

## N-Channel Enhancement Mode MOSFET

### General Description

The CMS4576 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ . This device is suitable for use as a synchronous switch in PWM applications.

### Features

- $R_{DS(ON)} \leq 6m\Omega$  @  $V_{GS}=10V$
- $R_{DS(ON)} \leq 10m\Omega$  @  $V_{GS}=4.5V$
- Surface mount package.
- RoHS Compliant

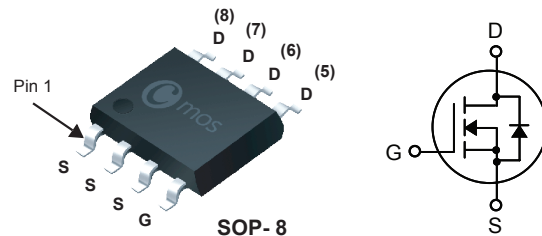
### Product Summary

BVDSS	RDSON	ID
30V	6mΩ	20A

### Applications

- DC/DC Converter
- Synchronous Rectifier
- Load Switch
- Battery protection

### SOP-8 Pin Configuration



Type	Package	Marking
CMS4576	SOP- 8	CMS4576

### Absolute Maximum Ratings ( $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	20	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	12	A
$I_{DM}$	Pulsed Drain Current	60	A
EAS	Single Pulse Avalanche Energy	35	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	3.1	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
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ( $t \leq 10s$ )	---	40	$^\circ C/W$

**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	$V_{GS}=10V, I_D=20A$	---	---	6	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	---	10	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	---	2.5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=5A$	---	13	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2	---	$\Omega$
$Q_g$	Total Gate Charge (4.5V)	$V_{DS}=15V, V_{GS}=10V, I_D=20A$	---	16	---	nC
$Q_{gs}$	Gate-Source Charge		---	3	---	
$Q_{gd}$	Gate-Drain Charge		---	3.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, V_{GS}=10V, R_L=0.75\Omega$ $R_{GEN}=3\Omega$	---	6.25	---	ns
$T_r$	Rise Time		---	2.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	19	---	
$T_f$	Fall Time		---	5	---	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	950	---	pF
$C_{oss}$	Output Capacitance		---	370	---	
$C_{rss}$	Reverse Transfer Capacitance		---	65	---	

**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	$V_{GS}=0V, I_S=15A, T_J=25^{\circ}\text{C}$	---	---	1.2	V

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