CMP/CMB/CMI/CMF65R180S6ZD

650V, 164mΩ typ., 20A N-Channel Super Junction Power MOSFET

General Description

The 65R180S6ZD is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance,gate charge and reduced tendency for ringing.As a result, its switching loss is very low,making it optimized for switching applications.Moreover, these user friendly devices offer the advantages of improved ruggedness and remarkable ESD capability by integrated Zener diode, making it an ideal choice for designers.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	180mΩ	20A

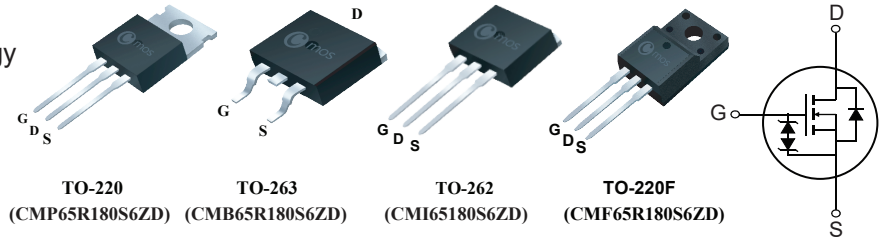
Applications

- Adapter
- PFC power supply stages
- DC-DC converters

Features

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

TO-220/263/262/220F Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
V_{DS}	Drain-Source Voltage	650		V
V_{GS}	Gate-Source Voltage	±25		V
I_D@T_C=25℃	Continuous Drain Current	20	20*	A
I_D@T_C=100℃	Continuous Drain Current	14	14*	A
I_{DM}	Pulsed Drain Current	80	80*	A
EAS	Single Pulse Avalanche Energy (Note 1)	320		mJ
P_D@T_C=25℃	Total Power Dissipation	200	40	W
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	150		℃

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient Max.	65	65	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case Max.	0.63	3.13	℃/W

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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=10A	---	164	180	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.5	---	4.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=650V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±25V , V_{DS}=0V	---	---	±10	μA
gfs	Forward Transconductance	V_{DS}=15V , I_D=10A	---	13	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	10	---	Ω
Q_g	Total Gate Charge	I_D=5.6A V_{DD}=400V V_{GS}=10V	---	32.5	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	14.1	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=300V V_{GS}=10V R_G=25Ω , I_D=18A	---	29	---	ns
T_r	Rise Time		---	62	---	
$T_{d(off)}$	Turn-Off Delay Time		---	104	---	
T_f	Fall Time		---	32	---	
C_{iss}	Input Capacitance	V_{DS}=100V, V_{GS}=0V , f=1MHz	---	1400	---	pF
C_{oss}	Output Capacitance		---	180	---	
C_{rss}	Reverse Transfer Capacitance		---	2	---	

Diode Characteristics

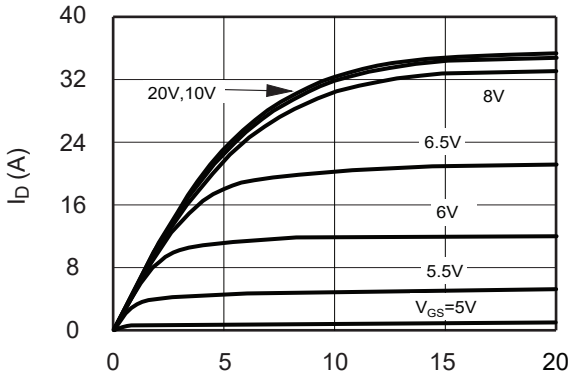
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A ,T_J=25℃	---	0.9	1.4	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs V_{DD}=400V , I_{SD}=5.6A	---	234	---	ns
Q_{rr}	Reverse Recovery Charge		---	2.2	---	μC

Note :

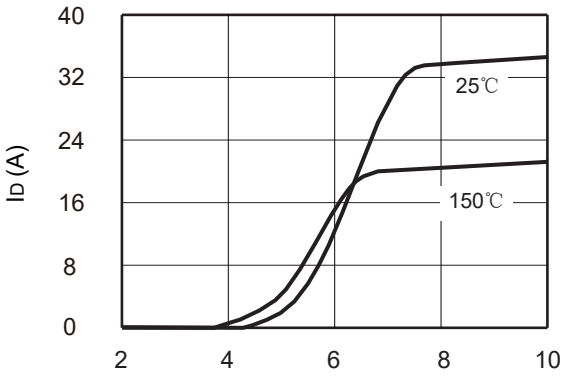
1. The EAS data shows Max. rating .The test condition is V_{DS}=100V , V_{GS}=10V , L=40mH , I_{AS}=4A.

