

General Description

The 50N10 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$. This device is ideal for PWM, load switching and general purpose applications.

Features

- Low On-Resistance
- High Reliability Capability with Passivation
- 100% avalanche tested
- RoHS Compliant

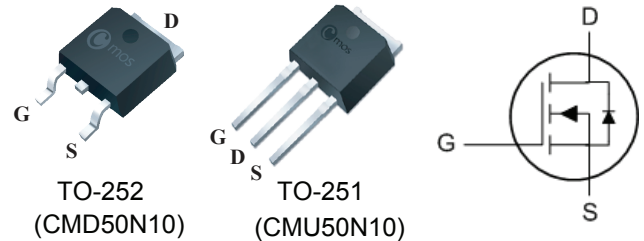
Product Summary

BVDSS	RDSON	ID
100V	17mΩ	50A

Applications

- DC-DC Converters
- Power switching application

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±25	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	50	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	38	A
I_{DM}	Pulsed Drain Current	150	A
EAS	Single Pulse Avalanche Energy ¹	200	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	100	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (PCB mount)	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.5	°C/W

Electrical Characteristics (T_J=25°C , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =25A	---	14	17	mΩ
		V _{GS} =4.5V , I _D =10A	---	18	25	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1	---	3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = 100V, V _{GS} =0V , T _J =25°C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±25V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =15V, I _D =20A	---	15	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.3	---	Ω
Q _g	Total Gate Charge	V _{DD} =80V , I _D =50A V _{GS} =0 to 10V	---	50	---	nC
Q _{gs}	Gate-Source Charge		---	10	---	
Q _{gd}	Gate-Drain Charge		---	8	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =20V , V _{GS} =10V , I _D =50A R _G =3.5Ω	---	10	---	ns
T _r	Rise Time		---	5	---	
T _{d(off)}	Turn-Off Delay Time		---	30	---	
T _f	Fall Time		---	5	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	3600	---	pF
C _{oss}	Output Capacitance		---	730	---	
C _{rss}	Reverse Transfer Capacitance		---	65	---	

Diode Characteristics

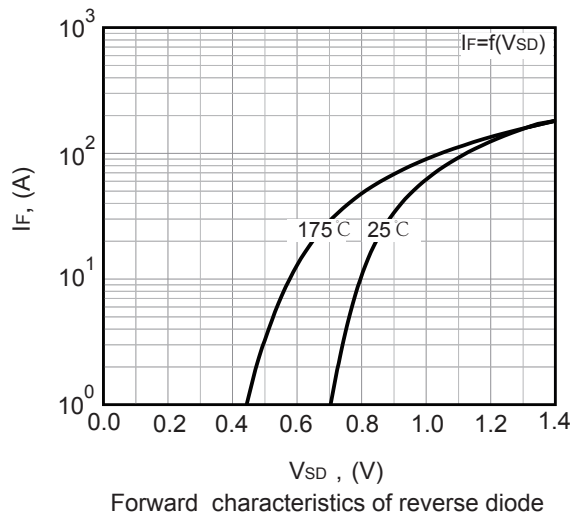
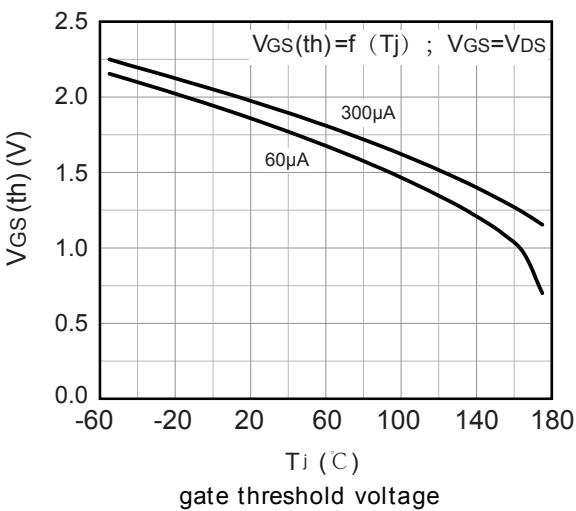
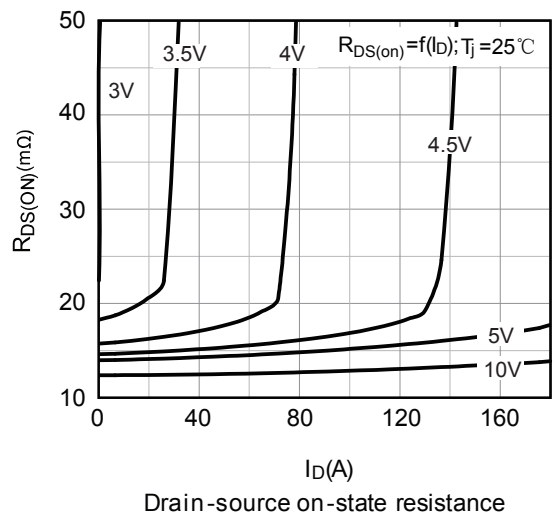
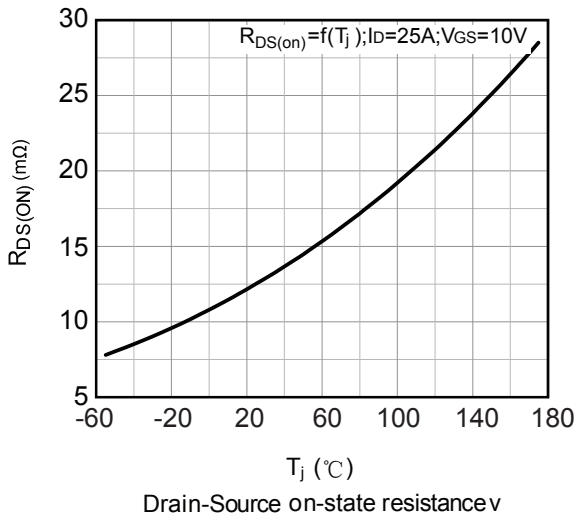
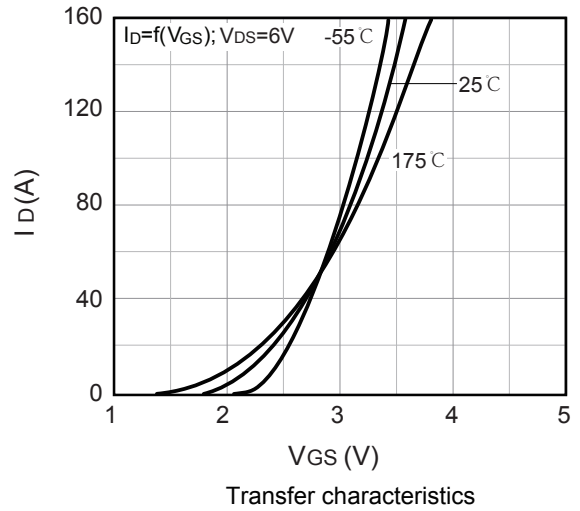
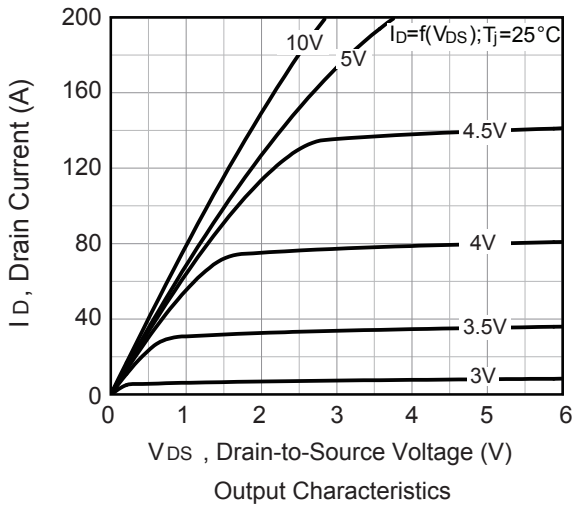
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	50	A
I _{SM}	Pulsed Source Current		---	---	150	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =25A	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 8A , V _R =50V	---	---	97	A
Q _{rr}	Reverse Recovery Charge	di _F / dt = 100 A/μs	---	---	178	V

Note :

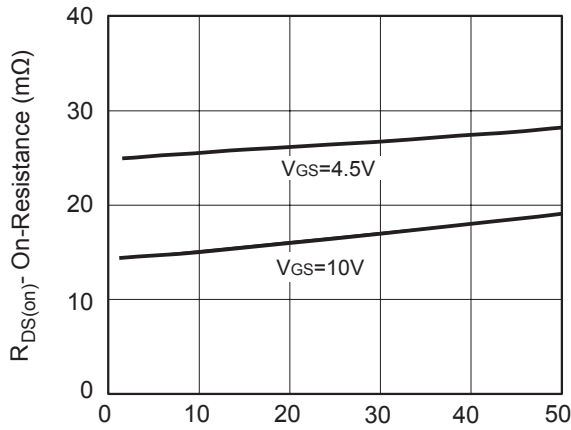
1.The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH,I_D=28A

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Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design ,functions and reliability without notice.

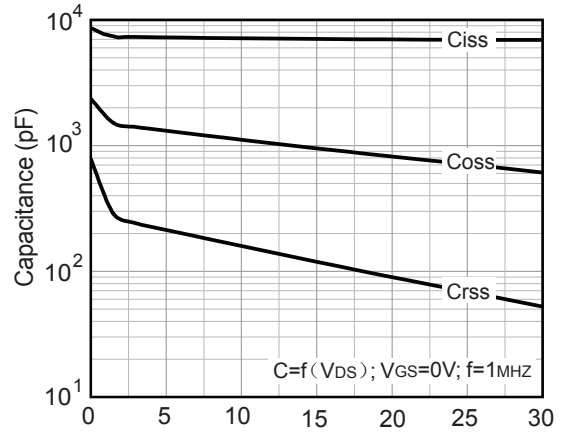
Typical Characteristics



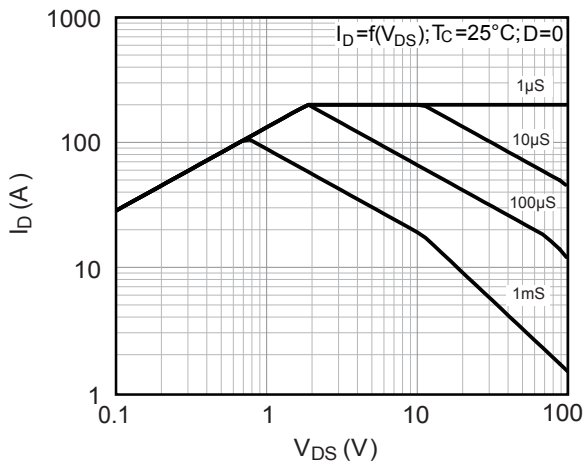
Typical Characteristics



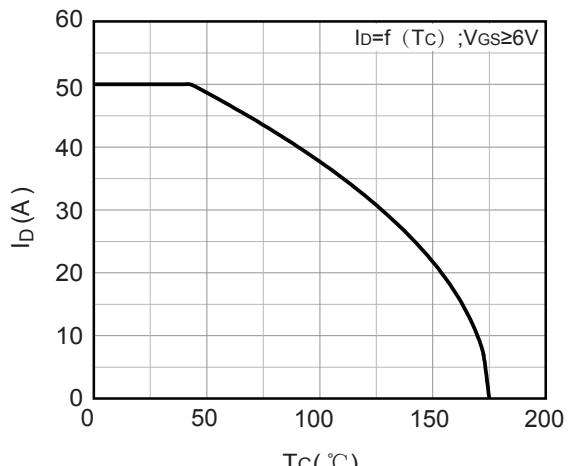
On-Resistance vs. Drain Current



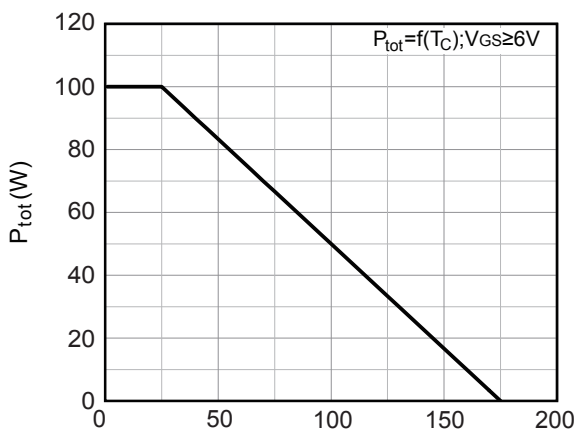
Typ. Characteristics



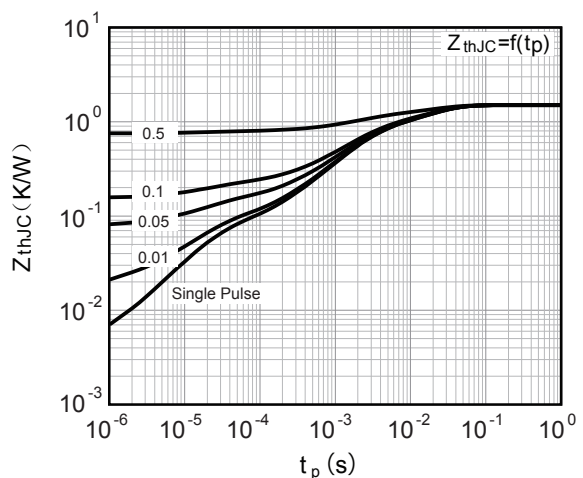
Safe operating area



Drain current



Power dissipation



Max. transient thermal impedance