

CMP20N65A/CMB20N65A/CMI20N65A/CMF20N65A

650V, 0.43Ω typ., 20A N-Channel MOSFET

General Description

These Power MOSFETs are produced using Cmos's proprietary, planar stripe, DMOS technology. These devices are widely used in AC-DC power supplies, DC-DC converters and H-bridge PWM motor drivers.

Product Summary

BVDSS	R _{DS(on)} max.	ID
650V	0.49Ω	20A

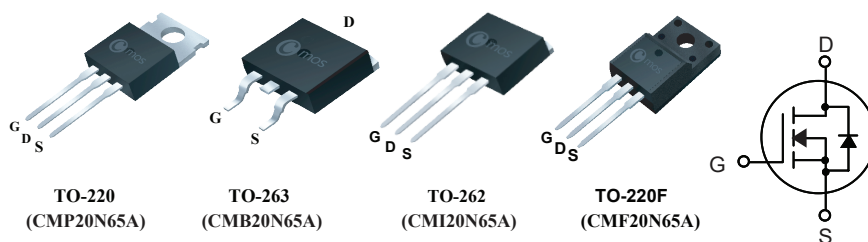
Applications

- Switch Mode Power Supply
- Uninterruptible Power Supply

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

Features

- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant



Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
V _{DS}	Drain-Source Voltage	650		V
V _{GS}	Gate-Source Voltage	±30		V
I _D @T _C =25°C	Continuous Drain Current	20	20*	A
I _D @T _C =100°C	Continuous Drain Current	14	14*	A
I _{DM}	Pulsed Drain Current (Note 1)	80	80*	A
EAS	Single Pulse Avalanche Energy (Note 2)	490		mJ
P _D @T _C =25°C	Total Power Dissipation	250	65	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 _{θJA}	Thermal Resistance Junction-ambient Max.	62.5	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-case Max.	0.50	1.92	°C/W

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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 =250μA	650	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =10A	---	430	490	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	3.0	---	5.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =650V , V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±30V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =20V , I _D =10A	---	12	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	1.6	---	Ω
Q _g	Total Gate Charge	V _{DS} =520V , I _D =20A V _{GS} =10V (Note 3)	---	52	---	nC
Q _{gs}	Gate-Source Charge		---	14.6	---	
Q _{gd}	Gate-Drain Charge		---	20	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =325V , I _D =20A R _{GS} =27Ω (Note 3)	---	67	---	ns
T _r	Rise Time		---	109	---	
T _{d(off)}	Turn-Off Delay Time		---	219	---	
T _f	Fall Time		---	63	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	2300	---	pF
C _{oss}	Output Capacitance		---	230	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	20	A
I _{SM}	Pulsed Source Current		---	---	80	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =20A , T _J =25°C	---	0.92	1.4	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	503	---	ns
Q _{rr}	Reverse Recovery Charge	T _J =25°C , I _r =20A (Note 3)	---	7.93	---	μC

Note :

