CMD2054D/CMU2054D

20V N-Channel MOSFET

General Description

The 2054D 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.

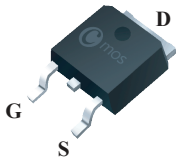
Product Summary

BVDSS	RDSON	ID
20V	13mΩ	30A

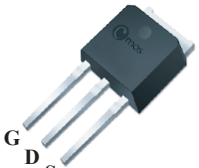
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

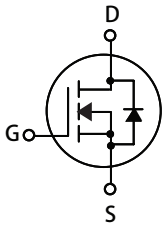
TO-252/251 Pin Configuration



TO-252



TO-251



Features

- Simple Drive Requirement
- Ultra low On-Resistance.
- Green Device Available

Type	Package	Marking
CMD2054D	TO-252	CMD2054D
CMU2054D	TO-251	CMU2054D

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	30	A
I_D@T_C=100℃	Continuous Drain Current	24	A
I_{DM}	Pulsed Drain Current[1]	90	A
EAS	Avalanche energy[4]	56	mJ
P_D@T_C=25℃	Total Power Dissipation	40	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	---	105	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.5	℃/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=6A	---	---	13	mΩ
		V_{GS}=2.5V , I_D=5A	---	---	19	
$V_{GS(th)}$	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
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance [2]	V_{DS}=5V, I_D =5A	---	20	---	S
Q_g	Total Gate Charge	V_{DS}=10V , V_{GS}=4.5V, I_D=6.8A	---	12	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate-Drain Charge		---	4	---	
$T_{d(on)}$	Turn-On Delay Time [3]	V_{DD}=10V , V_{GEN}=4.5V, R_G=3Ω I_D=6.8A	---	8	---	ns
T_r	Rise Time [3]		---	47	---	
$T_{d(off)}$	Turn-Off Delay Time [3]		---	31	---	
T_f	Fall Time [3]		---	53	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	150	---	pF
C_{oss}	Output Capacitance		---	133	---	
C_{rss}	Reverse Transfer Capacitance		---	117	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage [2]	V_{GS}=0V , I_S= 5A	---	---	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=15A