

CMP030N12/CMB030N12/CMI030N12/CMF030N12

120V, 2.8mΩ typ., 180A N-Channel MOSFET

General Description

The 030N12 uses advanced SGT technology to provide excellent RDS(ON). This device is ideal for high-frequency switching and synchronous rectification.

Product Summary

BVDSS	RDS(on) max.	ID
120V	3mΩ	180A

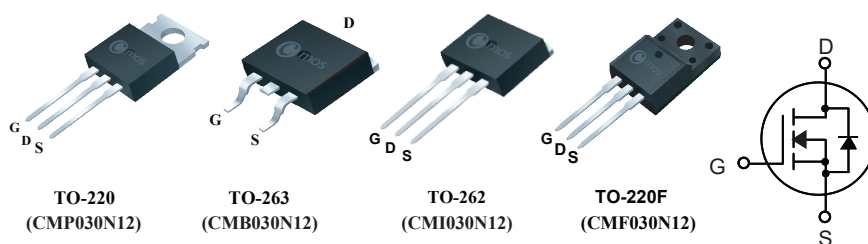
Applications

- Motor control and drive
- Battery management

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	120		V
V _{GS}	Gate-Source Voltage	±20		V
I _D @T _C =25°C	Continuous Drain Current	180	180*	A
I _D @T _C =100°C	Continuous Drain Current	126	126*	A
I _{DM}	Pulsed Drain Current	720	720*	A
EAS	Single Pulse Avalanche Energy (Note 1)	3800		mJ
P _D @T _C =25°C	Total Power Dissipation	300	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 _{θJA}	Thermal Resistance Junction-ambient Max.(min.footprint)	62	62	°C/W
R _{θJC}	Thermal Resistance Junction-case Max.	0.42	2.78	°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	120	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =90A	---	2.8	3	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	2	---	4	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =120V , V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =20A	---	51	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.6	---	Ω
Q _g	Total Gate Charge	V _{DS} =60V , I _D =90A V _{GS} =10V	---	147	---	nC
Q _{gs}	Gate-Source Charge		---	57.7	---	
Q _{gd}	Gate-Drain Charge		---	32.3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =60V R _{G_ext} =2.7Ω , V _{GS} =10V	---	33	---	ns
T _r	Rise Time		---	80	---	
T _{d(off)}	Turn-Off Delay Time		---	79	---	
T _f	Fall Time		---	47	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	9900	---	pF
C _{oss}	Output Capacitance		---	3600	---	
C _{rss}	Reverse Transfer Capacitance		---	400	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	180	A
I _{SM}	Pulsed Source Current		---	---	720	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =90A	---	0.88	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V , I _S =90A di/dt = 100A/μs	---	90.2	---	ns
Q _{rr}	Reverse Recovery Charge		---	240	---	nC

Note :

