

### General Description

The 90N06 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  $r_{DS(on)} = 4.5m\Omega$  at  $V_{GS} = 10V$
- Fast Switching
- RoHS Compliant

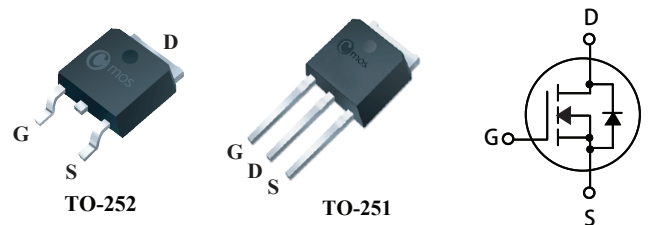
### Product Summary

BVDSS	RDSON	ID
60V	4.5mΩ	90A

### Applications

- Inverters
- Power Supplies

### TO-252/251 Pin Configuration



Type	Package	Marking
CMD90N06	TO-252	CMD90N06
CMU90N06	TO-251	CMU90N06

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	90	A
$I_D@T_C=100^\circ C$		72	A
$I_{DM}$	Pulsed Drain Current	360	A
$E_{AS}$	Drain-Source Avalanche Energy <sup>1</sup>	360	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	107	W
$T_{STG}$	Storage Temperature Range	-55 to 175	°C
$T_J$	Operating Junction Temperature Range	-55 to 175	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.4	°C/W

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	60	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V , I <sub>D</sub> =15A	---	---	4.5	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =10A	---	---	5.7	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250 uA	1	---	3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =60V , V <sub>GS</sub> =0V	---	---	1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance <sup>2</sup>	V <sub>DS</sub> =4.5V , I <sub>D</sub> =5A	---	40	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	1.7	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =90A	---	84	---	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DD</sub> =48V	---	24	---	
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>GS</sub> =0to10V	---	9	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =30V	---	15	---	ns
T <sub>r</sub>	Rise Time	I <sub>D</sub> =90A	---	5	---	
T <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>GEN</sub> =3.5Ω	---	81	---	
T <sub>f</sub>	Fall Time	V <sub>GS</sub> =10V	---	14	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	2300	---	pF
C <sub>oss</sub>	Output Capacitance		---	1355	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	60	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	90	A
I <sub>SM</sub>	Pulsed Source Current		---	---	360	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>F</sub> =28A	---	---	1.2	V

Notes:

- Starting T<sub>J</sub> = 25°C , L=0.5mH, I<sub>AS</sub> =38A, V<sub>DD</sub> = 30 V, V<sub>GS</sub> = 10 V .
- Pulse Test: Pulse Width < 300μs, Duty cycle < 2.0%.

This product has been designed and qualified for the consumer market.  
 Cmos assumes no liability for customers' product design or applications.  
 Cmos reserves the right to improve product design ,functions and reliability without notice.