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Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

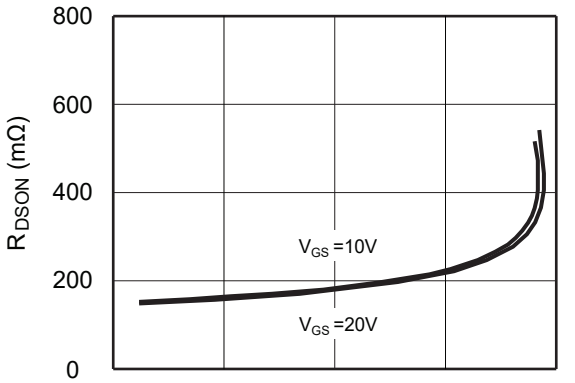
Typical Characteristics



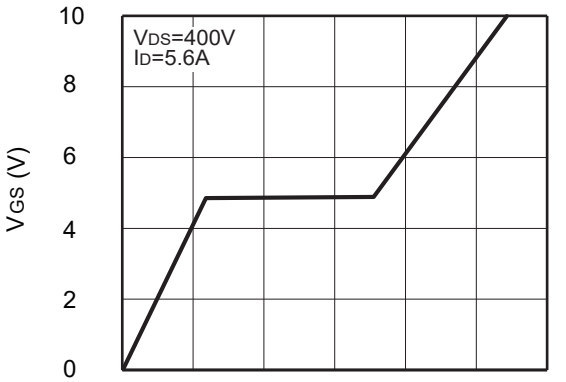
Output Characteristics



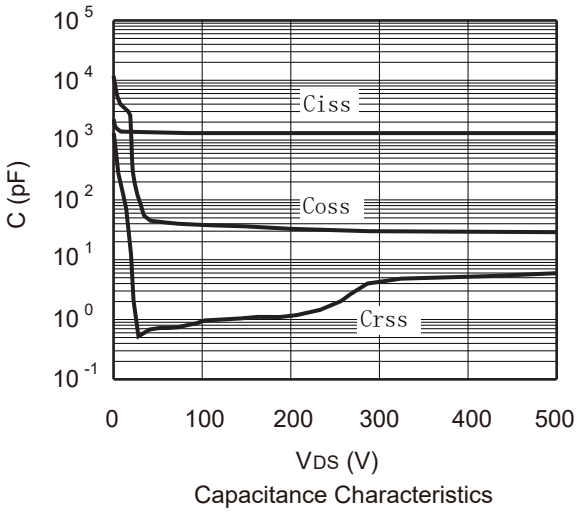
transfer characteristics



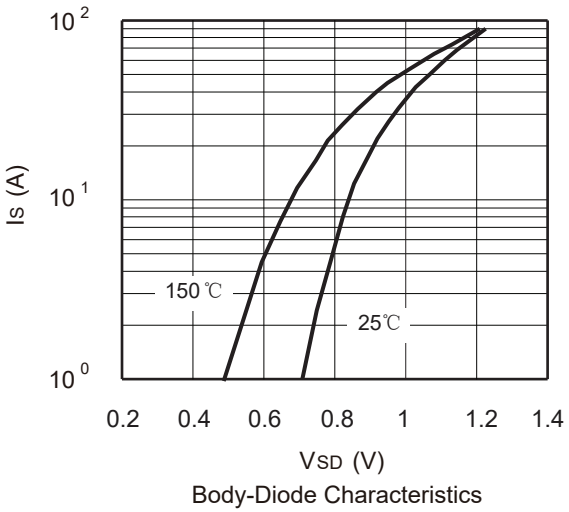
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



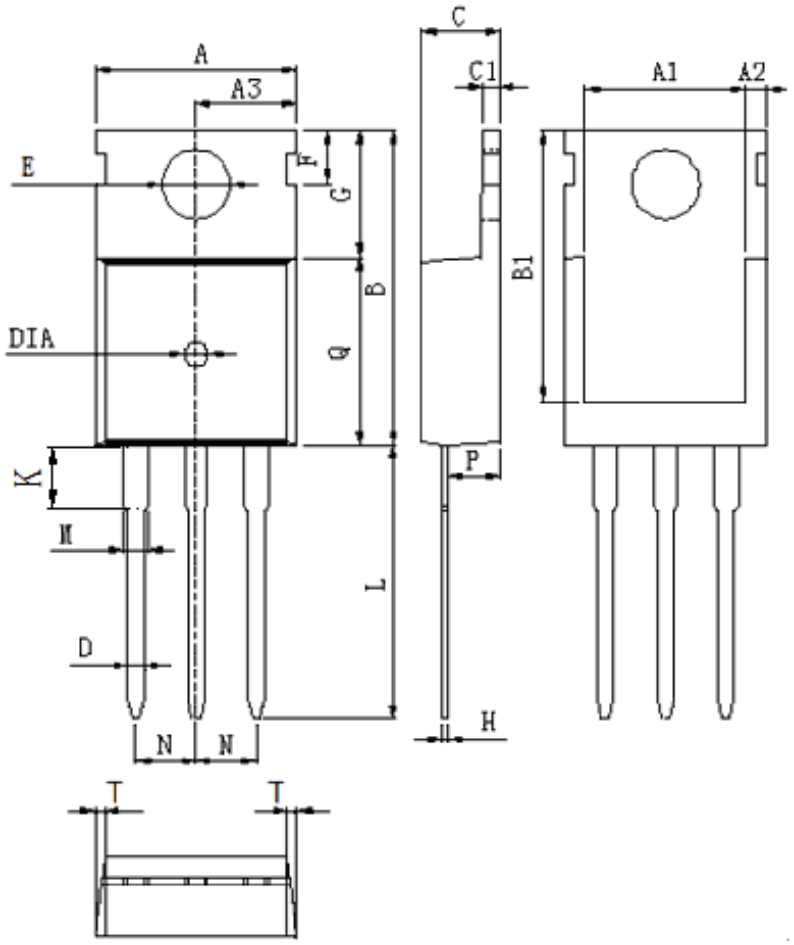
Capacitance Characteristics



Body-Diode Characteristics

Package Dimension

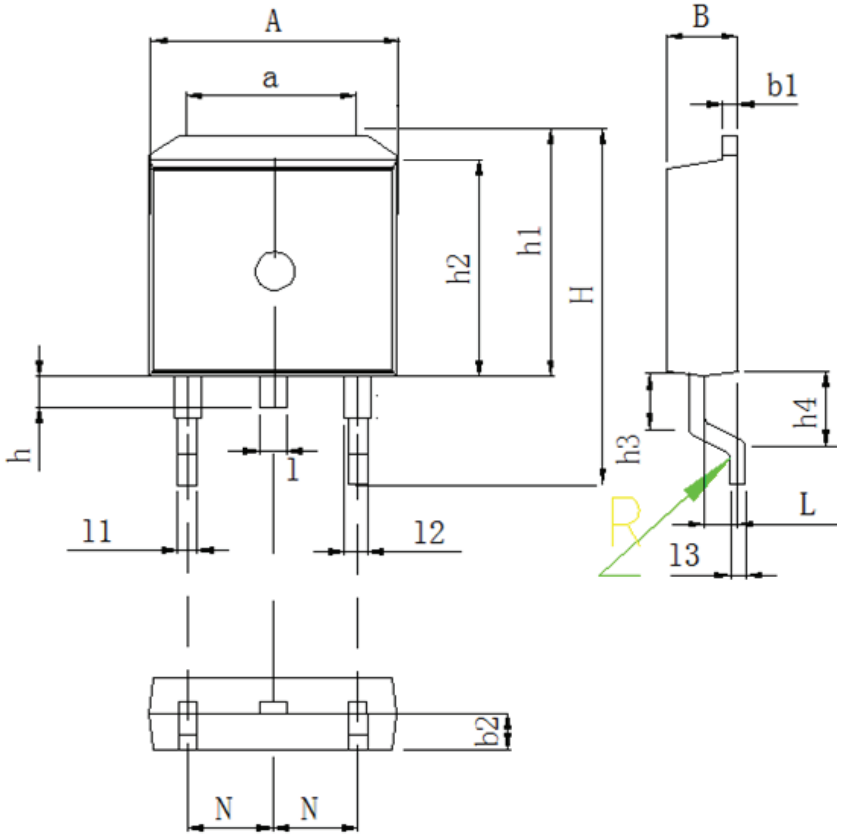
TO-220 Unit :mm



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	⊙1.5(deep 0.2)

