CMP65R580Q/CMF65R580Q

650V, 540mΩ typ., 8A N-Channel Super Junction Power MOSFET

General Description

The 65R580Q use advanced super junction technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This advanced technology has been tailored to minimize conduction loss, provide superior switching performance, and withstand extreme dv/dt rate and higher avalanche energy. suitable for various AC/DC power conversion in switching mode operation for higher efficiency.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	580mΩ	8A

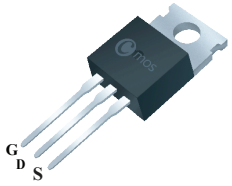
Applications

- Switching applications
- Switched mode power supplies(SMPS
- Uninterruptible Power Supply(UPS)

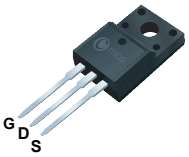
Features

- Multi-layer Epitaxial Chip Technology
- Low On-Resistance
- 100% avalanche tested
- RoHS Complian

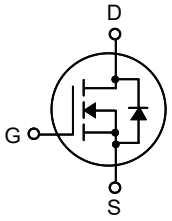
TO-220/220F Pin Configuration



TO-220
(CMP65R580Q)



TO-220F
(CMF65R580Q)



Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	220/263/262	220F	Units
V_{DS}	Drain-Source Voltage	650		V
V_{GS}	Gate-Source Voltage	±30		V
I_D@T_C=25℃	Continuous Drain Current	8	8*	A
I_D@T_C=100℃	Continuous Drain Current	4.8	4.8*	A
I_{DM}	Pulsed Drain Current	24	24*	A
EAS	Single Pulse Avalanche Energy (Note 1)	120		mJ
P_D@T_C=25℃	Total Power Dissipation	70	30	W
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	-55 to 150		℃

* Drain current limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient Max.	62	80	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case Max.	1.78	4.17	℃/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	650	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=2.5A	---	540	580	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	---	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=600V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=15V , I_D=2A	---	4.5	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	27	---	Ω
Q_g	Total Gate Charge	I_D=8A V_{DD}=480V V_{GS}=10V	---	13	---	nC
Q_{gs}	Gate-Source Charge		---	4	---	
Q_{gd}	Gate-Drain Charge		---	5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=300V V_{GS}=10V R_G=25Ω , I_D=8A	---	15	---	ns
T_r	Rise Time		---	35	---	
$T_{d(off)}$	Turn-Off Delay Time		---	76	---	
T_f	Fall Time		---	33	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , f=1MHz	---	480	---	pF
C_{oss}	Output Capacitance		---	35	---	
C_{rss}	Reverse Transfer Capacitance		---	8.2	---	

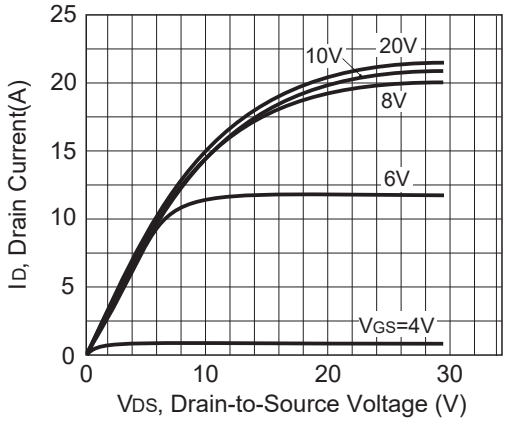
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	8	A
I_{SM}	Pulsed Source Current		---	---	24	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=8A ,T_J=25℃	---	0.89	1.4	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs V_{DD}=100V , I_{SD}=8A	---	260	---	ns
Q_{rr}	Reverse Recovery Charge		---	2	---	μC

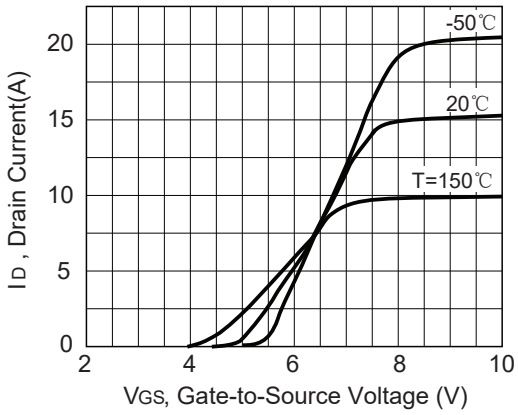
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=50V , V_{GS}=10V , L=15mH , I_{AS}=4A.

