

### General Description

The CMF50N06T uses advanced trench technology to provide excellent RDS(ON). This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

### Features

- Low On-Resistance
- 100% Avalanche Tested
- RoHS Compliant

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current <sup>1</sup>	50	A
$I_D@T_C=100^\circ C$	Continuous Drain Current <sup>1</sup>	30	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	200	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	156	mJ
$I_{AS}$	Avalanche Current	25	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	45	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient <sup>1</sup>	---	65	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.78	$^\circ C/W$

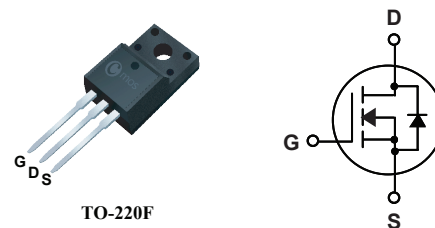
### Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
60V	16mΩ	50A

### Applications

- Switching application
- Motors, lamps and solenoid control
- LED Lighting and LED Backlight Drivers

### TO-220F Pin Configuration



Type	Package	Marking
CMF50N06T	TO-220F	CMF50N06T

**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 <sup>2</sup>	V <sub>GS</sub> =10V , I <sub>D</sub> =20A	---	14	16	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =15A	---	17	20	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1	---	3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =60V , V <sub>GS</sub> =0V	---	---	1	uA
		V <sub>DS</sub> =60V , V <sub>GS</sub> =0V , T <sub>C</sub> = 125°C	---	---	10	
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> =10A	---	20	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	1.6	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =50 A	---	30	---	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =48 V	---	8.5	---	
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>GS</sub> =5 V	---	16	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =30 V	---	17	---	ns
T <sub>r</sub>	Rise Time	I <sub>D</sub> =22.5A	---	160	---	
T <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>G</sub> =6.9Ω	---	69	---	
T <sub>f</sub>	Fall Time	V <sub>GS</sub> =10V	---	70	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	2900	---	pF
C <sub>oss</sub>	Output Capacitance		---	120	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	100	---	

**Diode Characteristics**

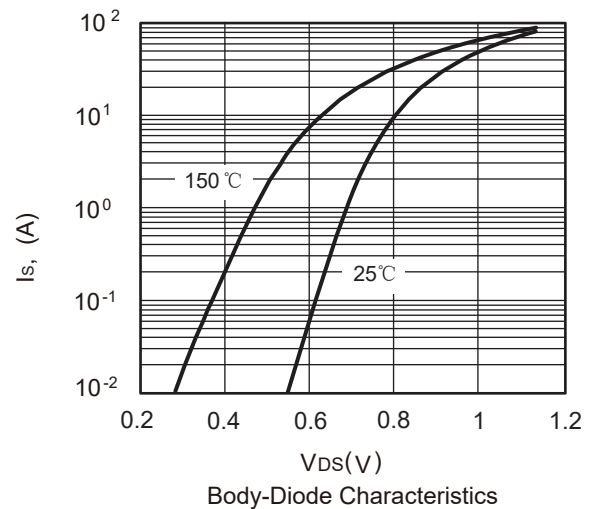
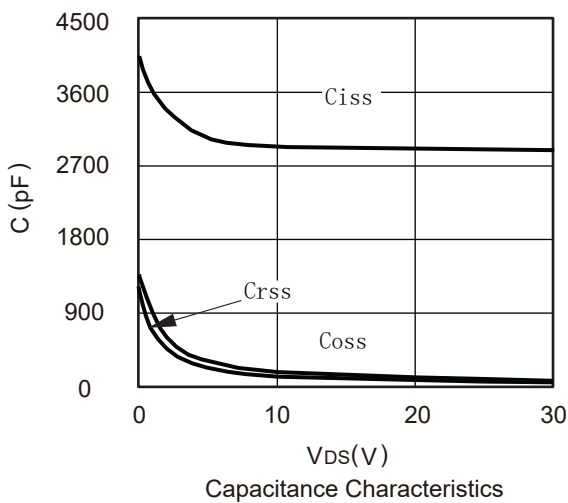
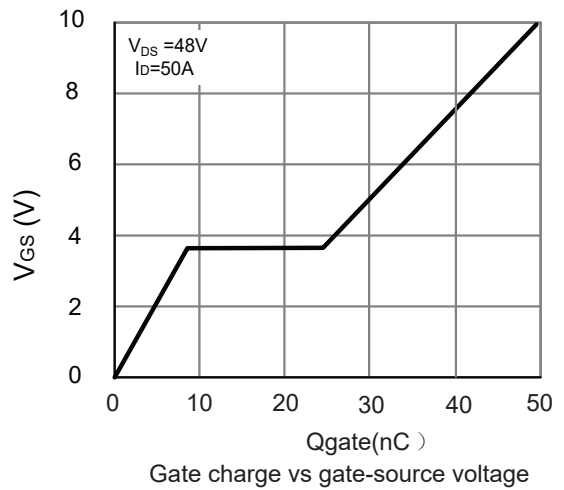
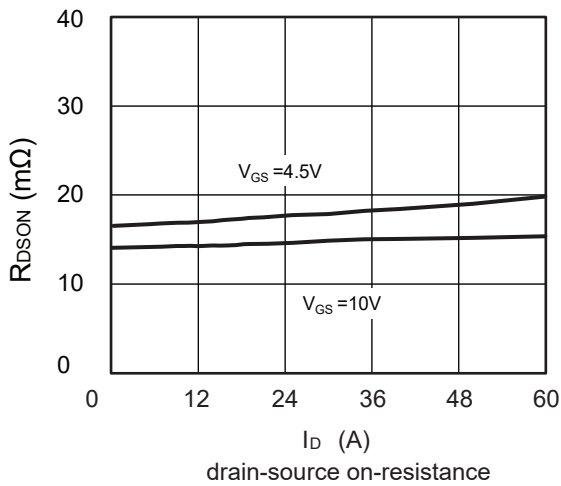
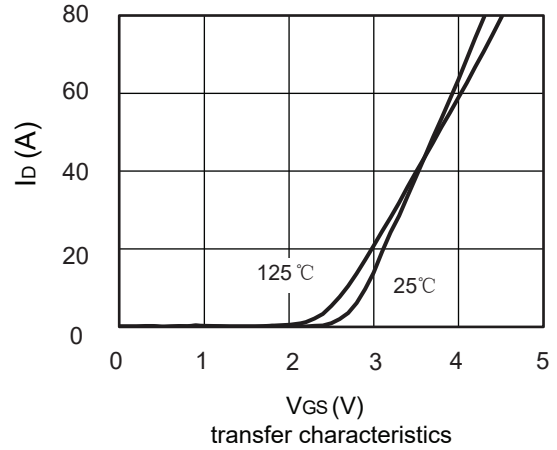
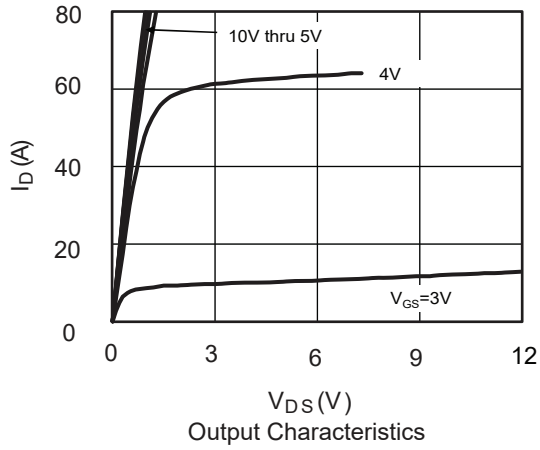
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1</sup>	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	50	A
I <sub>SM</sub>	Pulsed Source Current <sup>2</sup>		---	---	200	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V , I <sub>S</sub> =20 A , T <sub>J</sub> =25°C	---	---	1.32	V

Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- 3.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=40V,V<sub>GS</sub>=10V,L=0.5mH,I<sub>AS</sub>=25A.

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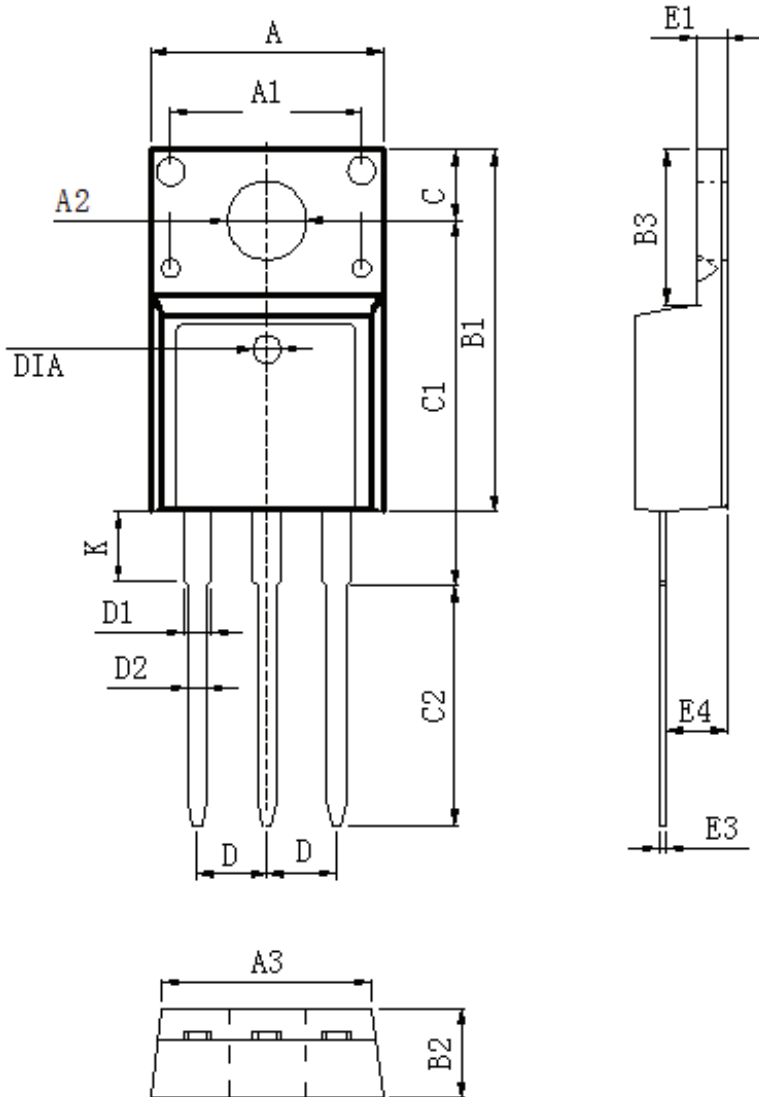
Typical Characteristics



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)