

CMSL107N20

200V, 7.9mΩ typ., 120A N-Channel MOSFET

General Description

The CMSL107N20 uses advanced SGT technology to provide excellent RDS(ON). This device is well suited for high efficiency fast switching applications.

Features

- Low On-Resistance
- 100% avalanche tested
- Low Gate Charge
- RoHS Compliant

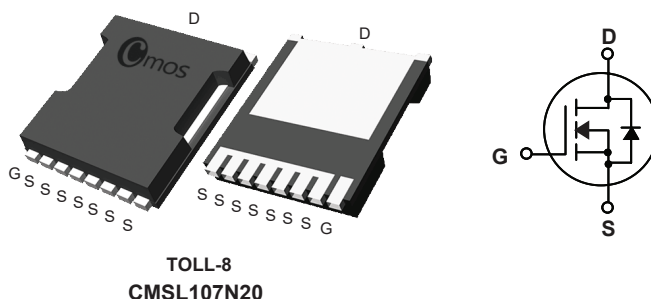
Product Summary

BVDSS	R _{DS(on)} max.	ID
200V	9mΩ	120A

Applications

- DC/DC and AC/DC converters
- Battery powered systems
- Brushed and BLDC Motor drive systems

TOLL-8L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	200	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	120	A
I _D @T _C =100°C	Continuous Drain Current	84	A
I _{DM}	Pulsed Drain Current	480	A
EAS	Single Pulse Avalanche Energy (Note 1)	3251	mJ
P _D @T _C =25°C	Total Power Dissipation	375	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient (min. footprint)	---	45	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.33	°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	$V_{GS}=0V$, $I_D=250\mu A$	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=50A$	---	7.9	9	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=200V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=20A$	---	62	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	3.3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=100V$, $I_D=60A$ $V_{GS}=10V$	---	74	---	nC
Q_{gs}	Gate-Source Charge		---	30	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=100V$, $V_{GS}=10V$, $I_D=50A$ $R_G=2.7\Omega$	---	35	---	ns
T_r	Rise Time		---	111	---	
$T_{d(off)}$	Turn-Off Delay Time		---	84	---	
T_f	Fall Time		---	112	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	5450	---	pF
C_{oss}	Output Capacitance		---	3300	---	
C_{rss}	Reverse Transfer Capacitance		---	200	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V$, Force Current	---	---	120	A
$I_{S,pulse}$	Diode pulse current		---	---	480	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=50A$, $T_J=25^{\circ}\text{C}$	---	0.81	1.4	V

Note :