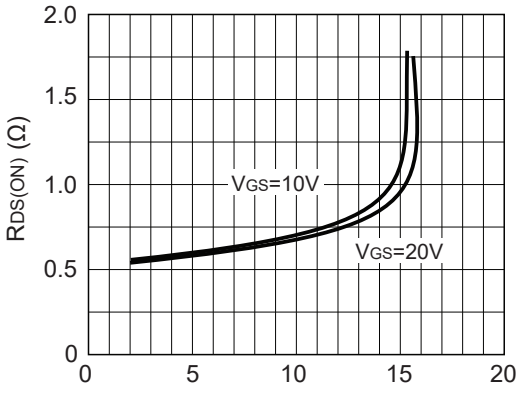
Typical Characteristics



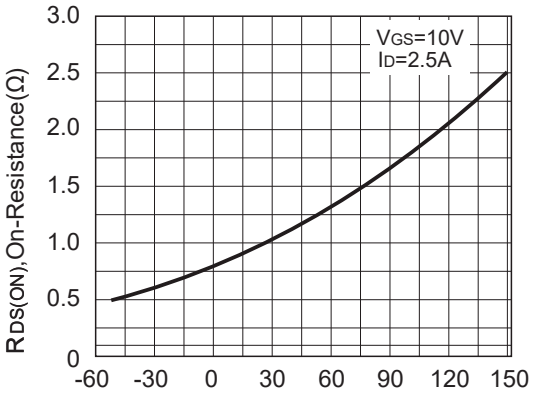
Output Characteristics



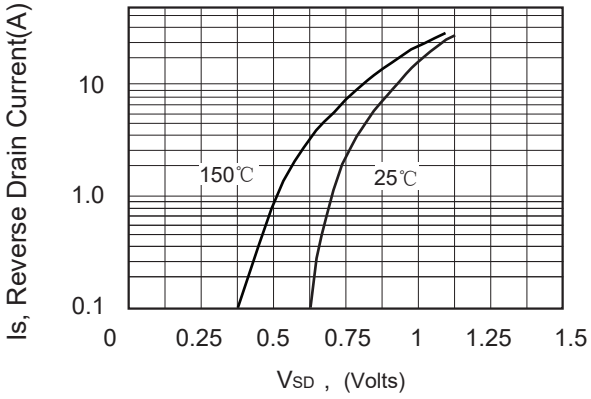
Transfer Characteristics



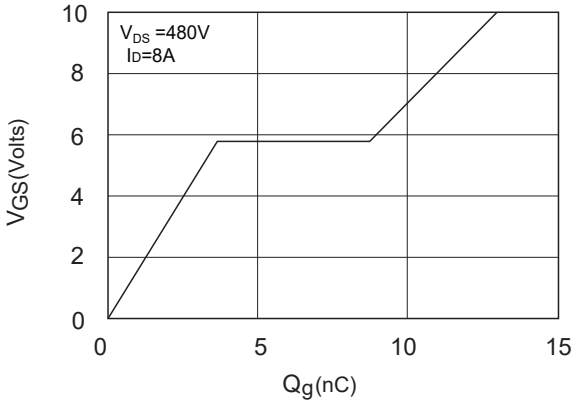
On-Resistance Variation with Drain Current and Gate Voltage



On-Resistance Variation with Temprature

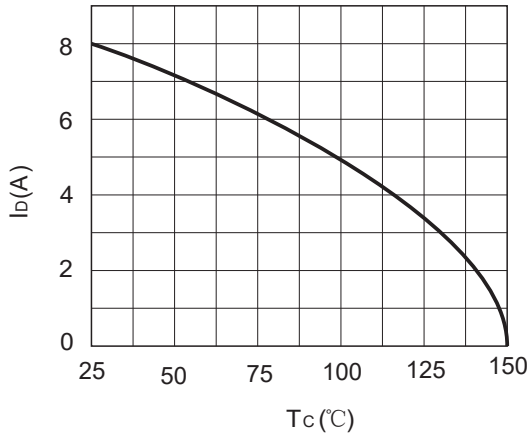


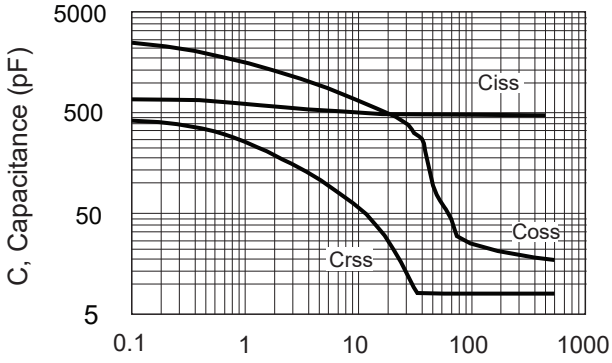
Body-Diode Characteristics



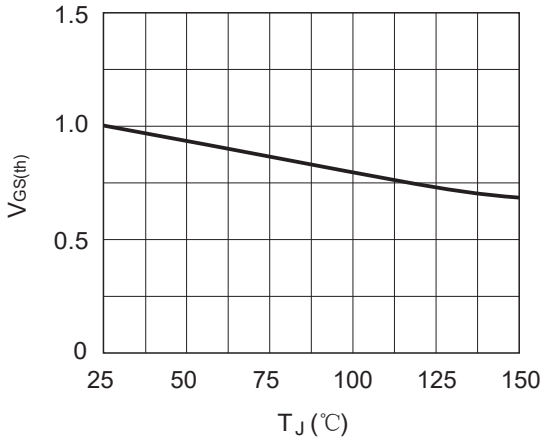
Gate-Charge Characteristics

Typical Characteristics

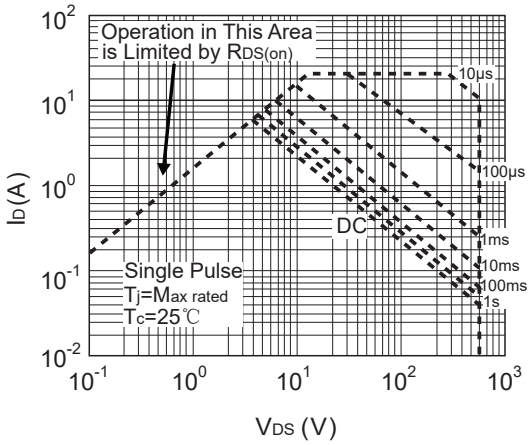




Capacitance Characteristics



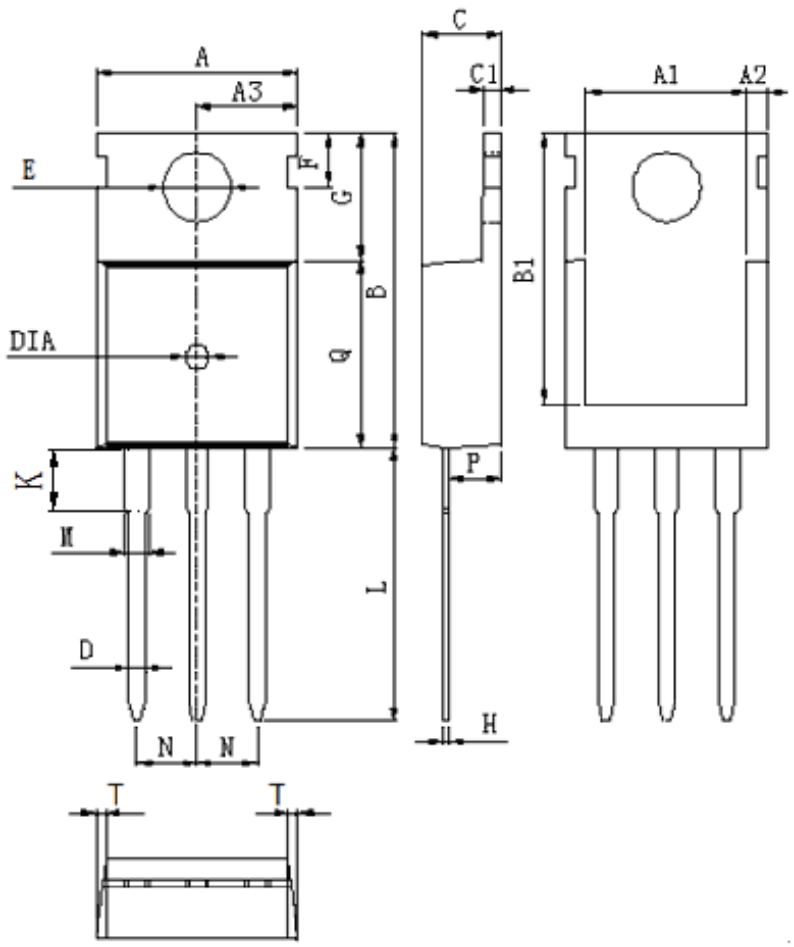
VGS(th) Variation with Temprature



Maximum Safe Operating Area

