

## P-Channel Enhancement Mode Field Effect Transistor

### General Description

The CMSA6411 uses advanced trench technology to provide excellent RDS(ON).

This device is ideal for load switch and battery protection applications.

### Features

- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

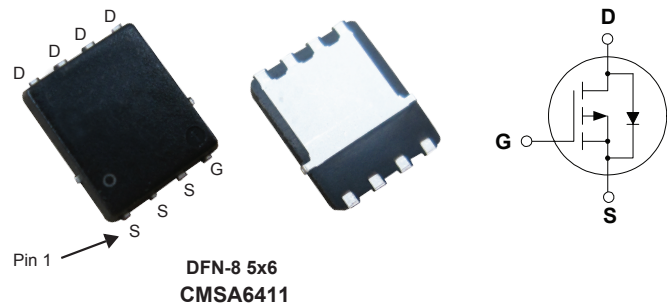
### Product Summary

BVDSS	RDSON	ID
-20V	3mΩ	-85A

### Applications

- Load Switch
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

### DFN-8 5x6 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current	-85	A
$I_{DM}$	Pulsed Drain Current	-260	A
EAS	Single Pulse Avalanche Energy ( $I_D = 30A$ )	230	mJ
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	160	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
$R_{\theta JA}$	Junction-to-Ambient(Steady-State)	---	55	$^\circ C/W$
$R_{\theta JC}$	Junction-to-Case	---	0.8	$^\circ C/W$

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

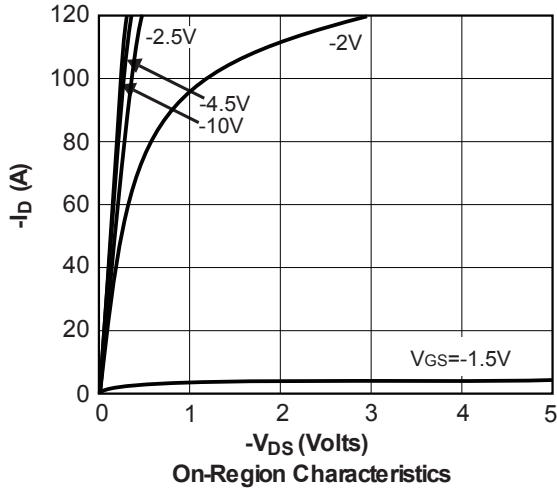
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{DS}=-4.5V, I_D=-20A$	---	---	3	m $\Omega$
		$V_{DS}=-2.5V, I_D=-20A$	---	---	4	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.5	---	-1.5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=-16V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	-1	$\mu A$
		$V_{DS}=-16V, V_{GS}=0V, T_J=55^{\circ}\text{C}$	---	---	-5	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=-10V, I_D=-10A$	---	8	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	17	---	$\Omega$
$Q_g$	Total Gate Charge	$V_{DS}=-10V, I_D=-20A$ $V_{GS}=-10V$	---	235	---	nC
$Q_{gs}$	Gate-Source Charge		---	20	---	
$Q_{gd}$	Gate-Drain Charge		---	35	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-10V, V_{GS}=-10V, R_{GEN}=3\Omega$ $R_L=0.5\Omega$	---	10	---	ns
$T_r$	Rise Time		---	20	---	
$T_{d(off)}$	Turn-Off Delay Time		---	280	---	
$T_f$	Fall Time		---	90	---	
$C_{iss}$	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$	---	16000	---	pF
$C_{oss}$	Output Capacitance		---	1900	---	
$C_{rss}$	Reverse Transfer Capacitance		---	1400	---	

Diode Characteristics

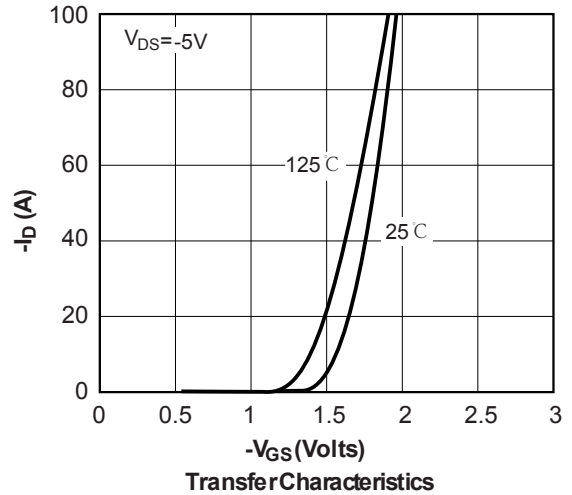
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	-85	A
$I_{SM}$	Pulsed Source Current		---	---	-260	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_F=-1A$	---	---	-1.2	V

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 Cmos assumes no liability for customers' product design or applications.  
 Cmos reserves the right to improve product design, functions and reliability without notice.

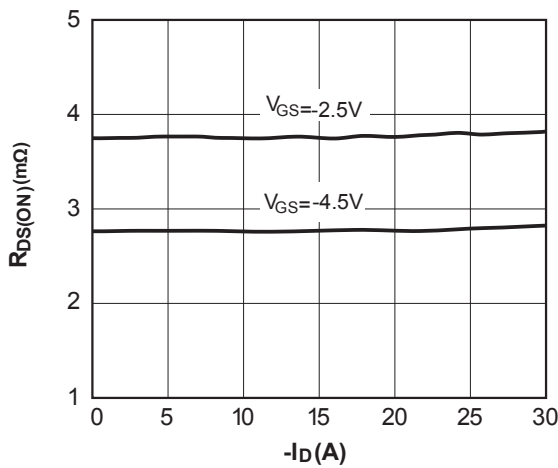
Typical Characteristics



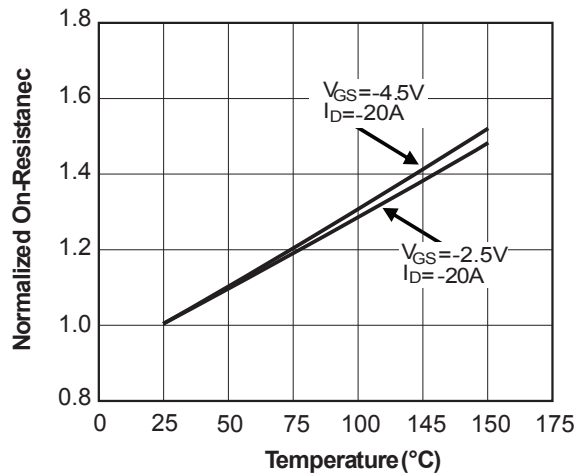
On-Region Characteristics



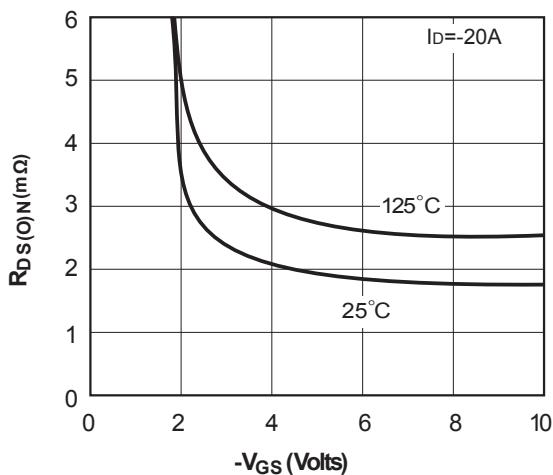
Transfer Characteristics



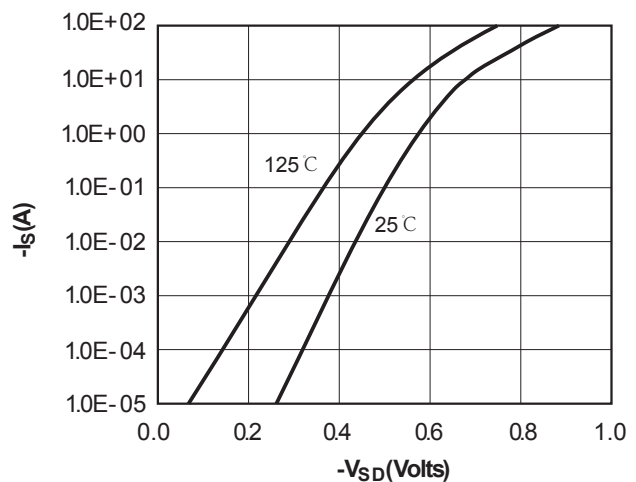
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Junction Temperature

