



ZBMCC

ZIBO MICRO COMMERCIAL
COMPONENTS CORP.



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MCA03N10

N-Channel Enhancement Mode Field Effect Transistor

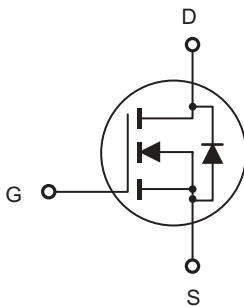
Features

- Lead free product is acquired
- Special process technology for high ESD capability
- Halogen free available upon request by adding suffix "-HF"
- High density cell design for ultra low $R_{dS(ON)}$
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

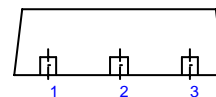
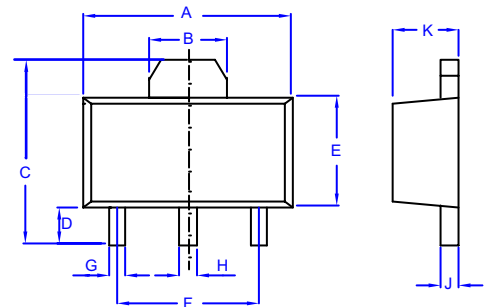
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	100	V
I_D	Drain Current-Continuous	3.0	A
I_{DM}	Pulsed Drain Current (note 1)	20	A
V_{GS}	Gate-source Voltage	± 20	V
P_D	Power Dissipation	500	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient(note2)	250	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$

Internal Block Diagram



SOT-89



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

DIM	DIMENSINS				NOTES
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	.173	.181	4.39	4.60	
B	.061	----	1.55	----	REF.
C	.154	.165	3.91	4.25	
D	.031	.039	0.80	1.00	
E	.092	.100	2.34	2.54	
F	.118	----	3.00	----	TYP
G	.013	.019	0.33	0.48	
H	.015	.021	0.38	0.53	
J	.015	.016	0.38	0.41	
K	.055	.063	1.40	1.60	

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Electrical characteristics ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1		2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5A$			140	m Ω
Forward transconductance (note 3)	g_{FS}	$V_{DS} = 5V, I_D = 2.9A$	3			S
Diode forward voltage (note 3)	V_{SD}	$I_S = 3A, V_{GS} = 0V$			1.2	V
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		690		pF
Output capacitance	C_{oss}			120		pF
Reverse transfer capacitance	C_{rss}			90		pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 30V,$ $R_{GEN} = 2.5\Omega, I_D = 2A, R_L = 15\Omega$		11		ns
Turn-on rise time	t_r			7.4		ns
Turn-off delay time	$t_{d(off)}$			35		ns
Turn-off fall time	t_f			9.1		ns
Total gate charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 3A$		15.5		nC
Gate-source Charge	Q_{gs}			3.2		nC
Gate-drain Charge	Q_{gd}			4.7		nC

Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t_s \leq 10s$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to producing.



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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 1.0Kpcs/Reel

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

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