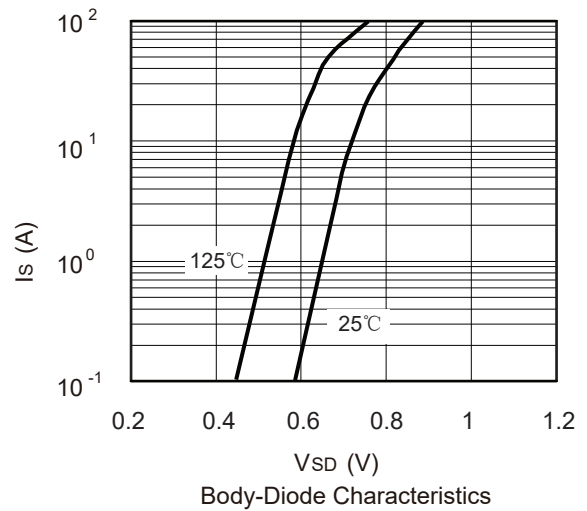
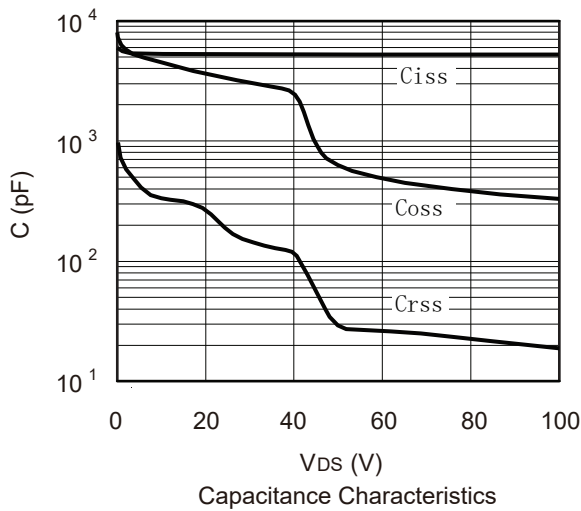
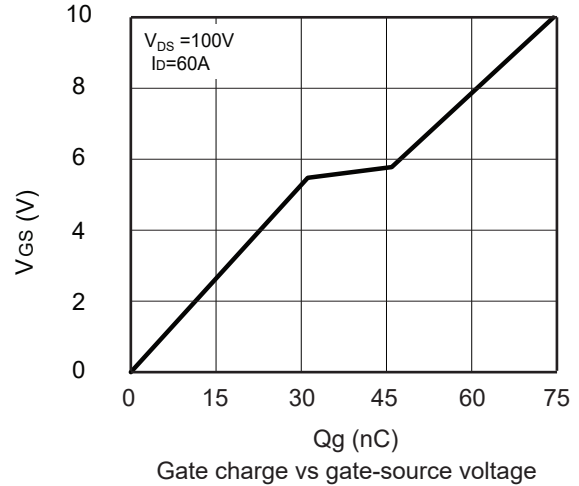
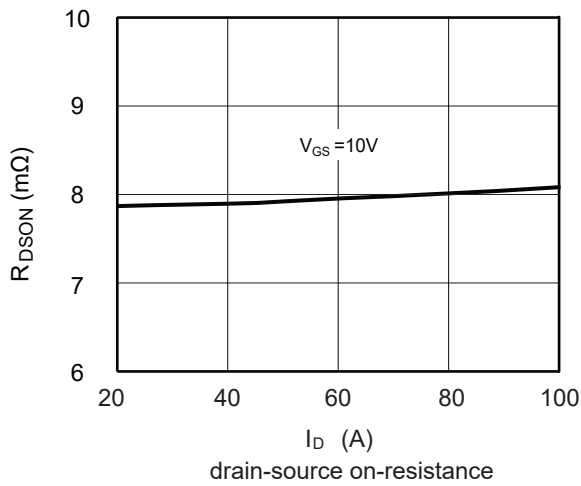
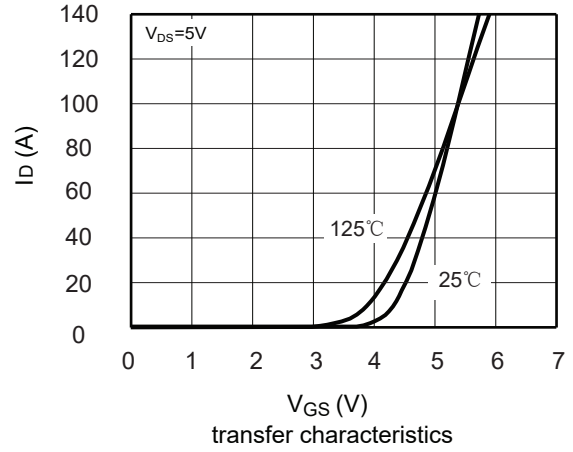
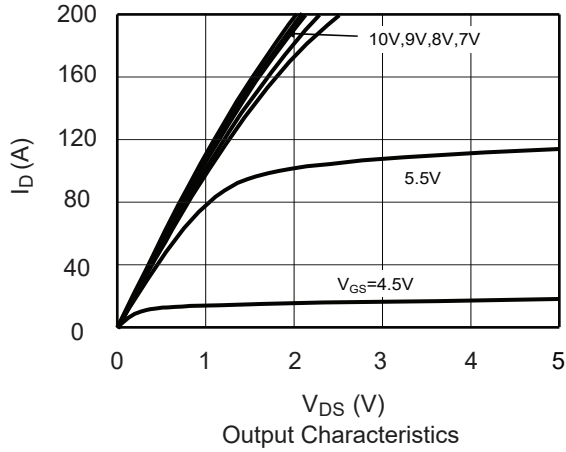
1.The EAS data shows Max. rating .The test condition is $V_{DS}=80V$, $V_{GS}=10V$, $L=10\text{mH}$, $I_{AS}=25.5A$.

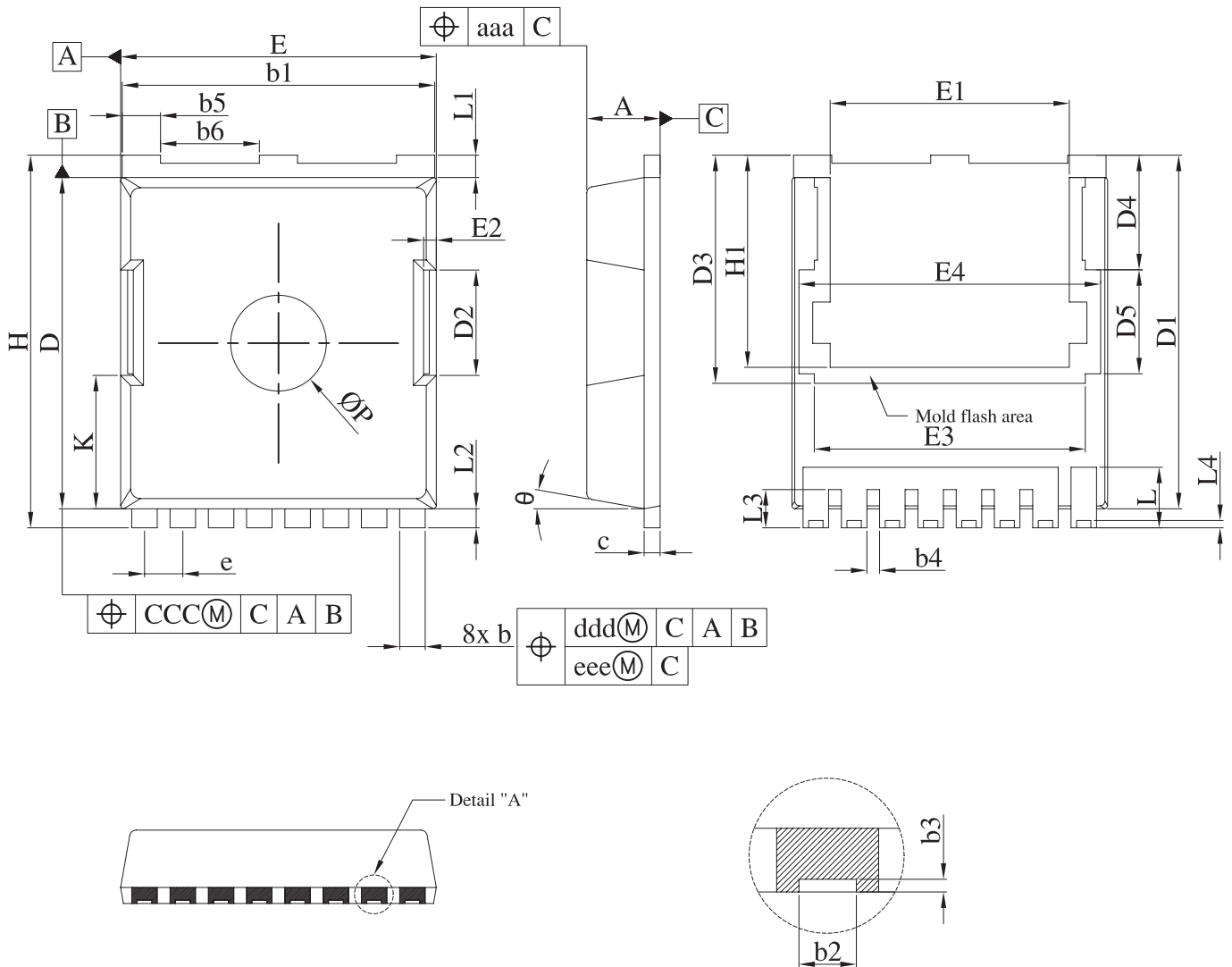
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Cmos reserves the right to improve product design ,functions and reliability without notice.

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						