

General Description

The CMD609A uses advanced trench technology MOSFETs to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used in H-bridge, Inverters and other applications.

Features

- Dual N- and P-Channel MOSFET
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

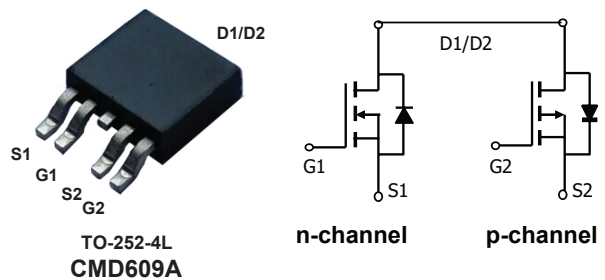
Product Summary

	BVDSS	$R_{DS(on)}$ max.	ID
N-Channel	40V	17mΩ	30A
P-Channel	-40V	28mΩ	-30A

Applications

- Power Management
- Load Switch
- DC/DC Converter

TO-252-4L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Max N-channel	Max P-channel	Units
V_{DS}	Drain-Source Voltage	40	-40	V
V_{GS}	Gate-Source Voltage	±20	±20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	30	-30	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	20	-20	A
I_{DM}	Pulsed Drain Current	120	-120	A
EAS	Single Pulse Avalanche Energy ¹	85	90	mJ
$P_D@T_C=25^\circ\text{C}$	Power Dissipation	40	40	W
T_{STG}	Storage Temperature Range	-55 to 150		°C
T_J	Operating Junction Temperature Range	-55 to 150		°C

Thermal Characteristics: N-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.13	°C/W

Thermal Characteristics: P-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.13	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=12A$	---	14	17	mΩ
		$V_{GS}=4.5V$, $I_D=8A$	---	16	22	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	uA
		$V_{DS}=40V$, $V_{GS}=0V$, $T_J=55^{\circ}\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=12A$	---	18	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6.6	---	Ω
Q_g	Total Gate Charge	$V_{DS}=20V$, $V_{GS}=4.5V$, $I_D=20A$	---	12	---	nC
Q_{gs}	Gate-Source Charge		---	4.5	---	
Q_{gd}	Gate-Drain Charge		---	6.3	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V$, $V_{GS}=10V$, $R_G=3.3\Omega$ $I_D=20A$	---	8	---	ns
T_r	Rise Time		---	38	---	
$T_{d(off)}$	Turn-Off Delay Time		---	20	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1350	---	pF
C_{oss}	Output Capacitance		---	140	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	30	A
I_{SM}	Pulsed Source Current		---	---	120	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=12A$, $T_J=25^{\circ}\text{C}$	---	0.84	1.2	V

P Channel Electrical Characteristics (T_J=25 °C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250μA	-40	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V , I _D =-12A	---	23	28	mΩ
		V _{GS} =-4.5V , I _D =-8A	---	30	50	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-40V , V _{GS} =0V	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V , I _D =-12A	---	18	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	45	---	Ω
Q _g	Total Gate Charge	V _{DS} =-20V , V _{GS} =4.5V , I _D =-9A	---	18	---	nC
Q _{gs}	Gate-Source Charge		---	5.5	---	
Q _{gd}	Gate-Drain Charge		---	8	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-20V , V _{GS} =-10V , I _D =-1.4A R _G =1Ω , R _L =14.2Ω	---	12	---	ns
T _r	Rise Time		---	10	---	
T _{d(off)}	Turn-Off Delay Time		---	40	---	
T _f	Fall Time		---	15	---	
C _{iss}	Input Capacitance	V _{DS} =-25V , V _{GS} =0V , f=1MHz	---	1700	---	pF
C _{oss}	Output Capacitance		---	160	---	
C _{rss}	Reverse Transfer Capacitance		---	90	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	-30	A
I _{SM}	Pulsed Source Current		---	---	-120	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _F =-12A , T _J =25°C	---	-0.88	-1.2	V

Note:

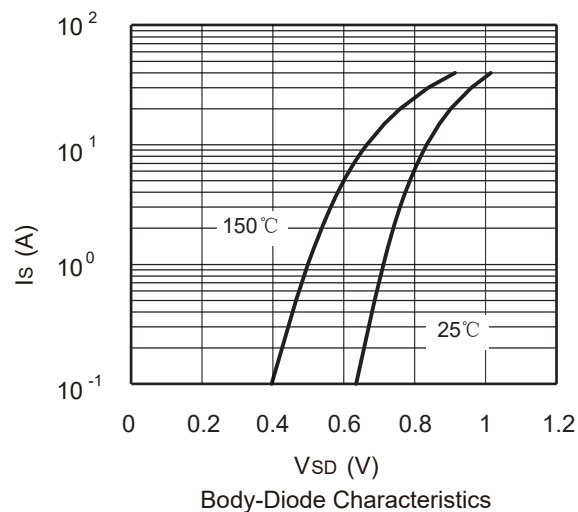
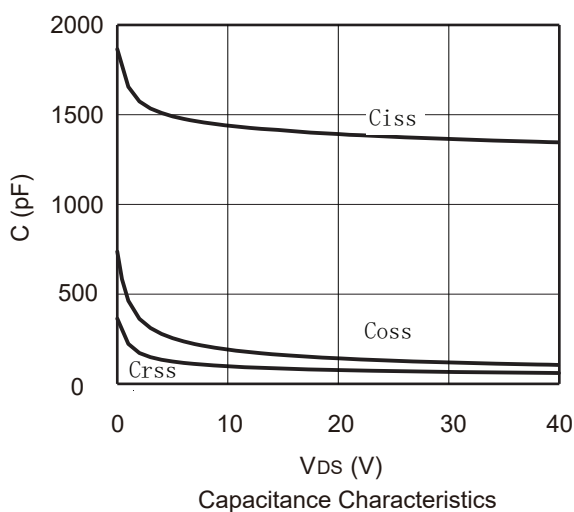
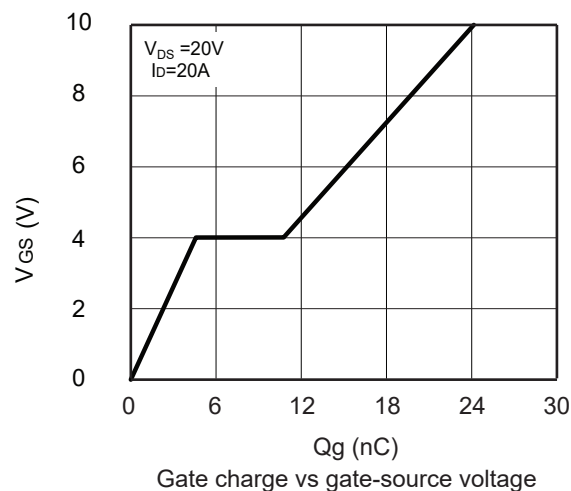
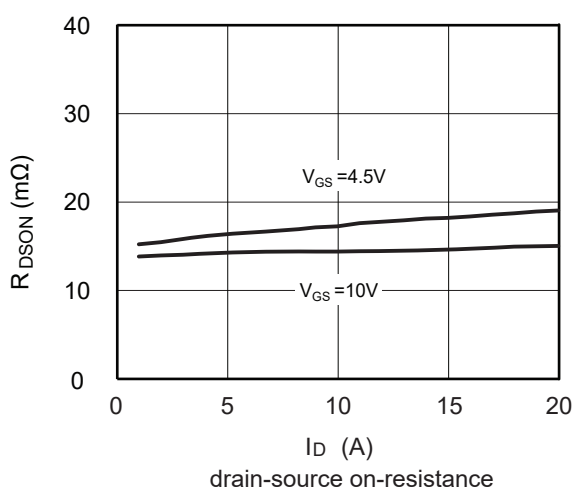
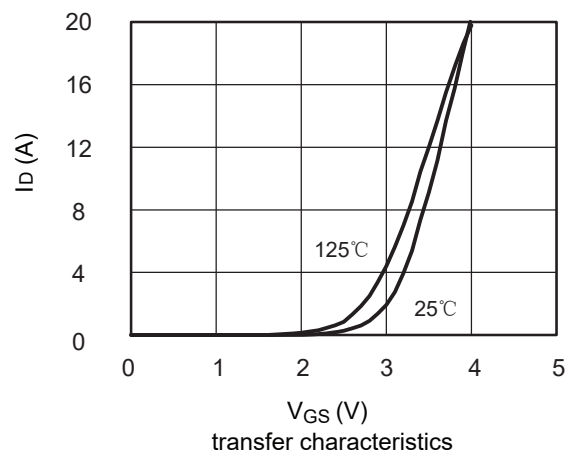
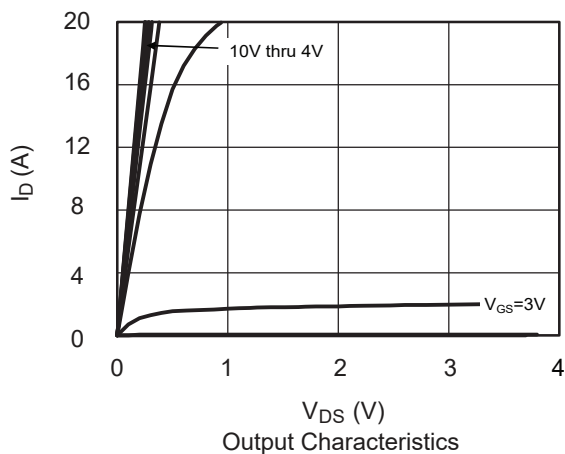
- The EAS data shows Max. rating . The N-Channel test condition is V_{DD}=20V , V_{GS}=10V , L=0.5mH , I_{AS}=18.5A.
The P-Channel test condition is V_{DD}=-20V , V_{GS}=-10V , L=0.5mH , I_{AS}=-19A.

