

General Description

The 50P06 is a P-channel Power MOSFET.

It uses advanced trench technology to

provide excellent RDS(ON). This device is

high current load applications.

Features

- Fast switching
- Lower On-resistance
- 100% avalanche tested
- RoHS Compliant

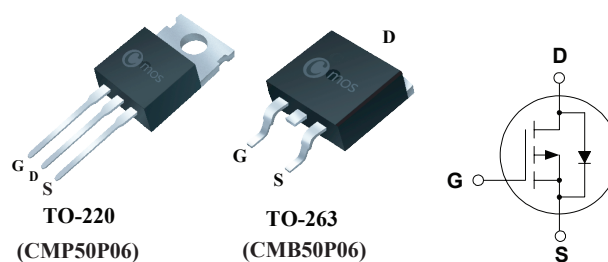
Product Summary

BVDSS	R _{DS(on)} max.	ID
-60V	25mΩ	-50A

Applications

- DC-DC Converters
- Load switch

TO-220/263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	-50	A
I _D @T _C =100°C	Continuous Drain Current	-35	A
I _{DM}	Pulsed Drain Current ¹	-150	A
EAS	Single Pulse Avalanche Energy ²	400	mJ
P _D @T _C =25°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 _{θJA}	Thermal Resistance Junction-ambient	---	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.94	°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	$V_{GS}=0V$, $I_D=-250\mu A$	-60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ³	$V_{GS}=-10V$, $I_D=-15A$	---	16	25	mΩ
		$V_{GS}=-4.5V$, $I_D=-10A$	---	18	32	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-60V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	uA
		$V_{DS}=-48V$, $V_{GS}=0V$, $T_J=150^{\circ}\text{C}$	---	---	-10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-15V$, $I_D=-11A$	---	20	---	S
Q_g	Total Gate Charge ³	$V_{DS}=-48V$, $I_D=-50A$ $V_{GS}=-10V$	---	80	---	nC
Q_{gs}	Gate-Source Charge		---	15	---	
Q_{gd}	Gate-Drain Charge		---	40	---	
$T_{d(on)}$	Turn-On Delay Time ³	$V_{DD}=-30V$, $R_G=25\Omega$ $I_D=-23.5A$	---	50	---	ns
T_r	Rise Time		---	450	---	
$T_{d(off)}$	Turn-Off Delay Time		---	100	---	
T_f	Fall Time		---	190	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	4000	---	pF
C_{oss}	Output Capacitance		---	1300	---	
C_{rss}	Reverse Transfer Capacitance		---	320	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-50	A
I_{SM}	Pulsed Source Current ¹		---	---	-150	A
V_{SD}	Diode Forward Voltage ³	$V_{GS}=0V$, $I_F=-10A$	---	---	-1.2	V

