

### General Description

The 70N06 utilizes advanced trench technology to deliver excellent  $R_{DS(ON)}$ , making it designed for low-voltage, high-speed switching in applications such as power supplies, converters, power motor controls, and bridge circuits.

### Features

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

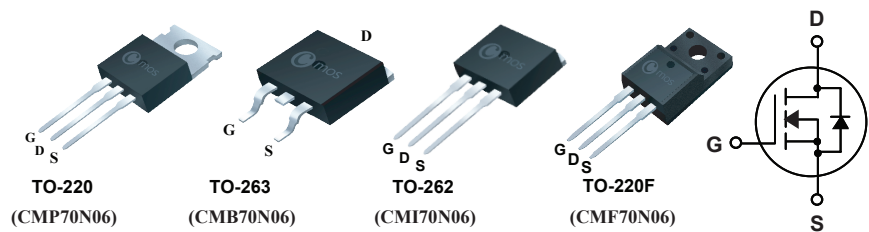
### Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
60V	0.014Ω	70A

### Applications

- DC-DC & DC-AC Converters
- Motor Control, Audio Amplifiers
- High Current, High Speed Switching
- Solenoid And Relay Drivers

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



### Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
$V_{DS}$	Drain-Source Voltage	60		V
$V_{GS}$	Gate-Source Voltage	±20		V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	70	70*	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	48	48*	A
$I_{DM}$	Pulsed Drain Current	280	280*	A
EAS	Single Pulse Avalanche Energy (Note 1)	350		mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	145	40	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.	62.5	75	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case Max.	0.86	3.13	°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	60	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =20A	---	11	14	mΩ
		V <sub>GS</sub> = 4.5V , I <sub>D</sub> = 10A	---	13	17	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.0	---	3.0	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =60V , 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	---	28	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	3.8	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =60A V <sub>DS</sub> =40V V <sub>GS</sub> = 10V	---	110	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	15	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	30	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =30V V <sub>GS</sub> =4.5V R <sub>G</sub> = 4.7Ω I <sub>D</sub> =30A	---	50	---	ns
T <sub>r</sub>	Rise Time		---	155	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	45	---	
T <sub>f</sub>	Fall Time		---	220	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	3300	---	pF
C <sub>oss</sub>	Output Capacitance		---	260	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	180	---	

**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	---	---	70	A
I <sub>SM</sub>	Pulsed Source Current		---	---	280	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =20A , T <sub>J</sub> =25°C	---	0.84	1.2	V

Note :