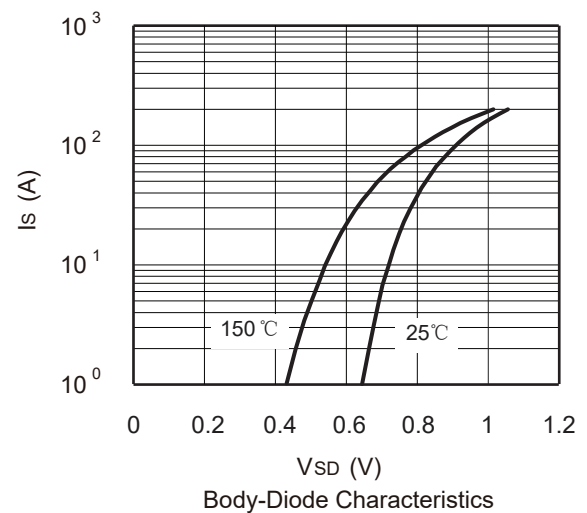
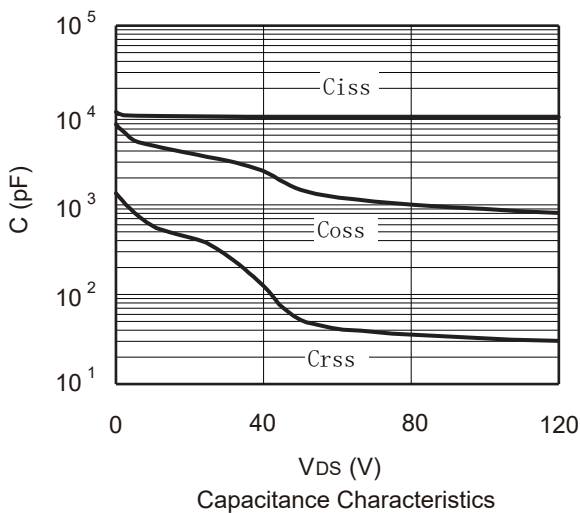
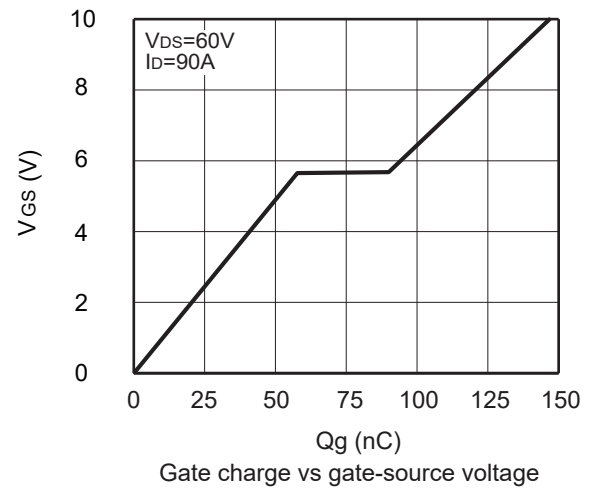
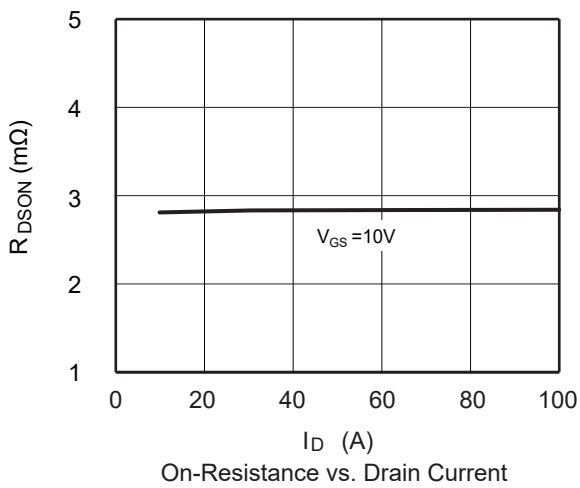
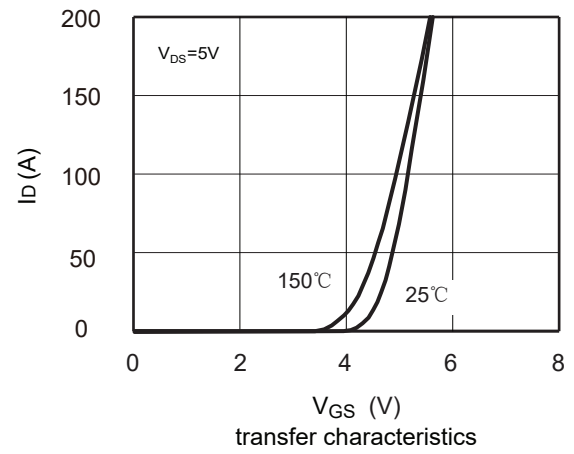
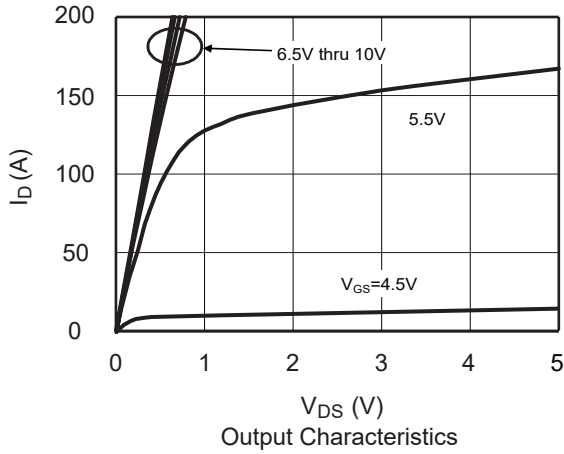
1.The EAS data shows Max. rating .The test condition is V_{DS}=80V , V_{GS}=10V , L=5mH , I_{AS}=39A.

