

General Description

The 514 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a wide variety of applications.

Features

- Low On-Resistance
- 100% avalanche tested
- High Current Capability
- 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, $V_{GS} @ 10V$	85	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	60	A
I_{DM}	Pulsed Drain Current ¹	255	A
EAS	Single Pulse Avalanche Energy ²	100	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	65	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 (PCB Mount) ³	---	50	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction -Case ⁴	---	2	$^\circ C/W$

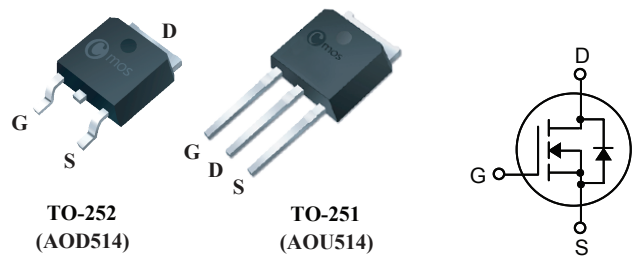
Product Summary

BVDSS	RDSON	ID
30V	6m Ω	85A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

TO-252/251 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	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=30A$	---	---	6	m Ω
		$V_{GS}=4.5V, I_D=20A$	---	---	9	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	uA
		$V_{DS}=24V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	---	---	150	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=10A$	---	15	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2.4	---	Ω
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V, I_D=20A$	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	4.2	---	
Q_{gd}	Gate-Drain Charge		---	7	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, V_{GS}=10V, R_G=10\Omega$ $I_D=20A$	---	12	---	ns
T_r	Rise Time		---	80	---	
$T_{d(off)}$	Turn-Off Delay Time		---	48	---	
T_f	Fall Time		---	35	---	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	2000	---	pF
C_{oss}	Output Capacitance		---	450	---	
C_{rss}	Reverse Transfer Capacitance		---	100	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current		---	---	85	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1.3	V

Note :

1. Single pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$.
2. Starting $T_J=25^{\circ}\text{C}$, $L=0.5\text{mH}$, $V_{DD}=20V$, $I_{AS}=20A$.
3. When mounted on 1" square PCB (FR-4 or G-10 Material).
4. R_{θ} is measured at T_J approximately at 90°C .

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.