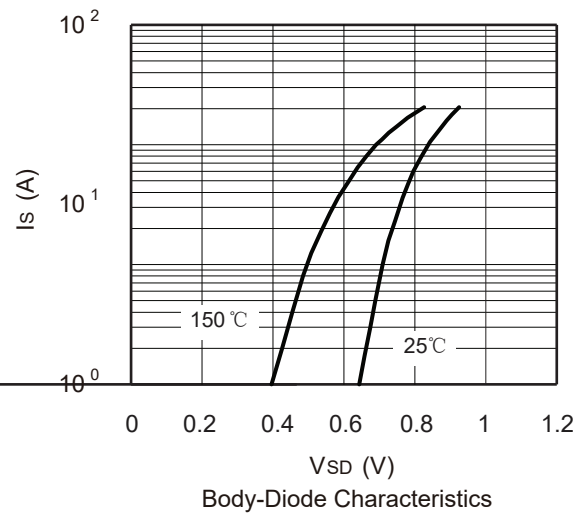
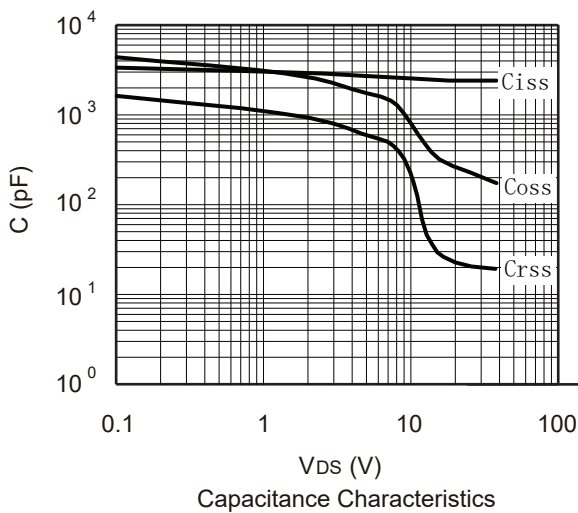
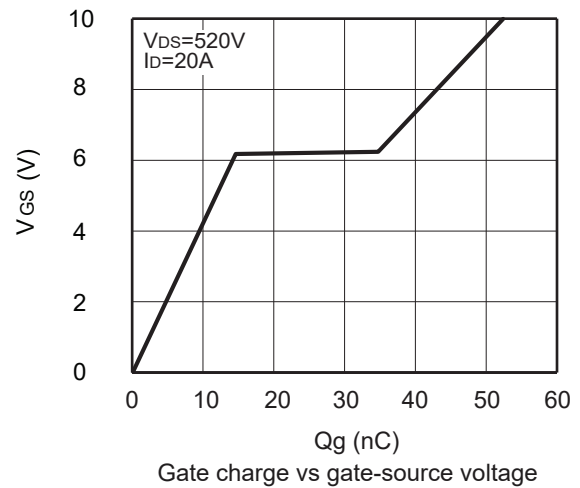
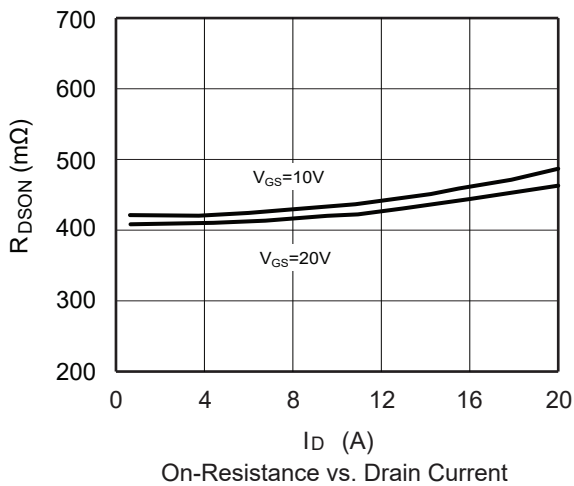
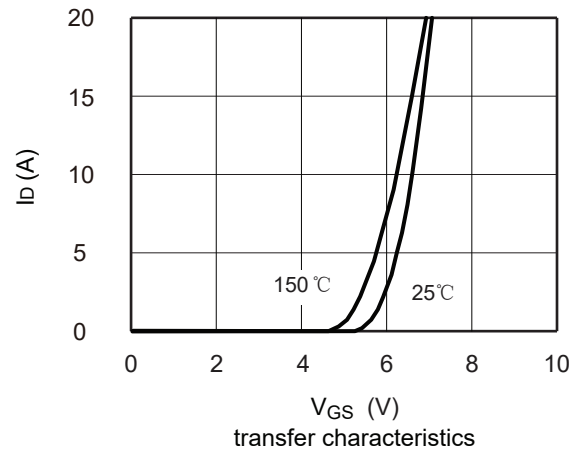
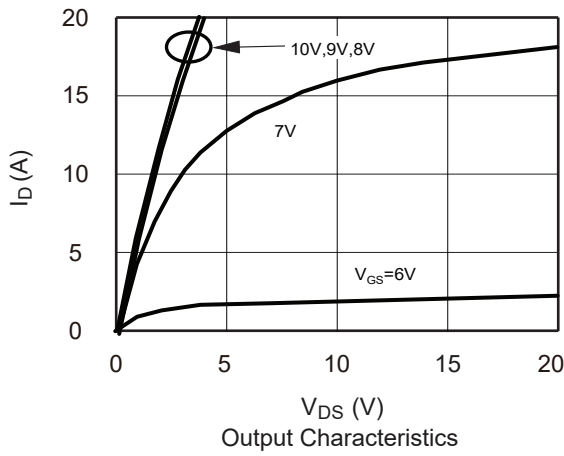
1. Repetitive rating: Pulse width limited by maximum junction temperature.
2. The EAS data shows Max. rating . The test condition is V_{DD}=100V , V_{GS}=10V , L=5mH , I_{AS}=14A.
3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

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

Cmos assumes no liability for customers' product design or applications.

