CMD607A

N- and P-Channel Enhancement Mode MOSFET

General Description

The CMD607A 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

- 30V 20A RDS(ON)≤20mΩ @ VGS=10V
  RDS(ON)≤40mΩ @ VGS=4.5V
- -30V -12A RDS(ON)≤48mΩ @ VGS=-10V
  RDS(ON)≤65mΩ @ VGS=-4.5V
- High Density Cell Design For Ultra Low On Resistance

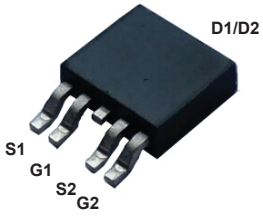
Product Summary

	BVDSS	RDSON	ID
N-Channel	30V	20mΩ	20A
P-Channel	-30V	48mΩ	-12A

Applications

- Power Management
- Load Switch
- DC/DC Converter

TO-252-4L Pin Configuration



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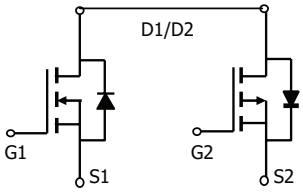

n-channel p-channel

Absolute Maximum Ratings

Symbol	Parameter	Max n-channel	Max p-channel	Units
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D@T_C=25℃	Continuous Drain Current	20	-12	A
I_D@T_C=70 ℃	Continuous Drain Current	15	-9.4	A
I_{DM}	Pulsed Drain Current	60	-36	A
P_D@T_C=25℃	Power Dissipation	25	25	W
T_{STG}	Storage Temperature Range	-55 to 150	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	-55 to 150	℃

Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State)	---	50	℃/W
$R_{\theta Jc}$	Maximum Junction-to-Case (Steady-State)	---	6.5	℃/W

Thermal Characteristics: p-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State)	---	50	℃/W
$R_{\theta JC}$	Maximum Junction-to-Case (Steady-State)	---	4.2	℃/W

N Channel Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=12A	---	---	20	mΩ
		V_{GS}=4.5V , I_D=10A	---	---	40	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=12A	---	10	---	S
Q_g	Total Gate Charge	V_{DS}=15V , V_{GS}=10V , I_D=8A	---	7.5	---	nC
Q_{gs}	Gate-Source Charge		---	1.3	---	
Q_{gd}	Gate-Drain Charge		---	1.7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=15V , V_{GS}=10V , R_L=1.87Ω R_{GEN} =3Ω	---	4.5	---	ns
T_r	Rise Time		---	2.7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	15	---	
T_f	Fall Time		---	3	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	650	---	pF
C_{oss}	Output Capacitance		---	65	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=1A ,T_J=25℃	---	---	1	V

P Channel Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250μA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-10A	---	---	48	mΩ
		V_{GS}=-4.5V , I_D=-8A	---	---	65	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250μA	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-32V , V_{GS}=0V	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-10A	---	10	---	S
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_D=-12A	---	14	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	3.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V , V_{GS}=-10V, R_L=1.25Ω R_{GEN} =3Ω	---	8	---	ns
T_r	Rise Time		---	6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	18	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , f=1MHz	---	1300	---	pF
C_{oss}	Output Capacitance		---	140	---	
C_{rss}	Reverse Transfer Capacitance		---	95	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-12	A
I_{SM}	Pulsed Source Current		---	---	-36	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-1A ,T_J=25℃	---	---	-1	V