

General Description

The 3803A uses advanced trench technology to provide excellent RDS(ON). This device is ideally suited for high current switching applications.

Features

- Low On-Resistance
- 100% avalanche tested
- Simple Drive Requirements
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	180	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	144	A
I_{DM}	Pulsed Drain Current	720	A
EAS	Single Pulse Avalanche Energy ¹	422	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	150	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(PCB mount)	---	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.83	$^\circ\text{C}/\text{W}$

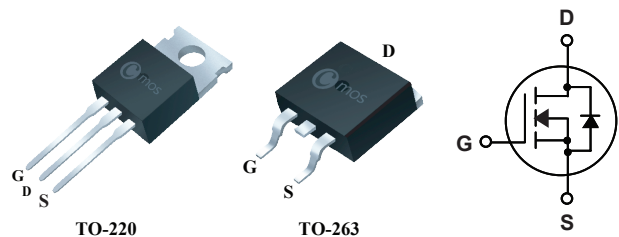
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
30V	3m Ω	180A

Applications

- DC-to-DC converters
- Load switching
- Motor control
- Server power supplies

TO-220/263 Pin Configuration



Type	Package	Marking
CMP3803A	TO-220	CMP3803A
CMB3803A	TO-263	CMB3803A

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	$V_{GS}=10V$, $I_D=40A$	---	---	3	m Ω
		$V_{GS}=4.5V$, $I_D=20A$	---	---	6.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=20A$	---	38	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.7	---	Ω
Q_g	Total Gate Charge	$I_D=30A$	---	140	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=24V$	---	20	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (note 3,4)	---	42	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$	---	16	---	ns
T_r	Rise Time	$I_D=30A$	---	64	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=407\Omega$	---	160	---	
T_f	Fall Time	$V_{GS}=10V$ (note 3,4)	---	80	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6000	---	pF
C_{oss}	Output Capacitance		---	725	---	
C_{rss}	Reverse Transfer Capacitance		---	538	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	180	A
I_{SM}	Pulsed Source Current		---	---	720	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=15A$, $T_J=25^{\circ}\text{C}$	---	0.80	1.2	V
t_{rr}	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	28	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J=25^{\circ}\text{C}$, $I_{DS}=30A$	---	12	---	nC

Note :

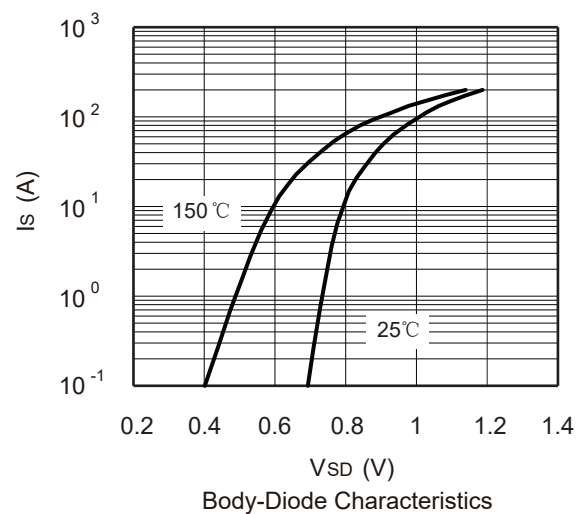
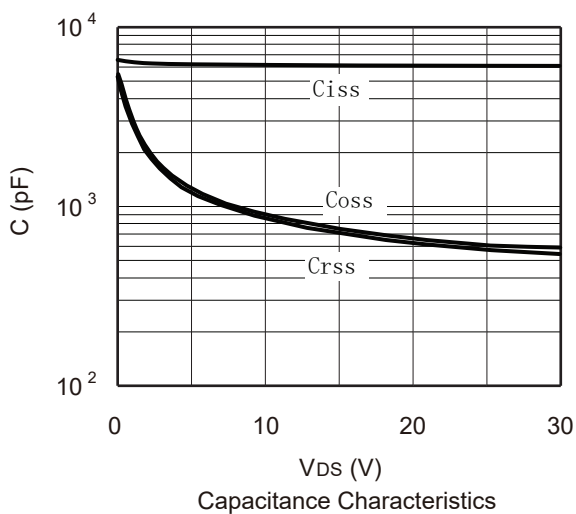
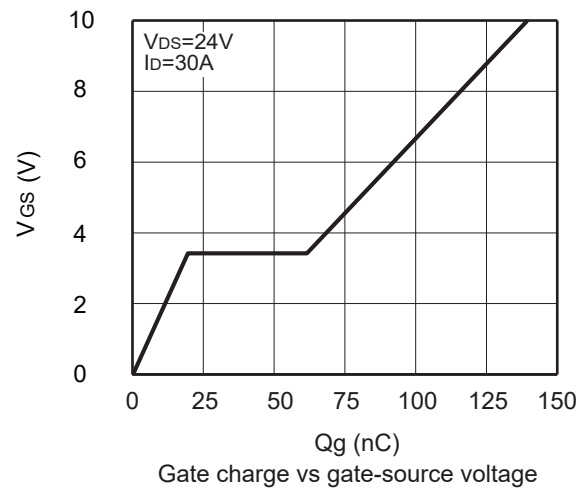
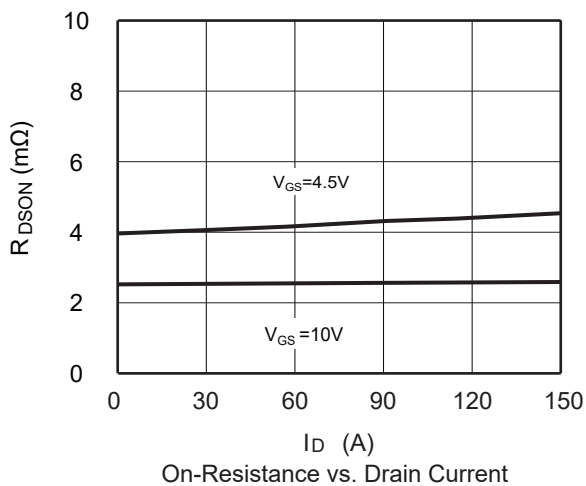
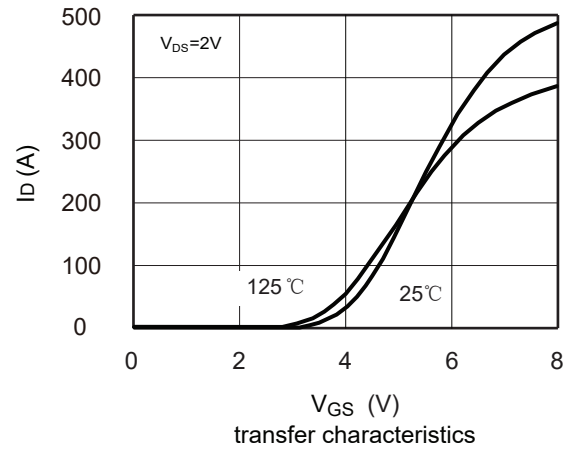
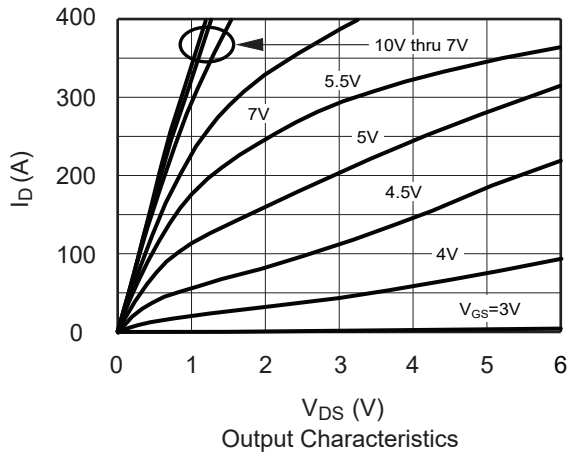
1. Repeattive rating : pulse width limited by junction temperature.
2. The EAS data shows Max. rating . The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=5mH$, $I_{AS}=13A$
3. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

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

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

Cmos reserver the right to improve product design ,functions and reliability wihtout notice. Please refer to the latest version of specification.