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

Typical Characteristics



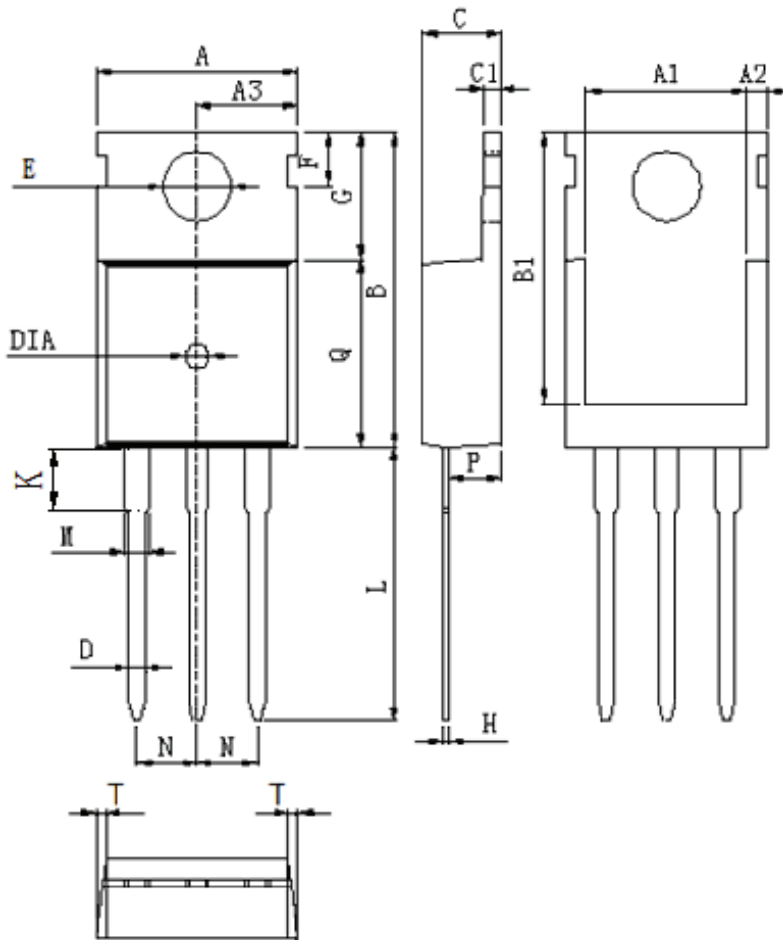
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Package Dimension

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)

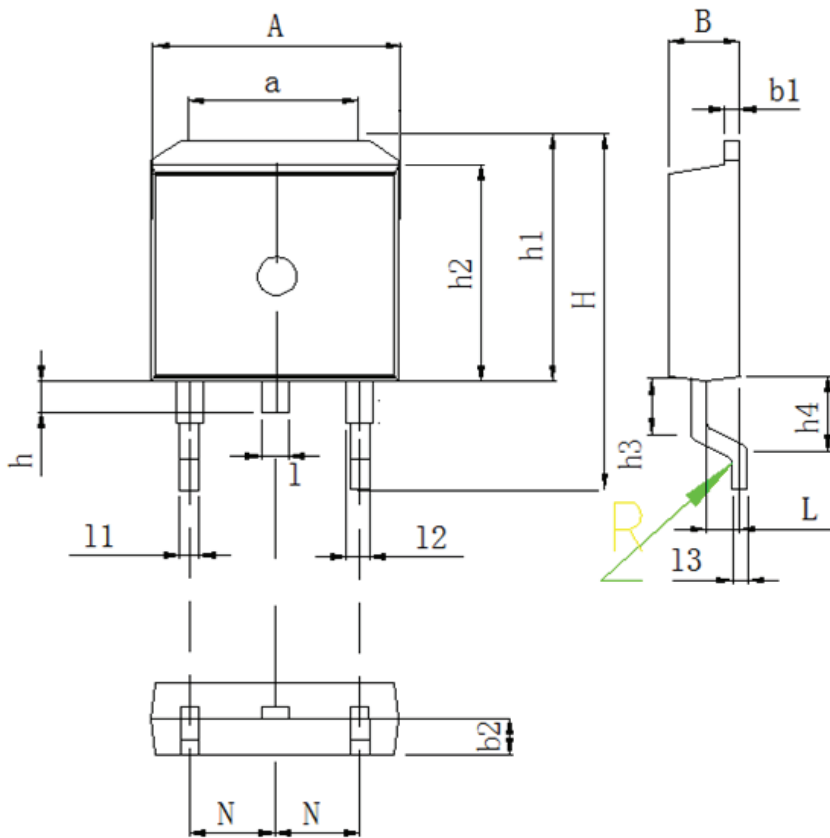
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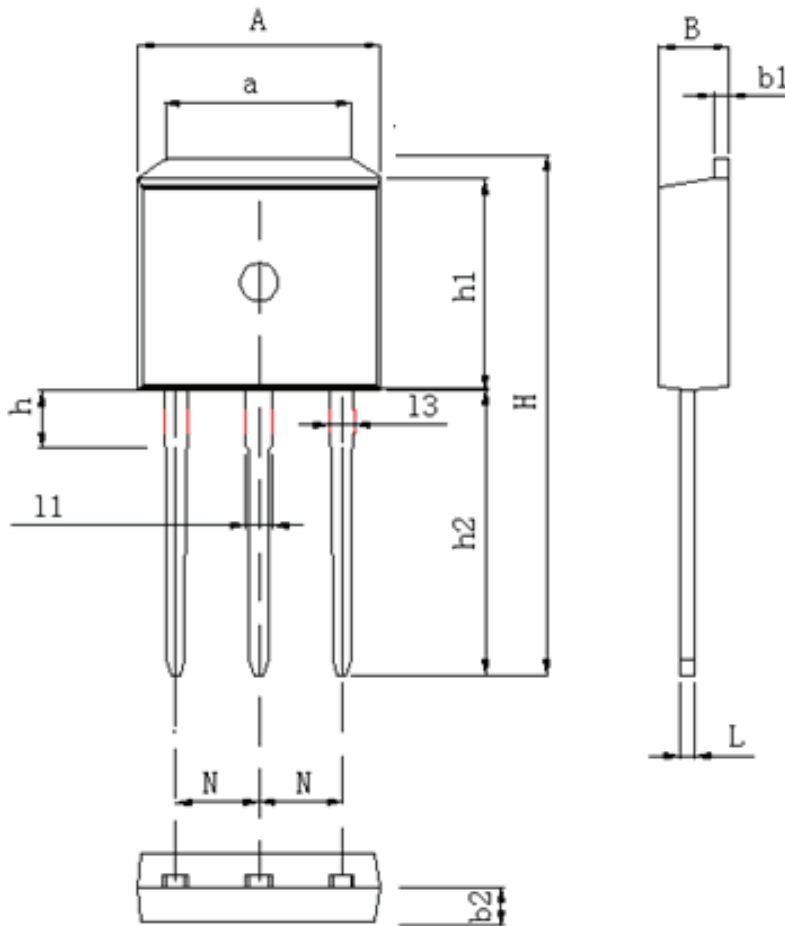
Package Dimension

