

General Description

The 220N03B uses advanced trench technology to provide excellent $R_{DS(ON)}$. This is suitable device for high current switching applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
30V	2.7mΩ	220A

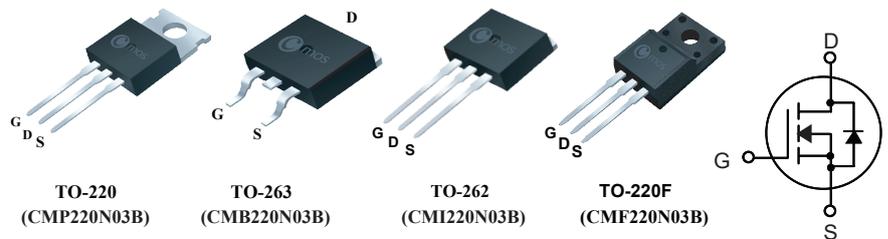
Applications

- Switching applications
- Motor Drive Applications

Features

- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

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



Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
V_{DS}	Drain-Source Voltage	30		V
V_{GS}	Gate-Source Voltage	±20		V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	220	220*	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	154	154*	A
I_{DM}	Pulsed Drain Current	880	880*	A
EAS	Single Pulse Avalanche Energy (Note 1)	3120		mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	200	45	W
T_{STG}	Storage Temperature Range	-55 to 150		°C
T_J	Operating Junction Temperature Range	-55 to 150		°C

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient Max.	62	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case Max.	0.63	2.78	°C/W

Electrical Characteristics (T_J=25°C , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =30A	---	2.4	2.7	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	3	---	5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =30A	---	32	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	3.8	---	Ω
Q _g	Total Gate Charge	V _{DD} =30V , I _D =80A V _{GS} =0 to 10V	---	108	---	nC
Q _{gs}	Gate-Source Charge		---	31	---	
Q _{gd}	Gate-Drain Charge		---	44	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =20V , V _{GS} =10V R _G =4.7Ω , I _D =60A	---	35	---	ns
T _r	Rise Time		---	220	---	
T _{d(off)}	Turn-Off Delay Time		---	80	---	
T _f	Fall Time		---	50	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	5500	---	pF
C _{oss}	Output Capacitance		---	1300	---	
C _{rss}	Reverse Transfer Capacitance		---	700	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Diode continuous forward current	V _G =V _D =0V , Force Current	---	---	220	A
I _{S,pulse}	Diode pulse current		---	---	880	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _F =30A , T _J =25 °C	---	0.80	1.2	V

Note :