Package Dimension

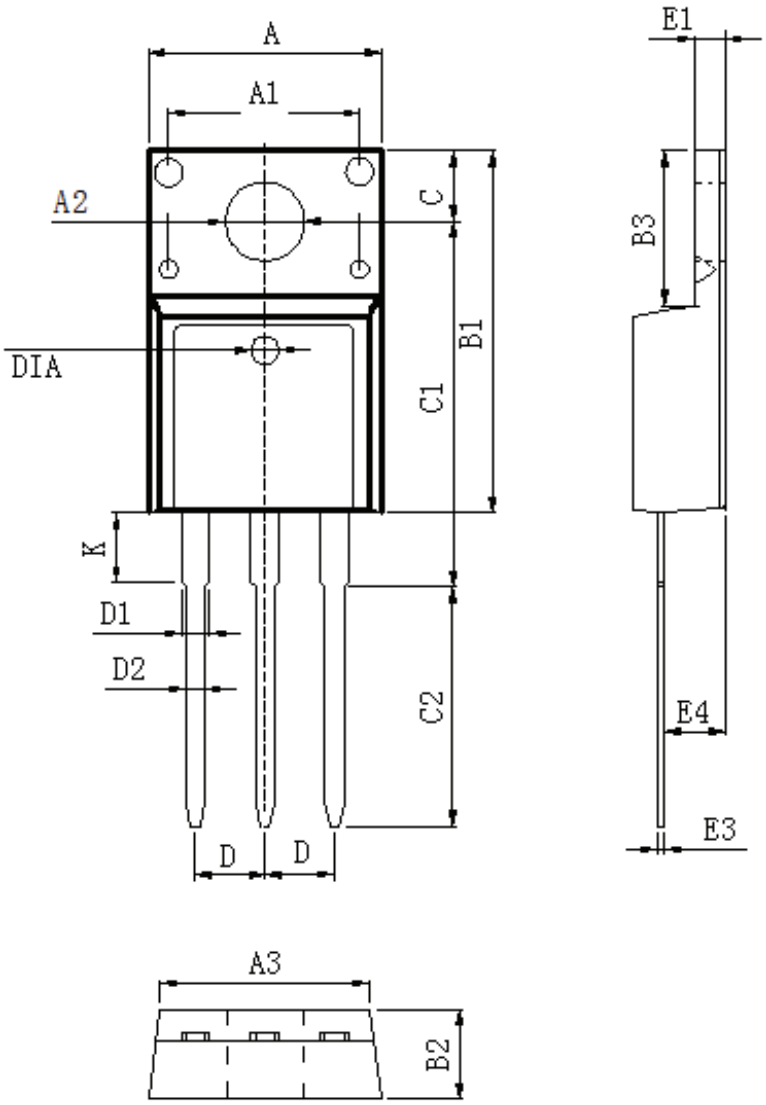
TO-220 Unit :mm



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)

Package Dimension

TO-220F Unit :mm



DIM	MILLIMETERS
A	10.16±0.3
A1	7.00±0.1
A2	3.3±0.2
A3	9.5±0.2
B1	15.87±0.3
B2	4.7±0.2
B3	6.68±0.4
C	3.3±0.2
C1	12.57±0.3
C2	10.02±0.5
D	2.54±0.05
D1	1.28±0.2
D2	0.8±0.1
K	3.1±0.3
E1	2.54±0.1
E3	0.5±0.1
E4	2.76±0.2
DIA	⊙1.5(deep 0.2)