CMD2054L/CMU2054L

20V, 17mΩ typ., 30A N-Channel MOSFET

General Description

The 2054L uses advanced trench technology to provide excellent RDS(ON).This device is suitable for use in PWM, load switching and general purpose applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
20V	20mΩ	30A

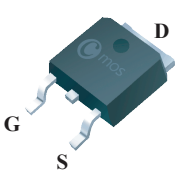
Applications

- DC/DC Converter

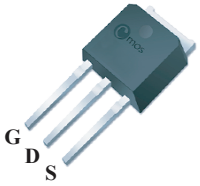
Features

- Low On-Resistance
- Simple Drive Requirements
- RoHS Compliant

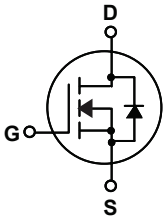
TO-252/251 Pin Configuration



TO-252
(CMD2054L)



TO-251
(CMU2054L)



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	20	A
I_{DM}	Pulsed Drain Current	120	A
EAS	Single Pulse Avalanche Energy[1]	18	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	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.12	℃/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	---	17	20	mΩ
		V_{GS}=2.5V , I_D=5A	---	22	25	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.4	---	1.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=5A	---	9	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.9	---	Ω
Q_g	Total Gate Charge	I_D=12.8A V_{DS}=10V V_{GS}=4.5V	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	5.4	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V V_{GEN} =4.5V R_G =6Ω R_L =10Ω , I_D =1A	---	25	---	ns
T_r	Rise Time		---	21	---	
$T_{d(off)}$	Turn-Off Delay Time		---	65	---	
T_f	Fall Time		---	35	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	450	---	pF
C_{oss}	Output Capacitance		---	60	---	
C_{rss}	Reverse Transfer Capacitance		---	58	---	

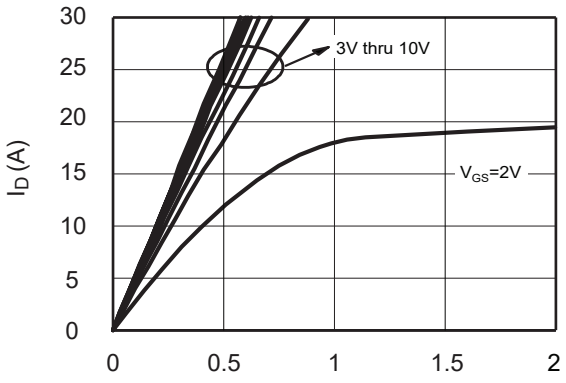
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	30	A
I_{SM}	Pulsed Source Current		---	---	120	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=5A ,T_J=25℃	---	0.86	1.2	V

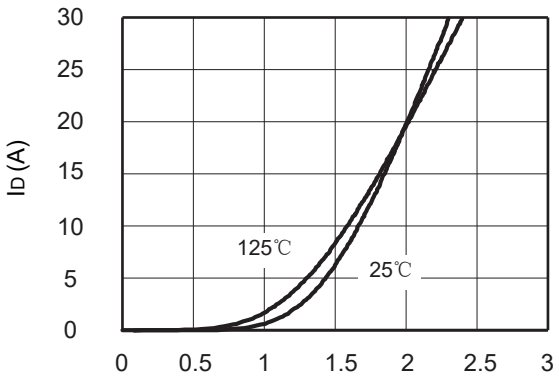
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=15V , V_{GS}=10V , L=1mH , I_{AS}=6A.