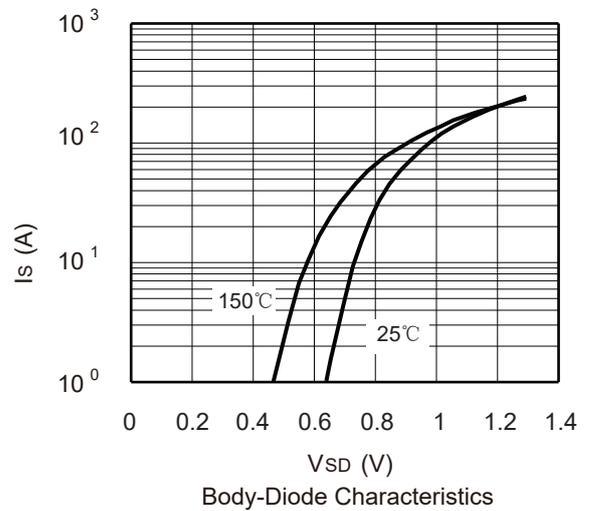
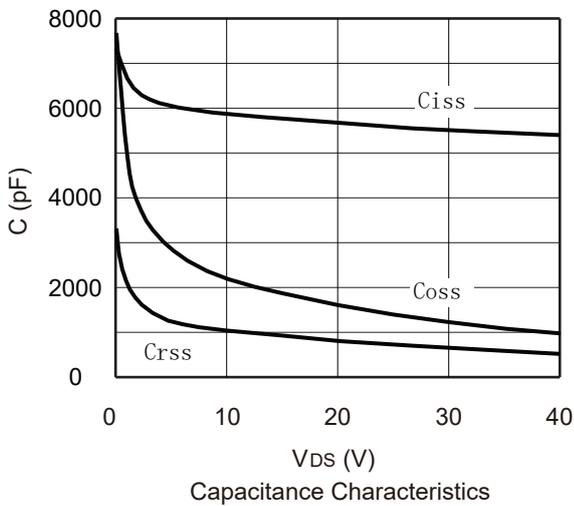
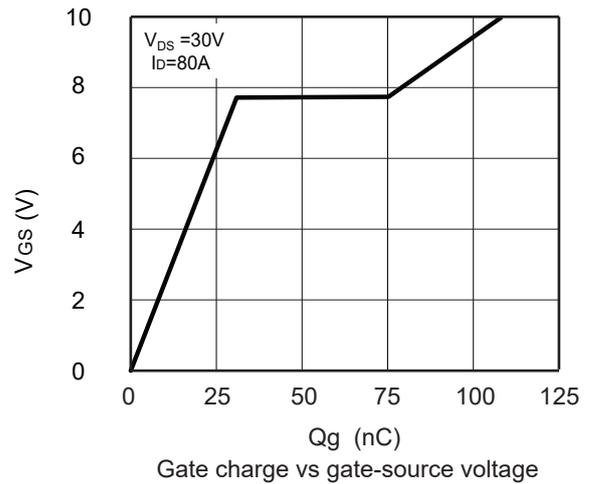
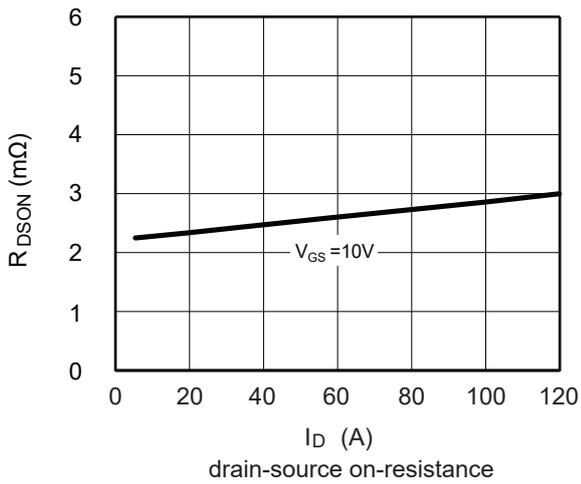
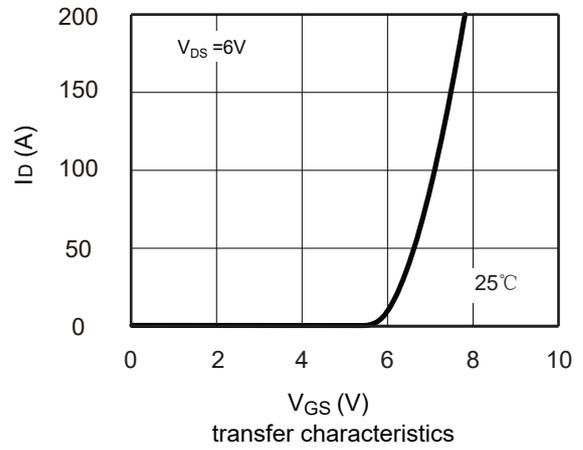
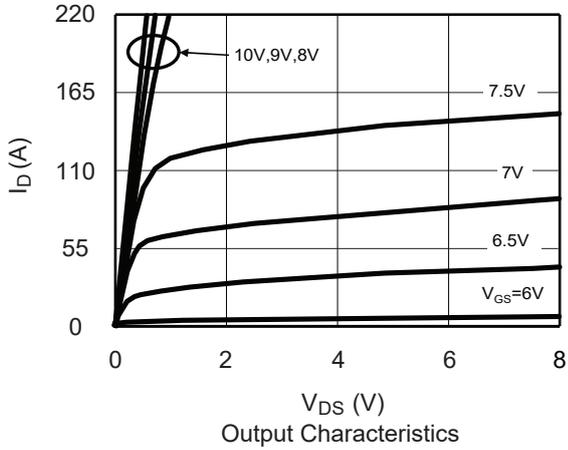
1.The EAS data shows Max. rating .The test condition is V_{DS}=45V , V_{GS}=10V , L=1mH , I_{AS}=79A.

This product has been designed and qualified for the consumer market.

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Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

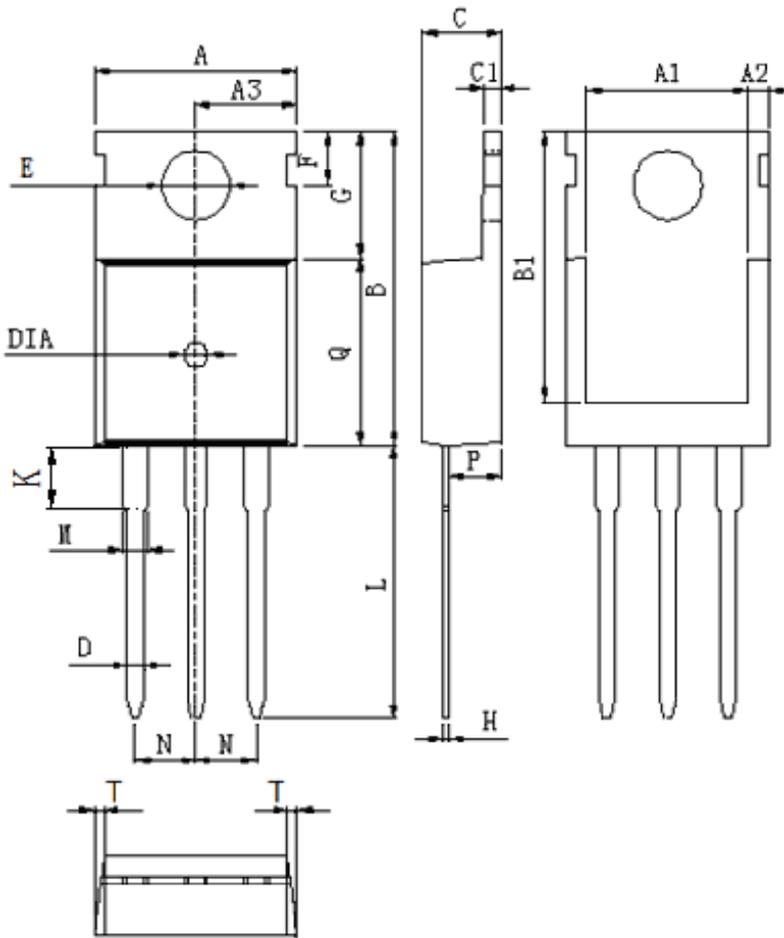
Typical Characteristics



Package Dimension

TO-220

Unit :mm

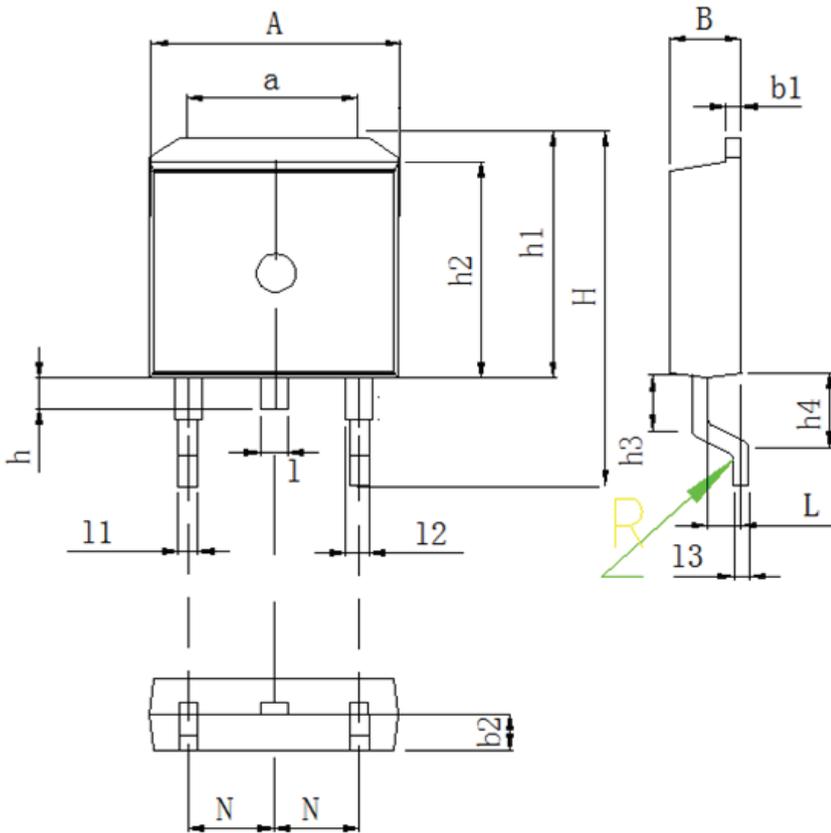


DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5(deep 0.2)

Package Dimension

TO-263

Unit :mm

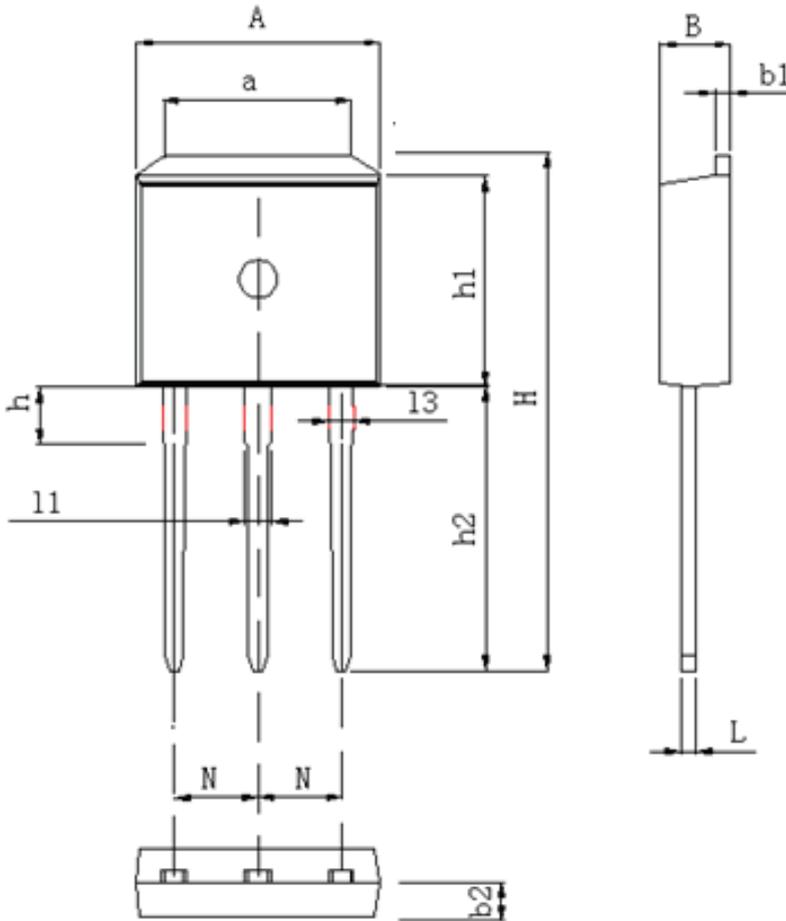


DIM	MILLIMETERS
A	9.8±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	15.5±0.3
h	1.54±0.2
h1	10.5±0.2
h2	9.2±0.1
h3	1.54±0.2
h4	2.7±0.2
L	2.4±0.2
1	1.3±0.1
11	0.8±0.1
12	1.3±0.1
13	0.5±0.1
N	2.54±0.1
R	0.5R±0.05

Package Dimension

TO-262

Unit :mm

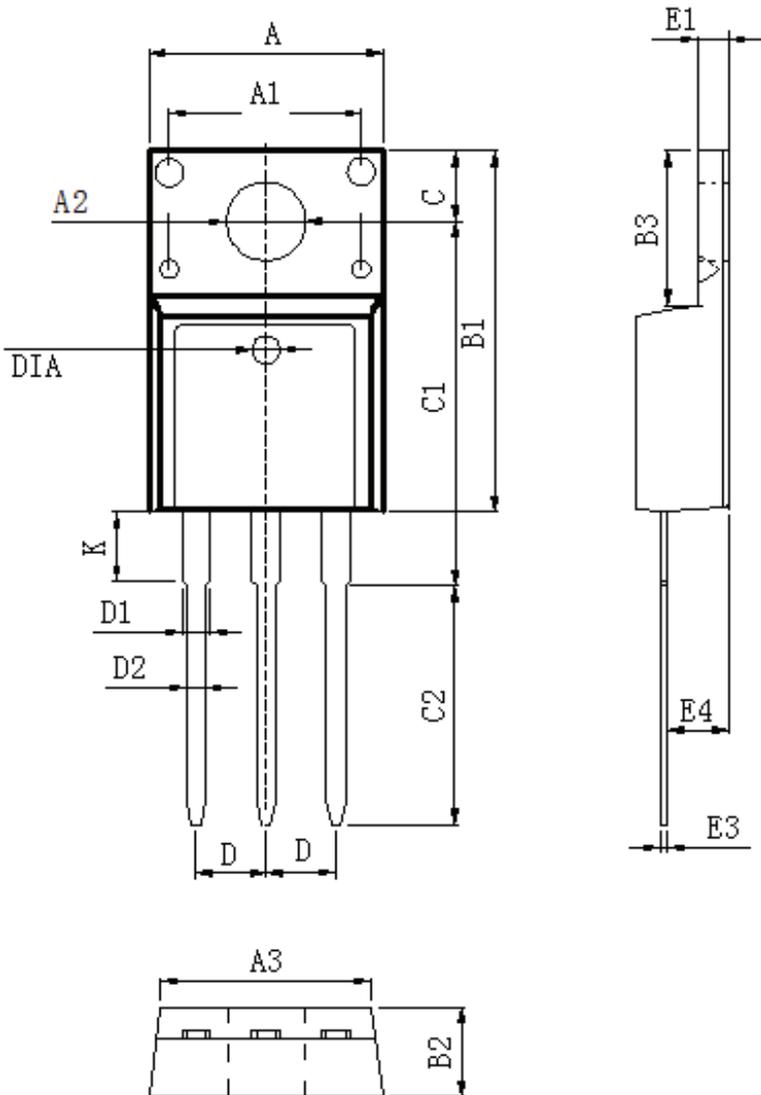


DIM	MILLIMETERS
A	9.98±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	23.9±0.3
h	3.1±0.2
h1	9.16±0.2
h2	13.2±0.2
L	0.5±0.1
l1	1.3±0.1
l2	0.8±0.1
N	2.45±0.1

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)