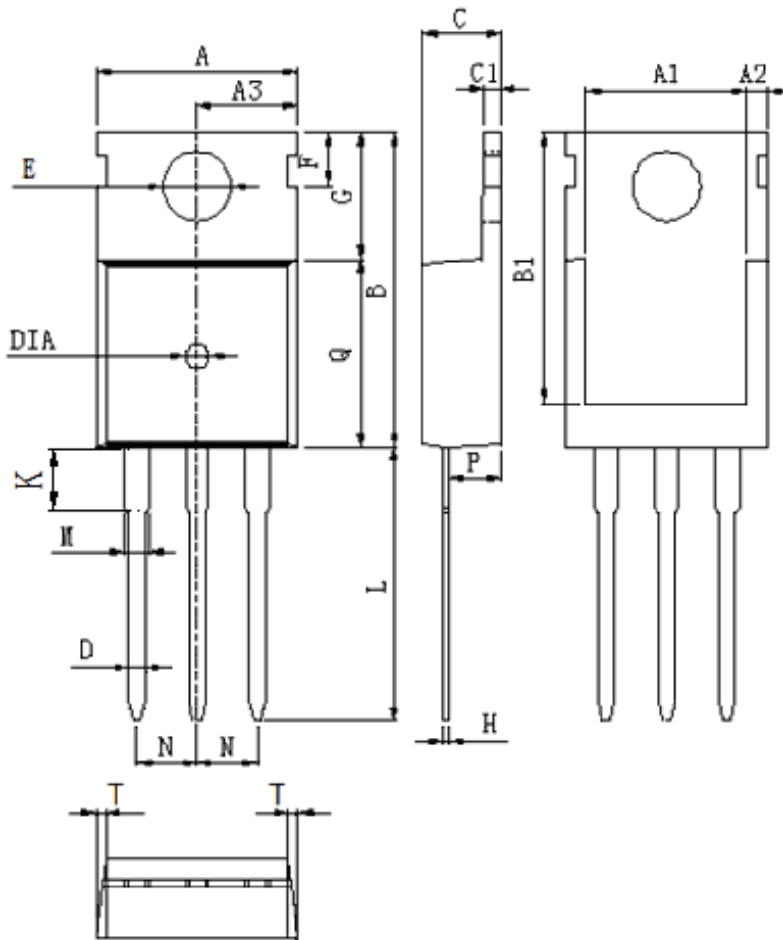
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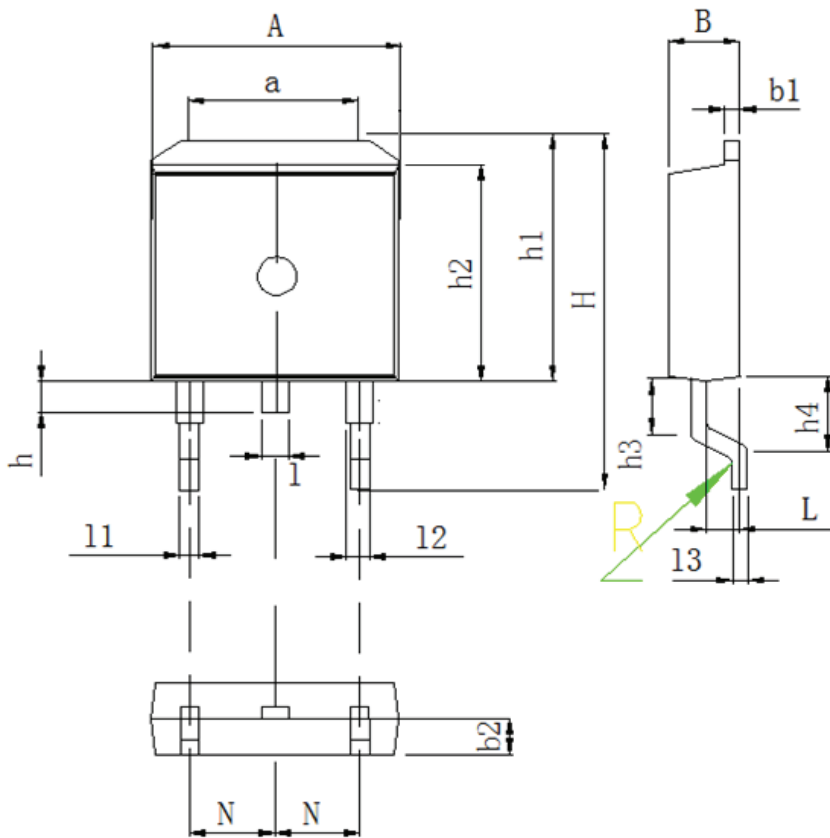
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Typical Characteristics

