CMD55N12/CMU55N12

120V, 15.4mΩ typ., 55A N-Channel MOSFET

General Description

The 55N12 uses advanced trench technology and design to provide excellent RDS(ON). This device is ideal for PWM, load switching and general purpose applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
120V	18mΩ	55A

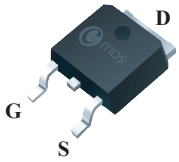
Applications

- Motor control and drive
- Uninterrupible Power Supplies

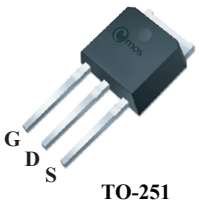
Features

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

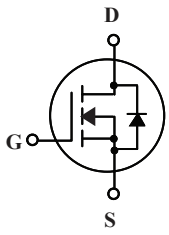
TO-252/251 Pin Configuration



TO-252
(CMD55N12)



TO-251
(CMU55N12)



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	120	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	55	A
I_D@T_C=100℃	Continuous Drain Current	34	A
I_{DM}	Pulsed Drain Current	220	A
EAS	Single Pulse Avalanche Energy[1]	420	mJ
P_D@T_C=25℃	Total Power Dissipation	126	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 (min. footprint)	---	73	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	0.99	℃/W

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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	120	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=28A	---	15.4	18	mΩ
		V_{GS}=4.5V , I_D=20A	---	18	20	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}= 120V , V_{GS}=0V , T_J=25℃	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V, I_D=20A	---	29	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.1	---	Ω
Q_g	Total Gate Charge [3]	V_{DS}=96V , V_{GS}=10V, I_D=30A	---	67	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	26	---	
$T_{d(on)}$	Turn-On Delay Time [3]	V_{DS}=60V , V_{GS}=10V , I_D=30A R_G =2.7Ω	---	12	---	ns
T_r	Rise Time		---	42	---	
$T_{d(off)}$	Turn-Off Delay Time		---	37	---	
T_f	Fall Time		---	81	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	2900	---	pF
C_{oss}	Output Capacitance		---	300	---	
C_{rss}	Reverse Transfer Capacitance		---	175	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_{GS} =V_{DS} =0V , Force Current	---	---	55	A
I_{SM}	Pulsed Source Current		---	---	220	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_{SD}=28A , T_j =25℃	---	0.84	1.3	V
t_{rr}	Reverse Recovery Time	I_F =30A , d_I/d_t=100A/μs	---	41	---	ns
Q_{rr}	Reverse Recovery Charge		---	69	---	nC

Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=50V , V_{GS}=10V , L=1mH , I_{AS} =29A.

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.

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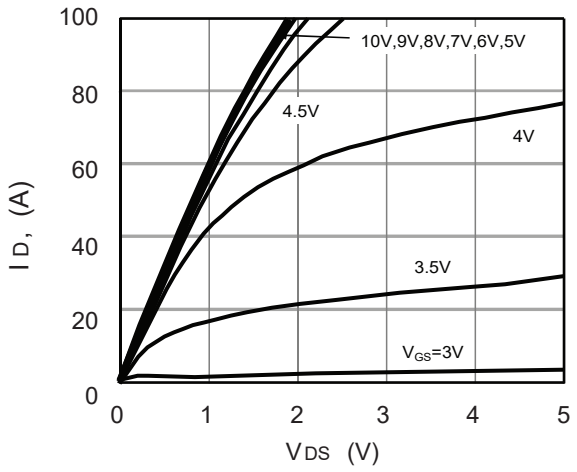
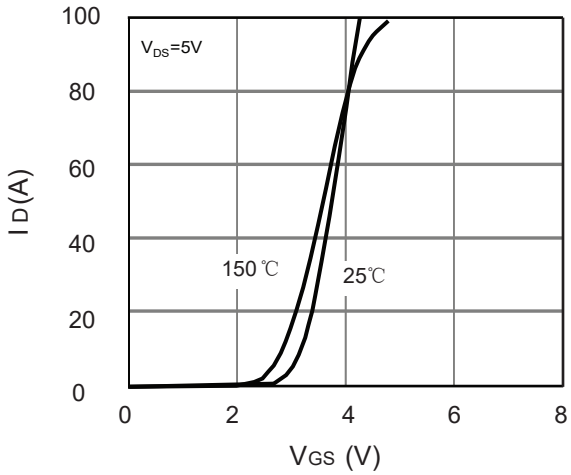
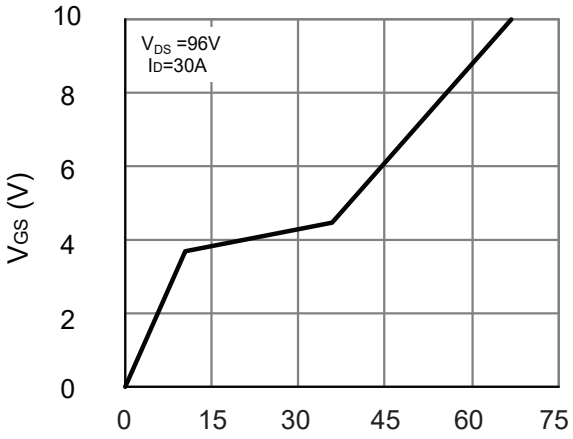
Typical Characteristics



