

150V, 3.9mΩ typ., 250A N-Channel MOSFET

General Description

The CMSL044N15 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

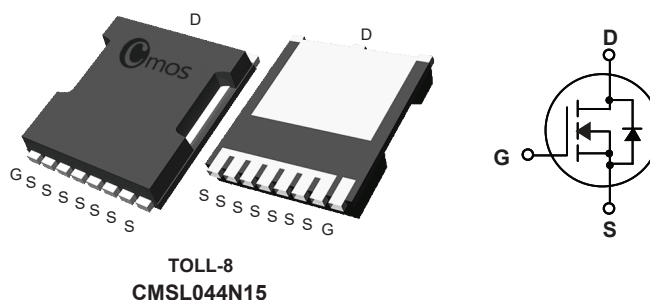
Product Summary

BVDSS	R _{DS(on)} max.	ID
150V	4.4mΩ	250A

Applications

- Motor
- BMS
- Load switch

TOLL-8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	150	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	250	A
I _D @T _C =100°C	Continuous Drain Current	175	A
I _{DM}	Pulsed Drain Current	1000	A
EAS	Single Pulse Avalanche Energy ¹	4351	mJ
P _D @T _C =25°C	Total Power Dissipation	600	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	---	62	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.21	°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	150	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =90A	---	3.9	4.4	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	2.0	---	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =150V , 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	---	65	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	3.7	---	Ω
Q _g	Total Gate Charge	V _{DS} =75V , I _D =90A V _{GS} =10V (Note 2)	---	76	---	nC
Q _{gs}	Gate-Source Charge		---	30	---	
Q _{gd}	Gate-Drain Charge		---	17	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =75V , V _{GS} =10V R _{G_ext} =2.7Ω (Note 2)	---	22	---	ns
T _r	Rise Time		---	60	---	
T _{d(off)}	Turn-Off Delay Time		---	59	---	
T _f	Fall Time		---	28	---	
C _{iss}	Input Capacitance	V _{DS} =100V , V _{GS} =0V , f=1MHz	---	5150	---	pF
C _{oss}	Output Capacitance		---	620	---	
C _{rss}	Reverse Transfer Capacitance		---	30	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	250	A
I _{SM}	Pulsed Source Current		---	---	1000	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =90A , T _J =25°C	---	0.83	1.4	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	99.6	---	ns
Q _{rr}	Reverse Recovery Charge	T _J = 25°C , I _F =90A (Note 2)	---	323	---	nC

Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=100V , V_{GS}=10V , L=10mH , I_{AS}=29.5A.

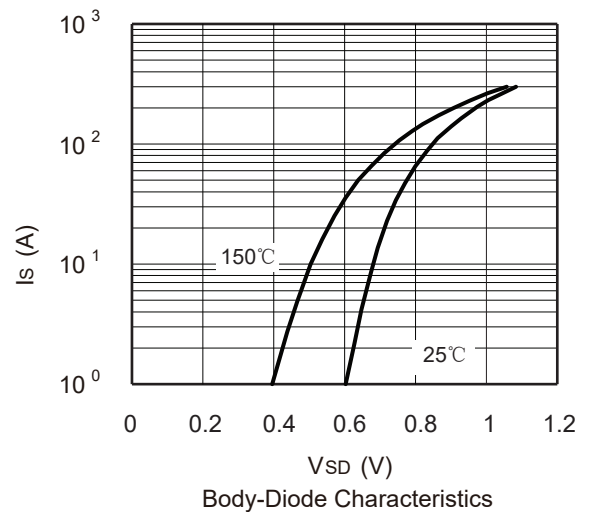
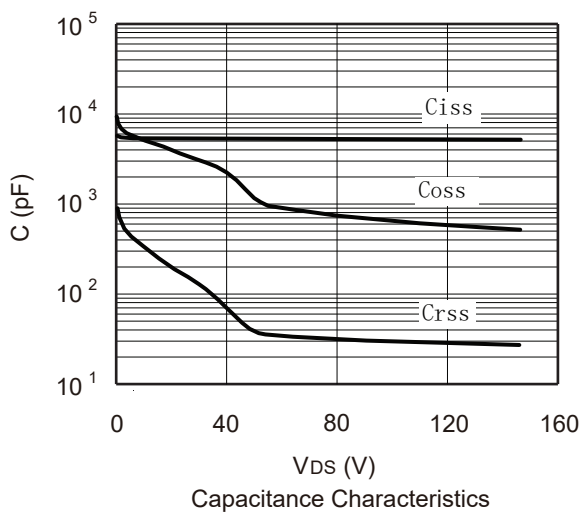
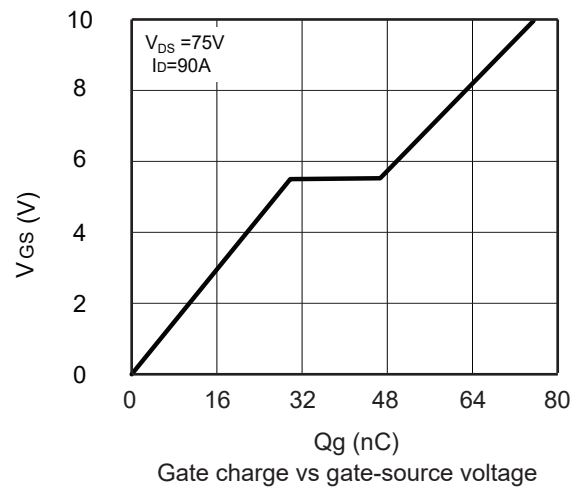
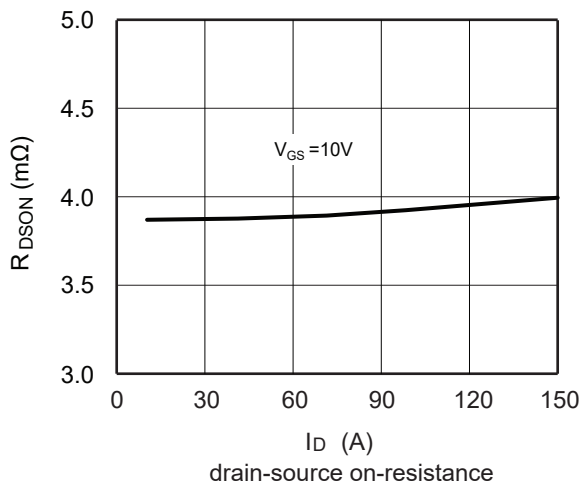
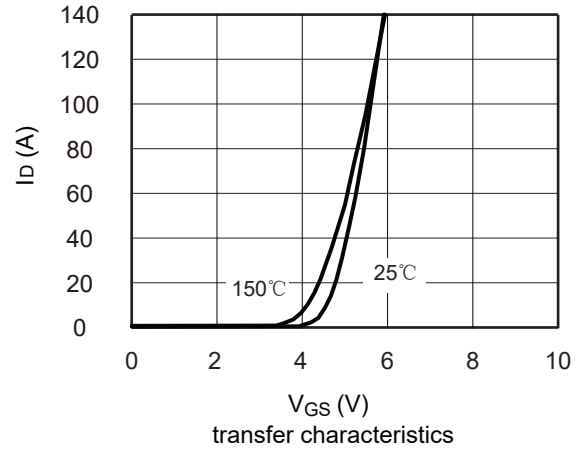
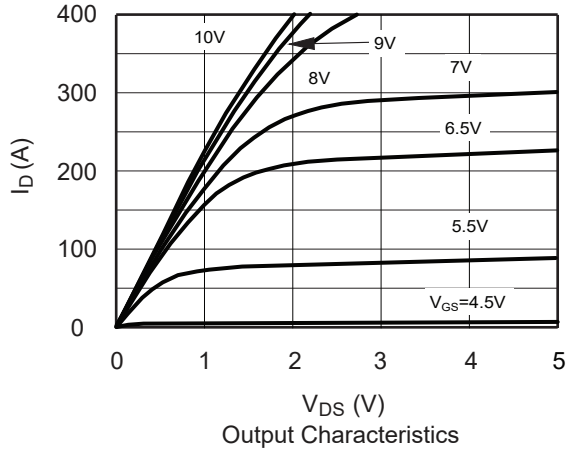
2. Defined by design, not subject to production.