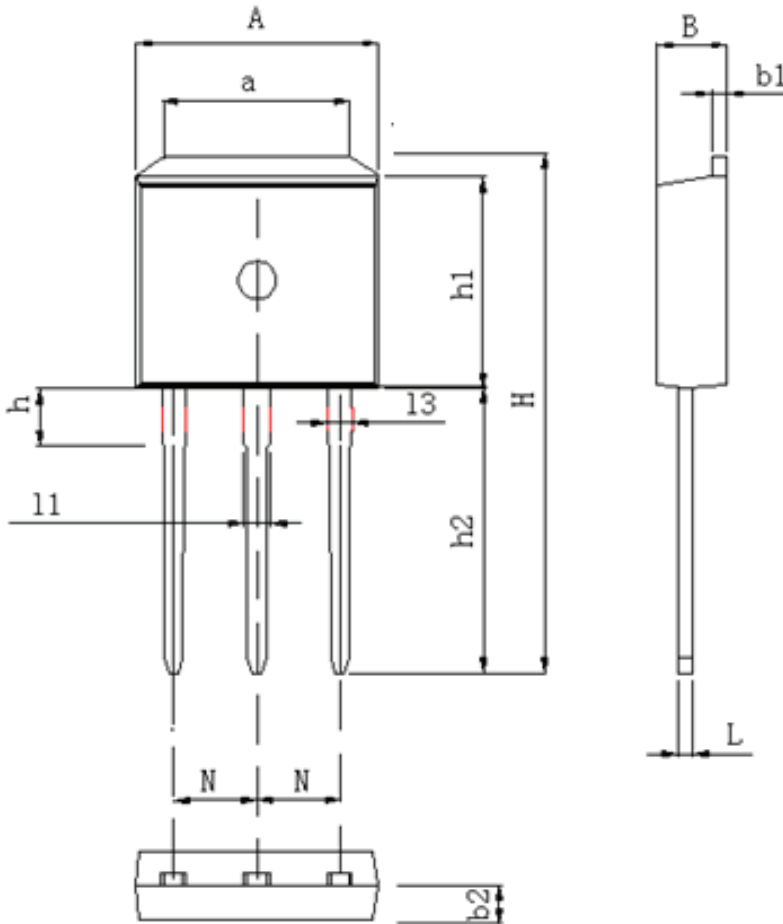


Package Dimension
TO-220
Unit :mm


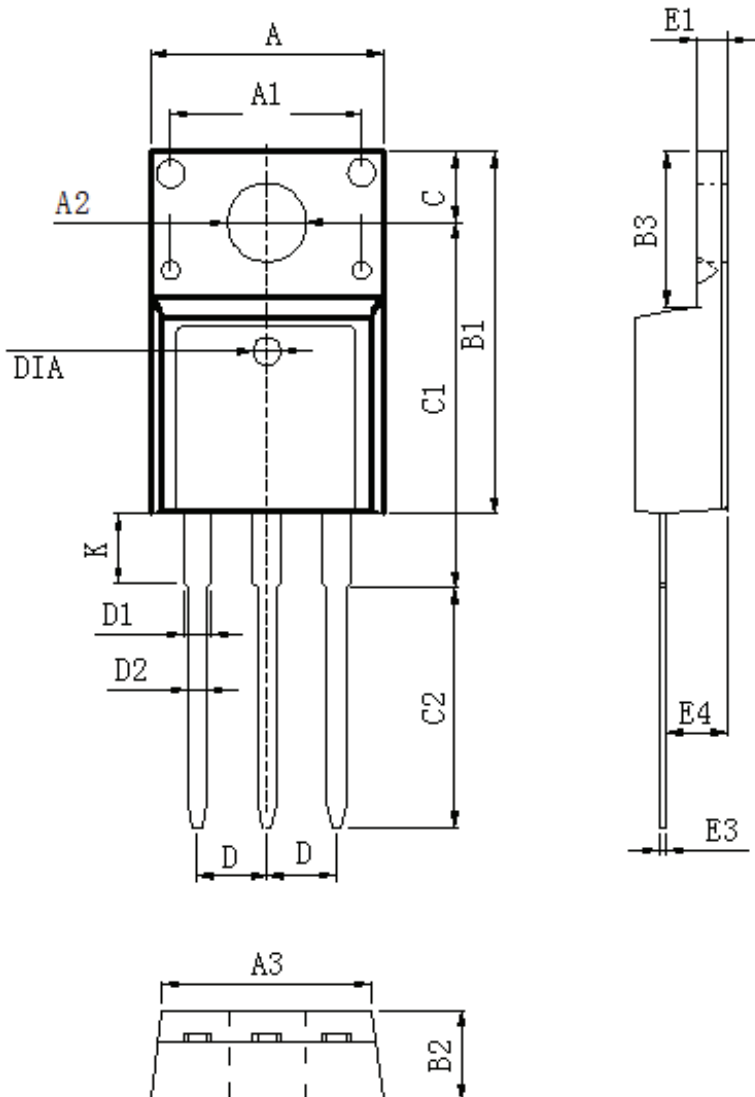
DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5 (deep 0.2)

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	$0.5R \pm 0.05$

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)