CMD65R900Q/CMU65R900Q

650V, 820mΩ typ., 5A N-Channel Super Junction Power MOSFET

General Description

The series of devices use advanced super junction technology and design to provide excellent RDS(ON) with low gate charge. This super junction MOSFET fits the industry’s AC-DC SMPS requirements for PFC,AC/DC power conversion, and industrial power applications.

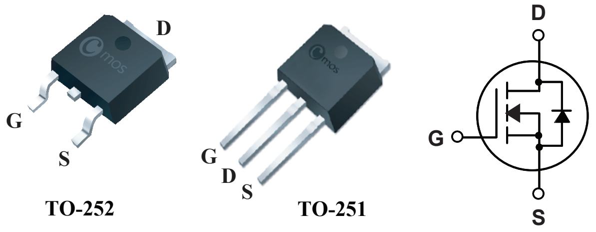
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	0.9Ω	5A

Applications

- Power factor correction （PFC）
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply （UPS）

TO252 / TO251 Pin Configuration



Type	Package	Marking
CMD65R900Q	TO-252	CMD65R900Q
CMU65R900Q	TO-251	CMU65R900Q

Features

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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current	5	A
I_D@T_C=100℃	Continuous Drain Current	3.2	A
I_{DM}	Pulsed Drain Current	20	A
EAS	Single Pulse Avalanche Energy[1]	183	mJ
P_D@T_C=25℃	Total Power Dissipation	35	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	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.57	℃/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=3A	---	820	900	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}=650V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=30V , I_D=3A	---	3.6	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	20	---	Ω
Q_g	Total Gate Charge	I_D=4.7A	---	12	---	nC
Q_{gs}	Gate-Source Charge	V_{DD}=520V	---	3	---	
Q_{gd}	Gate-Drain Charge	V_{GS}=10V (Note 2)	---	5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS} =325V	---	14	---	ns
T_r	Rise Time	V_{GS} =10V	---	25	---	
$T_{d(off)}$	Turn-Off Delay Time	R_G =25Ω	---	57	---	
T_f	Fall Time	I_D =4.7A (Note 2)	---	24	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , f=1MHz	---	390	---	pF
C_{oss}	Output Capacitance		---	25	---	
C_{rss}	Reverse Transfer Capacitance		---	7.8	---	

Diode Characteristics

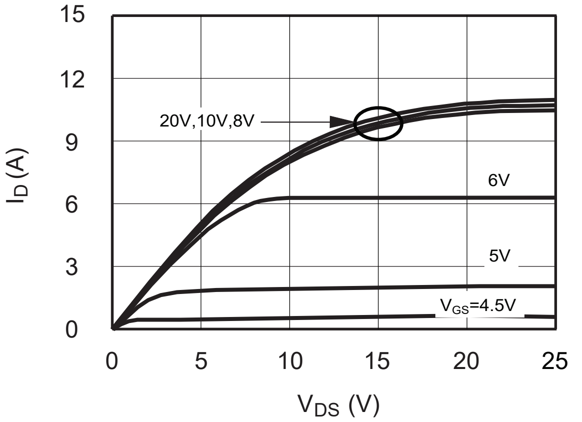
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	5	A
I_{SM}	Pulsed Source Current		---	---	20	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=5A ,T_J=25℃	---	0.88	1.4	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	252	---	ns
Q_{rr}	Reverse Recovery Charge	V_{DD} =100V , I_S =4.4A (Note 2)	---	1.7	---	μC

Note :

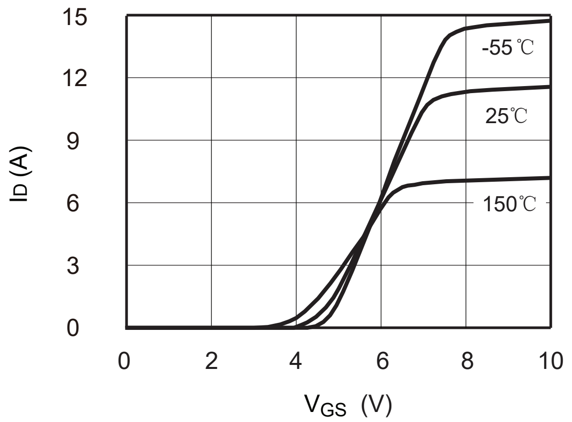
1.The EAS data shows Max. rating . The test condition is V_{DD} =100V , V_{GS}=10V , L=30mH , I_{AS}=3.5A.

