CMP90P06

P-Channel Enhancement Mode MOSFET

General Description

The CMP90P06 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-60V	10mΩ	-90A

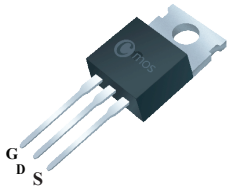
Applications

- Inverters
- Motor drive
- DC / DC converter

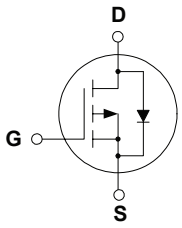
Features

- P-Channel
- Fast Switching
- Simple Drive Requirements
- RoHS Compliant

TO-220 Pin Configuration



TO-220
(CMP90P06)



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℃	Continuous Drain Current	-90	A
I_D@T_C=100℃	Continuous Drain Current	-58	A
I_{DM}	Pulsed Drain Current	-360	A
EAS	Single Pulse Avalanche Energy[1]	756	mJ
P_D@T_C=25℃	Total Power Dissipation	200	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.75	℃/W

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	-60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-20A	---	---	10	mΩ
		V_{GS}=-4.5V , I_D=-10A	---	---	12	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250 uA	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-60V , V_{GS}=0V	---	---	-100	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-10V, I_D=-15A	---	27	---	S
Q_g	Total Gate Charge	I_D=-38A V_{DS} =-44V V_{GS} =-10V	---	150	---	nC
Q_{gs}	Gate-Source Charge		---	25	---	
Q_{gd}	Gate-Drain Charge		---	70	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS} =-28V I_D=-38A R_G=2.5Ω R_D =0.72Ω	---	20	---	ns
T_r	Rise Time		---	100	---	
$T_{d(off)}$	Turn-Off Delay Time		---	60	---	
T_f	Fall Time		---	95	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	12000	---	pF
C_{oss}	Output Capacitance		---	1000	---	
C_{rss}	Reverse Transfer Capacitance		---	450	---	

Diode Characteristics

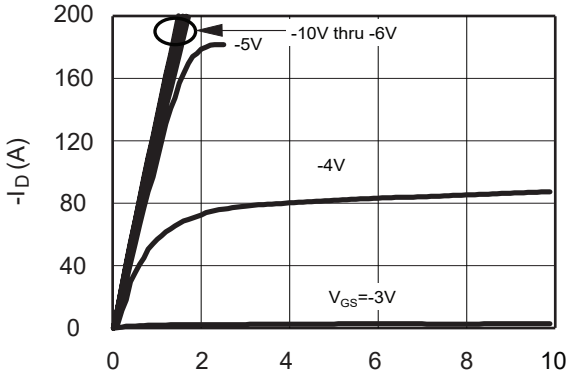
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-90	A
I_{SM}	Pulsed Source Current		---	---	-360	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-10A ,T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F =-38V, T_J =25℃	---	90	---	ns
Q_{rr}	Reverse Recovery Charge	$di_{F/dt}$ =100 A/μs	---	230	---	nC

Note :

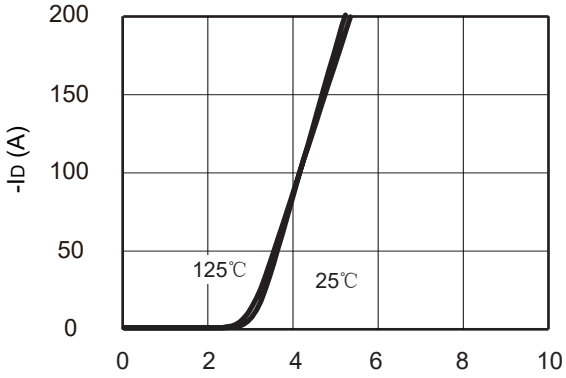
1.The EAS data shows Max. rating . The test condition is V_{DD}=-30V , V_{GS}=-10V , L=0.5mH , I_{AS}=-55A.

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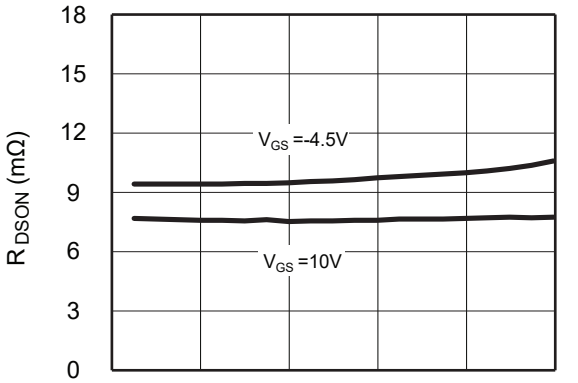
Typical Characteristics