This product has been designed and qualified for the consumer market.

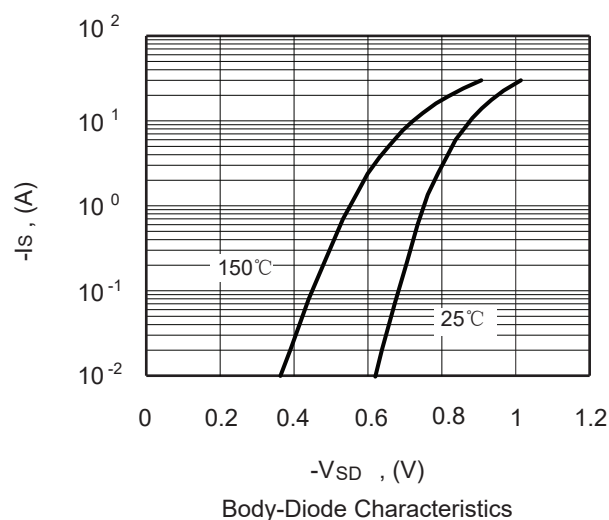
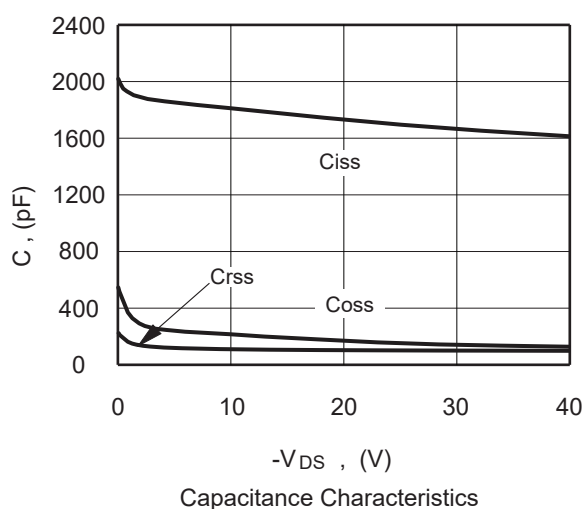
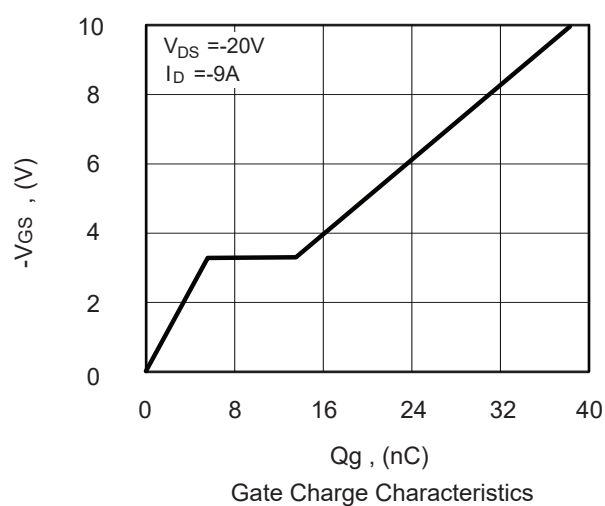
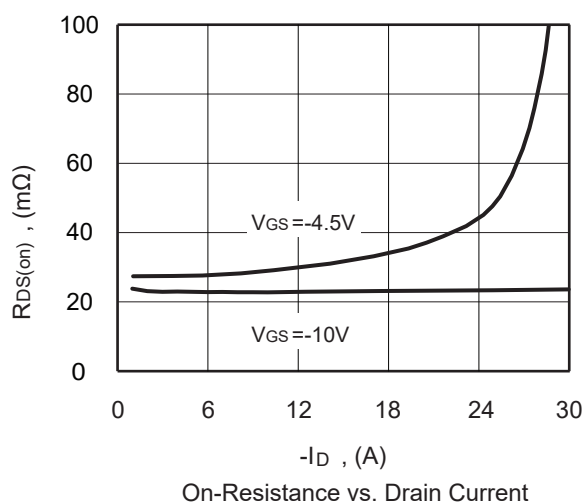
