20V N-Channel MOSFET

General Description

The 1402 combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for load switch and battery protection applications.

Features

- Simple Drive Requirement
- Ultra-Low RDS(on)
- Green Device Available

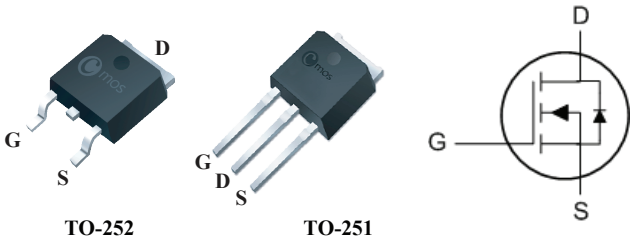
Product Summary

BVDSS	RDSON	ID
20V	5.5mΩ	50A

Applications

- Server
- DC/DC converter
- Motor drives

TO-252/251 Pin Configuration



Type	Package	Marking
CMD1402	TO-252	CMD1402
CMU1402	TO-251	CMU1402

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_C=25℃	Continuous Drain Current	50	A
I_D@T_C=100℃	Continuous Drain Current	19	A
I_{DM}	Pulsed Drain Current[1]	150	A
EAS	Avalanche energy[4]	72	mJ
P_D@T_C=25℃	Total Power Dissipation	55	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	110	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.6	℃/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	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V, I_D=15A	---	---	5.5	mΩ
		V_{GS}=2.5V , I_D=10A	---	---	9	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.5	---	1.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =± 12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance [2]	V_{DS}=10V, I_D =20A	---	33	---	S
Q_g	Total Gate Charge (V_{GS}=4.5V)	V_{DS}=10V , V_{GS}=10V , I_D=20A	---	36	---	nC
Q_{gs}	Gate-Source Charge		---	9	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time [3]	V_{DS}=10V , V_{GS}=5V , R_{GS} =3.3Ω I_D ≅18A	---	8	---	ns
T_r	Rise Time [3]		---	85	---	
$T_{d(off)}$	Turn-Off Delay Time [3]		---	20	---	
T_f	Fall Time [3]		---	25	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	4000	---	pF
C_{oss}	Output Capacitance		---	450	---	
C_{rss}	Reverse Transfer Capacitance		---	210	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage [2]	V_{GS}=0V , I_S= 20A	---	---	1.2	V

Note :
1.Pulse width limited by maximum junction temperature.
2.Pulse test : Pulse Width≤300 usec, Duty Cycle≤2%.
3.Independent of operating temperature.
4.The EAS data shows Max. rating . The test condition is V_{DD}=15V,V_{GS}=10V,L=0.5mH,I_D=17A

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