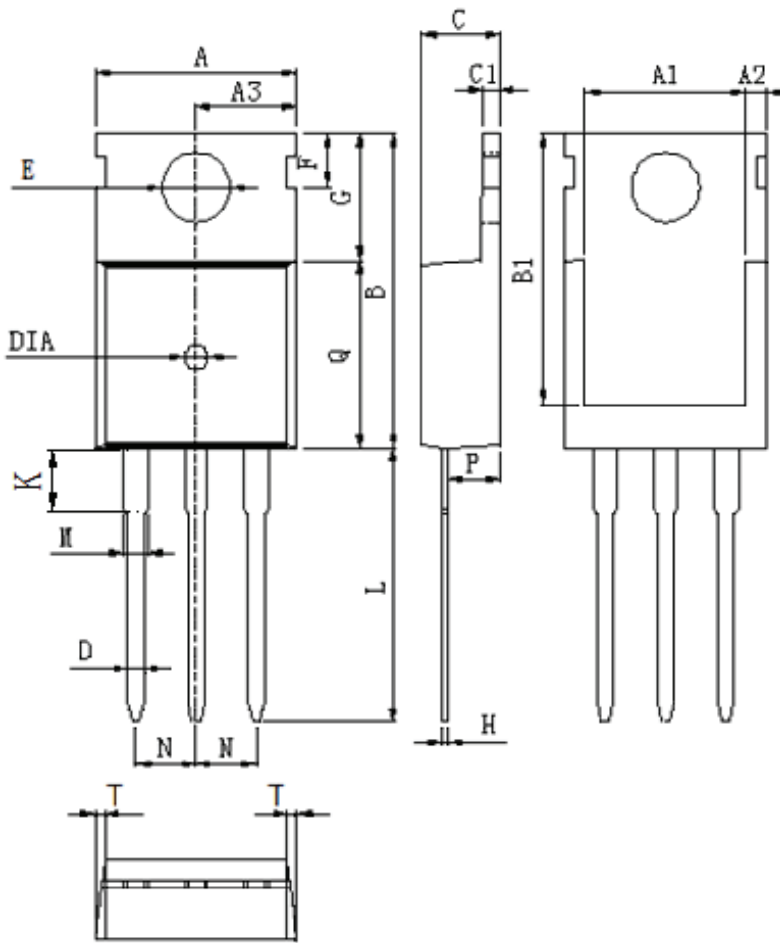
Typical Characteristics



Package Dimension

TO-220

Unit :mm

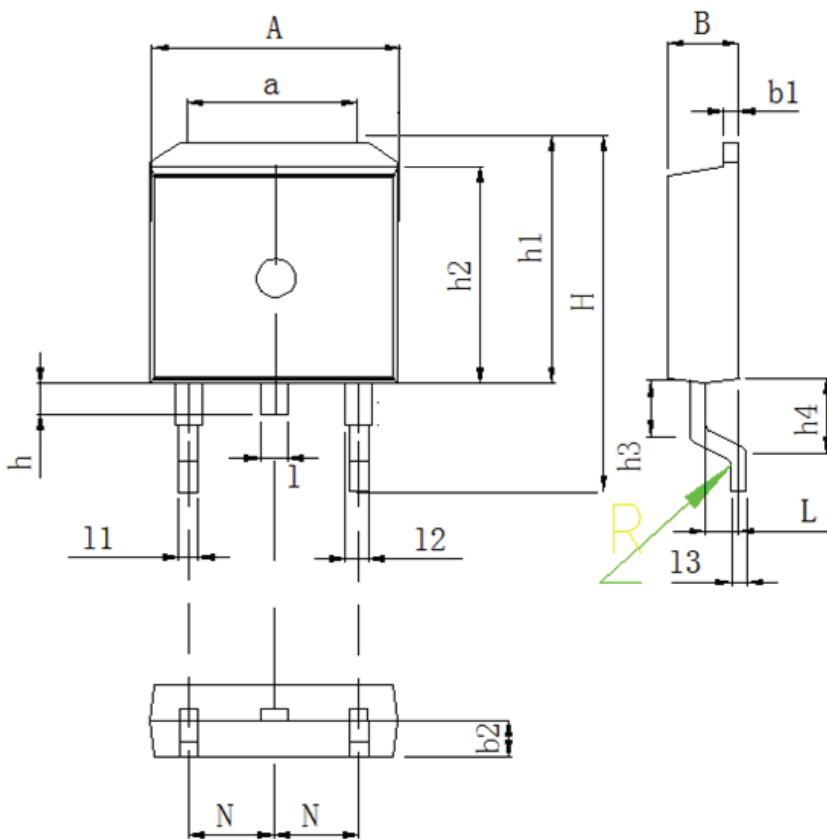


DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5(deep 0.2)

Package Dimension

TO-263

Unit :mm

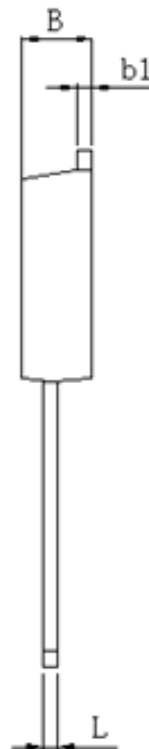
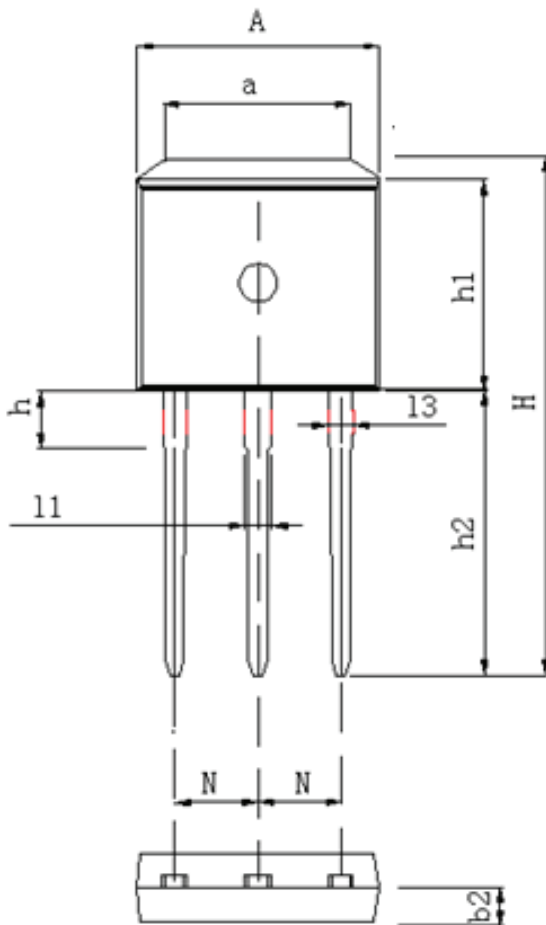


DIM	MILLIMETERS
A	9.8±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	15.5±0.3
h	1.54±0.2
h1	10.5±0.2
h2	9.2±0.1
h3	1.54±0.2
h4	2.7±0.2
L	2.4±0.2
1	1.3±0.1
11	0.8±0.1
12	1.3±0.1
13	0.5±0.1
N	2.54±0.1
R	0.5R±0.05

Package Dimension

TO-262

Unit :mm

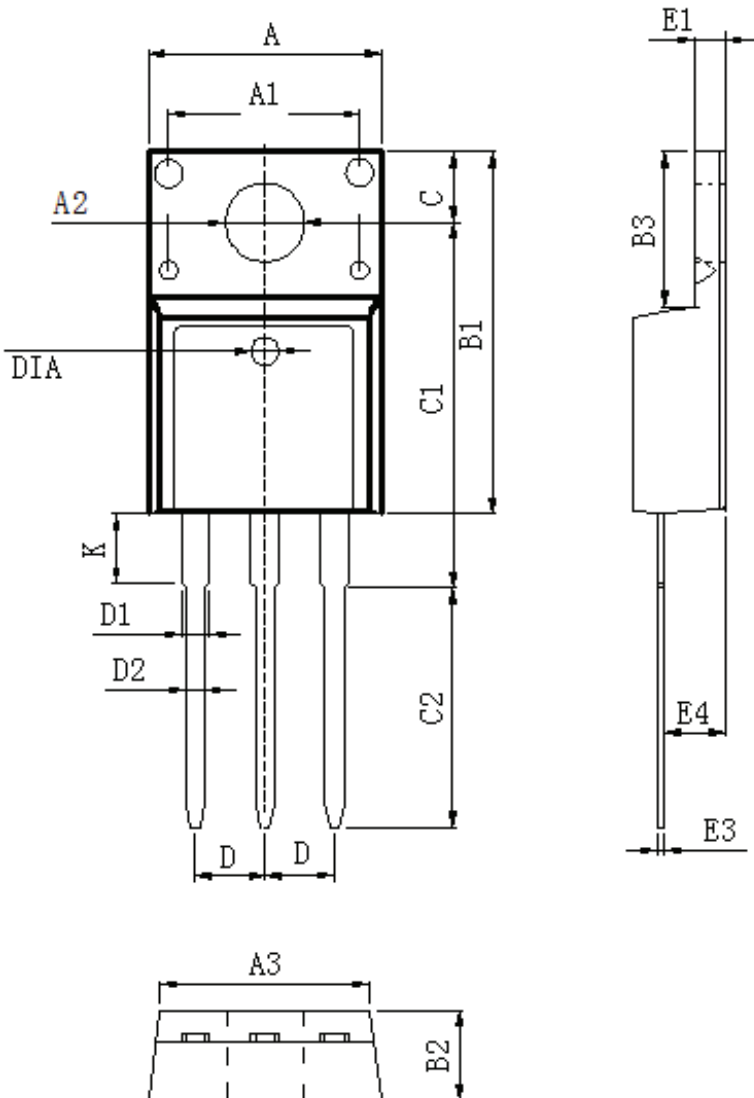


DIM	MILLIMETERS
A	9.98±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	23.9±0.3
h	3.1±0.2
h1	9.16±0.2
h2	13.2±0.2
L	0.5±0.1
l1	1.3±0.1
l2	0.8±0.1
N	2.45±0.1

Package Dimension

TO-220F

Unit :mm



DIM	MILLIMETERS
A	10.16±0.3
A1	7.00±0.1
A2	3.3±0.2
A3	9.5±0.2
B1	15.87±0.3
B2	4.7±0.2
B3	6.68±0.4
C	3.3±0.2
C1	12.57±0.3
C2	10.02±0.5
D	2.54±0.05
D1	1.28±0.2
D2	0.8±0.1
K	3.1±0.3
E1	2.54±0.1
E3	0.5±0.1
E4	2.76±0.2
DIA	⊙1.5(deep 0.2)