N-Channel Enhancement Mode Field Effect Transistor

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

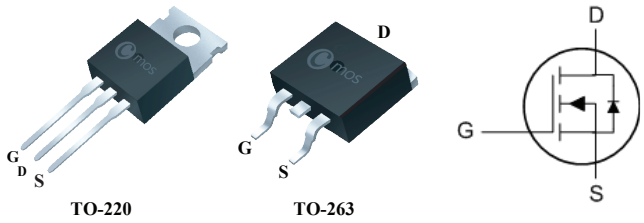
Product Summary

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



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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	68	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current,VGS @ 10V	120	A
I_D@T_C=100°C	Continuous Drain Current,VGS @ 10V	96	A
I_{DM}	Pulsed Drain Current	360	A
EAS	Single Pulse Avalanche Energy	800	mJ
P_D@T_C=25°C	Power Dissipation	250	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient (PCB mount)[3]	---	62	°C/W
$R_{\theta JC}$	Junction-to-Case	---	0.5	°C/W

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Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	68	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=30A	---	---	5.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60 V, V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=10A	---	25	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.5	---	Ω
Q_g	Total Gate Charge	I_D=80A V_{DD}=44V V_{GS}=10V	---	115	---	nC
Q_{gs}	Gate-Source Charge		---	25	---	
Q_{gd}	Gate-Drain Charge		---	50	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V I_D=80A R_G=2.4Ω V_{GS}=10V	---	25	---	ns
T_r	Rise Time		---	24	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	23	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	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[1]		---	---	360	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=45A , T_J=25℃	---	---	1.2	V

Note :

1. The test condition is V_{DS}=30V , V_{GS}=10V , L=1mH , I_D =40A.

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