2.Guaranteed by design, not subject to production testing.

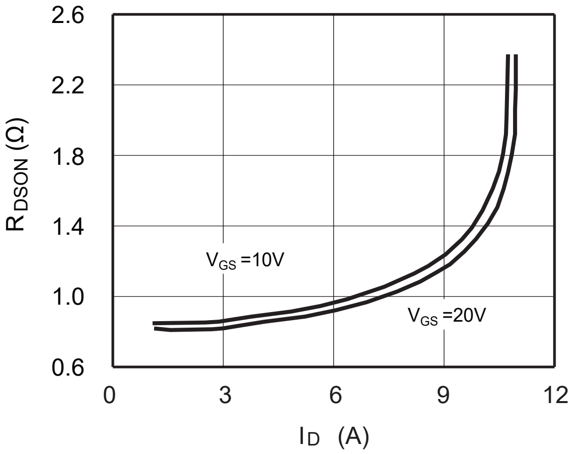
Typical Characteristics



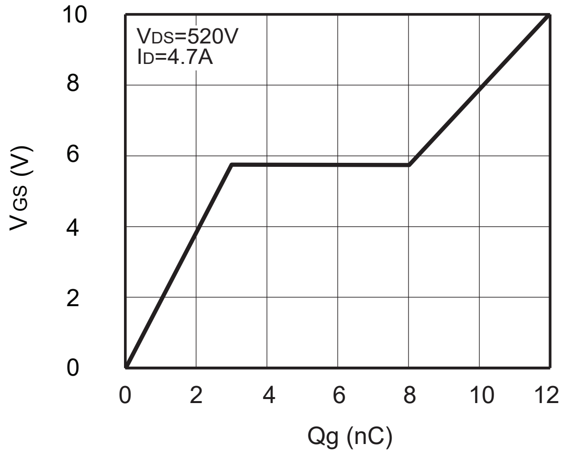
Output Characteristics



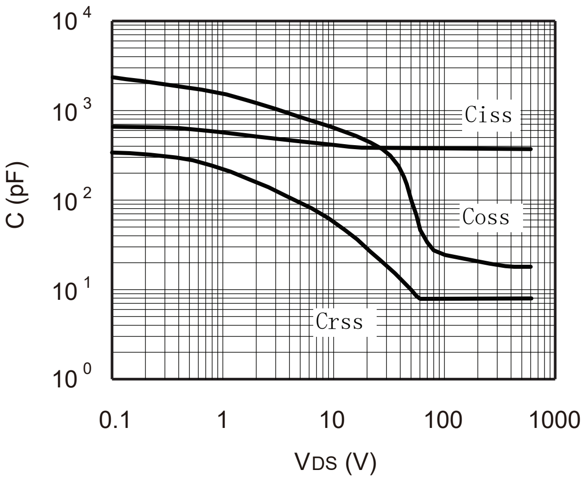
transfer characteristics



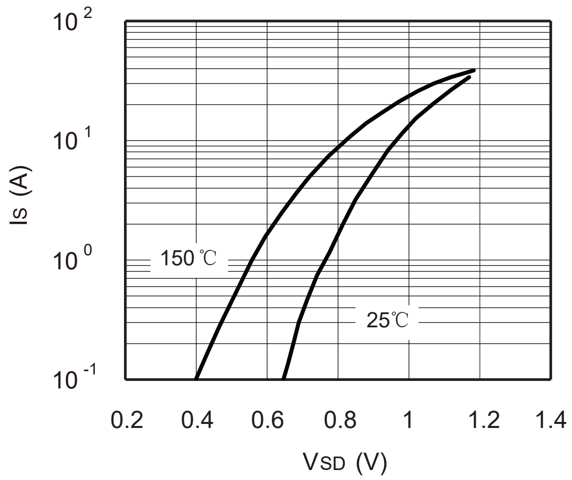
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage

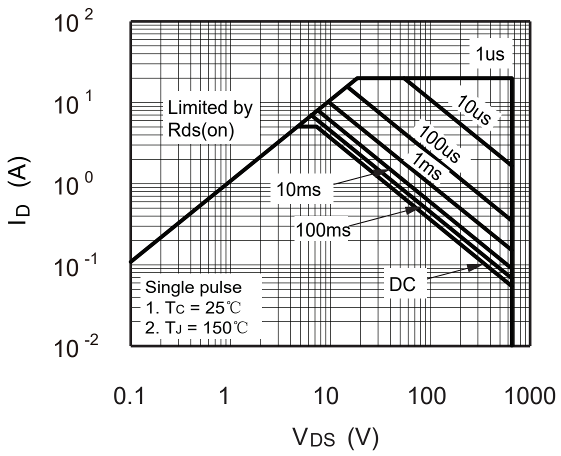


Capacitance Characteristics

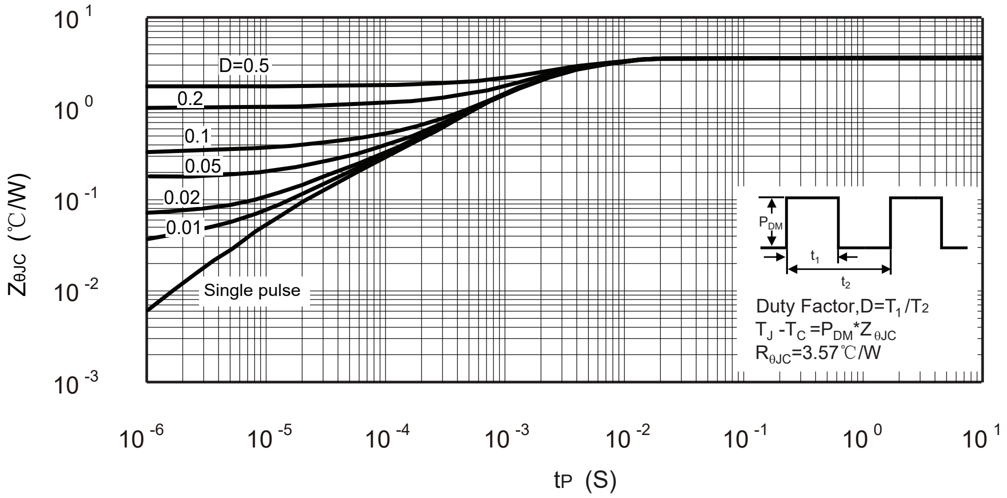


Body-Diode Characteristics

Typical Characteristics



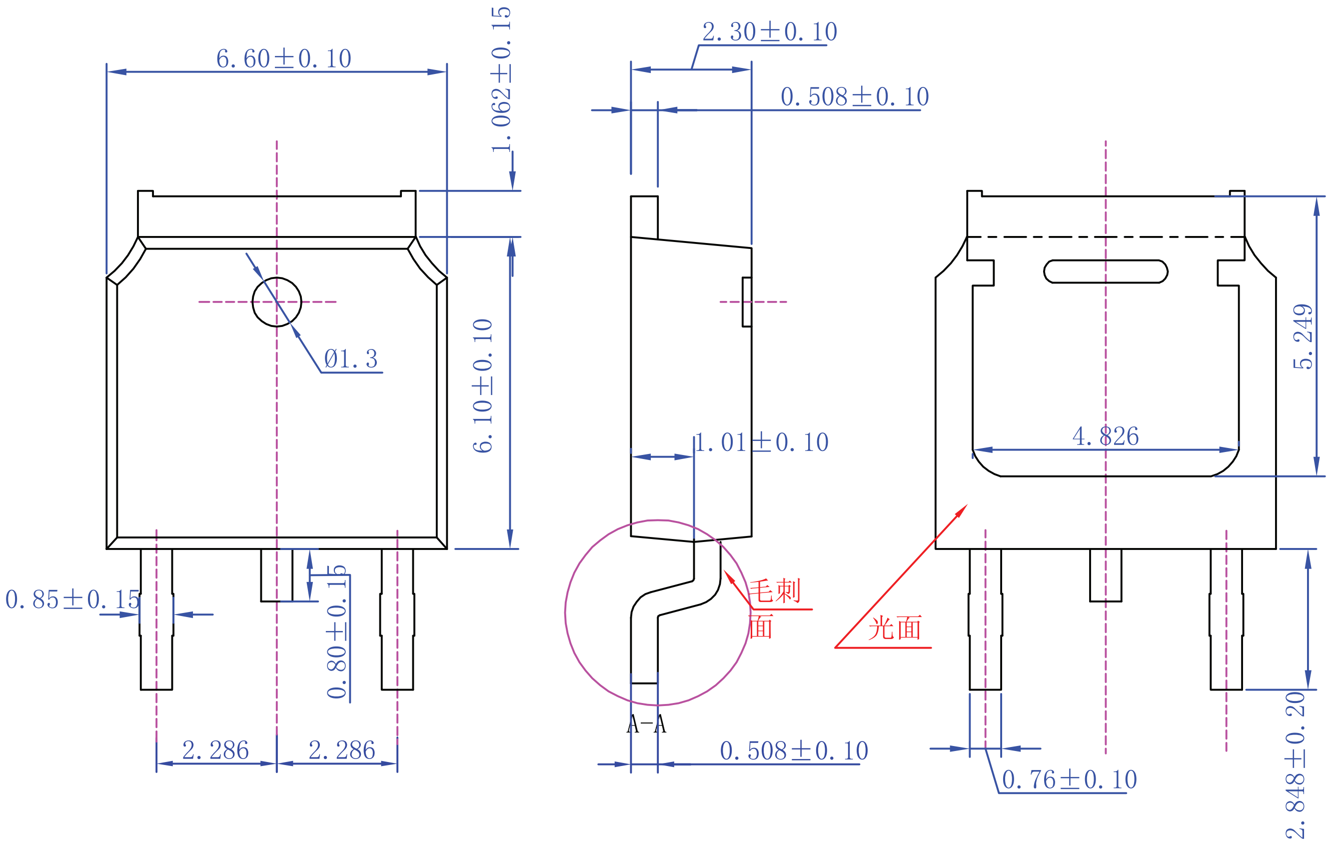
Safe Operating Area

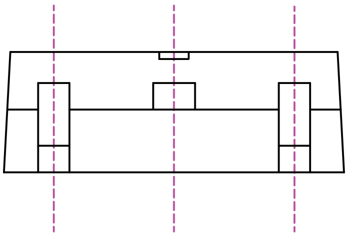