Notes

1. Pulse width limited by Max. junction temperature.

2. The EAS data shows Max. rating . The test condition is $V_D=-30V$, $L=2\text{mH}$, $I_{AS}=22A$

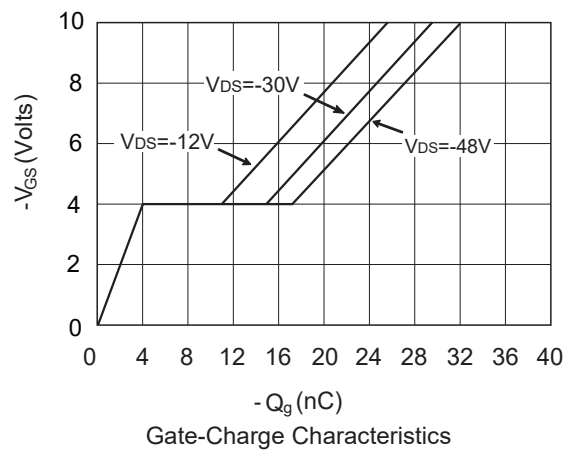
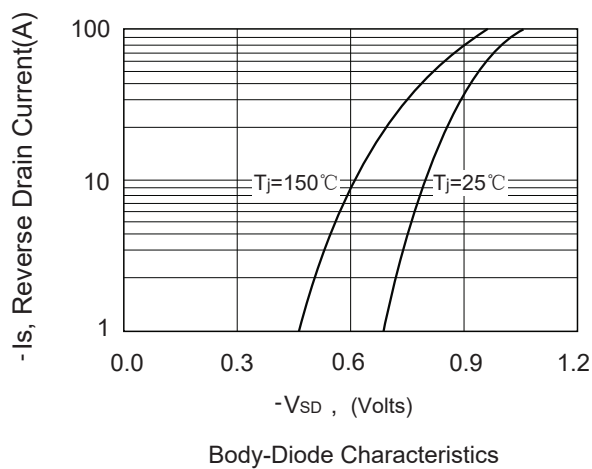
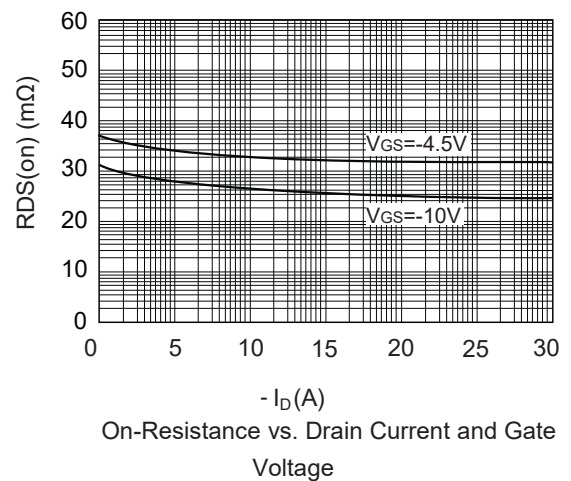
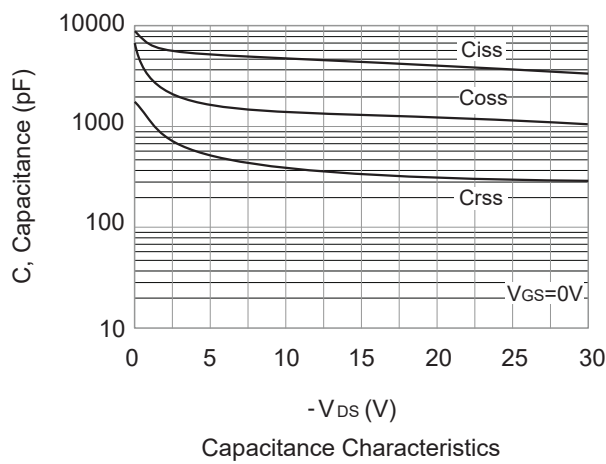
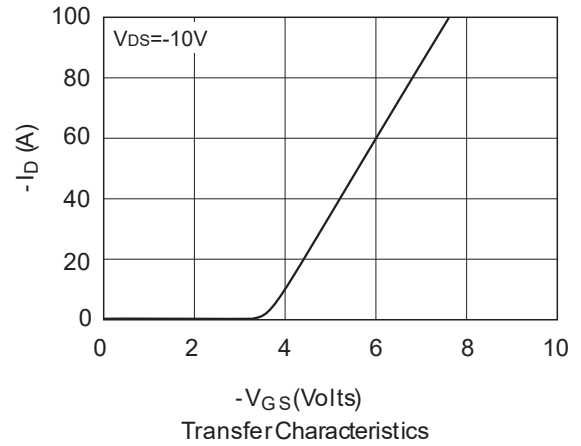
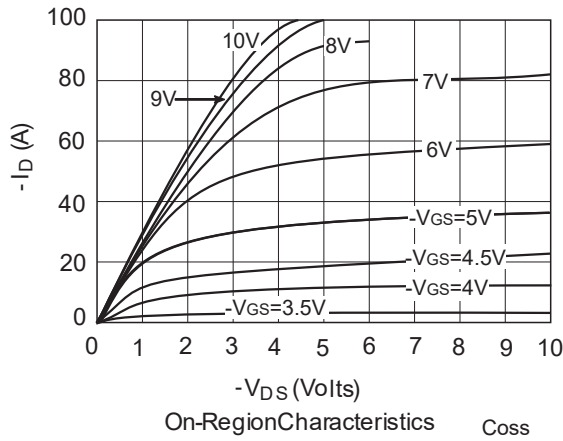
3. Pulse test

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

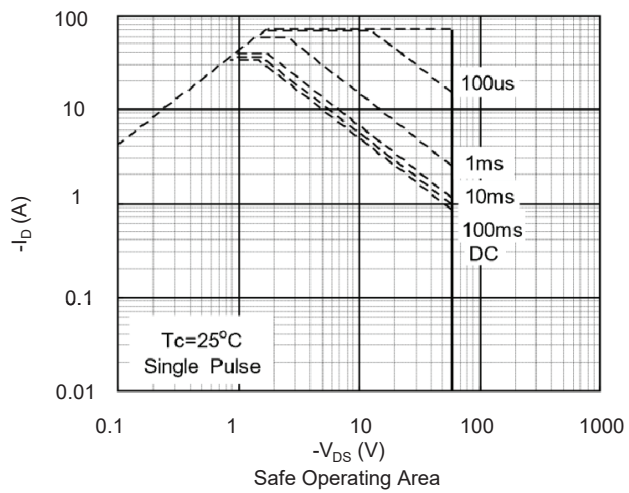
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Typical Characteristics



