

General Description

The 120P04 is a P-channel Power MOSFET.

They use advanced trench technology to

provide excellent $R_{DS(ON)}$. The device is

therefore suitable in advanced high-efficiency

switching applications.

Features

- Fast switching
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

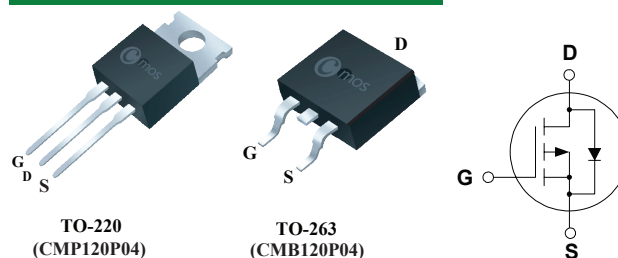
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-40V	5.7mΩ	-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	-40	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	-120	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	-84	A
I_{DM}	Pulsed Drain Current	-360	A
EAS	Single Pulse Avalanche Energy ¹	576	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	150	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
$R_{\theta JA}$	Junction-to-Ambient	---	62.5	°C/W
$R_{\theta JC}$	Junction-to-Case	---	0.83	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-20A$	---	5.2	5.7	mΩ
		$V_{GS}=-4.5V$, $I_D=-20A$	---	6.7	7.7	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-340\mu A$	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-40V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	μA
		$V_{DS}=-40V$, $V_{GS}=0V$, $T_J=125^{\circ}\text{C}$	---	---	-200	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=-10A$	---	33	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.2	---	Ω
Q_g	Total Gate Charge	$V_{DD}=-20V$, $I_D=-20A$ $V_{GS}=-10V$	---	58	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	8	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-20V$, $V_{GS}=-10V$, $R_{GS}=1.6\Omega$ $I_D=-20A$	---	11	---	ns
T_r	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	36	---	
T_f	Fall Time		---	6	---	
C_{iss}	Input Capacitance	$V_{DS}=-10V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	8000	---	pF
C_{oss}	Output Capacitance		---	900	---	
C_{rss}	Reverse Transfer Capacitance		---	25	---	

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		---	---	-360	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=-20A$	---	---	-1.2	V

Notes:

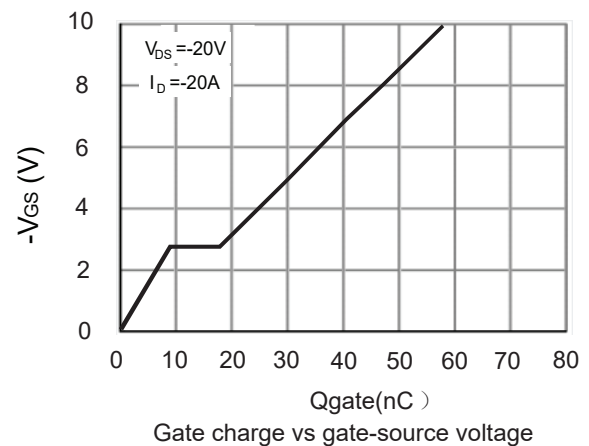
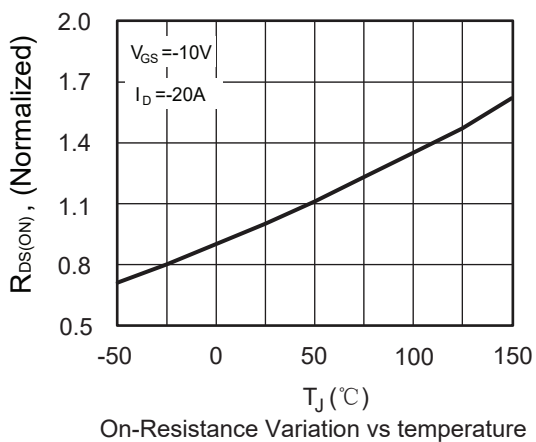
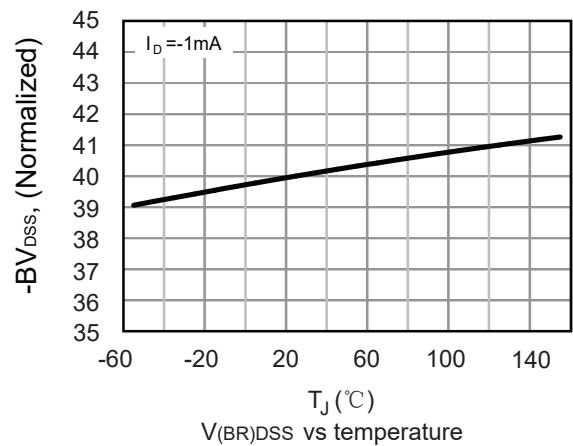
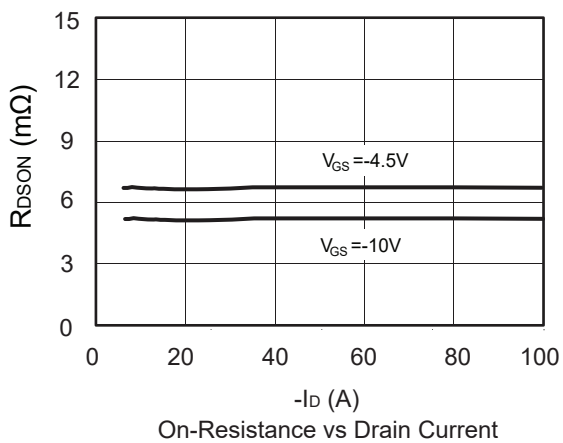
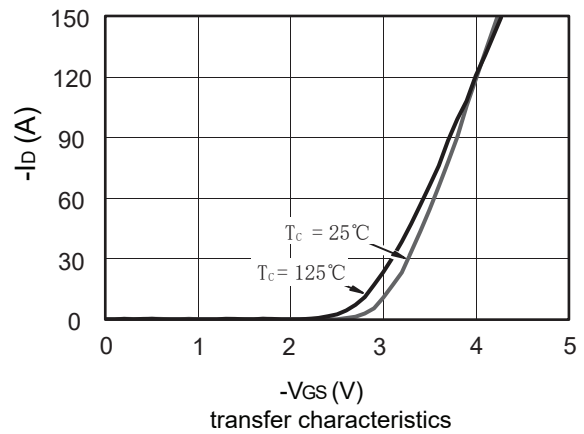
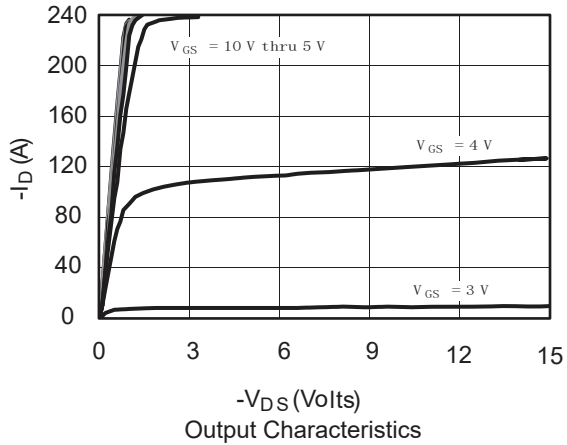
1.Starting $T_J = 25^{\circ}\text{C}$, $L = 0.5\text{mH}$, $I_D = 48A$, $V_{DD} = 30V$, $V_{GS} = 10V$.

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

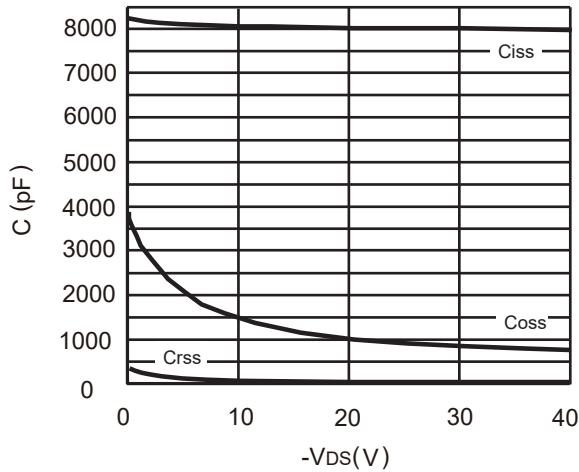
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CMOS reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

