

General Description

The 70N03D uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It is ESD protected. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching.

Features

- ESD Protected
- Low On-Resistance
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 16	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	70	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	56	A
I_{DM}	Pulsed Drain Current	280	A
EAS	Single Pulse Avalanche Energy ¹	225	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	65	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady-State)	---	145	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.92	$^\circ\text{C}/\text{W}$

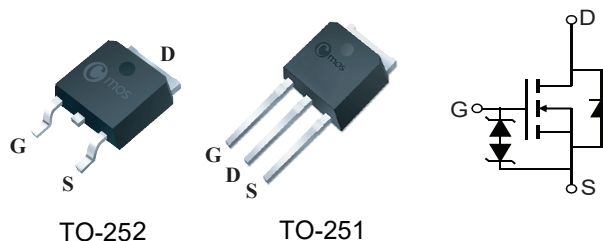
Product Summary

BVDSS	$R_{DS(ON)}$	ID
30V	4m Ω	70A

Applications

- Power Management in Note book
- Battery Powered System
- DC/DC Converter
- Load Switch

TO-252/251 Pin Configuration



Type	Package	Marking
CMD70N03D	TO-252	CMD70N03D
CMU70N03D	TO-251	CMU70N03D

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	$V_{GS}=10V, I_D=28A$	---	3.5	4	$m\Omega$
		$V_{GS}=4.5V, I_D=25A$	---	5	6	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.8	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 16V, V_{DS}=0V$	---	---	± 10	μA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=28A$	---	39	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	1	---	Ω
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=5A, V_{GS}=10V$	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	4.5	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, V_{GS}=10V, R_G=3.3\Omega, I_D=15A$	---	10	---	ns
T_r	Rise Time		---	20	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	12	---	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2200	---	pF
C_{oss}	Output Capacitance		---	500	---	
C_{rss}	Reverse Transfer Capacitance		---	150	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	70	A
I_{SM}	Pulsed Source Current		---	---	280	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=28A, T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

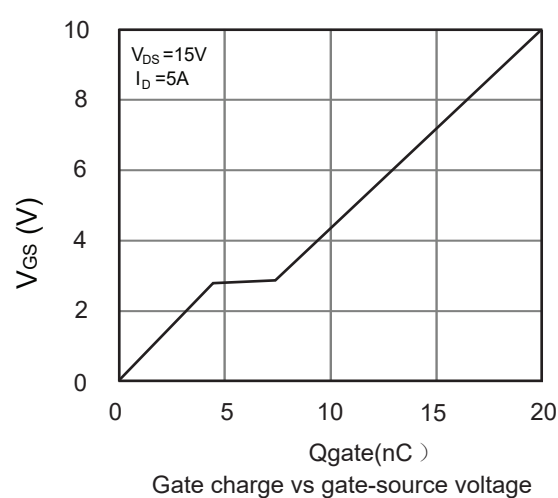
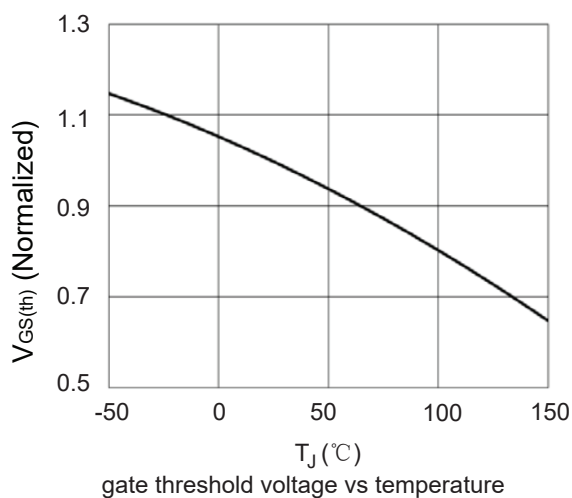
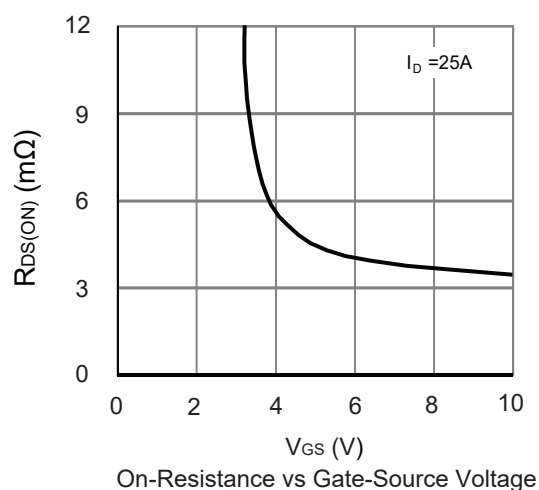
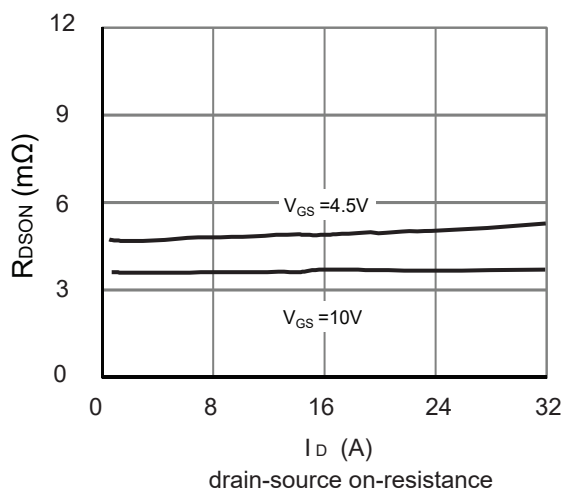
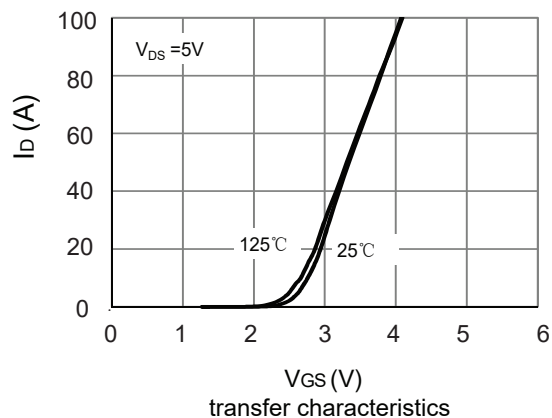
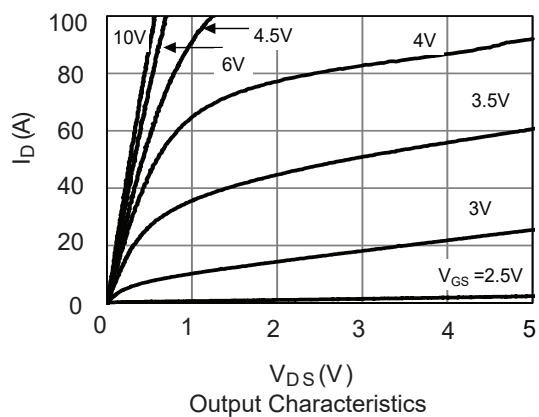
1.The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=30A$

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

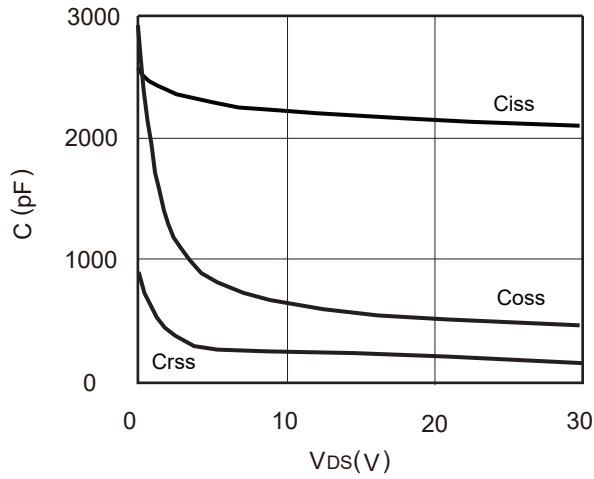
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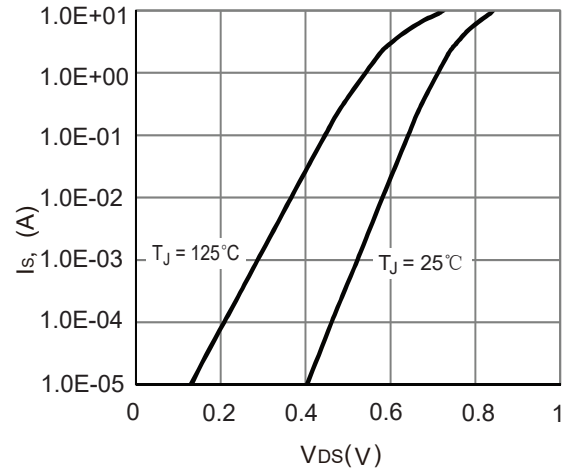
Typical Characteristics



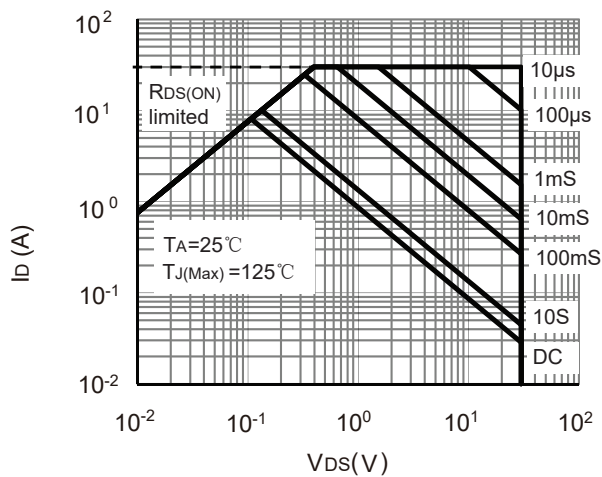
Typical Characteristics



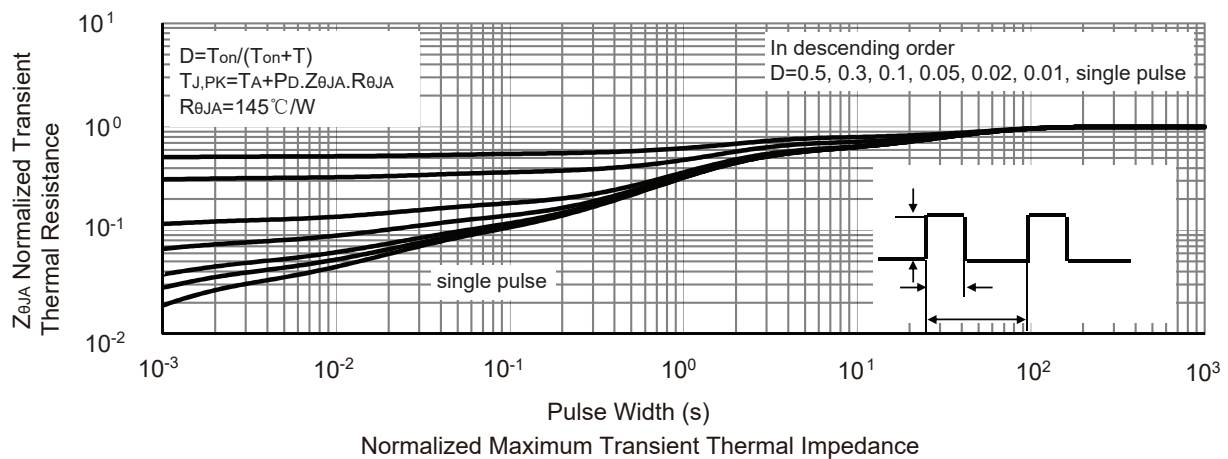
Capacitance Characteristics



Body-Diode Characteristics



Safe operating area



Normalized Maximum Transient Thermal Impedance