

General Description

The 20P03 uses advanced trench technology to provide excellent RDS(ON) with low gate charge. This device is well suited for high current load applications.

Features

- Low On-Resistance
- Simple Drive Requirements
- 100% avalanche tested
- RoHS Compliant

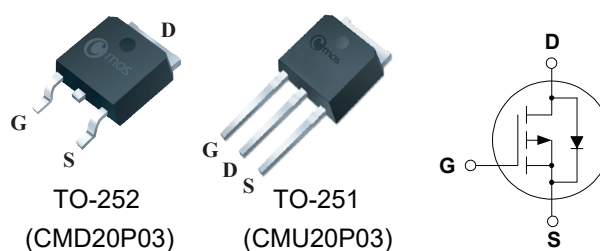
Product Summary

BVDSS	RDS(on) max.	ID
-30V	42mΩ	-19A

Applications

- DC-DC Converters
- Desktop PCs
- LED controller

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	-19	A
I _D @T _C =100°C	Continuous Drain Current	-12	A
I _{DM}	Pulsed Drain Current	-76	A
EAS	Single Pulse Avalanche Energy ¹	105	mJ
P _D @T _C =25°C	Total Power Dissipation	30	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ²	---	71.4	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	4.17	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-10A$	---	36	42	mΩ
		$V_{GS}=-4.5V$, $I_D=-5A$	---	60	68	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = -250\mu A$	-1.0	---	-3.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24V$, $V_{GS} = 0V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V$, $I_D=-10A$	---	13	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6.3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-15V$, $I_D=-6A$ $V_{GS}=-10V$	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate-Drain Charge		---	4	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-15V$, $V_{GS}=-10V$ $R_L=2.5\Omega$, $R_{GEN}=3\Omega$	---	8.6	---	ns
T_r	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	28.5	---	
T_f	Fall Time		---	14	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	700	---	pF
C_{oss}	Output Capacitance		---	110	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-19	A
I_{SM}	Pulsed Source Current		---	---	-76	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=-10A$, $T_J=25^{\circ}\text{C}$	---	-0.97	-1.4	V
t_{rr}	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	24	---	ns
Q_{rr}	Reverse Recovery Charge	$I_{SD} = -6A$	---	14.7	---	μC

Note :

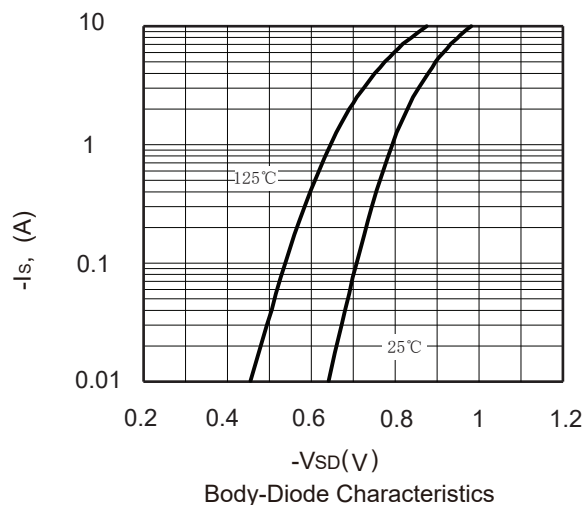
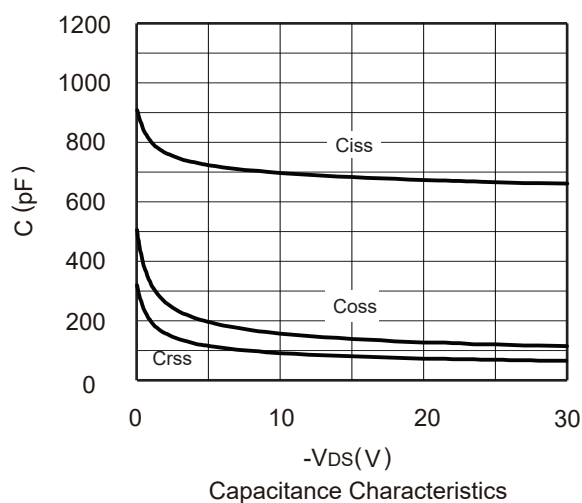
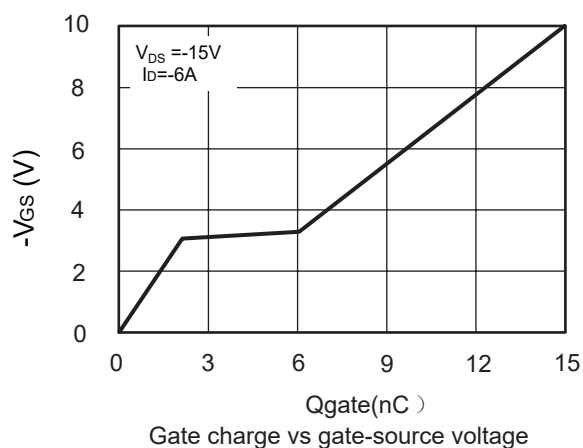
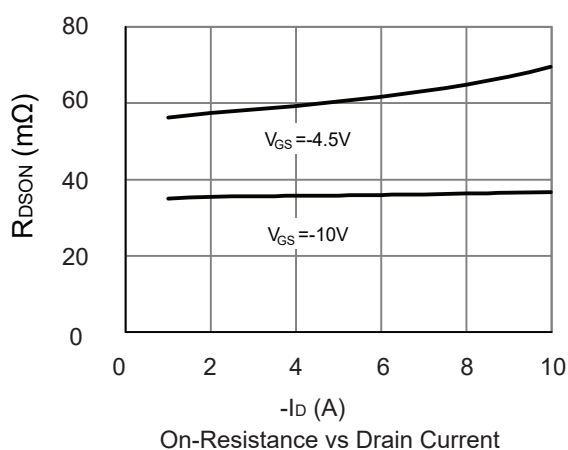
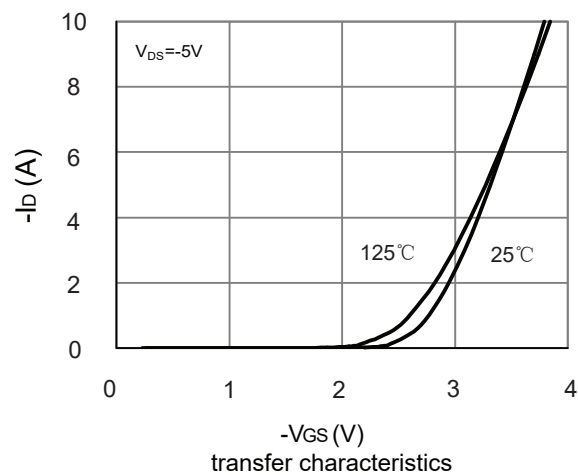
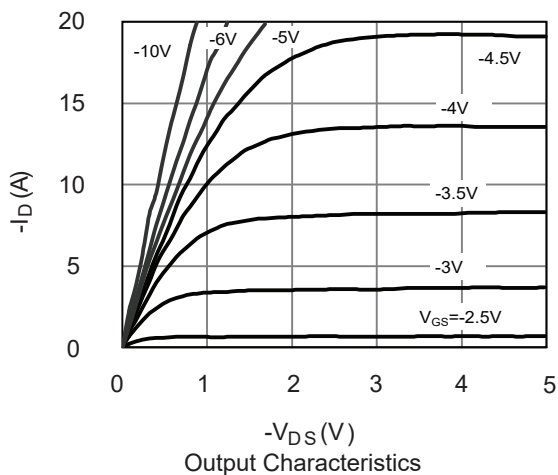
- 1.The EAS data shows Max. rating . The test condition is $V_{DD}=-20V$, $V_{GS}=-10V$, $L=1\text{mH}$, $I_{AS}=-14.5A$.
- 2.When surface mounted to an FR-4 board using the 0.5 sq.in. drain pad size.

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design , functions and reliability without notice. Please refer to the latest version of specification.

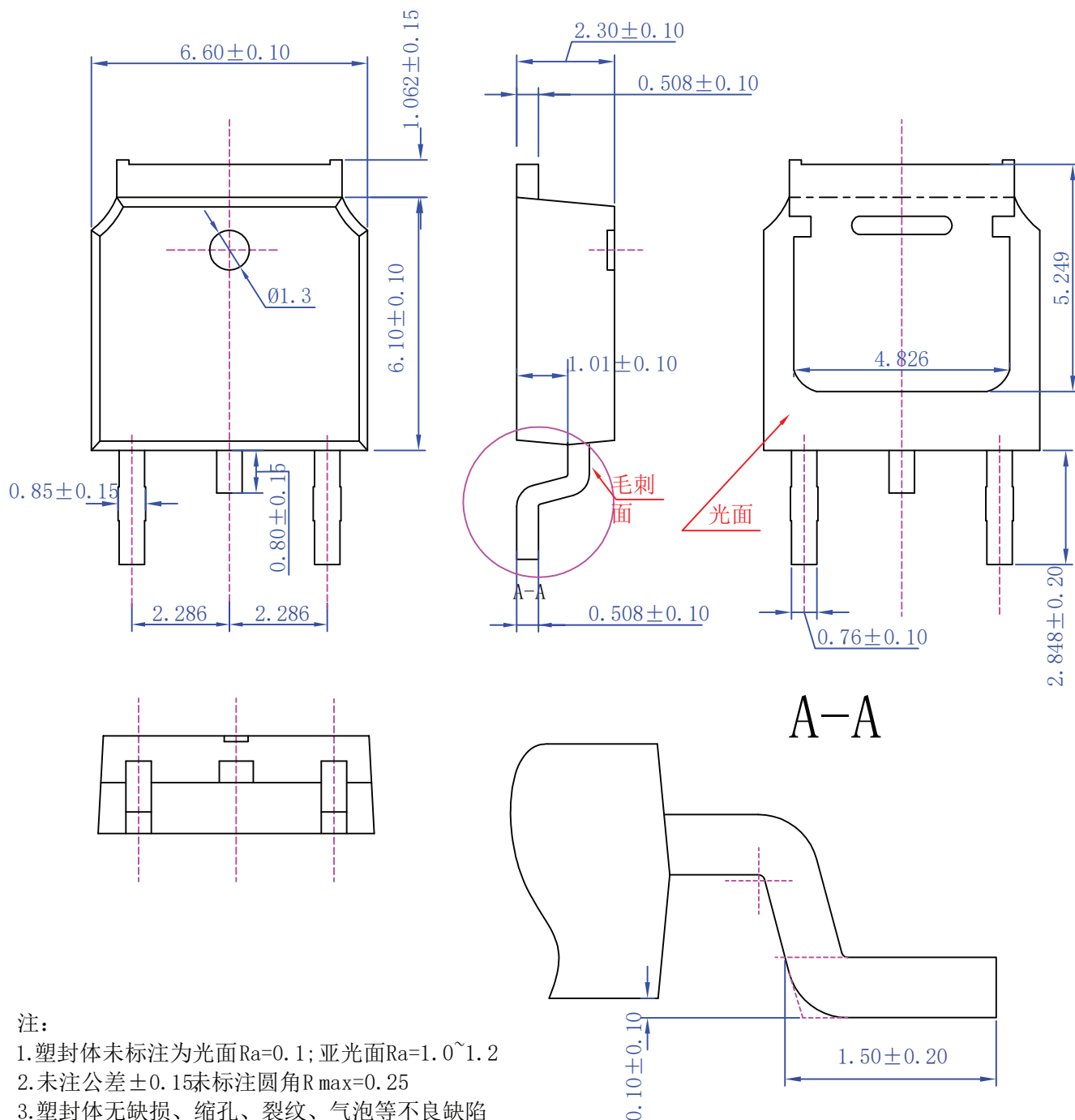
Typical Characteristics



Package Dimension

TO-252

Unit :mm



Package Dimension

TO-251A

Unit :mm

