

CMSL025N12

120V, 2.3mΩ typ., 240A N-Channel MOSFET

General Description

The CMSL025N12 uses advanced SGT technology to provide excellent RDS(ON).It can be used in a wide variety of applications.

Features

- Low On-Resistance
- 100% avalanche tested
- Surface Mount Package
- RoHS Compliant

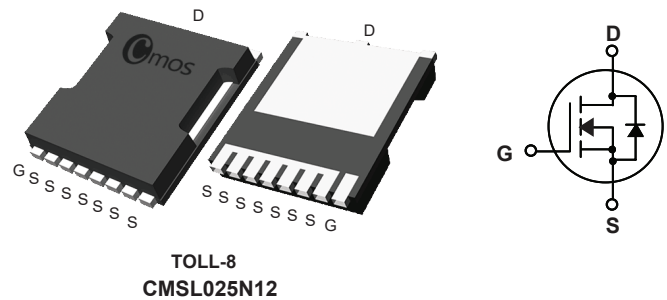
Product Summary

BVDSS	R _{DS(on)} max.	ID
120V	2.6mΩ	240A

Applications

- Load Switch
- Battery Protection
- UPS and Energy Inverters

TOLL-8 Pin Configuration



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°C	Continuous Drain Current	240	A
I _D @T _C =100°C	Continuous Drain Current	168	A
I _{DM}	Pulsed Drain Current	960	A
EAS	Single Pulse Avalanche Energy ¹	3610	mJ
P _D @T _C =25°C	Total Power Dissipation	400	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(min. footprint)	---	50	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.31	°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	120	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =90A	---	2.3	2.6	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	---	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =120V , V _{GS} =0V	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =20A	---	80	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.7	---	Ω
Q _g	Total Gate Charge	I _D =90A	---	149	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =60V	---	61	---	
Q _{gd}	Gate-Drain Charge	V _{GS} = 10V	---	29	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =60V V _{GS} = 10V R _{G_ext} = 2.7Ω	---	45	---	ns
T _r	Rise Time		---	85	---	
T _{d(off)}	Turn-Off Delay Time		---	97	---	
T _f	Fall Time		---	47.5	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	10000	---	pF
C _{oss}	Output Capacitance		---	3600	---	
C _{rss}	Reverse Transfer Capacitance		---	440	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	240	A
I _{SM}	Pulsed Source Current		---	---	960	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =90A	---	0.83	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V , I _S =90A	---	90.2	---	ns
Q _{rr}	Reverse Recovery Charge	di/dt =100A/μs	---	276	---	nC