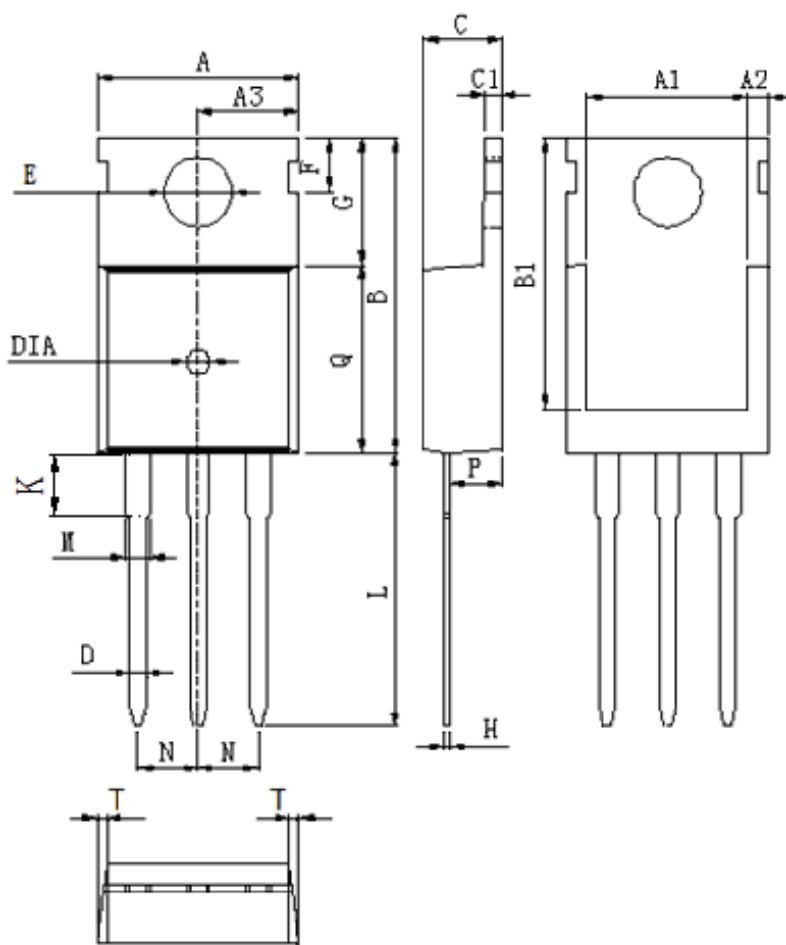
Typical Characteristics



Package Dimension

TO-220

Unit :mm

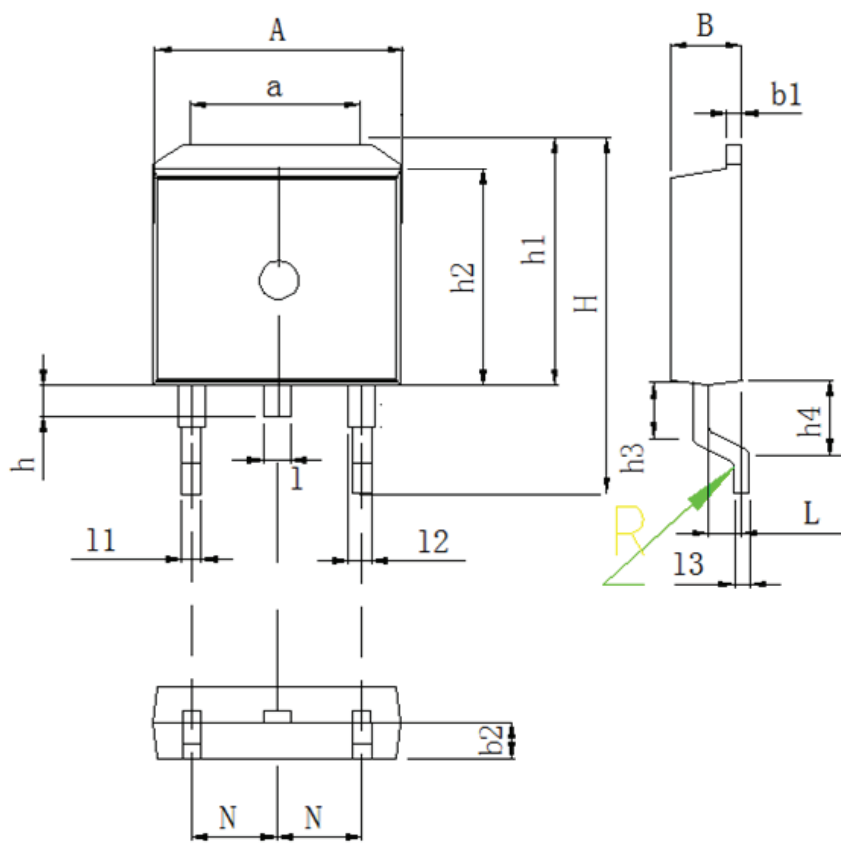


DIM	MILLIMETERS
A	10.0 ± 0.3
A1	8.64 ± 0.2
A2	1.15 ± 0.1
A3	5.0 ± 0.2
B	15.8 ± 0.4
B1	13.2 ± 0.3
C	4.56 ± 0.1
C1	1.3 ± 0.2
D	0.8 ± 0.2
E	3.6 ± 0.2
F	2.95 ± 0.3
G	6.5 ± 0.3
H	0.5 ± 0.1
K	3.1 ± 0.2
L	13.2 ± 0.4
M	1.25 ± 0.1
N	2.54 ± 0.1
P	2.4 ± 0.3
Q	9.0 ± 0.3
T	W:0.35
DIA	$\odot 1.5$ (deep 0.2)

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