



ZBMCC

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MCD04N65

N-Channel Enhancement Mode Field Effect Transistor

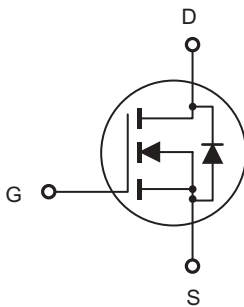
Features

- 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

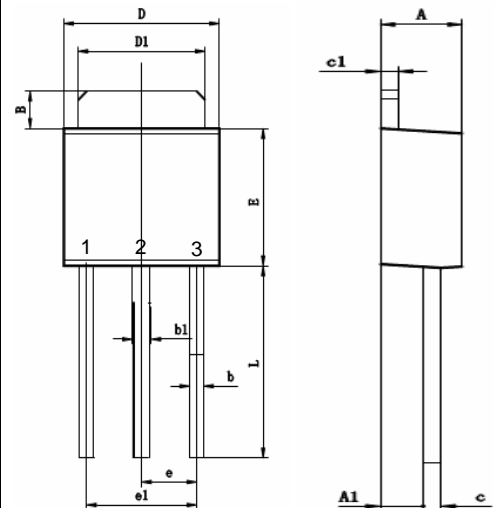
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	650	V
I_D	Drain Current-Continuous	4.0	A
I_{DM}	Pulsed Drain Current	16	A
V_{GSS}	Gate-source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy(note1)	80	mJ
P_D	Total Power Dissipation	1.25	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	100	$^{\circ}C/W$
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-251



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

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.087	.094	2.20	2.40	
A1	.042	.054	1.05	1.35	
B	.053	.065	1.35	1.65	
b	.020	.028	0.50	0.70	
b1	.028	.035	0.07	0.09	
c	.017	.023	0.43	0.58	
c1	.017	.023	0.43	0.58	
D	.250	.262	6.35	6.65	
D1	.205	.213	5.20	5.40	
E	.213	.224	5.40	5.70	
e1	0.091TYP		2.300TYP		
e	.177	.185	4.50	4.70	
L	.295	.311	7.50	7.90	

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650			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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
Static drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.0A$			3.0	Ω

Dynamic characteristics (note 3)						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$			760	pF
Output capacitance	C_{oss}				180	
Reverse transfer capacitance	C_{rss}				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)	$t_{d(on)}$	$V_{DD} = 300V, V_{GS} = 10V,$ $R_G = 9.1\Omega, I_D = 4.0A$			20	ns
Turn-on rise time (note3)	t_r				10	
Turn-off delay time (note3)	$t_{d(off)}$				40	
Turn-off fall time (note3)	t_f				20	

Notes :

- $L = 10mH, I_L = 4A, V_{DD} = 50V, V_{GS} = 10V, R_G = 25\Omega, \text{Starting } T_J = 25^{\circ}\text{C}.$
- Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- These parameters have no way to verify.



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Ordering Information :

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

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

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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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