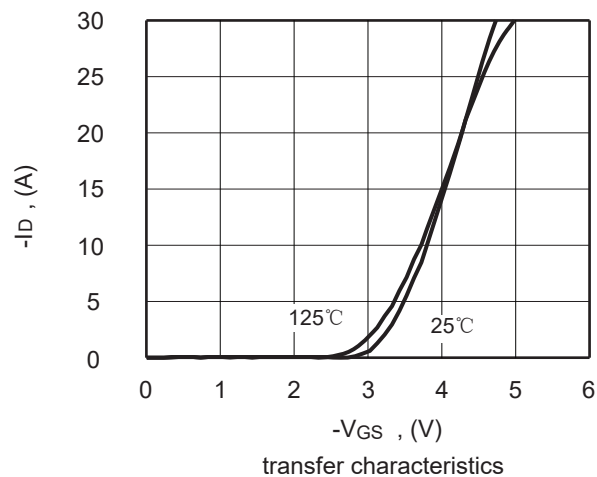
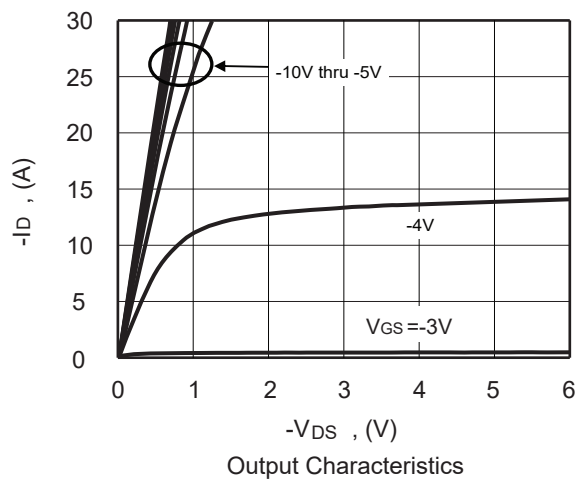
Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

N-Channel: Typical Characteristics



P-Channel: Typical Characteristics



Package Dimension

TO-252-4L

Unit :mm