TO-263

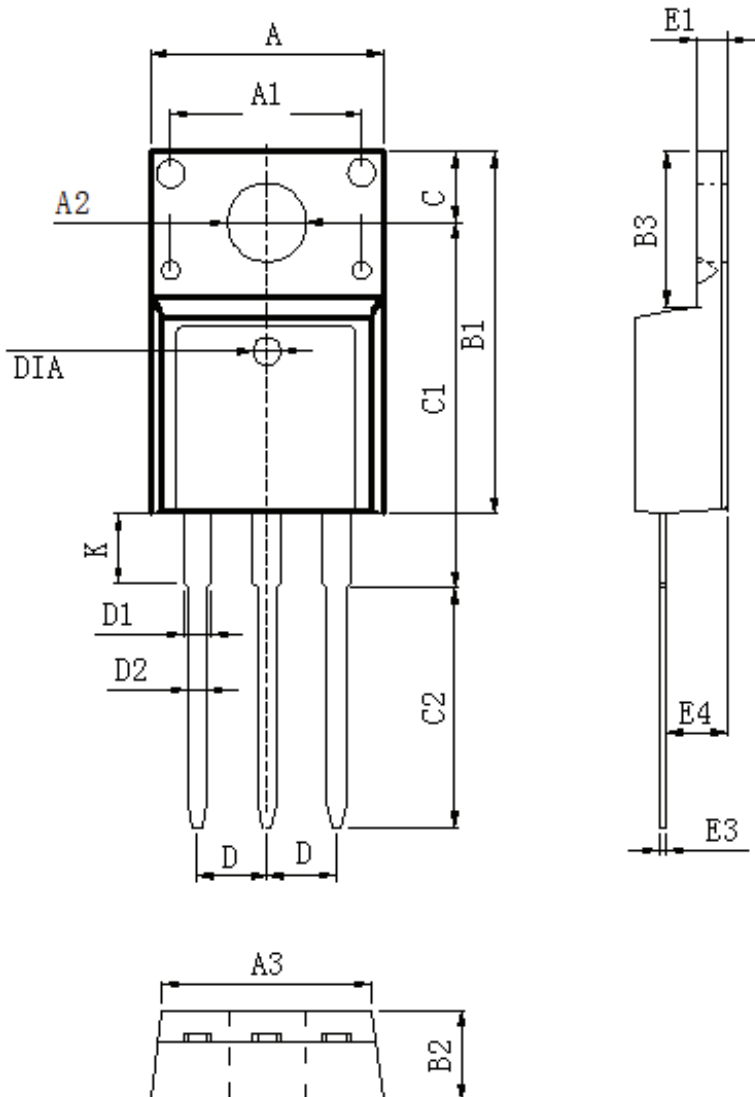
Unit :mm



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	$0.5R \pm 0.05$

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)