

## 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.

### Features

- 11A, 650V, R<sub>DS</sub> (on) = 0.37Ω @V<sub>GS</sub> = 10 V
- Low On-Resistance
- 100% avalanche tested
- Low on-resistance and low conduction losses
- ROHS compliant

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	650	V
V <sub>GS</sub>	Gate-Source Voltage	±30	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current	11	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current	9	A
I <sub>DM</sub>	Pulsed Drain Current	33	A
EAS	Single Pulse Avalanche Energy	215	mJ
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	85	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 175	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 175	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient	---	62	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction -Case	---	1.5	°C/W

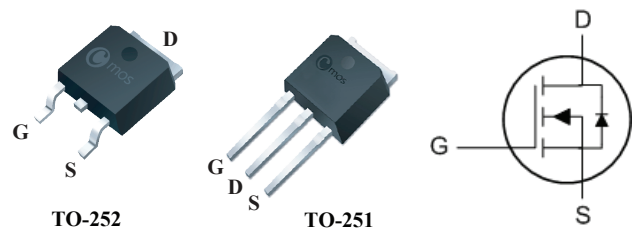
### Product Summary

BVDSS	RDS(on)	ID
650V	0.38Ω	11A

### Applications

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

### TO252 / TO251 Pin Configuration



Type	Package	Marking
CMD65R380Q	TO-252	CMD65R380Q
CMU65R380Q	TO-251	CMU65R380Q

### Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	650	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$ , $I_D=20A$	---	---	0.38	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu A$	2	---	4	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=650V$ , $V_{GS}=0V$ , $T_J=25^\circ\text{C}$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 30V$ , $V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=30V$ , $I_D=4A$	---	8	---	S
$R_g$	Gate Resistance	$V_{DS}=0V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	23	---	$\Omega$
$Q_g$	Total Gate Charge	$V_{DS}=520V$ , $V_{GS}=10V$ , $I_D=10.6A$	---	21	---	nC
$Q_{gs}$	Gate-Source Charge		---	8	---	
$Q_{gd}$	Gate-Drain Charge		---	6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=325V$ , $R_G=25\Omega$ $I_D=10.6A$ $V_{GS}=10V$	---	20	---	ns
$T_r$	Rise Time		---	39	---	
$T_{d(off)}$	Turn-Off Delay Time		---	109	---	
$T_f$	Fall Time		---	37	---	
$C_{iss}$	Input Capacitance	$V_{DS}=50V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	780	---	pF
$C_{oss}$	Output Capacitance		---	896	---	
$C_{rss}$	Reverse Transfer Capacitance		---	38.7	---	

### 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		---	---	33	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V$ , $I_S=20A$ , $T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

This product has been designed and qualified for the consumer market.  
Cmos assumes no liability for customers' product design or applications.  
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