-30V, 13mΩ typ., -50A P-Channel MOSFET

General Description

The 50P03B uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a load switch or in PWM applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	16mΩ	-50A

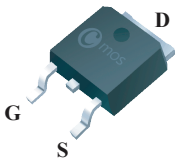
Applications

- DC/DC Converters.
- Load Switch

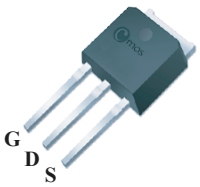
Features

- P-Channel MOSFET
- Low ON-resistance
- 100% avalanche tested
- RoHS Compliant

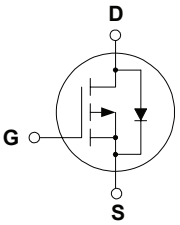
TO-252/251 Pin Configuration



TO-252
(CMD50P03B)



TO-251
(CMU50P03B)



Absolute Maximum Ratings (T_A=25 ℃ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-50	A
I_D@T_C=100℃	Continuous Drain Current	-32	A
I_{DM}	Pulsed Drain Current	-200	A
EAS	Single Pulse Avalanche Energy[1]	289	mJ
P_D@T_C=25℃	Total Power Dissipation	50	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]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.50	℃/W

-30V, 13mΩ typ., -50A P-Channel MOSFET

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=-250μA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-20A	---	13	16	mΩ
		V_{GS}=-4.5V , I_D=-15A	---	16	21	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = -250μA	-1.0	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V , V_{GS}=0V	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS} =-5V , I_D=-10A	---	22	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	250	---	Ω
Q_g	Total Gate Charge	V_{DS}=-15V , V_{GS}=-10V , I_D=-10A	---	40	---	nC
Q_{gs}	Gate-Source Charge		---	8	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS} =-10V , R_G=3Ω R_L =1Ω	---	15	---	ns
T_r	Rise Time		---	10	---	
$T_{d(off)}$	Turn-Off Delay Time		---	26	---	
T_f	Fall Time		---	12	---	
C_{iss}	Input Capacitance	V_{DS}=-25V , V_{GS}=0V , f=1MHz	---	2300	---	pF
C_{oss}	Output Capacitance		---	300	---	
C_{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-50	A
I_{SM}	Pulsed Source Current		---	---	-200	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-20A ,T_J=25℃	---	-0.88	-1.3	V

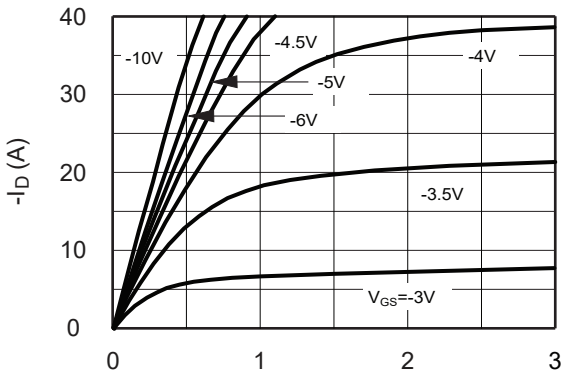
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=-20V , V_{GS}=-10V , L=0.5mH , I_{AS}=-34A.

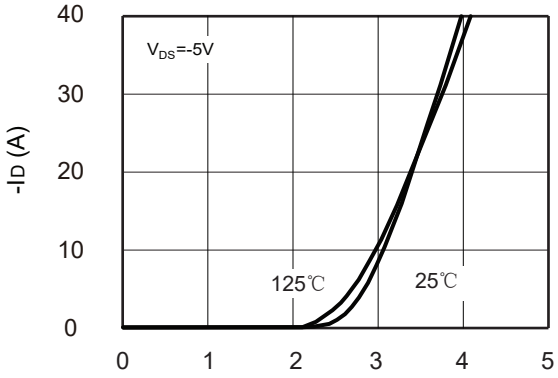
2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

