CMD80R1K2/CMU80R1K2

800V, 1.05Ω typ., 4.5A N-Channel Super Junction Power MOSFET

General Description

The 80R1K2 is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology. These user friendly devices give an advantage of low EMI to designers as well as low switching loss.

Features

- Low On-Resistance
- Excellent ESD robustness
- 100% Avalanche Tested
- RoHS Compliant

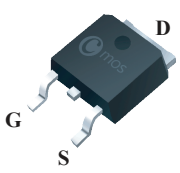
Product Summary

BV_{DSS}	$R_{DS(on)}$ max.	I_D
800V	1.2Ω	4.5A

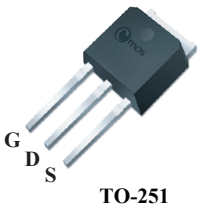
Applications

- Adapter
- PFC Power Supply Stages
- Switching Applications

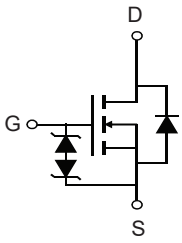
TO-252/TO-251 Pin Configuration



TO-252
CMD80R1K2



TO-251
CMU80R1K2



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	800	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	4.5	A
I_D@T_C=100℃	Continuous Drain Current	2.9	A
I_{DM}	Pulsed Drain Current	18	A
EAS	Single Pulse Avalanche Energy (Note 1)	60	mJ
P_D@T_C=25℃	Total Power Dissipation	39	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	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	---	3.2	℃/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	800	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=2.5A	---	1.05	1.2	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=800V , V_{GS}=0V, T_j =25℃	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±10	μA
gfs	Forward Transconductance	V_{DS}=20V, I_D =2A	---	3.2	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	21	---	Ω
Q_g	Total Gate Charge	I_D=4.5A V_{DS}=640V V_{GS}=10V	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	3.3	---	
Q_{gd}	Gate-Drain Charge		---	4.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=400V V_{GS}=10V I_D=4.5A R_G=25Ω	---	16	---	ns
T_r	Rise Time		---	24	---	
$T_{d(off)}$	Turn-Off Delay Time		---	59	---	
T_f	Fall Time		---	19	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	390	---	pF
C_{oss}	Output Capacitance		---	530	---	
C_{rss}	Reverse Transfer Capacitance		---	14	---	

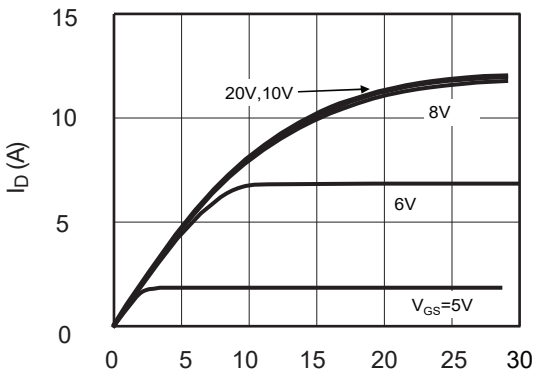
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_{GS}=V_{DS}=0V , Force Current	---	---	4.5	A
I_{SM}	Pulsed Source Current		---	---	18	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_{SD}=11A , T_j =25℃	---	0.96	1.4	V
t_{rr}	Reverse Recovery Time	V_{DD}=100V	---	380	---	ns
Q_{rr}	Reverse Recovery Charge	I_F=4.5A , di/dt=100A/μs	---	2	---	uC

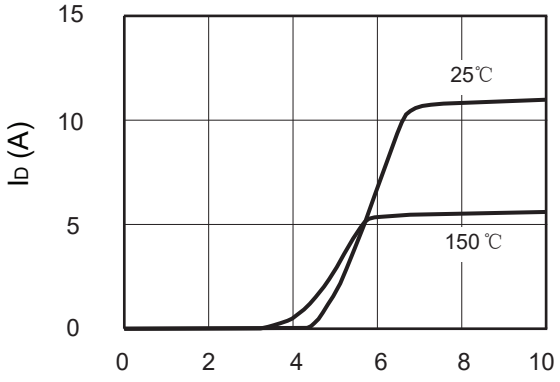
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=80V , V_{GS}=10V , L=30mH , I_{AS}=2A.

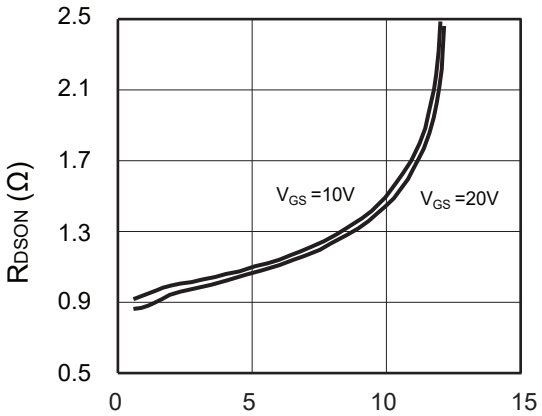
Typical Characteristics



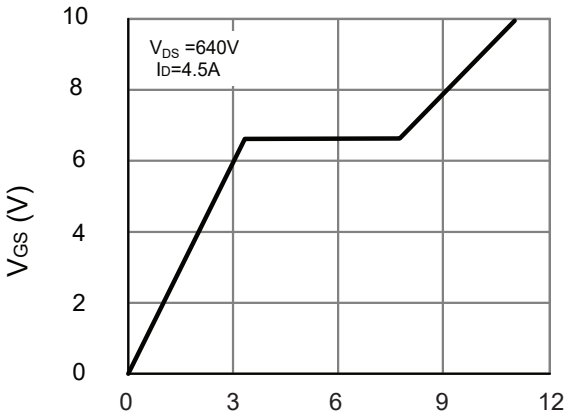
Output Characteristics



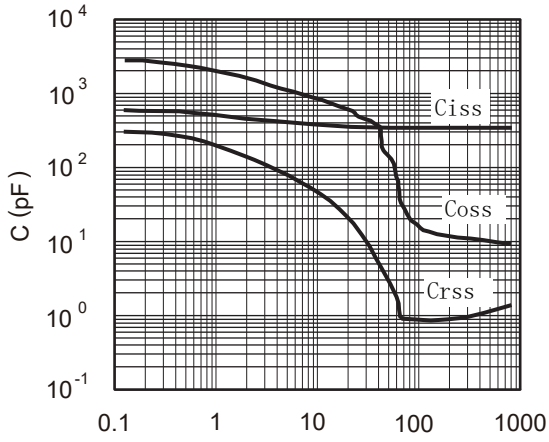
transfer characteristics



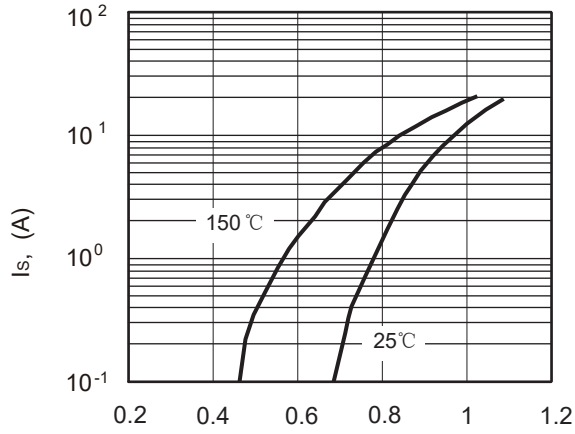
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics