

General Description

These N-Channel enhancement mode power field effect transistors uses advanced trench Technology, which provides low on-state resistance, high switching performance and excellent quality. These devices are well suited for high efficiency switching DC/DC converters, switch mode power supplies, DC-AC converters for uninterrupted power supplies and motor controls.

Features

- 100% avalanche tested
- Fast Switching
- Improved dv/dt capability

Absolute Maximum Ratings

Symbol	Parameter	CMP5015/CMF5015		Units
V_{DS}	Drain-Source Voltage	150		V
V_{GS}	Gate-Source Voltage	± 20		V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	20	20*	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	14	14*	A
I_{DM}	Pulsed Drain Current	80	80*	A
EAS	Single Pulse Avalanche Energy ¹	60		mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	150	40	W
T_{STG}	Storage Temperature Range	-55 to 150		$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150		$^\circ\text{C}$

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	CMP5015	CMF5015	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62	62.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	0.83	3.13	$^\circ\text{C/W}$

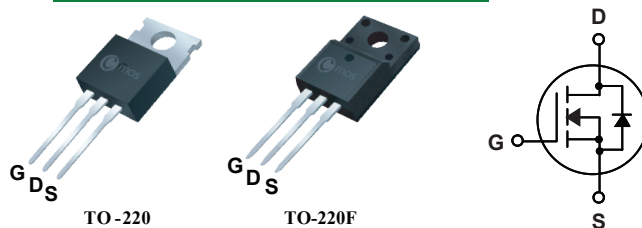
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
150V	90mΩ	20A

Applications

- Switch mode power supplies (SMPS)
- PWM Motor Controls
- DC-DC converters

TO-220/220F Pin Configuration



Type	Package	Marking
CMP5015	TO-220	CMP5015
CMF5015	TO-220F	CMF5015

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=10A$	---	72	90	mΩ
		$V_{GS}=4.5V$, $I_D=8A$	---	78	105	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=120V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=100V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=15V$, $I_D=10A$	---	23	---	S
Q_g	Total Gate Charge	$I_D=20A$	---	100	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=75V$	---	25	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	37	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=75V$, $V_{GS}=10V$ $I_D \approx 20A$ $R_{GS}=2.5\Omega$	---	16	---	ns
T_r	Rise Time		---	70	---	
$T_{d(off)}$	Turn-Off Delay Time		---	25	---	
T_f	Fall Time		---	40	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1300	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	45	---	

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	$V_{GS}=0V$, $I_S=19A$, $T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

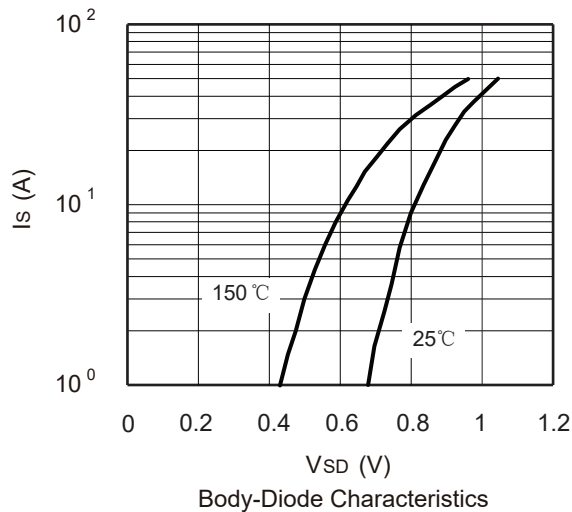
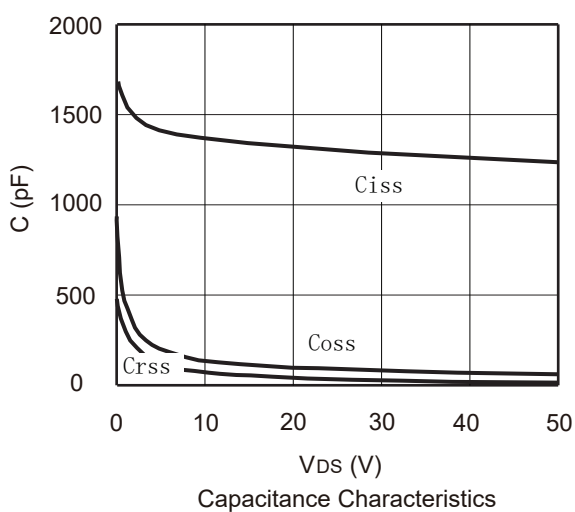
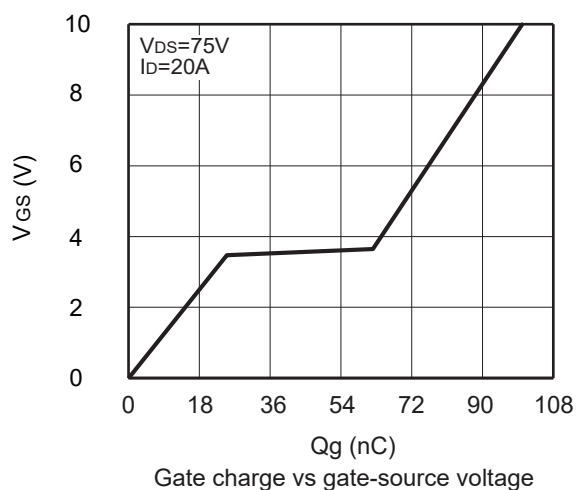
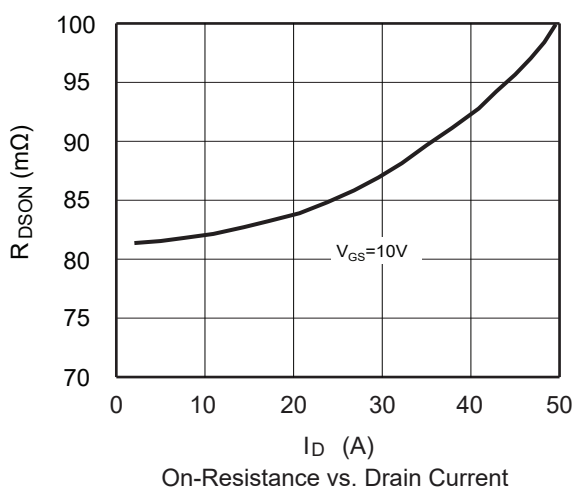
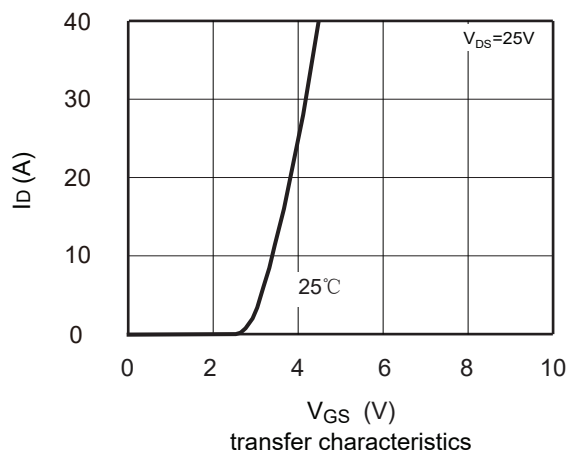
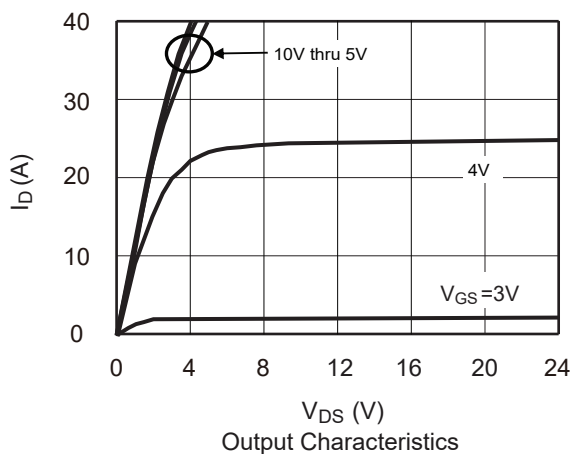
1. The EAS data shows Max. rating . The test condition is $V_{DD}=50V$, $V_{GS}=10V$, $L=1\text{mH}$, $I_{AS}=11A$

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.