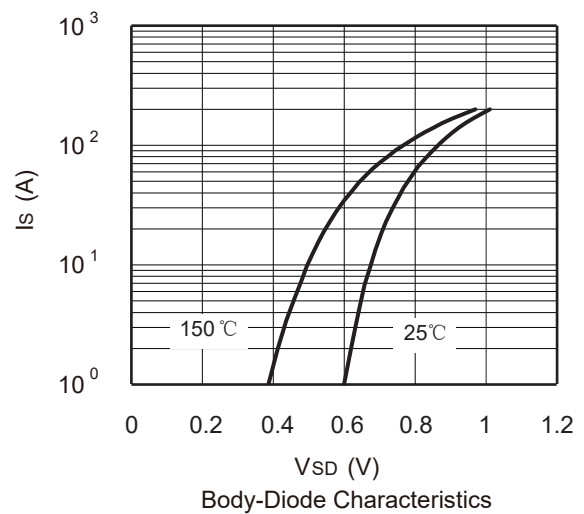
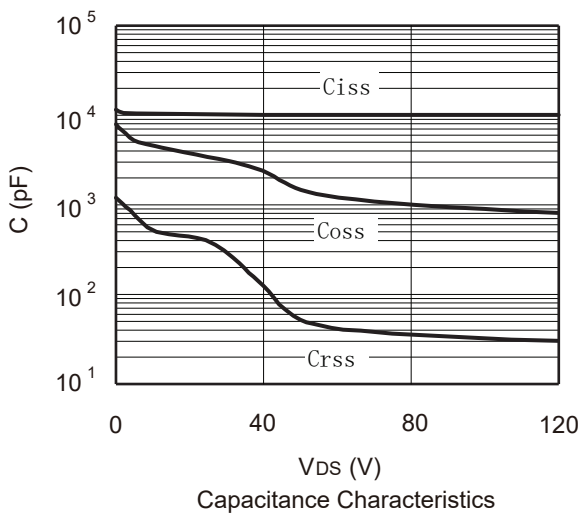
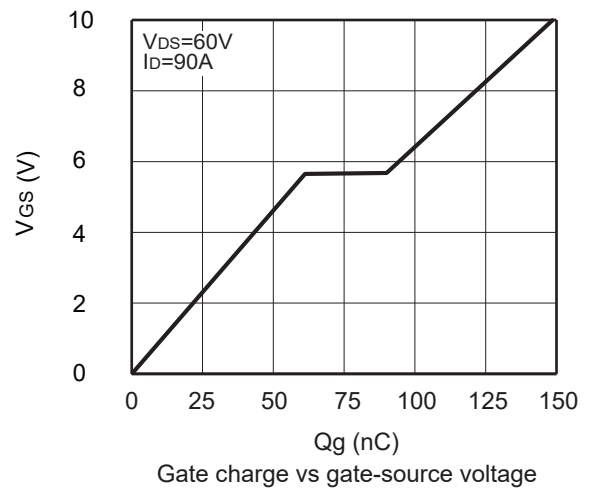
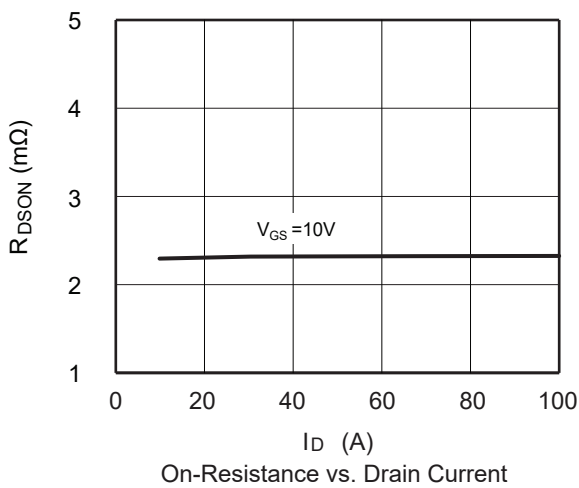
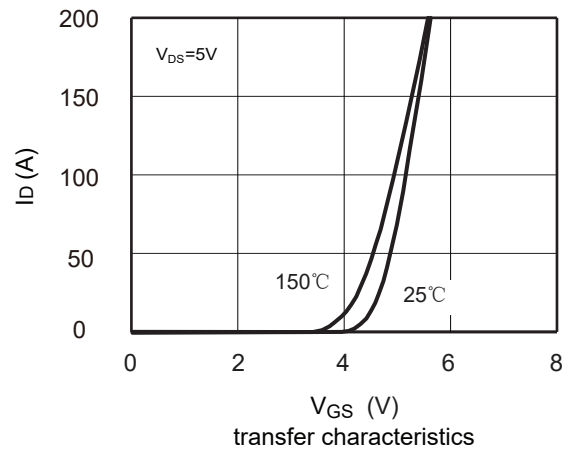
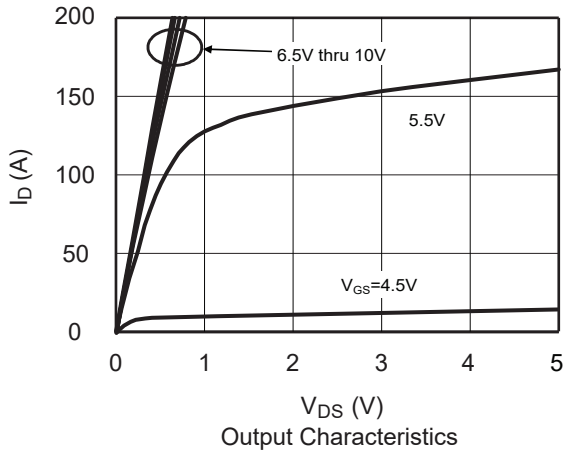
Note :

