

## General Description

The 1405A is a N-channel Power MOSFET. It has specifically been designed to minimize input capacitance and gate charge. The device is therefore suitable in advanced high-efficiency switching applications.

## Features

- Advanced Process Technology
- Ultra Low On-Resistance
- Dynamic dv/dt Rating
- 175°C Operating Temperature
- Fast Switching
- Fully Avalanche Rated
- Lead-Free

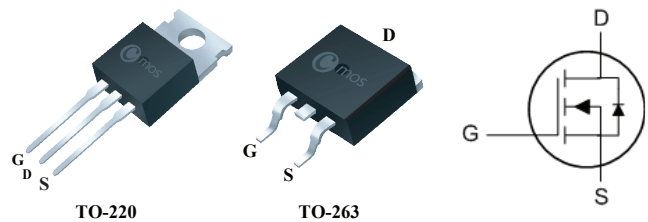
## Product Summary

BVDSS	RDSON	ID
68V	5.5mΩ	120A

## 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

Type	Package	Marking
CMP1405A	TO-220	CMP1405A
CMB1405A	TO-263	CMB1405A

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	68	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	120	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	96	A
$I_{DM}$	Pulsed Drain Current	360	A
EAS	Single Pulse Avalanche Energy	560	mJ
$P_D@T_C=25^\circ\text{C}$	Power Dissipation	250	W
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

## Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient (PCB mount) <sup>3</sup>	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case	---	0.5	$^\circ\text{C/W}$

Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	68	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$ , $I_D=30A$	---	---	5.5	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$ , $I_D=250\mu A$	2	---	4	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=60V$ , $V_{GS}=0V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V$ , $V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=10V$ , $I_D=10A$	---	25	---	S
$R_g$	Gate Resistance	$V_{DS}=0V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	2.5	---	$\Omega$
$Q_g$	Total Gate Charge	$I_D=80A$	---	115	---	nC
$Q_{gs}$	Gate-Source Charge	$V_{DD}=44V$	---	25	---	
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=10V$	---	50	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V$	---	25	---	ns
$T_r$	Rise Time	$I_D=80A$	---	24	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=2.4\Omega$	---	50	---	
$T_f$	Fall Time	$V_{GS}=10V$	---	23	---	
$C_{iss}$	Input Capacitance	$V_{DS}=25V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	6500	---	pF
$C_{oss}$	Output Capacitance		---	1100	---	
$C_{rss}$	Reverse Transfer Capacitance		---	280	---	

## Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	120	A
$I_{SM}$	Pulsed Source Current <sup>1</sup>		---	---	360	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V$ , $I_S=45A$ , $T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

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