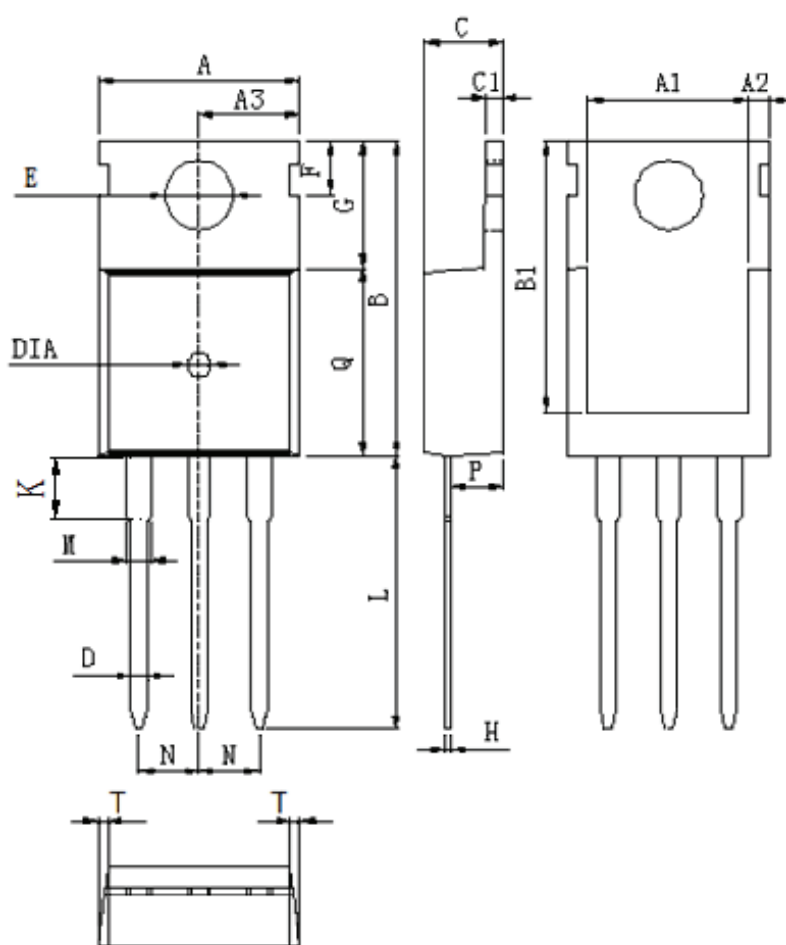
Typical Characteristics



Package Dimension

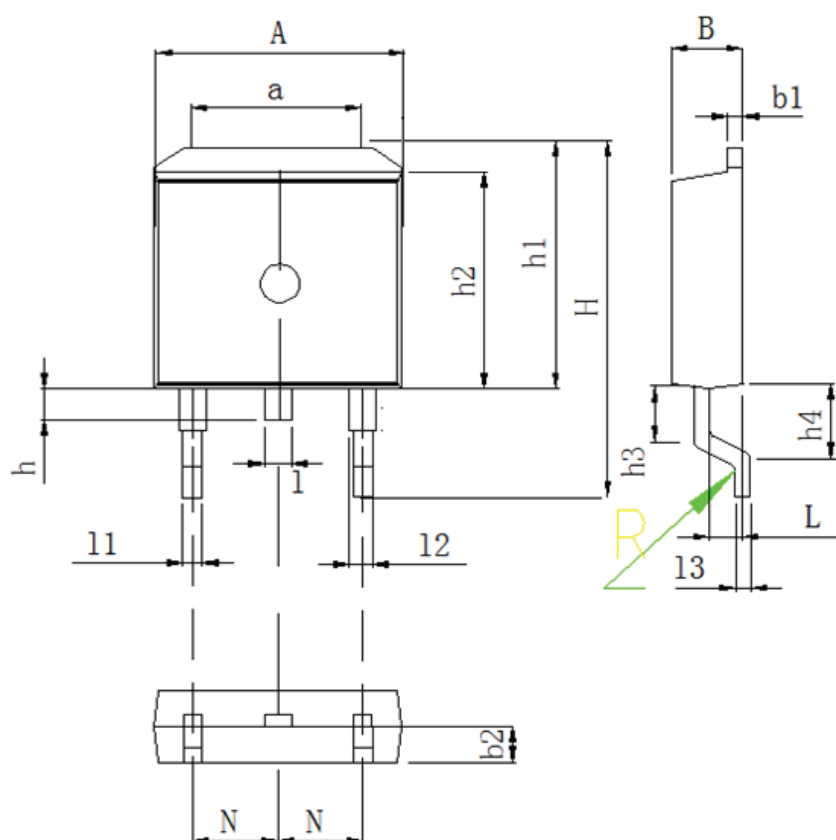
TO-220

Unit :mm



DIM	MILLIMETERS
A	10.0 ± 0.3
A1	8.64 ± 0.2
A2	1.15 ± 0.1
A3	5.0 ± 0.2
B	15.8 ± 0.4
B1	13.2 ± 0.3
C	4.56 ± 0.1
C1	1.3 ± 0.2
D	0.8 ± 0.2
E	3.6 ± 0.2
F	2.95 ± 0.3
G	6.5 ± 0.3
H	0.5 ± 0.1
K	3.1 ± 0.2
L	13.2 ± 0.4
M	1.25 ± 0.1
N	2.54 ± 0.1
P	2.4 ± 0.3
Q	9.0 ± 0.3
T	W:0.35
DIA	$\odot 1.5$ (deep 0.2)

Unit :mm



DIM	MILLIMETERS
A	9.8 ± 0.2
a	7.4 ± 0.4
B	4.5 ± 0.2
b1	1.3 ± 0.05
b2	2.4 ± 0.2
H	15.5 ± 0.3
h	1.54 ± 0.2
h1	10.5 ± 0.2
h2	9.2 ± 0.1
h3	1.54 ± 0.2
h4	2.7 ± 0.2
L	2.4 ± 0.2
l	1.3 ± 0.1
l1	0.8 ± 0.1
l2	1.3 ± 0.1
l3	0.5 ± 0.1
N	2.54 ± 0.1
R	$0.5R \pm 0.05$