N-Channel Super Junction Power MOSFET

General Description

The 60R420 is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance.These user friendly devices give an advantage of low EMI to designers as well as low switching loss.

Product Summary

BVDSS	RDSON	ID
600V	400mΩ	11A

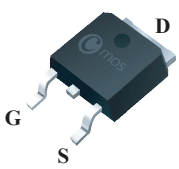
Applications

- SMPS with PFC, Flyback and LLC topologies
- Silver ATX,adapter,TV,lighting,Server power

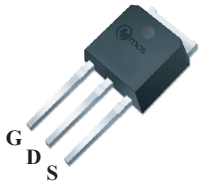
Features

- Low On-Resistance
- 100% avalanche tested
- Surface Mount Package
- ROHS compliant

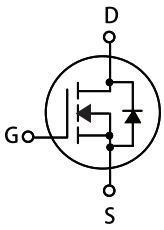
TO-252/251 Pin Configuration



TO-252
CMD60R420



TO-251
CMU60R420



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current	11	A
I_D@T_C=100℃	Continuous Drain Current	8	A
I_{DM}	Pulsed Drain Current	44	A
EAS	Single Pulse Avalanche Energy [1]	105	mJ
P_D@T_C=25℃	Total Power Dissipation	125	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 [2, 3]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1	℃/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	600	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=5A	---	340	400	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D = 250μA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=600V , V_{GS}=0V , T_J=25℃	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=20V, I_D=8A	---	7	---	S
R_g	Gate Resistance	V_{DS}=0 V , V_{GS}=0V , f=1MHz	---	5.5	---	Ω
Q_g	Total Gate Charge	V_{DS}=480V, V_{GS}=10V , I_D=5.5A	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=400V , R_G=5Ω I_D =5.5A V_{GS} =10V	---	20	---	ns
T_r	Rise Time		---	13	---	
$T_{d(off)}$	Turn-Off Delay Time		---	43	---	
T_f	Fall Time		---	16	---	
C_{iss}	Input Capacitance	V_{DS}=25V ,V_{GS}=0V , f=1MHz	---	1120	---	pF
C_{oss}	Output Capacitance		---	135	---	
C_{rss}	Reverse Transfer Capacitance		---	3	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	11	A
I_{SM}	Pulsed Source Current		---	---	44	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=8A , T_J=25℃	---	0.89	1.2	V

Notes:

1.The EAS data shows Max. rating .The test condition is V_{DS}=80V , V_{GS}=10V , L=5mH , I_{AS}=6.5A.

2.The value of $R_{\theta JA}$ is measured with the device in a still air environment with T_A =25°C.

3.The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

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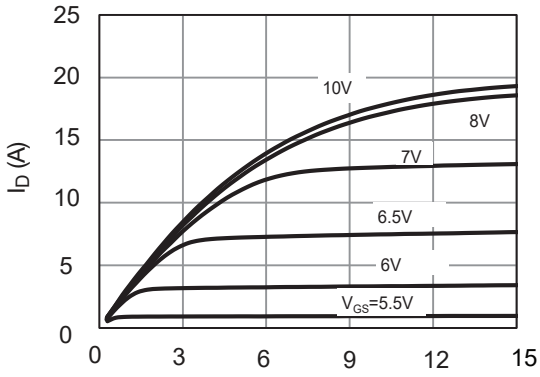
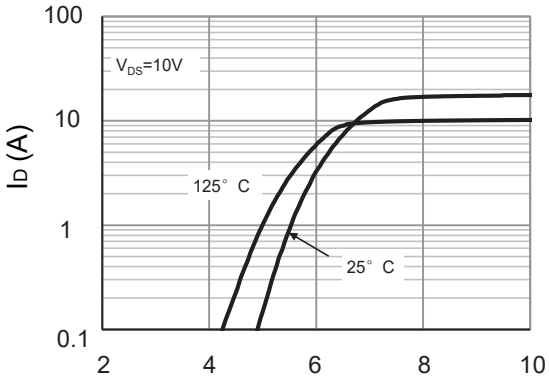
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