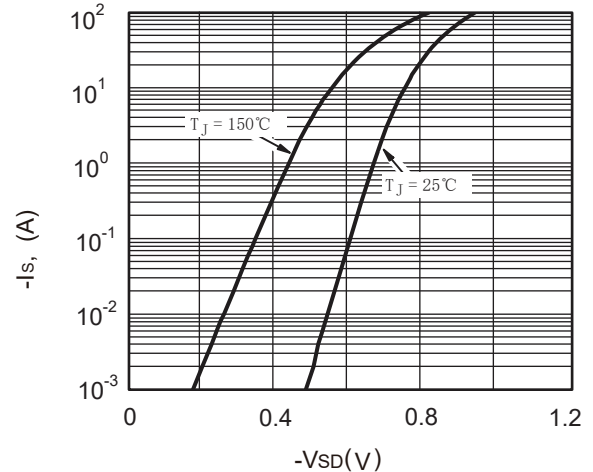
Typical Characteristics



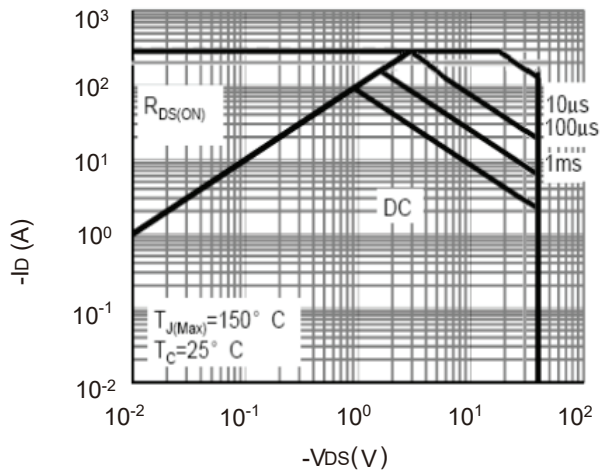
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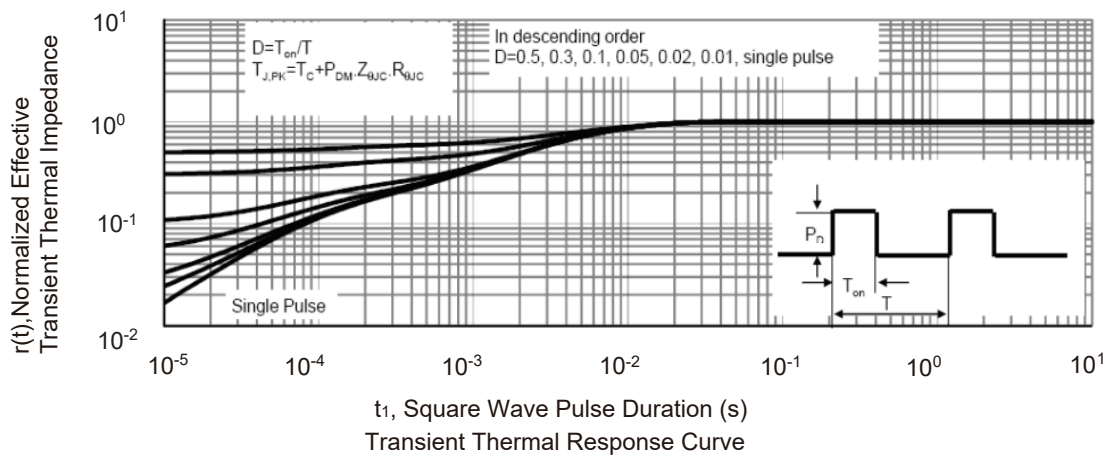
Capacitance Characteristics



Body-Diode Characteristics



Safe operating area



Transient Thermal Response Curve