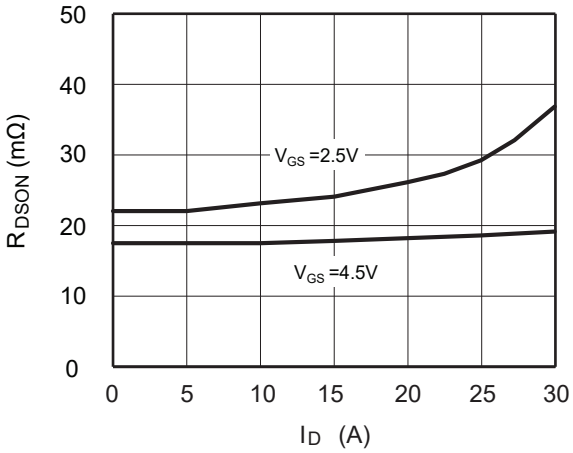
Typical Characteristics



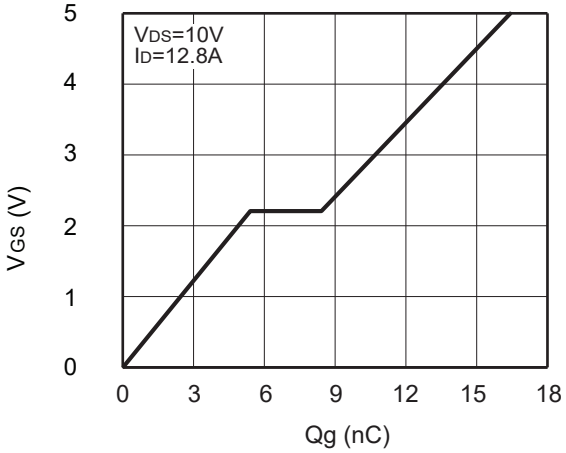
Output Characteristics



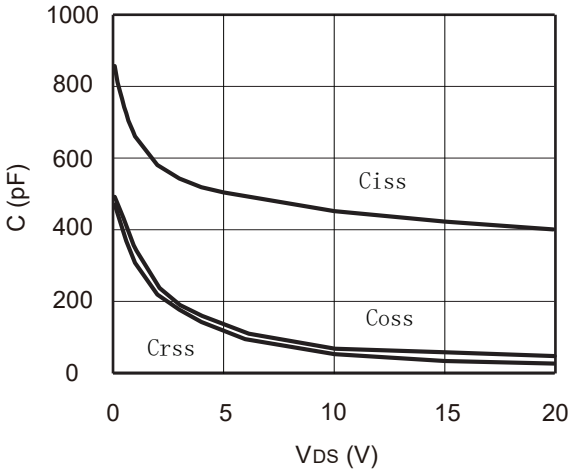
transfer characteristics



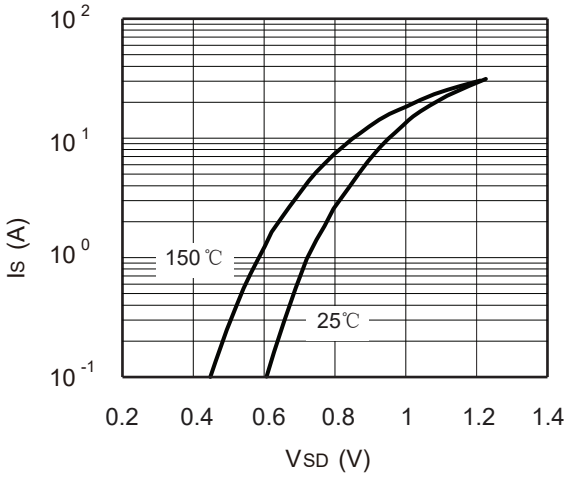
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



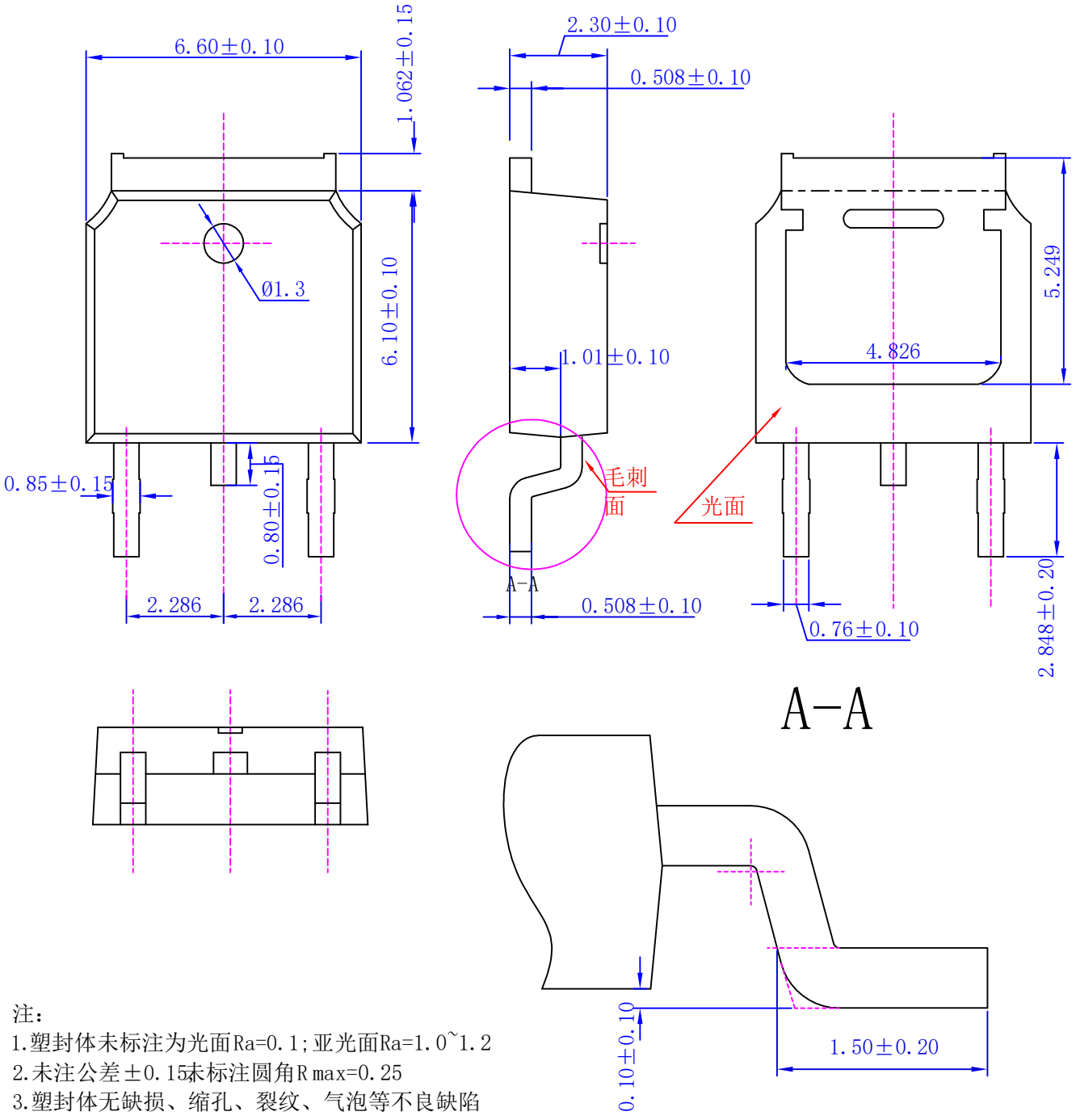
Capacitance Characteristics



Body-Diode Characteristics

Package Dimension

TO-252 Unit :mm



注：
1.塑封体未标注为光面Ra=0.1;亚光面Ra=1.0~1.2
2.未注公差±0.15未标注圆角R max=0.25
3.塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
4.标注单位mm
5.顶针孔不允许凸出塑封体表面

Package Dimension

TO-251A Unit :mm