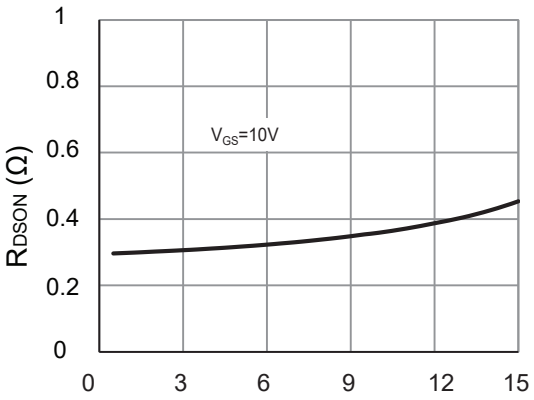
Typical Characteristics



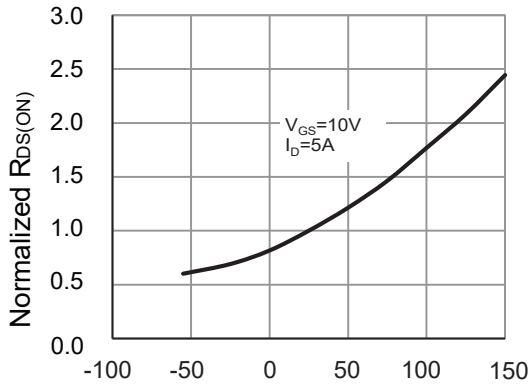
Output Characteristics



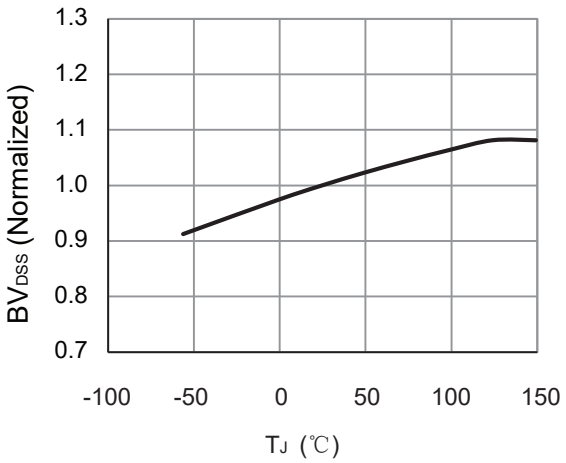
transfer characteristics



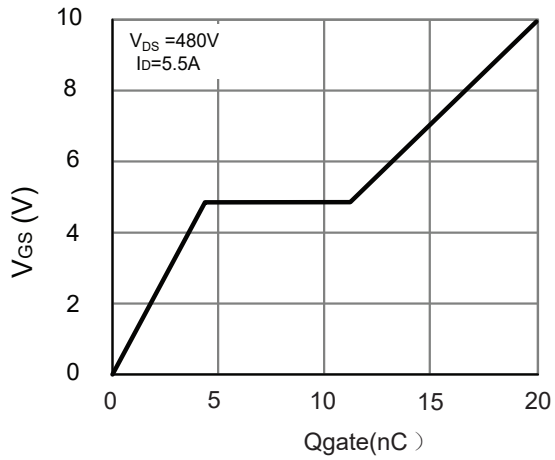
drain-source on-resistance



On-Resistance vs. Junction Temperature

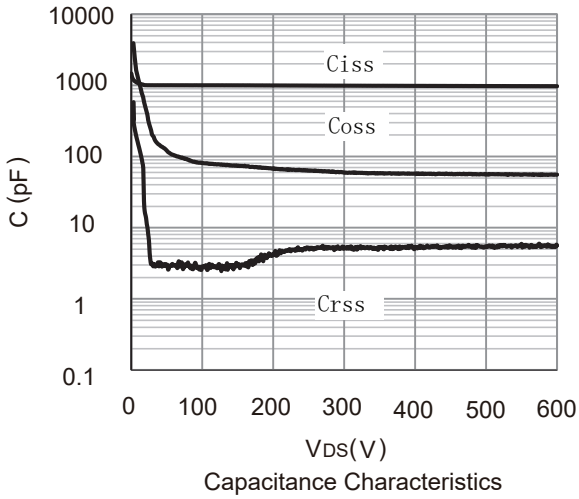