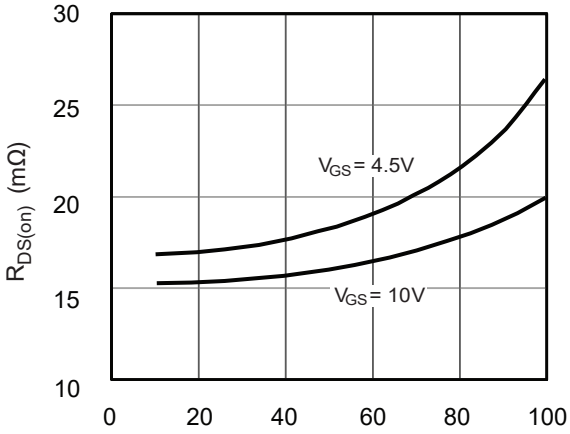
Output Characteristics



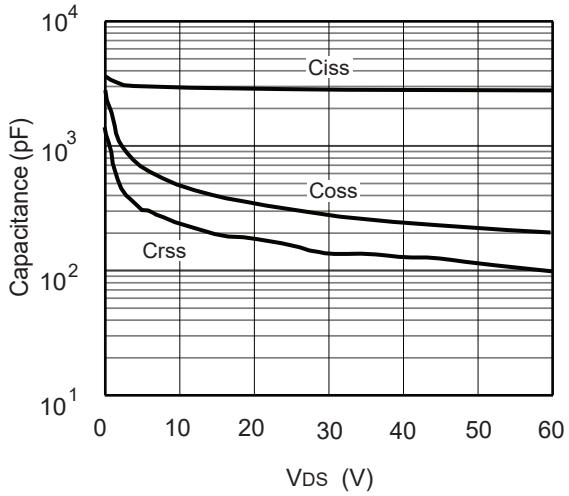
Transfer characteristics



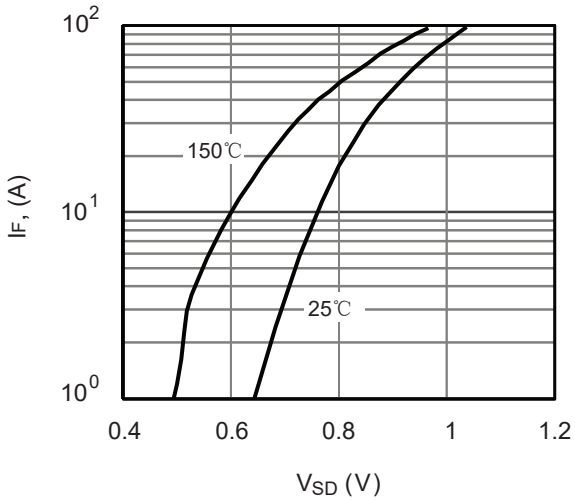
Gate charge vs gate-source voltage



On-Resistance vs. Drain Current



Typ.Characteristics



Source-Drain Diode Forward Voltage