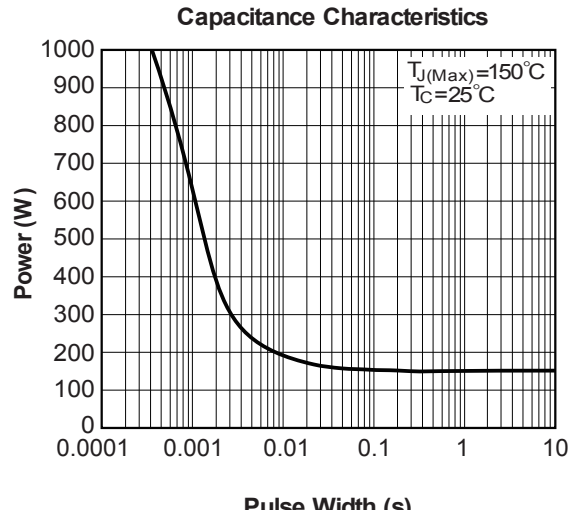
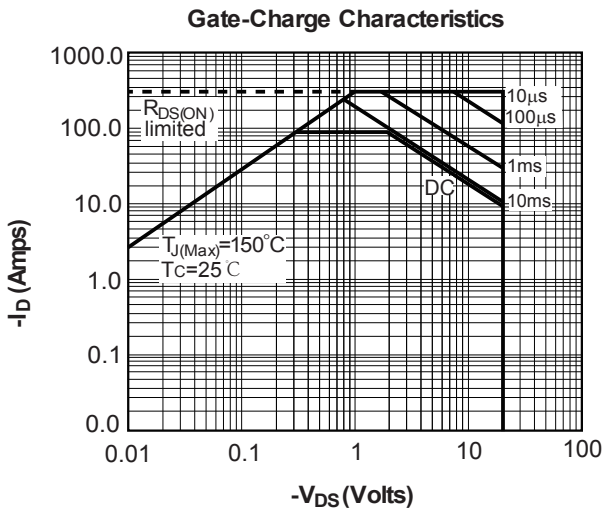
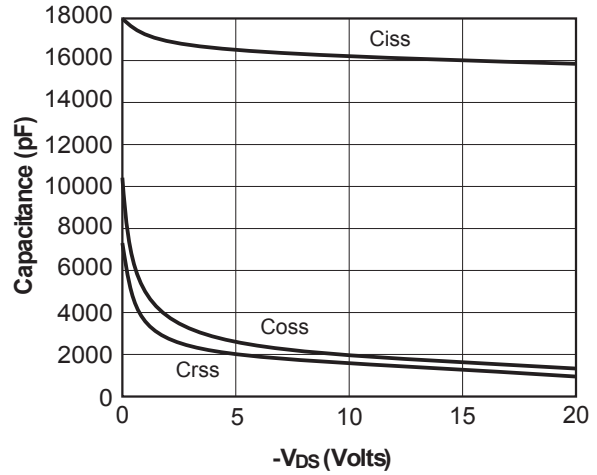
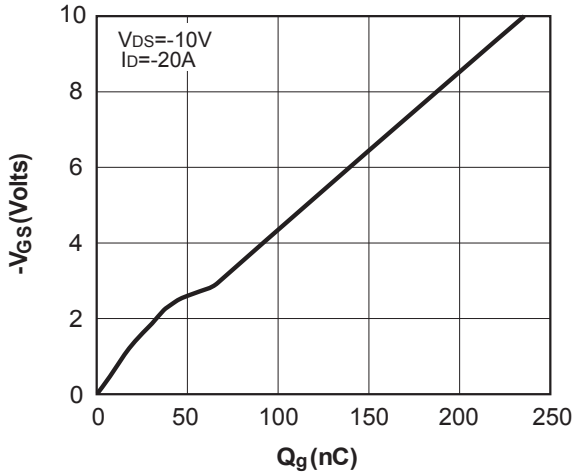


On-Resistance vs. Gate-Source Voltage



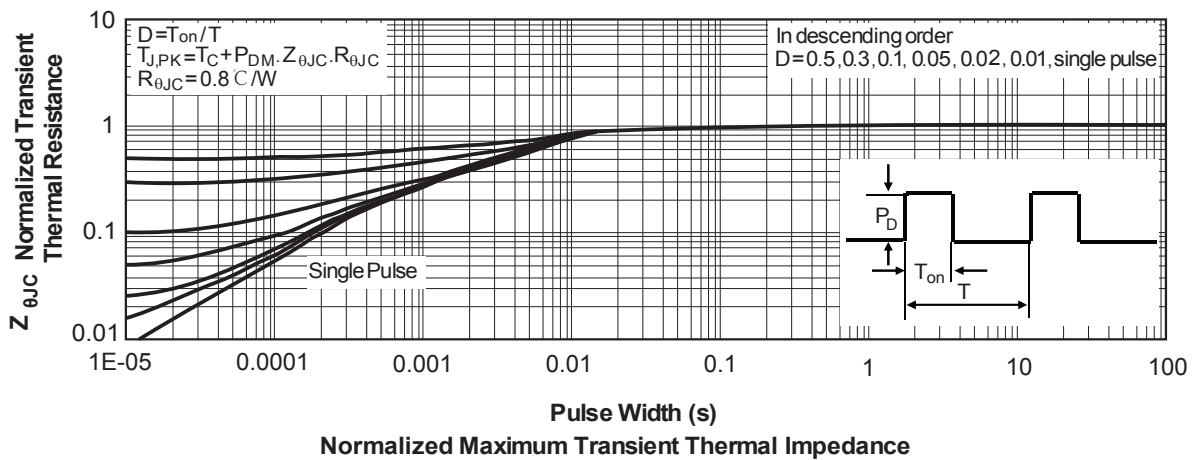
Body-Diode Characteristics

Typical Characteristics



Maximum Forward Biased Safe Operating Area

Single Pulse Power Rating Junction-to-Case



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Typical Characteristics