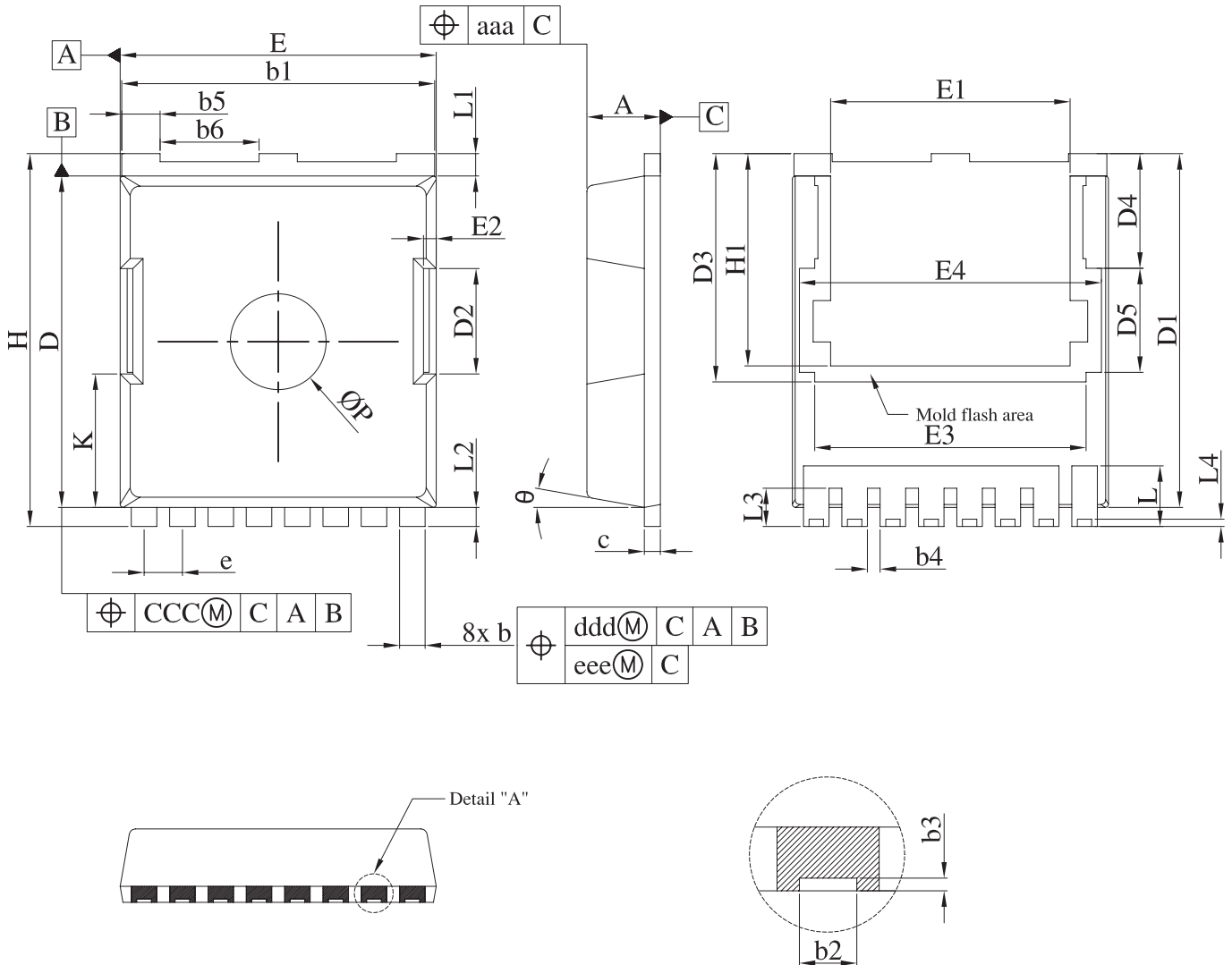
1.The EAS data shows Max. rating . The test condition is V_{DD}=80V , V_{GS}=10V , L=5mH , I_{AS}=38A.

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


Package Dimension
TOLL-8
Unit :mm


SYMBOL		A	b	b1	b2	b3	b4	b5	b6	c	D	D1	D2	D3	D4	D5	e	E	E1
MILLIMETER	MIN.	2.2	0.7	9.7	0.36	0.05	0.3	1.1	3	0.4	10.28	10.98	3.2	7.15	3.59	3.26	1.1	9.8	7.4
	TYP.	2.3	0.8	9.8	0.45	0.1	0.4	1.2	3.1	0.5	10.38	11.08	3.3				1.2	9.9	7.5
	MAX.	2.4	0.9	9.9	0.55	/	0.5	1.3	3.2	0.6	10.55	11.18	3.4				1.3	10	7.6
SYMBOL		E2	E3	E4	H	H1	K	L	L1	L2	L3	L4	P	θ	aaa	ccc	ddd	eee	
MILLIMETER	MIN.	0.3	8.5	9.46	11.5	6.55	4.08	1.6	0.5	0.5	1	0.13	2.85	10° REF	0.2	0.2	0.25	0.2	
	TYP.	0.4			11.68	6.65	4.18	1.9	0.7	0.6	1.2	0.23	3						
	MAX.	0.5			11.85	6.75	4.28	2.1	0.9	0.7	1.3	0.33	3.15						