

General Description

The 120P03 is a P-channel Power MOSFET.

They use advanced trench technology to

provide excellent RDS(ON). The device is

therefore suitable in advanced high-efficiency

switching applications.

Features

- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement
- RoHS Compliant

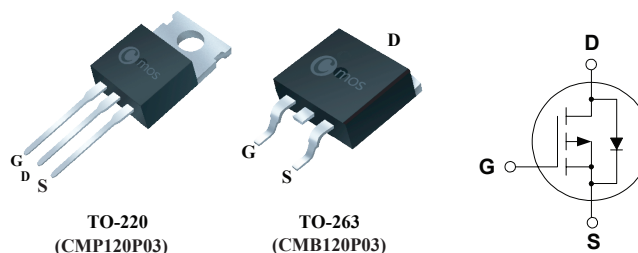
Product Summary

BVDSS	R _{DS(on)} max.	ID
-30V	3.6mΩ	-120A

Applications

- DC-DC Converters
- Motor control
- LED controller

TO-220/263 Pin Configuration



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°C	Continuous Drain Current	-120	A
I _D @T _C =100°C	Continuous Drain Current	-76	A
I _{DM}	Pulsed Drain Current	-480	A
EAS	Single Pulse Avalanche Energy ¹	800	mJ
P _D @T _C =25°C	Total Power Dissipation	260	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Junction-to-Ambient	---	62	°C/W
R _{θJC}	Junction-to-Case	---	0.48	°C/W

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 =-250uA	-30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-20A	---	3.2	3.6	mΩ
		V _{GS} =-4.5V, I _D =-20A	---	4	7	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V , T _J =25°C	---	---	-1	uA
		V _{DS} =-30V, V _{GS} =0V , T _J =125°C	---	---	-100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V , I _D =-5A	---	37	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	17	---	Ω
Q _g	Total Gate Charge	V _{DS} =-24V , I _D =-80A V _{GS} =0 to -10V	---	135	---	nC
Q _{gs}	Gate-Source Charge		---	20	---	
Q _{gd}	Gate-Drain Charge		---	50	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _G =6Ω I _D =-50A	---	35	---	ns
T _r	Rise Time		---	50	---	
T _{d(off)}	Turn-Off Delay Time		---	220	---	
T _f	Fall Time		---	180	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V , f=1MHz	---	7600	---	pF
C _{oss}	Output Capacitance		---	980	---	
C _{rss}	Reverse Transfer Capacitance		---	550	---	

Diode Characteristics

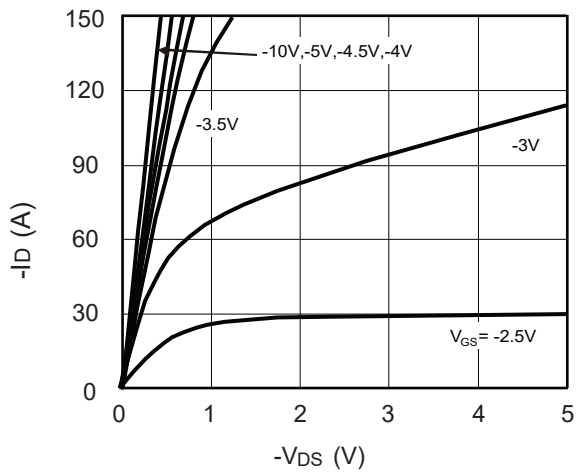
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	-120	A
I _{SM}	Pulsed Source Current		---	---	-480	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _F =-20A	---	-0.79	-1.2	V

Note :

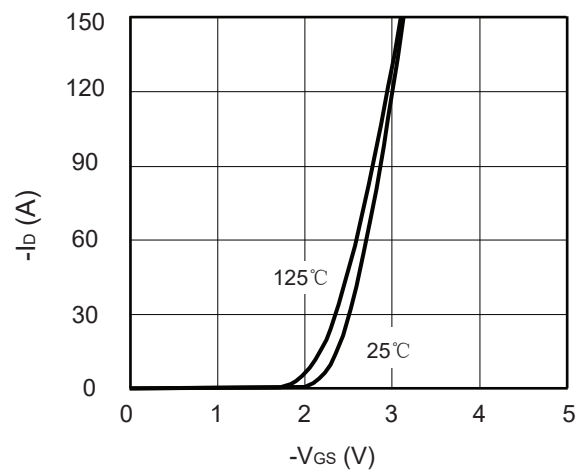
1.The EAS data shows Max. rating . The test condition is V_{DD}=-25V , V_{GS}=-10V , L=1mH , I_{AS}=-40A.

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.

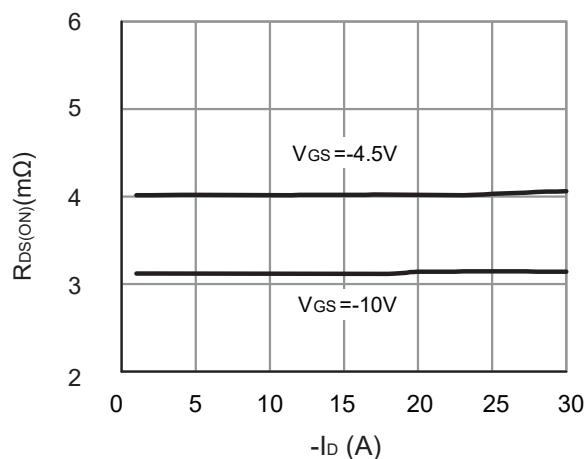
Typical Characteristics



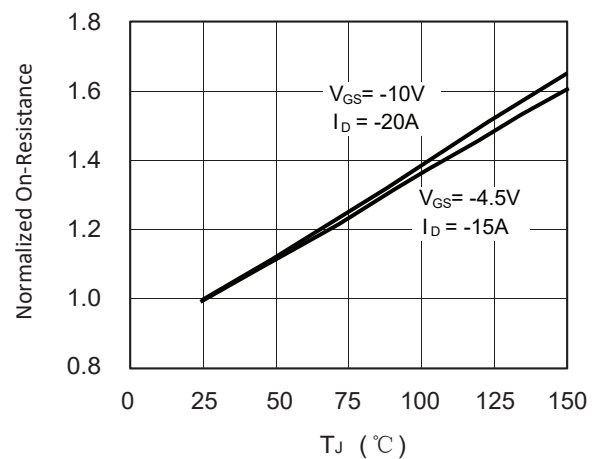
On-Region Characteristics



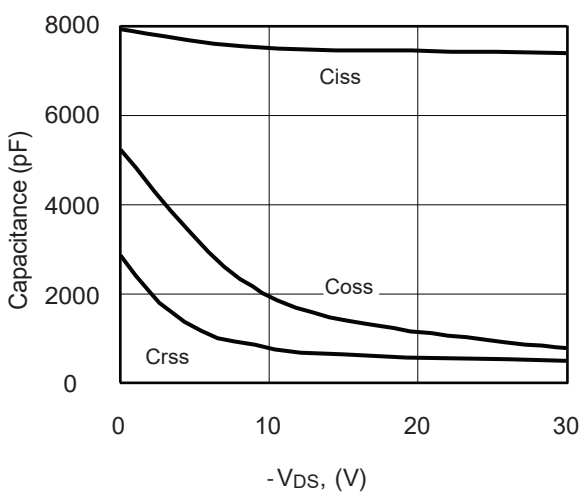
transfer characteristics



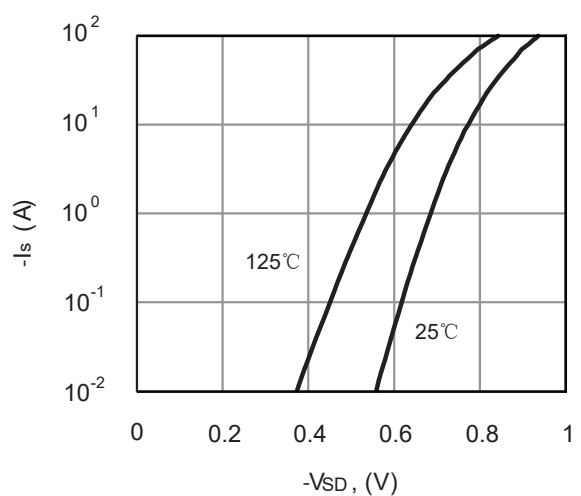
On-Resistance vs. Drain Current



On-Resistance vs. Junction Temperature



Capacitance Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature