

General Description

The 020N03 uses advanced technology and design 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

- Max $r_{DS(on)} = 2.0m\Omega$ at $V_{GS} = 10V$
- Fast Switching
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	170	A
$I_D@T_C=100^\circ C$		136	A
I_{DM}	Pulsed Drain Current	510	A
E_{AS}	Drain-Source Avalanche Energy ¹	595	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	143	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	60.0	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.05	$^\circ C/W$

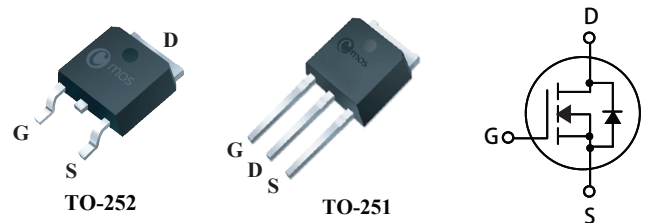
Product Summary

BVDSS	RDSON	ID
30V	2.0m Ω	170A

Applications

- Inverters
- Power Supplies

TO-252/251 Pin Configuration



Type	Package	Marking
CMD020N03	TO-252	CMD020N03
CMU020N03	TO-251	CMU020N03

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=28A$	---	---	2.0	m Ω
		$V_{GS}=4.5V, I_D=25A$	---	---	2.8	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=20A$	---	40	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2.5	---	Ω
Q_g	Total Gate Charge	$I_D=30A$	---	161	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=15V$	---	19	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	35	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V$	---	28	---	ns
T_r	Rise Time	$I_D=30A$	---	26	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3.0\Omega$	---	91	---	
T_f	Fall Time	$V_{GS}=10V$	---	41	---	
C_{iss}	Input Capacitance	$V_{DS}=40V, V_{GS}=0V, f=1\text{MHz}$	---	5250	---	pF
C_{oss}	Output Capacitance		---	380	---	
C_{rss}	Reverse Transfer Capacitance		---	3750	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	170	A
I_{SM}	Pulsed Source Current		---	---	510	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=28A$	---	---	1.2	V

Notes:

1. Starting $T_J = 25^{\circ}\text{C}$, $L=1.0\text{mH}$, $I_{AS}=34.5\text{A}$, $V_{DD}=28\text{V}$, $V_{GS}=10\text{V}$.

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