

N&P-Channel Enhancement Mode MOSFET

General Description

The CMSA3811 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use in inverter and other applications.

Features

- 30V, 16A, RDS(ON) = 12mΩ @VGS = 10V
-30V, -15A, RDS(ON) = 35mΩ @VGS = -10V
- Surface mount package
- Extremely low on-resistance RDS(on)
- RoHS Compliant

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°C	Continuous Drain Current	16	-15	A
I _D @T _C =100°C	Continuous Drain Current	10	-10	A
I _{DM}	Pulsed Drain Current	48	-45	A
P _D @T _C =25°C	Power Dissipation	15	15	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 _{θJA}	Maximum Junction-to-Ambient (Steady-State)	---	70	°C/W
R _{θJC}	Maximum Junction-to-Case (Steady-State)	---	10	°C/W

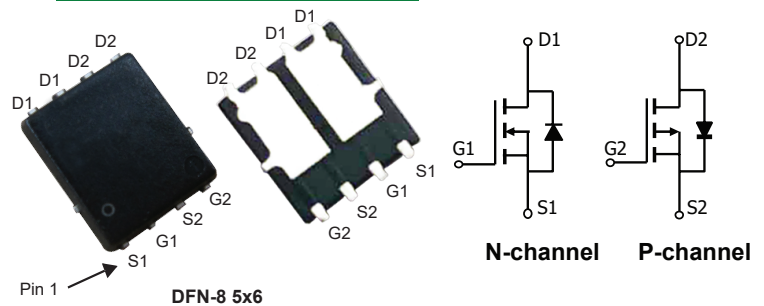
Product Summary

	BVDSS	RDS(ON)	ID
N-Channel	30V	12mΩ	16A
P-Channel	-30V	35mΩ	-15A

Applications

- Synchronous Rectification.
- High Current, High Speed Switching.
- Portable equipment application

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA3811	DFN- 8 5*6	CMSA3811

Thermal Characteristics: P-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State)	---	65	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Maximum Junction-to-Case (Steady-State)	---	6	$^{\circ}\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$, $I_D=15\text{A}$	---	---	12	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=10\text{A}$	---	---	16	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = 250\mu\text{A}$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$	---	---	1	μA
		$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^{\circ}\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5\text{V}$, $I_D=10\text{A}$	---	10	---	S
Q_g	Total Gate Charge	$V_{DS}=15\text{V}$, $I_D=12\text{A}$ $V_{GS}=10\text{V}$	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=15\text{V}$, $V_{GS}=10\text{V}$, $R_{GEN}=3\Omega$ $R_L=1.25\Omega$	---	5	---	ns
T_r	Rise Time		---	10	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16	---	
T_f	Fall Time		---	6	---	
C_{iss}	Input Capacitance	$V_{DS}=15\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	---	1200	---	pF
C_{oss}	Output Capacitance		---	125	---	
C_{rss}	Reverse Transfer Capacitance		---	68	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0\text{V}$, Force Current	---	---	16	A
$I_{S,pulse}$	Diode pulse current		---	---	48	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0\text{V}$, $I_F=1\text{A}$, $T_J=25^{\circ}\text{C}$	---	---	1	V

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
B _{VDSS}	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	---	---	35	mΩ
		V _{GS} =-4.5V, I _D =-8A	---	---	43	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V	---	---	-1	μA
		V _{DS} =-30V, V _{GS} =0V, T _J =25°C	---	---	-5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-10A	---	9	---	S
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _D =-9.7A	---	20	---	nC
Q _{gs}	Gate-Source Charge		---	3.5	---	
Q _{gd}	Gate-Drain Charge		---	4.6	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =-15V, V _{GS} =-10V, R _L =1.5Ω R _{GEN} =3Ω	---	10	---	ns
T _r	Rise Time		---	5.5	---	
T _{d(off)}	Turn-Off Delay Time		---	25	---	
T _f	Fall Time		---	10	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1300	---	pF
C _{oss}	Output Capacitance		---	180	---	
C _{rss}	Reverse Transfer Capacitance		---	120	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	-15	A
I _{SM}	Pulsed Source Current		---	---	-45	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _F =-1A, T _J =25°C	---	---	-1	V

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.