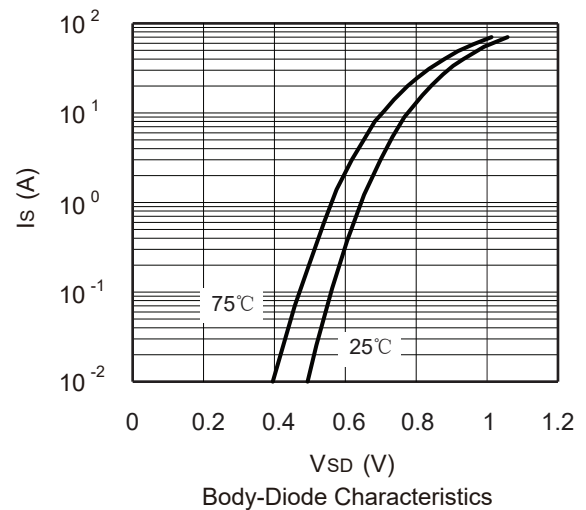
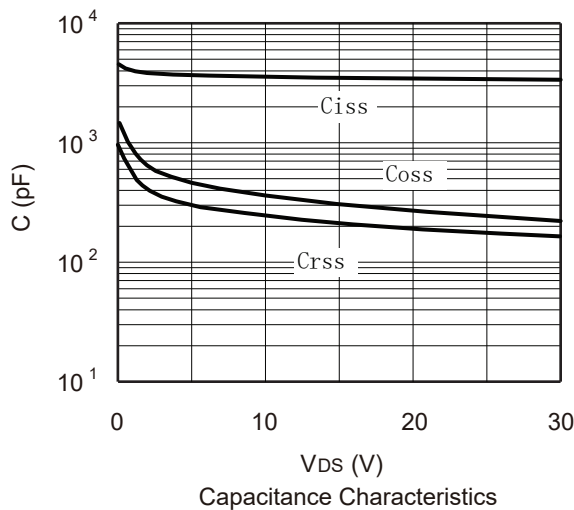
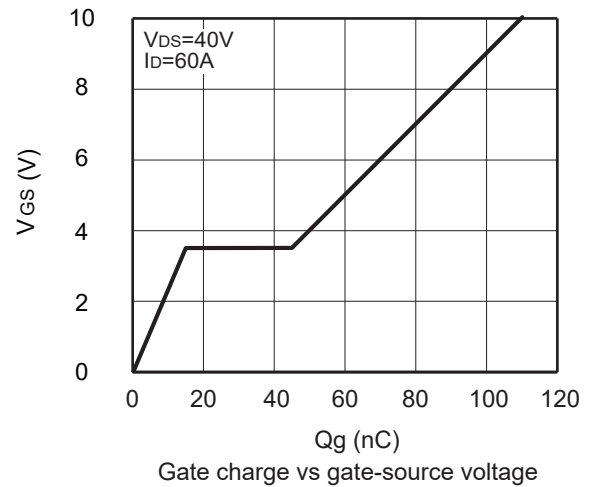
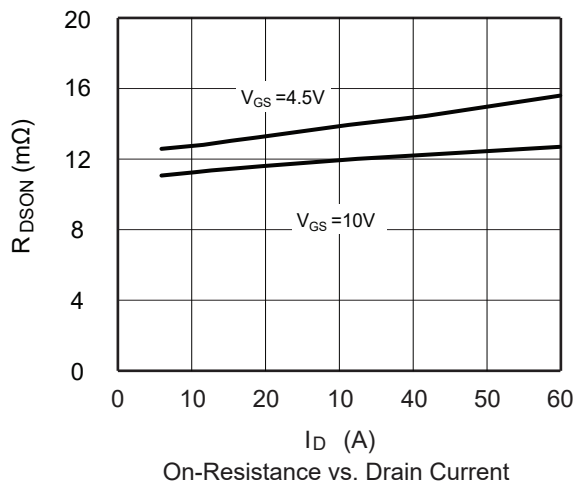
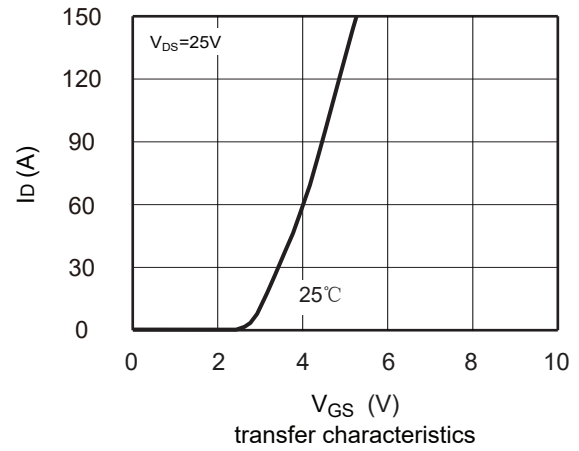
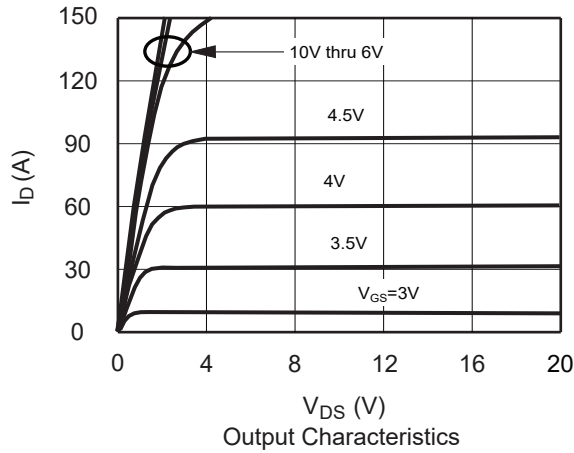
1.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=40V , V<sub>GS</sub>=10V , L=1mH , I<sub>AS</sub>=26.5A.

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.

