

General Description

This N-Channel MOSFET has been produced using advanced trench technology to deliver low $R_{DS(on)}$ and optimized $BVDSS$ capability to offer superior performance benefit in the application

Features

- Max $r_{DS(on)}$ = 16m Ω at V_{GS} = 10V
- Max $r_{DS(on)}$ = 21m Ω at V_{GS} = 4.5V
- Fast Switching
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	50	A
I_{DM}	Pulsed Drain Current	150	A
E_{AS}	Drain-Source Avalanche Energy ¹	90	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	45	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	40	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.8	$^\circ C/W$

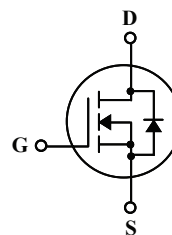
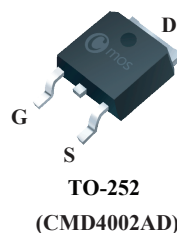
Product Summary

$BVDSS$	$R_{DS(on)}$	ID
40V	16m Ω	50A

Applications

- Inverters
- Power Supplies

TO-252 Pin Configuration



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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=18A$	---	---	16	m Ω
		$V_{GS}=4.5V$, $I_D=15A$	---	---	21	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=32V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance ²	$V_{DS}=5V$, $I_D=10A$	---	15	---	S
Q_g	Total Gate Charge	$I_D=25A$	---	18	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=20V$	---	3	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V$	---	8	---	ns
T_r	Rise Time	$I_D=25A$	---	15	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=6\Omega$	---	32	---	
T_f	Fall Time	$V_{GS}=10V$	---	7	---	
C_{iss}	Input Capacitance	$V_{DS}=20V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1400	---	pF
C_{oss}	Output Capacitance		---	200	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse Recovery Time	$I_F=25A$	---	15	---	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	---	30	---	nC
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=20A$	---	---	1.2	V

Notes:

- Starting $T_J = 25^{\circ}\text{C}$, $L = 0.5\text{mH}$, $I_D = 19\text{A}$, $V_{DD} = 40\text{V}$, $V_{GS} = 10\text{V}$.
- Pulse Test: Pulse Width < 300 μs , Duty cycle < 2.0% .

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