Package Dimension

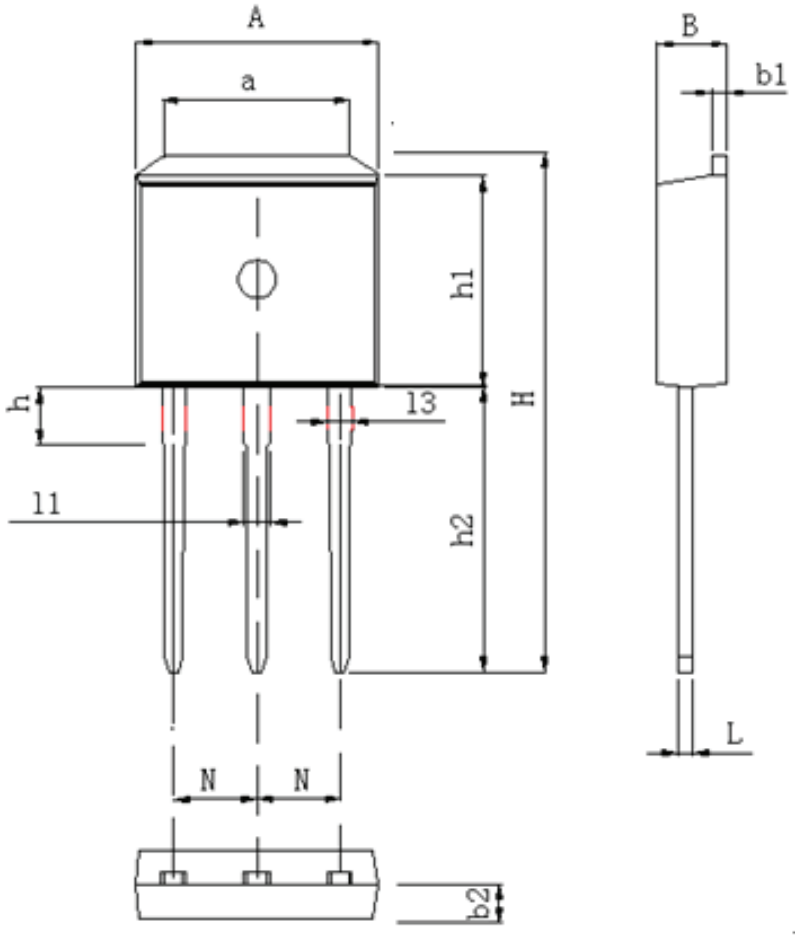
TO-263 Unit :mm



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
l	1.3±0.1
l1	0.8±0.1
l2	1.3±0.1
l3	0.5±0.1
N	2.54±0.1
R	0.5R±0.05

Package Dimension

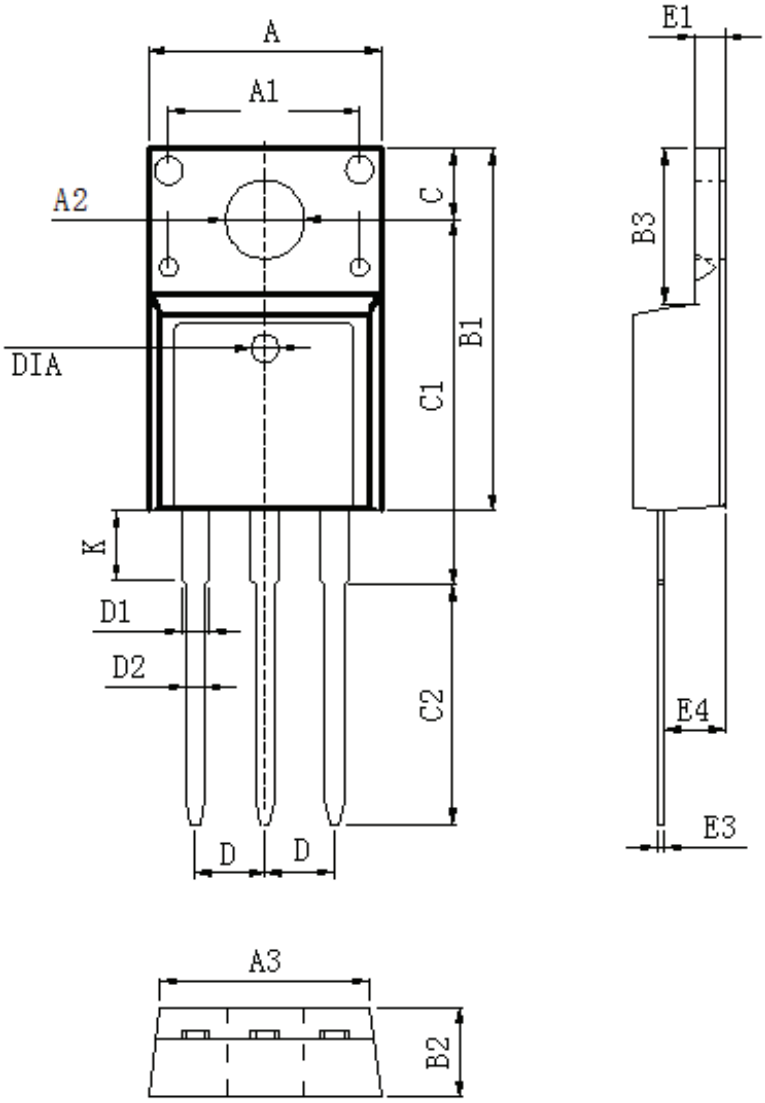
TO-262 Unit :mm



DIM	MILLIMETERS
A	9.98±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	23.9±0.3
h	3.1±0.2
h1	9.16±0.2
h2	13.2±0.2
L	0.5±0.1
l1	1.3±0.1
l2	0.8±0.1
N	2.45±0.1

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)