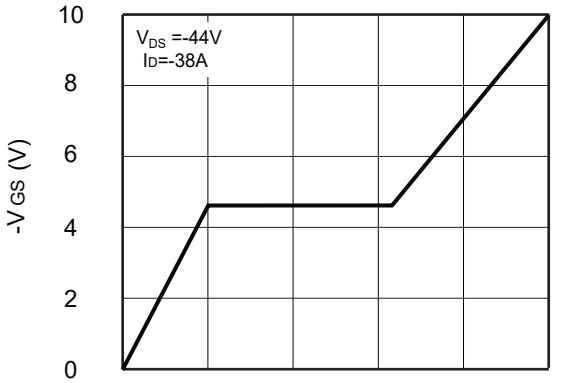
Output Characteristics



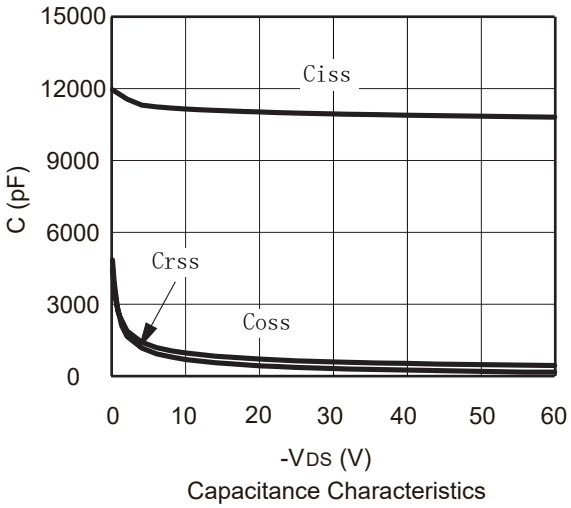
transfer characteristics



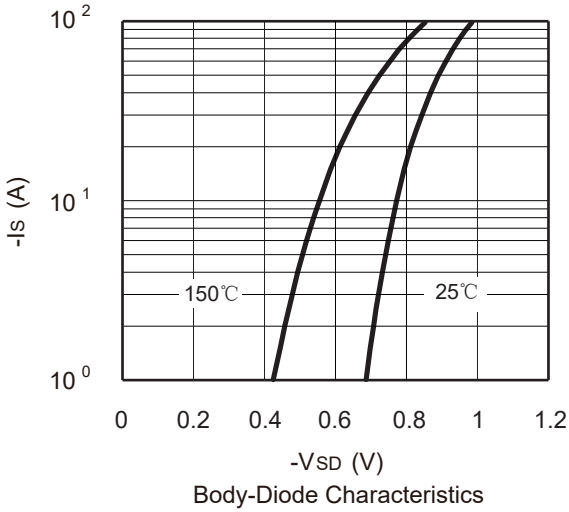
drain-source on-resistance



Gate charge vs gate-source voltage

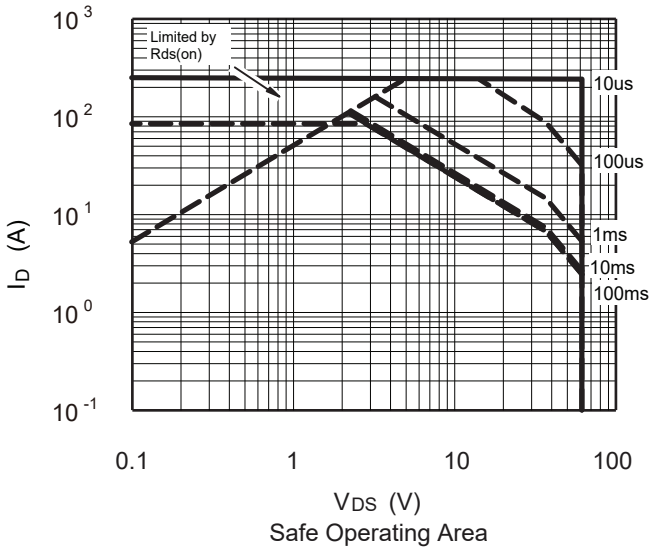


Capacitance Characteristics



Body-Diode Characteristics

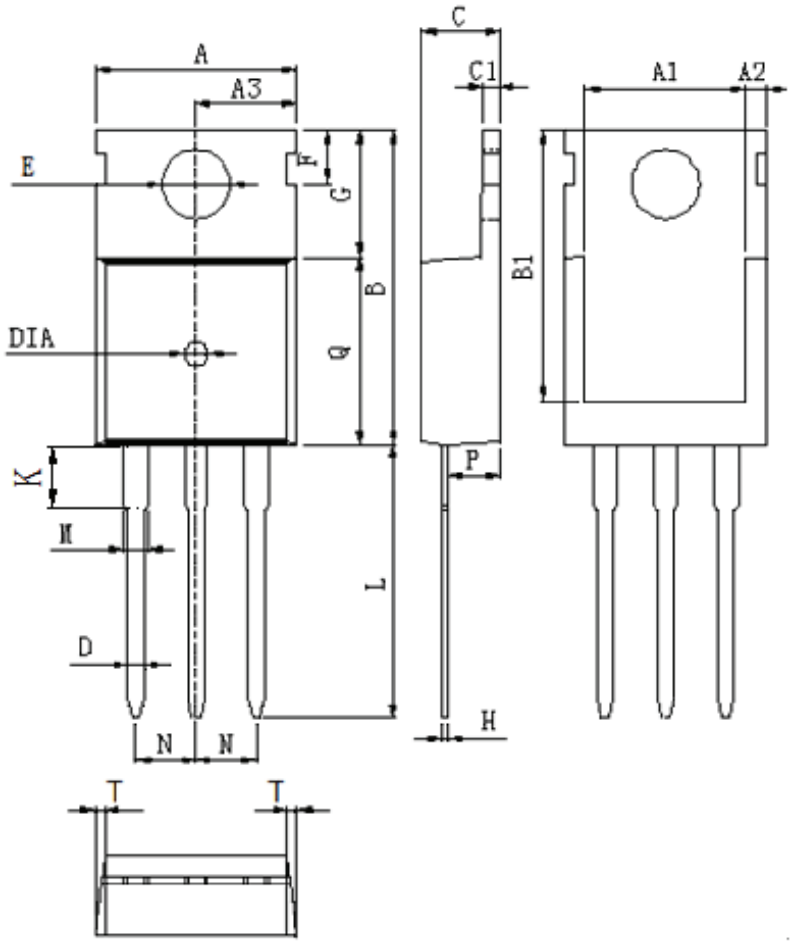
Characteristics



Safe Operating Area

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	⊙1.5(deep 0.2)