

General Description

The CMA40N20P uses advanced planar stripe DMOS technology and design to provide excellent RDS(ON).

These devices are well suited for high efficiency switched mode power supplies, active power factor correction based on half bridge topology.

Features

- Low on-resistance
- Fast Switching
- RoHS Compliant

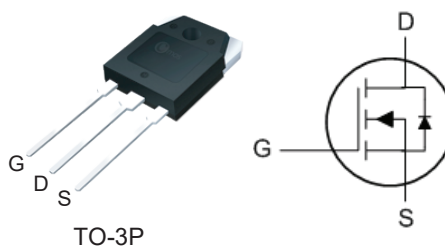
Product Summary

BVDSS	RDSON	ID
200V	65mΩ	40A

Applications

- DC-AC converters
- SMPS Power
- UPS (Uninterruptible Power Supply)

TO-247/3P Pin Configuration



Type	Package	Marking
CMA40N20P	TO-3P	CMA40N20P

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 30	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	40	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	32	A
I_{DM}	Pulsed Drain Current ¹	160	A
EAS	Single Pulse Avalanche Energy ²	1050	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	260	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.48	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	---	65	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=250V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance ³	$V_{DS}=20V$, $I_D=15A$	---	23	---	S
Q_g	Total Gate Charge	$I_D=20A$	---	63	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=125V$	---	17	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (Note 3, 4)	---	19	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=125V$	---	43	---	ns
T_r	Rise Time	$I_D=20A$	---	27	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=25\Omega$	---	156	---	
T_f	Fall Time	(Note 3, 4)	---	33	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	2700	---	pF
C_{oss}	Output Capacitance		---	325	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	40	A
I_{SM}	Pulsed Source Current		---	---	160	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=40A$, $T_J=25^{\circ}\text{C}$	---	---	1.4	V

Note :

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature
- 2.L = 1mH, $I_D=40A$, $V_{DD}=50V$, Starting $T_J=25^{\circ}\text{C}$
- 3.Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4.Essentially Independent of Operating Temperature

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