Break Down vs. Junction Temparature

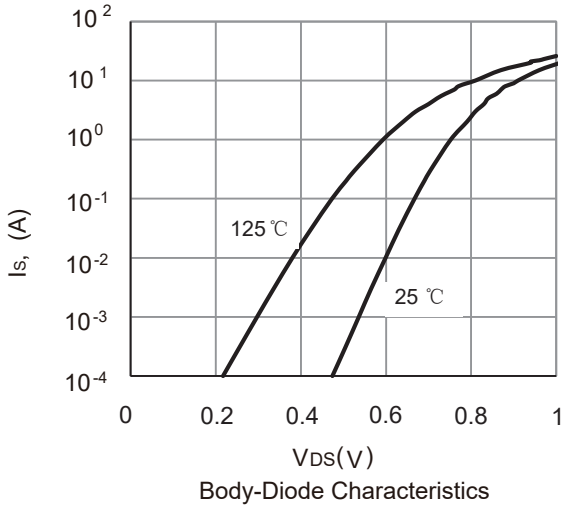


Gate charge vs gate-source voltage

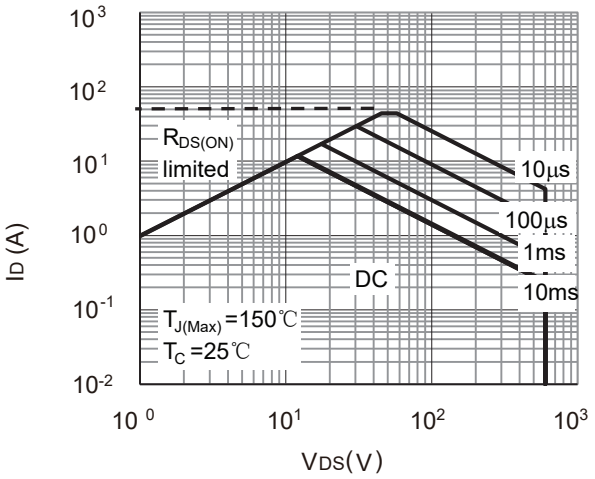
Typical Characteristics



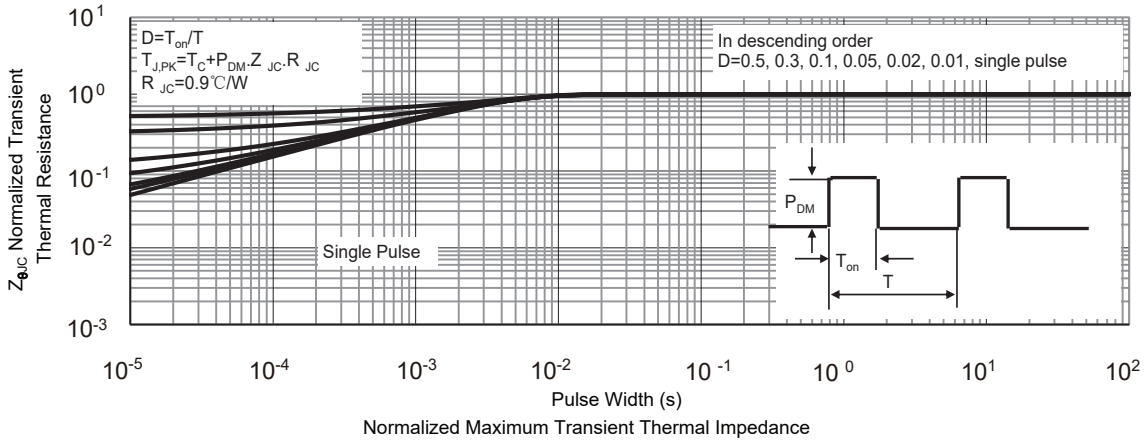
Capacitance Characteristics



Body-Diode Characteristics



Safe operating area



Normalized Maximum Transient Thermal Impedance