

**General Description**

The CMD603 uses advanced trench technology MOSFETs to provide excellent RDS(ON) and low gate charge.

The complementary MOSFETs may be used in H-bridge, Inverters and other applications.

**Features**

- 60V 13A RDS(ON)≤45mΩ @ VGS=10V  
RDS(ON)≤50mΩ @ VGS=4.5V
- -60V -13A RDS(ON)≤75mΩ @ VGS=10V  
RDS(ON)≤85mΩ @ VGS=4.5V
- High Density Cell Design For Ultra Low On Resistance

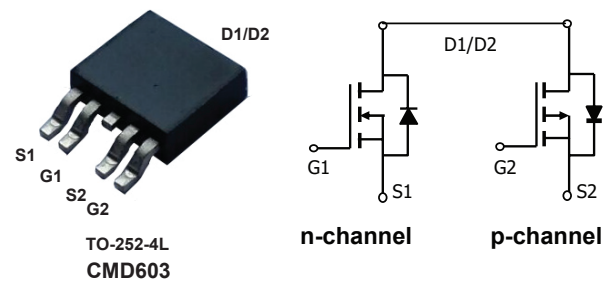
**Product Summary**

	<b>BVDSS</b>	<b>RDS(ON)</b>	<b>ID</b>
N-Channel	60V	45mΩ	13A
P-Channel	-60V	75mΩ	-13A

**Applications**

- Power Management
- Load Switch
- DC/DC Converter

**TO-252-4L Pin Configuration**



**Absolute Maximum Ratings**

<b>Symbol</b>	<b>Parameter</b>	<b>Max n-channel</b>	<b>Max p-channel</b>	<b>Units</b>
V <sub>DS</sub>	Drain-Source Voltage	60	-60	V
V <sub>GS</sub>	Gate-Source Voltage	±20	±20	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current	13	-13	A
I <sub>DM</sub>	Pulsed Drain Current	39	-39	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Power Dissipation	27	43	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 175	-55 to 175	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 175	-55 to 175	°C

**Thermal Characteristics: n-channel**

<b>Symbol</b>	<b>Parameter</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
R <sub>θJA</sub>	Maximum Junction-to-Ambient	---	60	°C/W
R <sub>θJc</sub>	Maximum Junction-to-Case	---	5.5	°C/W

**Thermal Characteristics: p-channel**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient	---	60	$^{\circ}C/W$
$R_{\theta JC}$	Maximum Junction-to-Case	---	3.5	$^{\circ}C/W$

**N Channel Electrical Characteristics ( $T_J=25^{\circ}C$  unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=6A$	---	---	45	m $\Omega$
		$V_{GS}=4.5V, I_D=4A$	---	---	50	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	---	2.5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=48V, V_{GS}=0V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
gfs	Forward Transconductance	$V_{DS}=5V, I_D=3A$	---	11	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	---	3.7	---	$\Omega$
$Q_g$	Total Gate Charge (10V)	$V_{DS}=30V, V_{GS}=10V, I_D=12A$	---	8	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.2	---	
$Q_{gd}$	Gate-Drain Charge		---	2	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V, V_{GS}=10V, R_L=2.5\Omega$ $R_{GEN}=3\Omega$	---	4.5	---	ns
$T_r$	Rise Time		---	3.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16	---	
$T_f$	Fall Time		---	2	---	
$C_{iss}$	Input Capacitance	$V_{DS}=30V, V_{GS}=0V, f=1MHz$	---	860	---	pF
$C_{oss}$	Output Capacitance		---	52	---	
$C_{rss}$	Reverse Transfer Capacitance		---	42	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=12A, di/dt=100A/\mu s$	---	27	---	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		---	30	---	nC
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=5A$	---	---	1.2	V

**P Channel Electrical Characteristics (T<sub>J</sub>=25 °C unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =-250μA	-60	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V , I <sub>D</sub> =-5A	---	---	75	mΩ
		V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-2A	---	---	85	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250μA	-1	---	-2.5	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-48V , V <sub>GS</sub> =0V	---	---	-1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V , I <sub>D</sub> =- 3 A	---	7.5	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	17	---	Ω
Q <sub>g</sub>	otal Gate Charge (10V)	V <sub>DS</sub> =-30V , V <sub>GS</sub> =-10V , I <sub>D</sub> =-12A	---	16	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	3	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3.5	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =-30V , V <sub>GS</sub> =-10V , R <sub>L</sub> =2.5Ω R <sub>GEN</sub> =3Ω ,	---	9	---	ns
T <sub>r</sub>	Rise Time		---	10	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	25	---	
T <sub>f</sub>	Fall Time		---	11	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-30V , V <sub>GS</sub> =0V , f=1MHz	---	1550	---	pF
C <sub>oss</sub>	Output Capacitance		---	68	---	
C <sub>riss</sub>	Reverse Transfer Capacitance		---	49	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-12A , di/dt=100A/μs	---	27.5	---	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		---	30	---	nC
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =-5A	---	---	-1.2	V

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