

CMD603B

60V, 55mΩ typ., 13A N-Channel MOSFET and -60V, 90mΩ typ., -13A P-Channel MOSFET

General Description

The CMD603B uses advanced trench technology MOSFETs to provide excellent RDS(ON).

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

Features

- Dual N- and P-Channel MOSFET
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

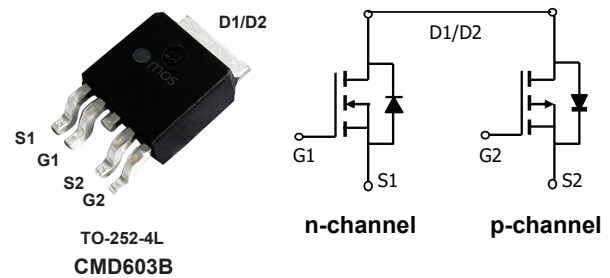
Product Summary

	BVDSS	R _{DS(on)} max.	ID
N-Channel	60V	63mΩ	13A
P-Channel	-60V	105mΩ	-13A

Applications

- Power Management
- Load Switch
- DC/DC Converter

TO-252-4L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Max n-ch	Max p-ch	Units
V _{DS}	Drain-Source Voltage	60	-60	V
V _{GS}	Gate-Source Voltage	±20	±20	V
I _D @T _C =25°C	Continuous Drain Current	13	-13	A
I _D @T _C =100°C	Continuous Drain Current	9	-9	A
I _{DM}	Pulsed Drain Current	39	-39	A
EAS	Single Pulse Avalanche Energy ¹	36	36	mJ
P _D @T _C =25°C	Total Power Dissipation	27	42	W
T _{STG}	Storage Temperature Range	-55 to 150	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	-55 to 150	°C

Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	60	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	4.63	°C/W

CMD603B

60V, 55mΩ typ., 13A N-Channel MOSFET and -60V, 90mΩ typ., -13A P-Channel MOSFET

Thermal Characteristics: p-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.98	°C/W

N Channel Electrical Characteristics (T_J=25 °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	$V_{GS}=10V$, $I_D=6A$	---	55	63	mΩ
		$V_{GS}=4.5V$, $I_D=4A$	---	65	76	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=48V$, $V_{GS}=0V$	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=3A$	---	7	---	S
Q_g	Total Gate Charge	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=12A$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	1.5	---	
Q_{gd}	Gate-Drain Charge		---	2	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V$, $V_{GS}=10V$, $R_L=2.5\Omega$ $R_{GEN}=3\Omega$	---	5	---	ns
T_r	Rise Time		---	4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	17	---	
T_f	Fall Time		---	3	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	150	---	pF
C_{oss}	Output Capacitance		---	50	---	
C_{rss}	Reverse Transfer Capacitance		---	10	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	13	A
I_{SM}	Pulsed Source Current		---	---	39	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=5A$, $T_J=25^\circ C$	---	0.85	1.3	V

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-60	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-5A	---	90	105	mΩ
		V _{GS} =-4.5V, I _D =-2A	---	99	130	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V, V _{GS} =0V	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-3A	---	9.3	---	S
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _D =-12A	---	17.5	---	nC
Q _{gs}	Gate-Source Charge		---	4	---	
Q _{gd}	Gate-Drain Charge		---	5	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =-30V, V _{GS} =-10V, R _L =2.5Ω R _{GEN} =3Ω	---	10	---	ns
T _r	Rise Time		---	11	---	
T _{d(off)}	Turn-Off Delay Time		---	26	---	
T _f	Fall Time		---	12	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	910	---	pF
C _{oss}	Output Capacitance		---	50	---	
C _{rss}	Reverse Transfer Capacitance		---	30	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	-13	A
I _{SM}	Pulsed Source Current		---	---	-39	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _F =-5A, T _J =25°C	---	-0.88	-1.2	V

Note:

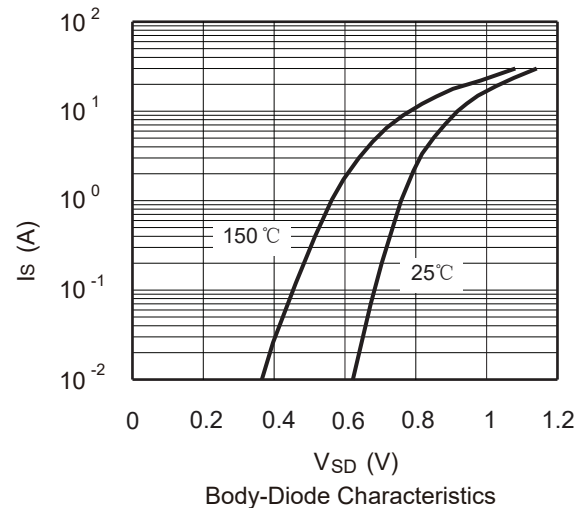
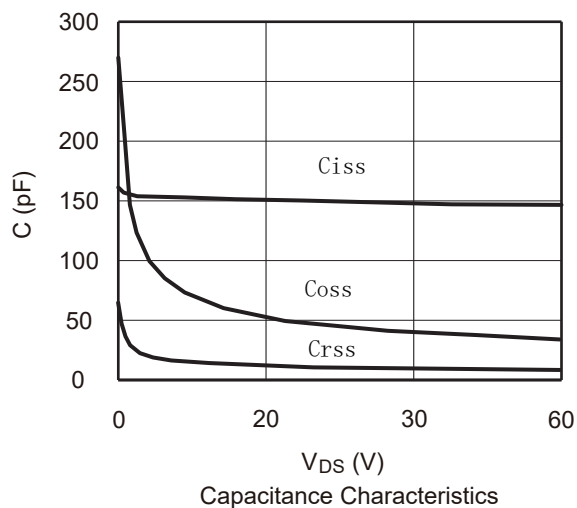
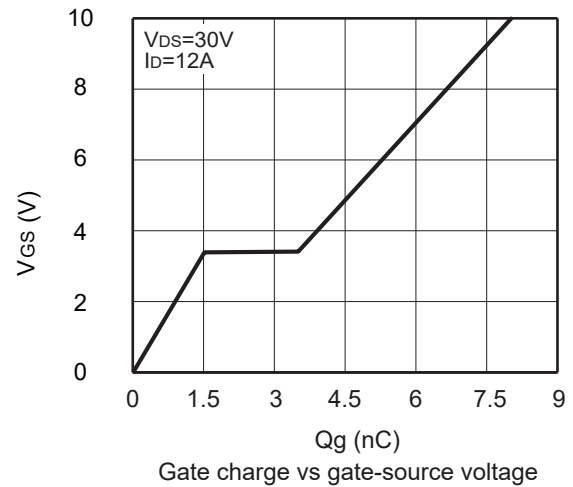
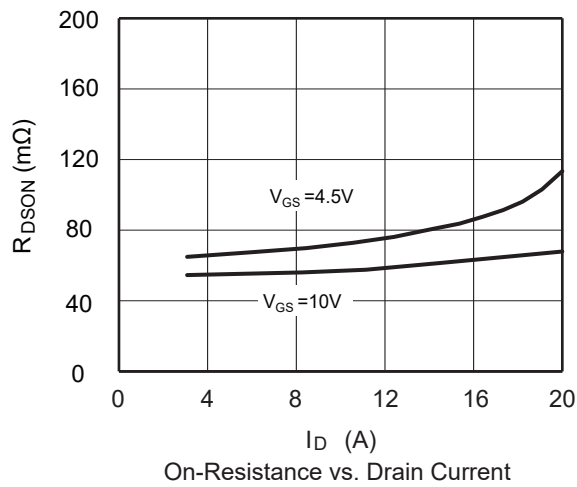
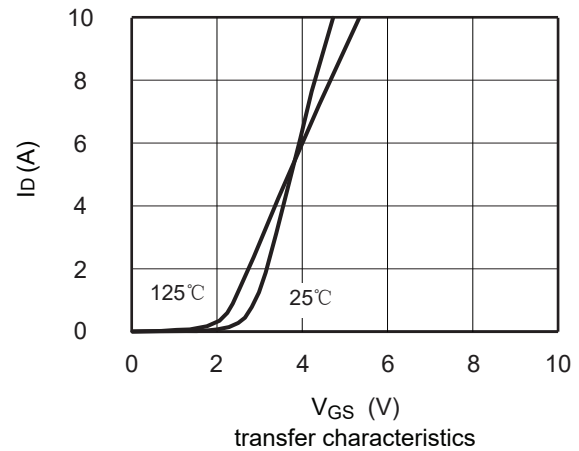
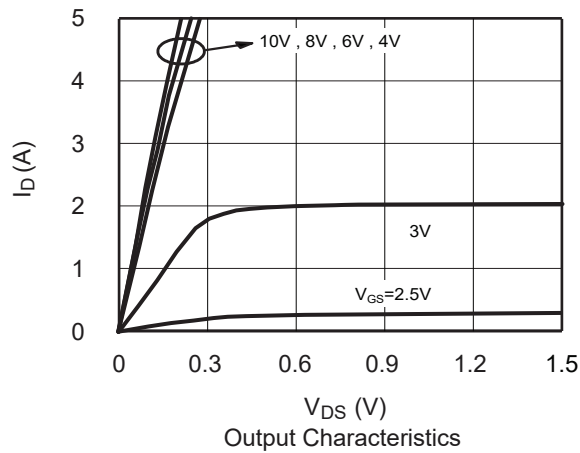
- The EAS data shows Max. rating . The N-Channel test condition is V_{DD}=20V, V_{GS}=10V, L=0.5mH, I_{AS}=12A.
The P-Channel test condition is V_{DD}=-20V, V_{GS}=-10V, L=0.5mH, I_{AS}=-12A.

This product has been designed and qualified for the consumer market.

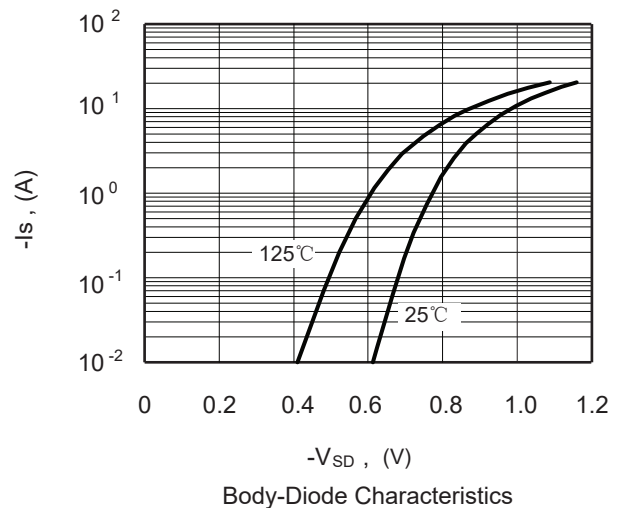
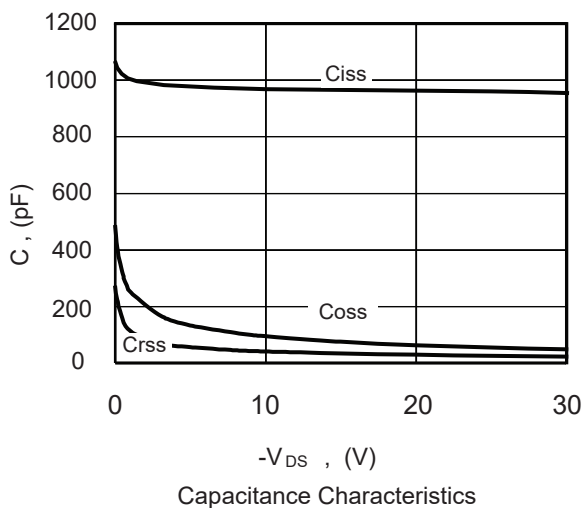
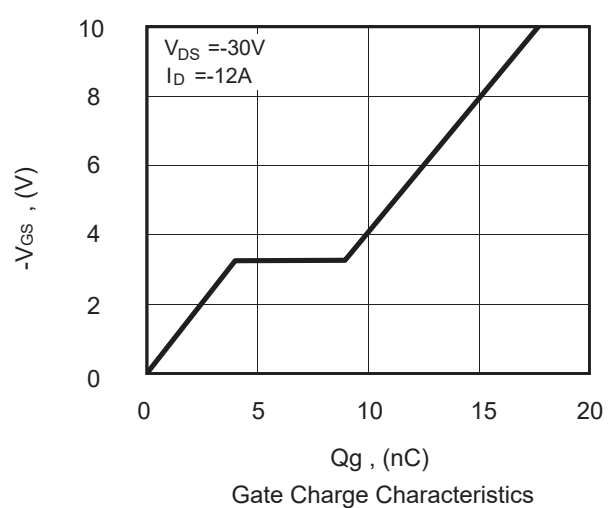
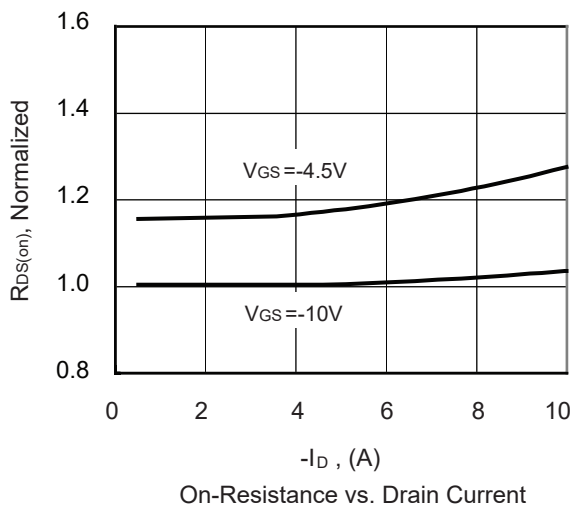
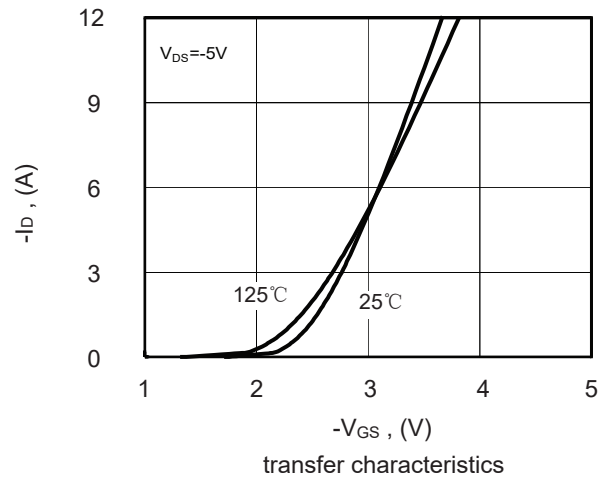
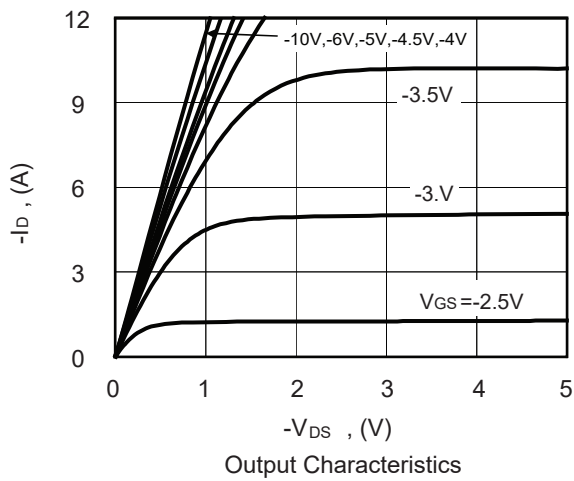
Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design, functions and reliability without notice.

N-Channel: Typical Characteristics



P-Channel: Typical Characteristics



CMD603B

60V, 55mΩ typ., 13A N-Channel MOSFET and -60V, 90mΩ typ., -13A P-Channel MOSFET

Package Dimension

TO-252-4L

Unit :mm