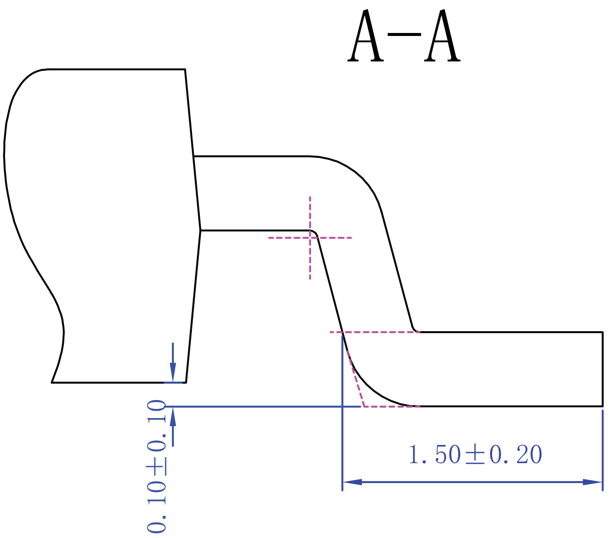
Transient thermal impedance

Package Dimension

TO-252 Unit :mm







注：
1.塑封体未标注为光面Ra=0.1;亚光面Ra=1.0~1.2
2.未注公差±0.15未标注圆角R max=0.25
3.塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
4.标注单位mm
5.顶针孔不允许凸出塑封体表面

Package Dimension

TO-251A Unit :mm