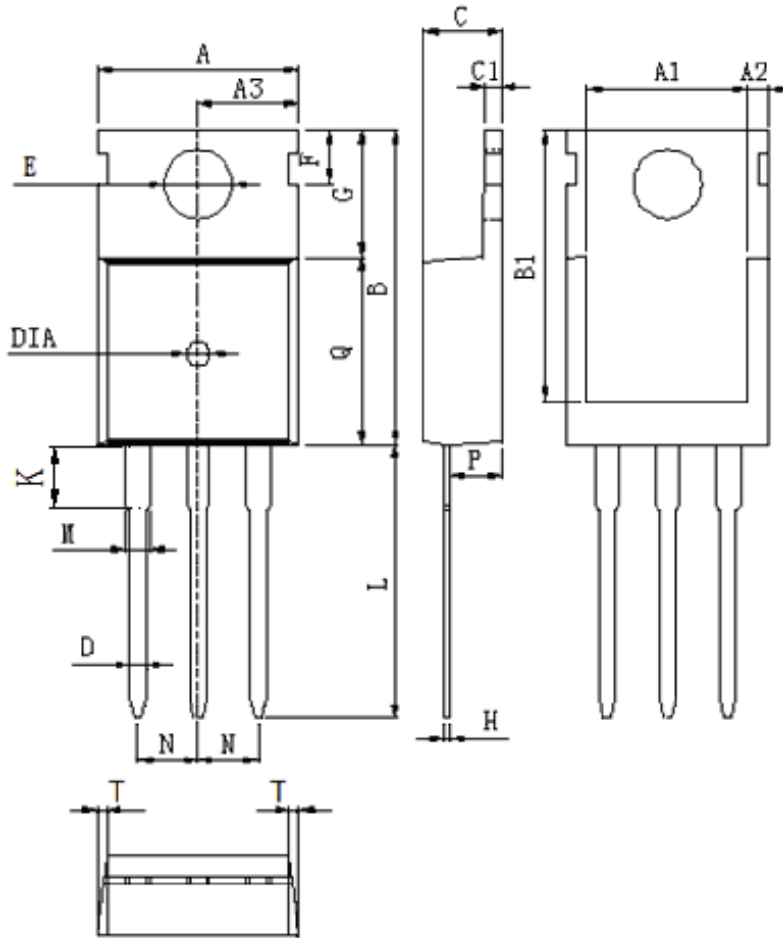
Typical Characteristics



**Package Dimension**

TO-220

Unit :mm

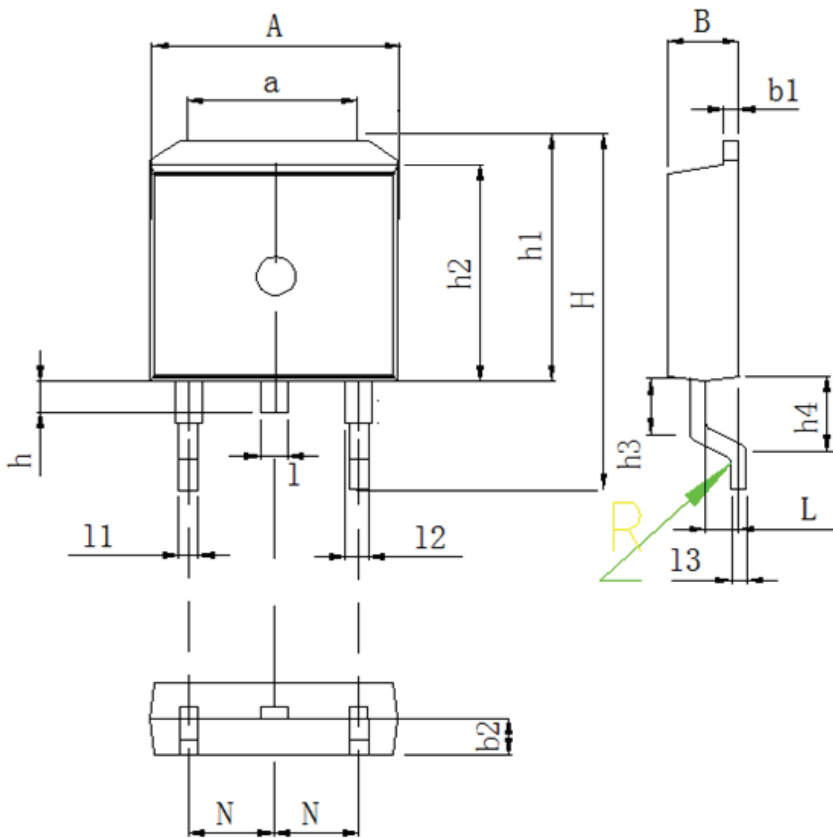


DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5(deep 0.2)

