

N-Channel Enhancement Mode Field Effect Transistor

General Description

The 3205A uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use in UPS, high current switching applications.

Features

- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

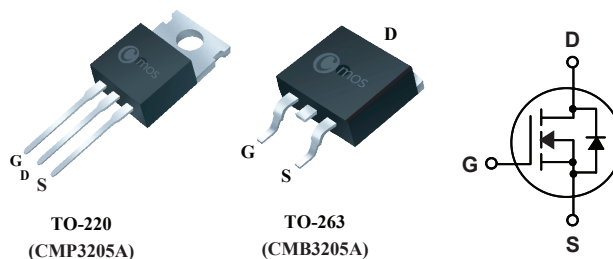
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
55V	8.5m Ω	110A

Applications

- LED power controller
- DC-DC & DC-AC converters
- High current, high speed switching
- Solenoid and relay drivers
- Motor control, Audio amplifiers

TO-220/263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	55	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	110	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	80	A
I_{DM}	Pulsed Drain Current ¹	440	A
EAS	Single Pulse Avalanche Energy ²	676	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	200	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	---	62.5	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.63	$^\circ\text{C}/\text{W}$

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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	$V_{GS}=0V$, $I_D=250\mu A$	55	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=62A$	---	---	8.5	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=\text{Max rating}$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=\text{Max rating}$, $V_{GS}=0V@150^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=20V$, $I_D=40A$	---	32	---	S
Q_g	Total Gate Charge	$I_D=62A$	---	71	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=44V$	---	16	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	28	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=28V$ $I_D=62A$ $R_G=4.7\Omega$, $V_{GS}=10V$	---	16	---	ns
T_r	Rise Time		---	98	---	
$T_{d(off)}$	Turn-Off Delay Time		---	65	---	
T_f	Fall Time		---	81	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	3400	---	pF
C_{oss}	Output Capacitance		---	650	---	
C_{rss}	Reverse Transfer Capacitance		---	250	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	110	A
I_{SM}	Pulsed Source Current ¹		---	---	440	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=30A$, $T_J=25^{\circ}\text{C}$	---	0.82	1.3	V

Note :

1.Repetitive rating; pulse width limited by max. junction temperature.

2.The test condition is $V_{DD}=30V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=52A$.

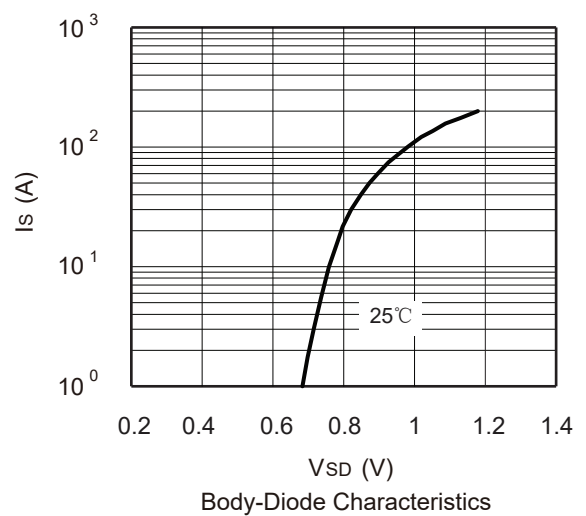
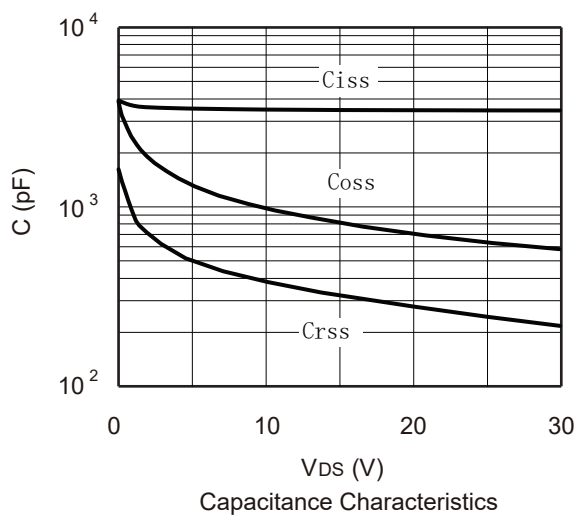
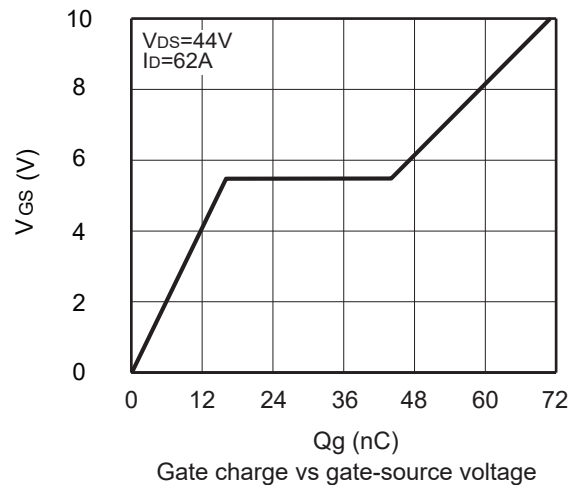
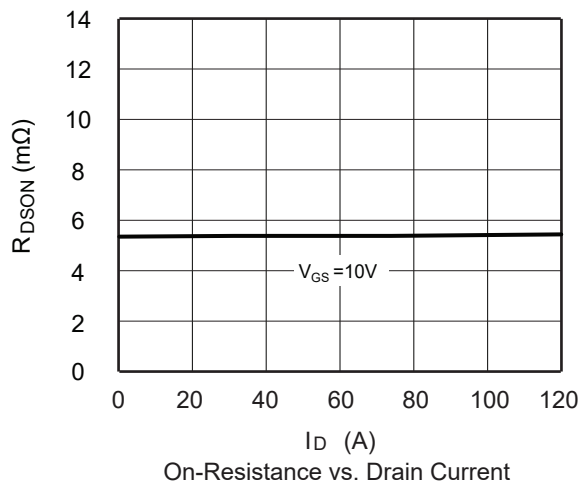
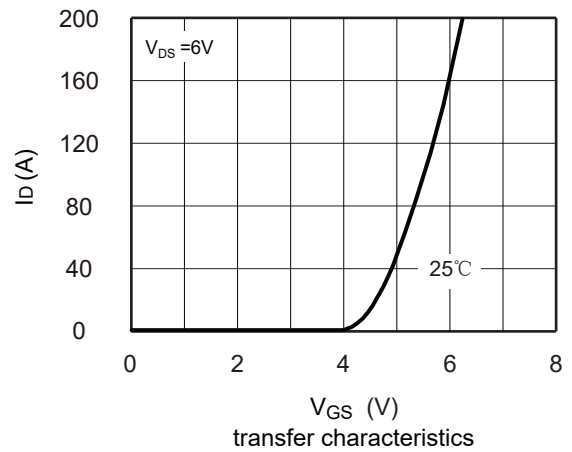
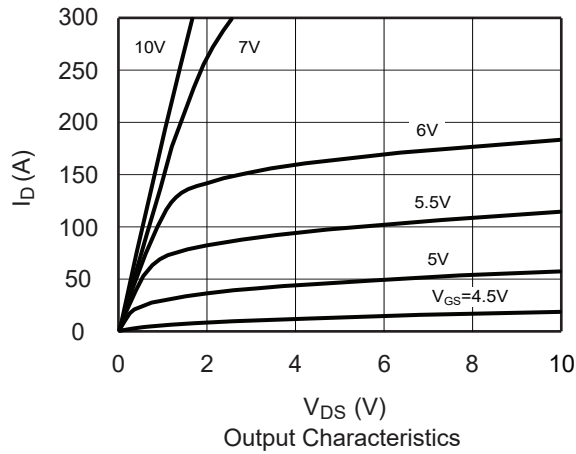
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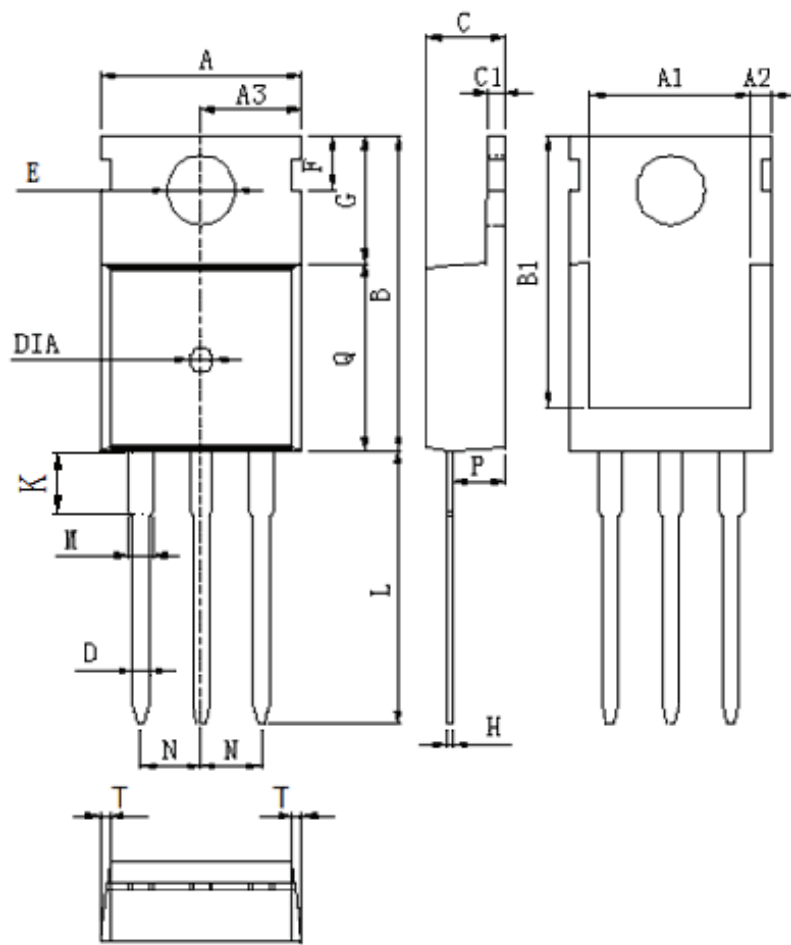
Typical Characteristics



Package Dimension

TO-220

Unit :mm

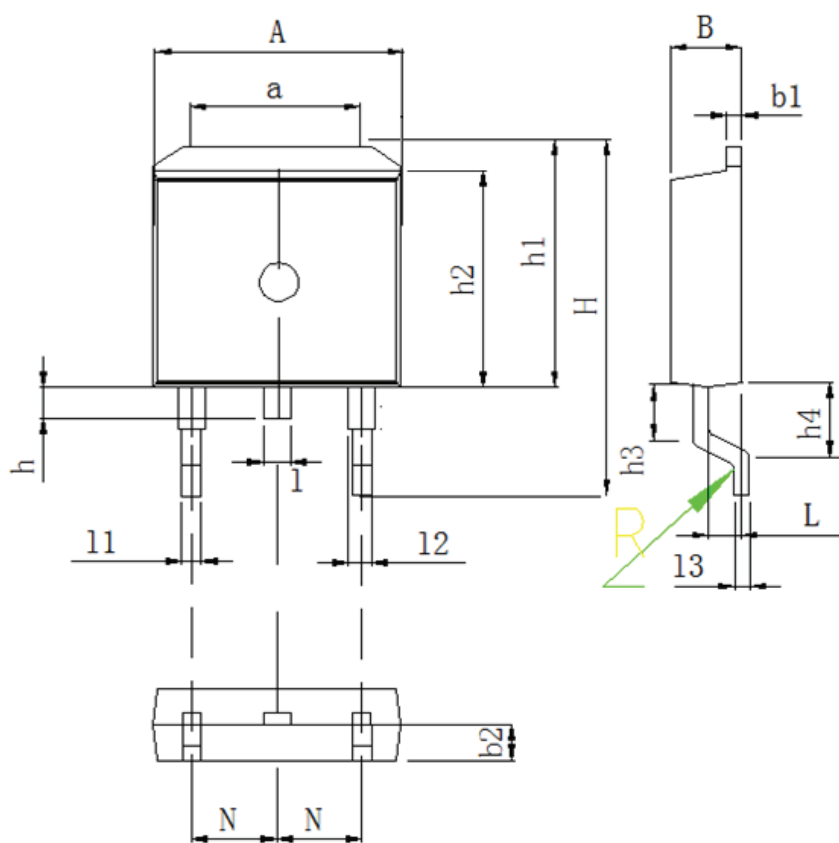


DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5(deep 0.2)

Package Dimension

TO-263

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
1	1.3±0.1
11	0.8±0.1
12	1.3±0.1
13	0.5±0.1
N	2.54±0.1
R	0.5R±0.05