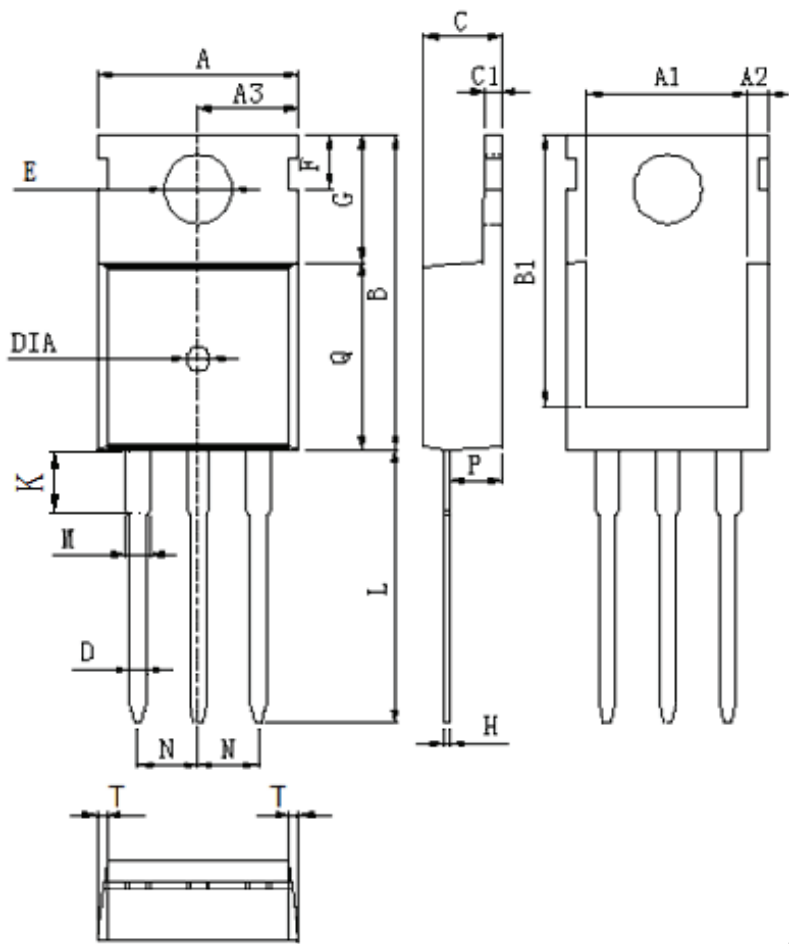
Typical Characteristics



Package Dimension

TO-220

Unit :mm

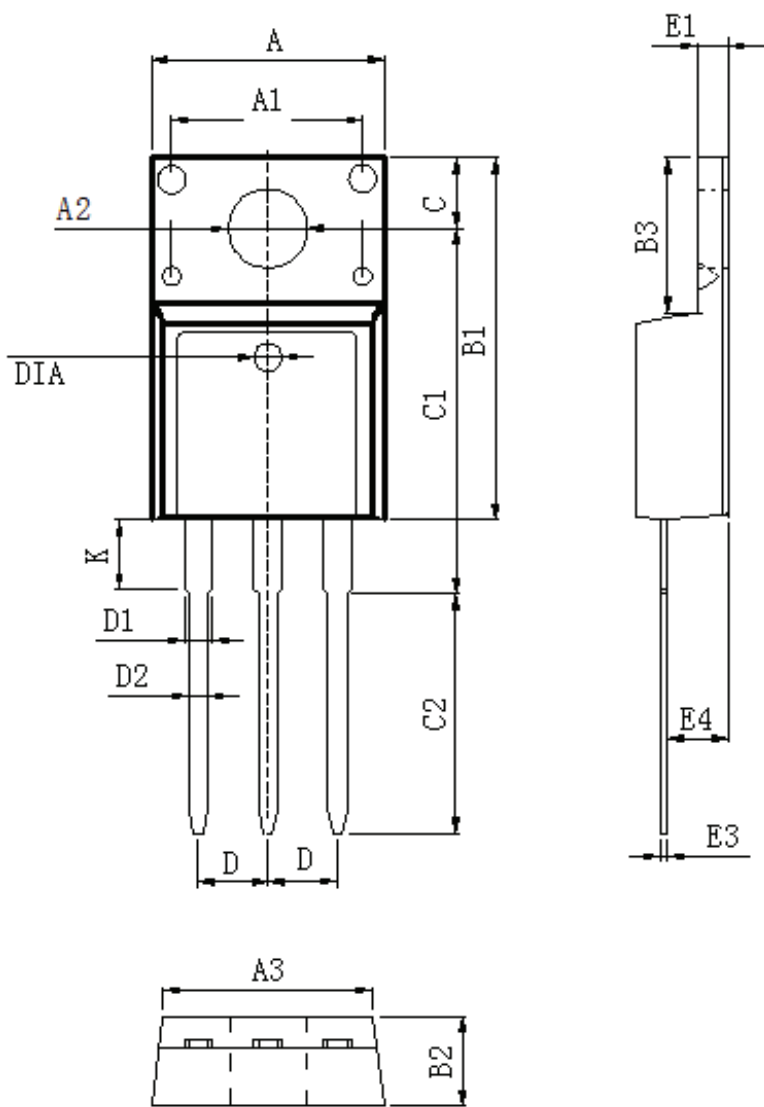


DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5(deep 0.2)

Package Dimension

TO-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)