Package Dimension

TO-263

Unit :mm

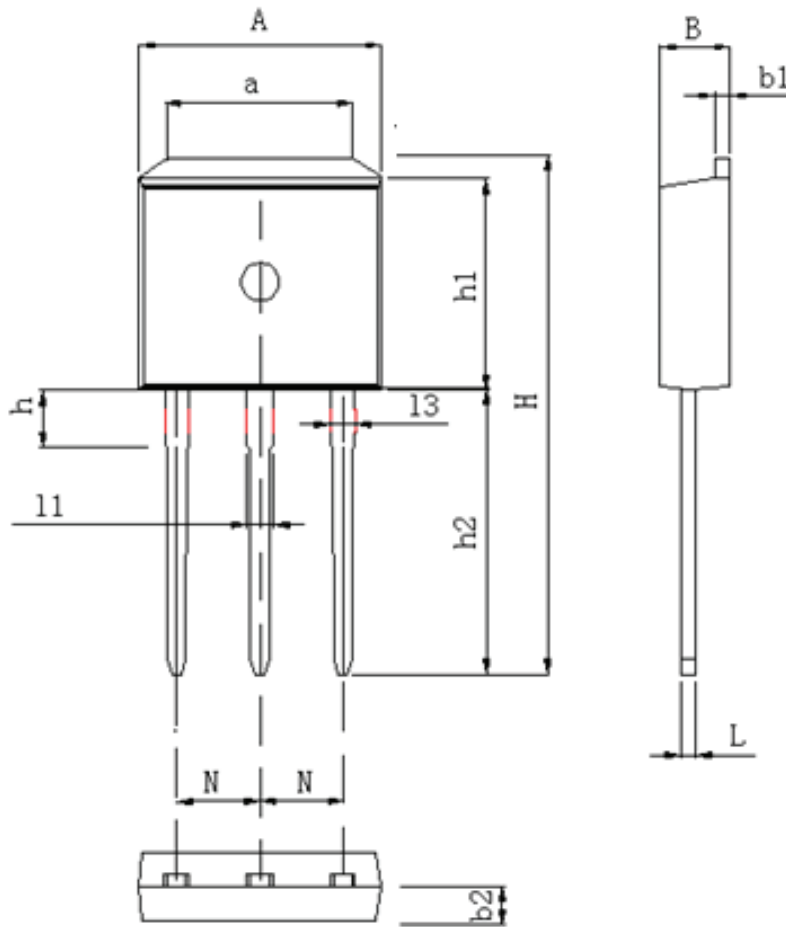


DIM	MILLIMETERS
A	9.8±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	15.5±0.3
h	1.54±0.2
h1	10.5±0.2
h2	9.2±0.1
h3	1.54±0.2
h4	2.7±0.2
L	2.4±0.2
1	1.3±0.1
11	0.8±0.1
12	1.3±0.1
13	0.5±0.1
N	2.54±0.1
R	0.5R±0.05

Package Dimension

TO-262

Unit :mm

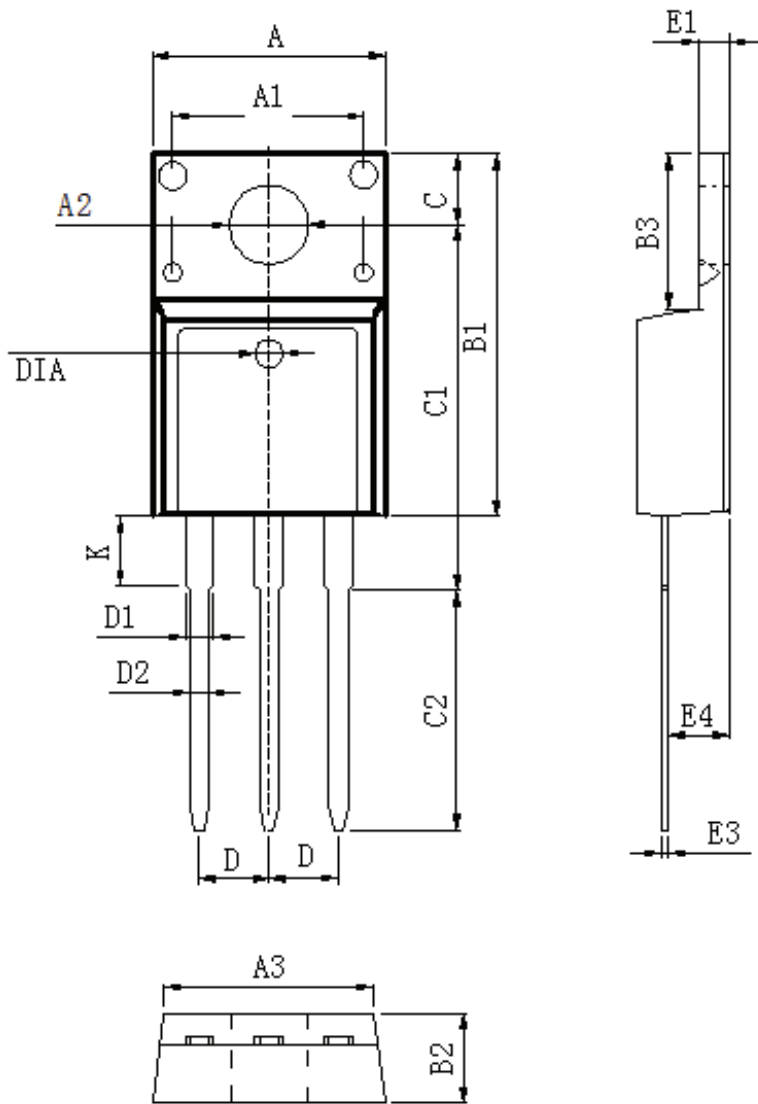


DIM	MILLIMETERS
A	9.98±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	23.9±0.3
h	3.1±0.2
h1	9.16±0.2
h2	13.2±0.2
L	0.5±0.1
11	1.3±0.1
12	0.8±0.1
N	2.45±0.1

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)