



ZBMCC

ZIBO MICRO COMMERCIAL
COMPONENTS CORP.



ADD:ZhangLiu Road No.6
Zhangdian Zibo Shandong
P.C.:255000
Tel:+86-533-3032000/3032005
Fax:+86-533-3112884

MCPF04N60

N-Channel Enhancement Mode Field Effect Transistor

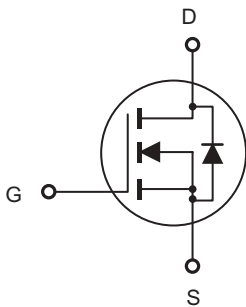
Features

- High Current Rating
- Lower Capacitance
- Halogen free available upon request by adding suffix "-HF"
- Lower $R_{ds(ON)}$
- Lower Total Gate Charge
- Tighter VSD Specifications
- Avalanche Energy Specified
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

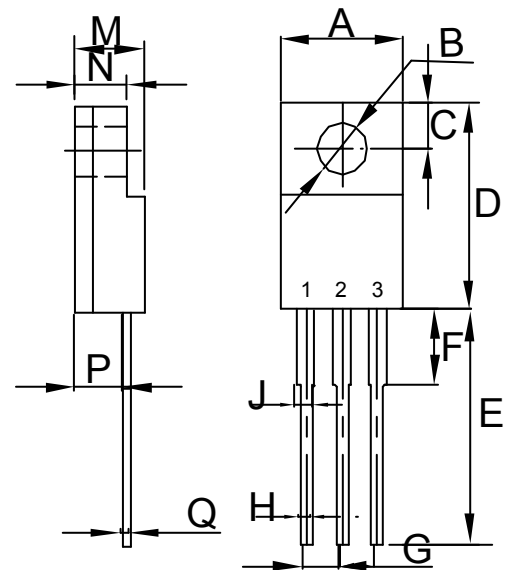
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	600	V
I_D	Drain Current-Continuous	4.0	A
I_S	Continuous Drain-Source Diode Forward Current	4.0	A
V_{GSS}	Gate-source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy(note1)	80	mJ
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	260	$^{\circ}C$

Internal Block Diagram



TO-220F



- 1.GATE
- 2.DRAIN
- 3.SOURCE

DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	.392	.408	9.96	10.36	
B	.138		3.50		Φ
C	.106		2.70		
D	.583	.598	14.80	15.20	
E	.520		13.20		
F	.142	.158	3.60	4.00	
G	.100		2.54		
H	.020	.030	0.50	0.75	
J	.043	.053	1.10	1.35	
M	.169	.185	4.30	4.70	
N	.110	.126	2.80	3.20	
P	.098	.114	2.50	2.90	
Q	.020	.030	0.50	0.75	

MCDF04N60

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	600			V
Drain-source diode forward voltage(note2)	V _{SD}	V _{GS} = 0V, I _S = 4.0A			1.5	
Zero gate voltage drain current	I _{DSS}	V _{DS} = 600V, V _{GS} = 0V			25	μA
Gate-body leakage current, forward(note2)	I _{GSSF}	V _{DS} = 0V, V _{GS} = 30V			100	nA
Gate-body leakage current, reverse(note2)	I _{GSSR}	V _{DS} = 0V, V _{GS} = -30V			-100	
On characteristics (note2)						
Gate-threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.0		4.0	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 2.0A		2.0	3.0	Ω
Forward transconductance	g _{fs}	V _{DS} = 50V, I _D = 2A	2.5			S
Dynamic characteristics (note 3)						
Input capacitance	C _{iss}	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz		540	760	pF
Output capacitance	C _{oss}			125	180	
Reverse transfer capacitance	C _{rss}			8.0	20	
Switching characteristics						
Total gate charge	Q _g	V _{DS} = 480V, V _{GS} = 10V, I _D = 4.0A		5.0	10	nC
Gate-source charge	Q _{gs}			2.7		
Gate-drain charge	Q _{gd}			2.0		
Turn-on delay time (note3)	t _{d(on)}	V _{DD} = 300V, V _{GS} = 10V, R _G = 9.1Ω, I _D = 4.0A		12	20	ns
Turn-on rise time (note3)	t _r			7.0	10	
Turn-off delay time (note3)	t _{d(off)}			19	40	
Turn-off fall time (note3)	t _f			10	20	

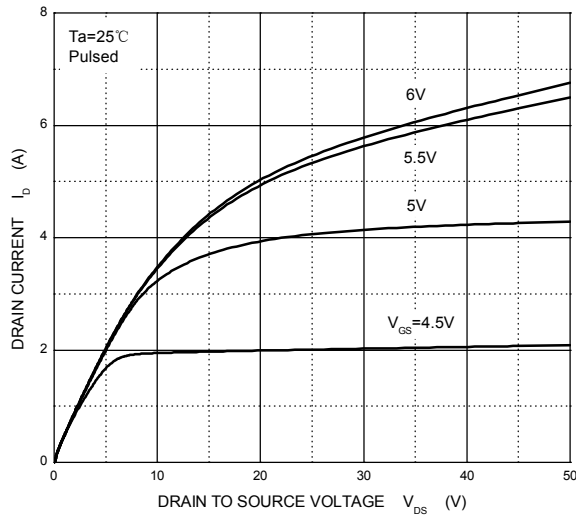
Notes :

- L = 30mH, I_L = 4 A, V_{DD} = 100V, V_{GS} = 10V, R_G = 25Ω, Starting T_J = 25°C.
- Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
- These parameters have no way to verify.