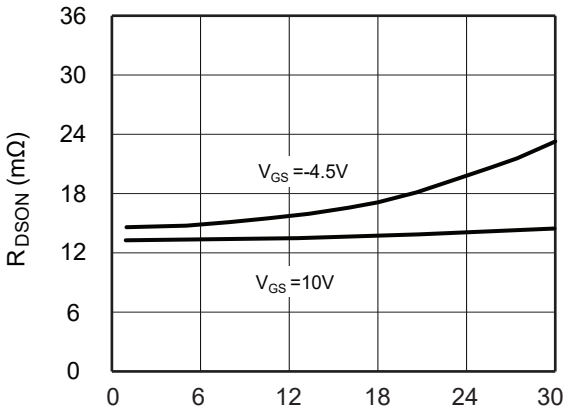
Typical Characteristics



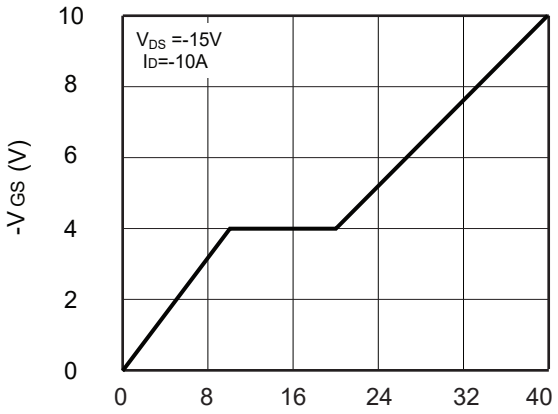
Output Characteristics



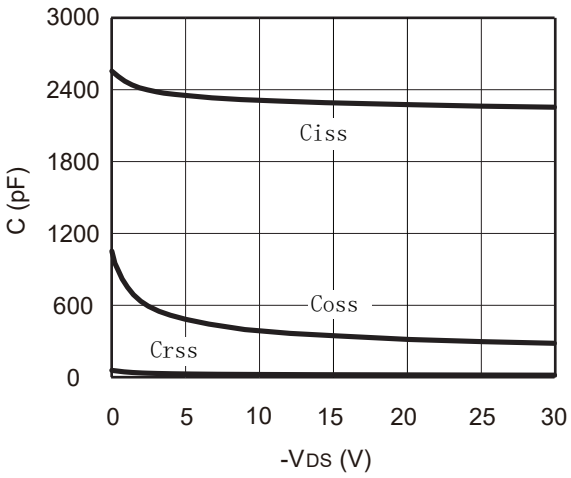
transfer characteristics



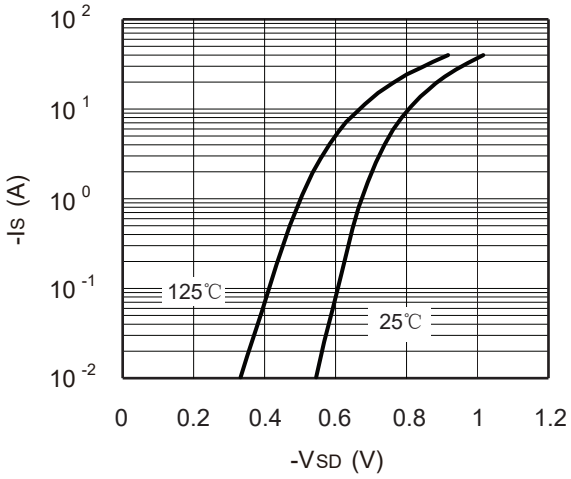
drain-source on-resistance



Gate charge vs gate-source voltage



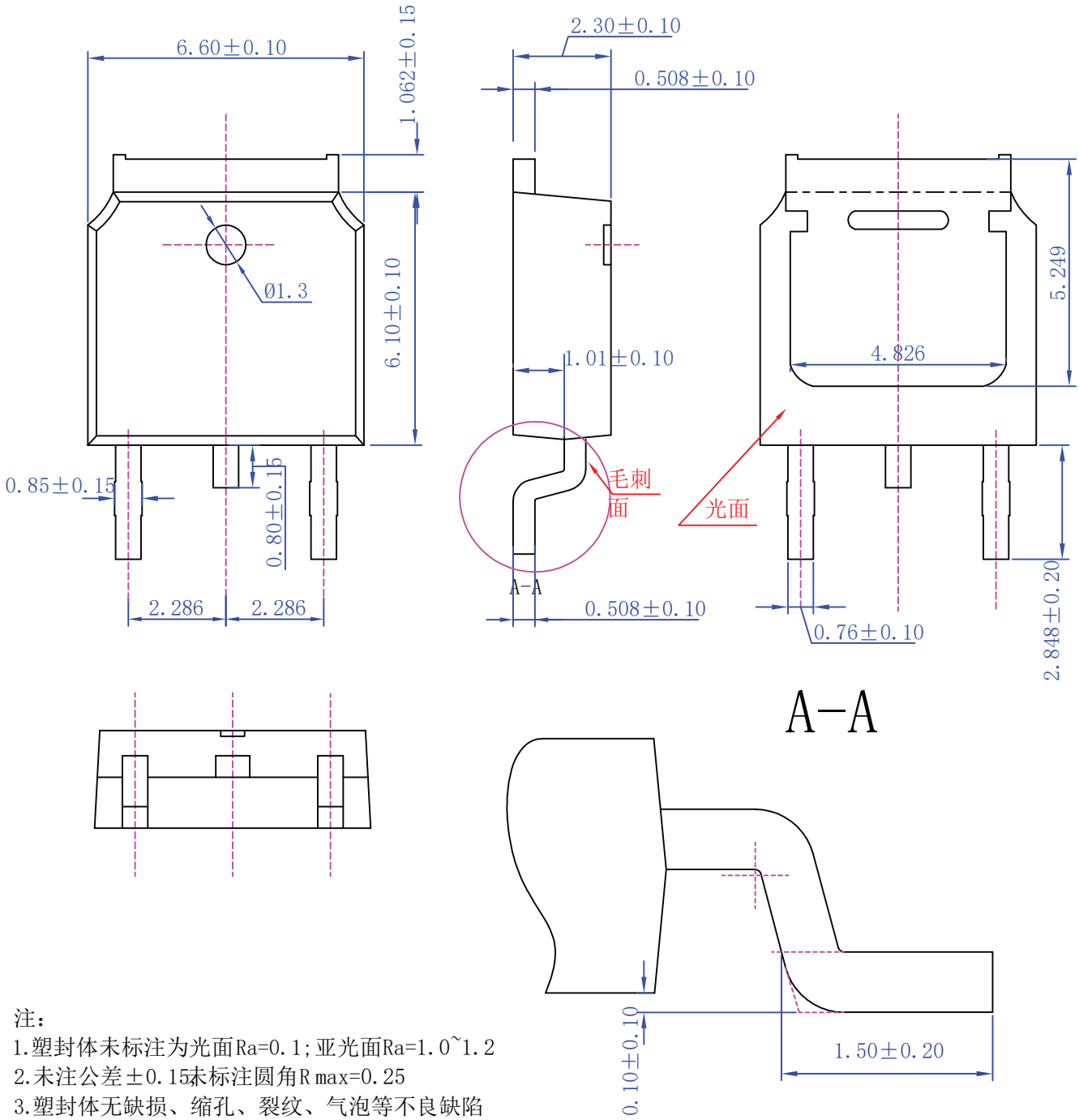
Capacitance Characteristics



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