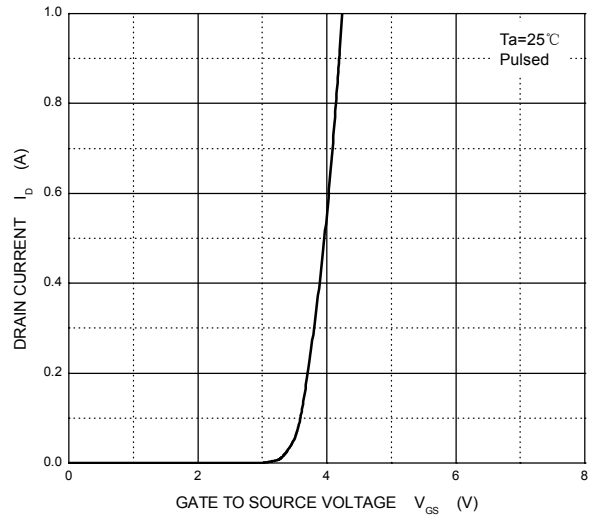
MCDF04N60

ZIBO MICRO COMMERCIAL COMPONENTS CORP.

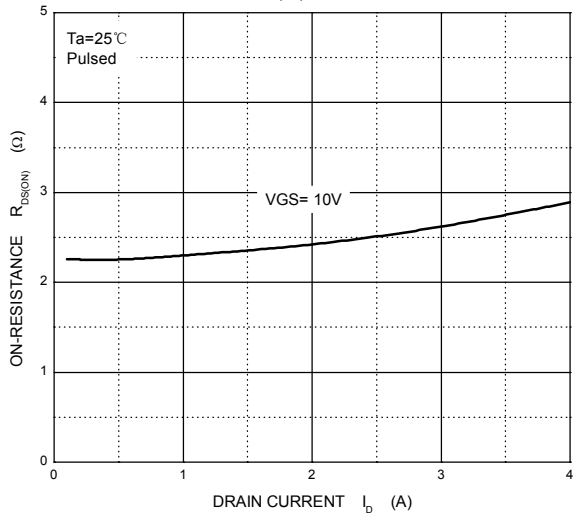
Output Characteristics



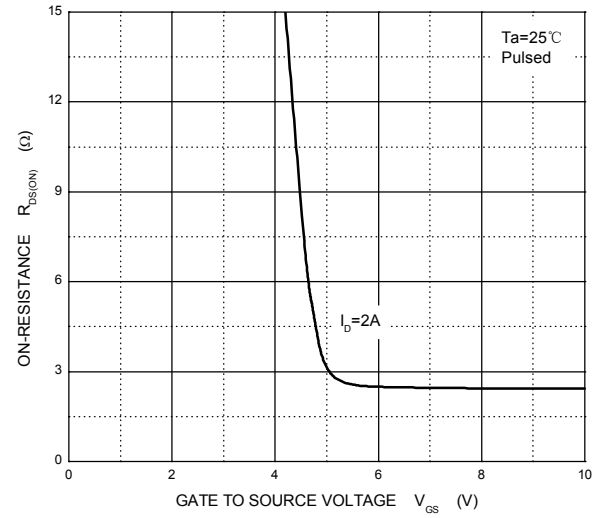
Transfer Characteristics



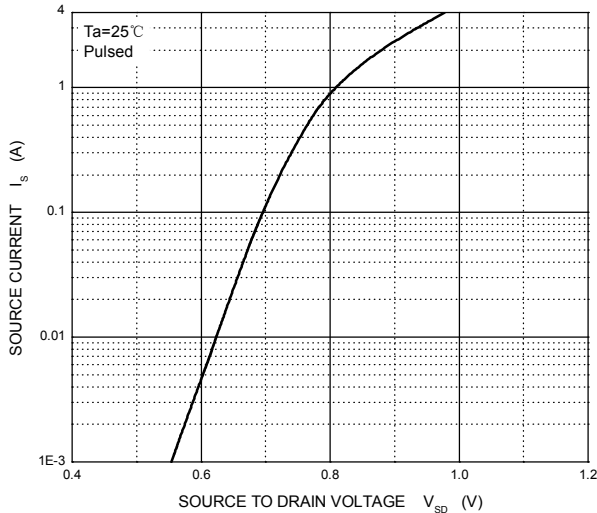
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}





ZIBO MICRO COMMERCIAL
COMPONENTS CORP.

Ordering Information :

Device	Packing
Part Number-BP	Bulk;4Kpcs/Box

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

*****LIFE SUPPORT*****

ZBMCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of ZiBo Micro Commercial Components Corp.

*****CUSTOMER AWARENESS*****

Counterfeiting of semiconductor parts is a growing problem in the industry. ZiBo Micro Commercial Components Corp. is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. ZBMCC strongly encourages customers to purchase ZBMCC parts either directly from ZBMCC or from Authorized ZBMCC Distributors who are listed by country on our web page cited below. Products customers buy either from ZBMCC directly or from Authorized ZBMCC Distributors are genuine parts, have full traceability, meet ZBMCC's quality standards for handling and storage. ZBMCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. ZBMCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.