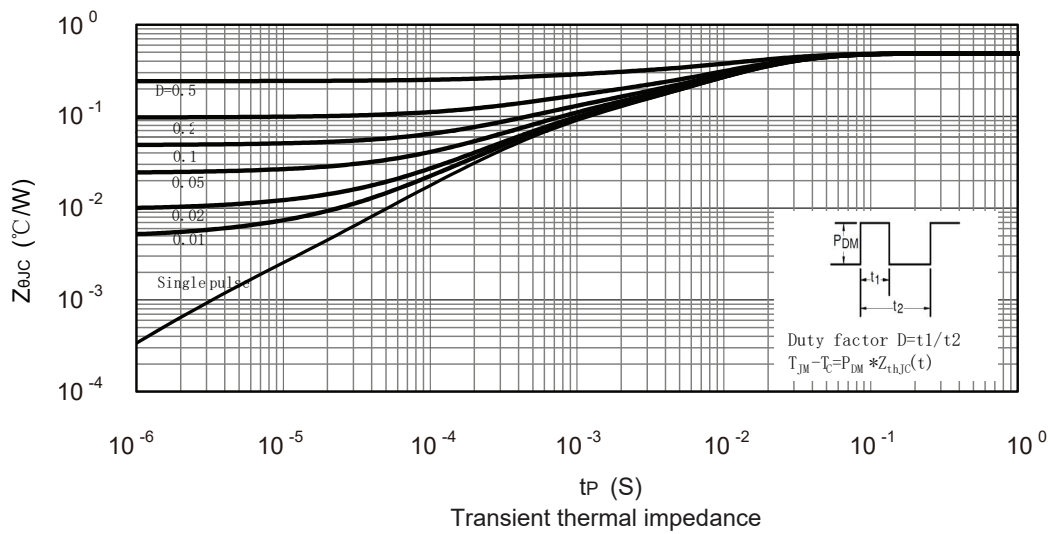
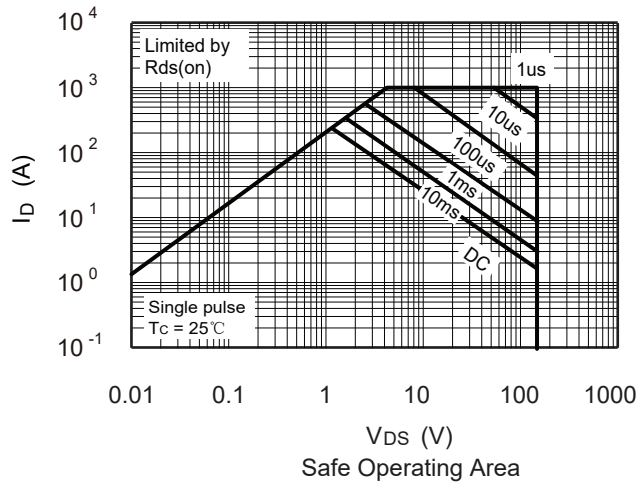
This product has been designed and qualified for the consumer market.

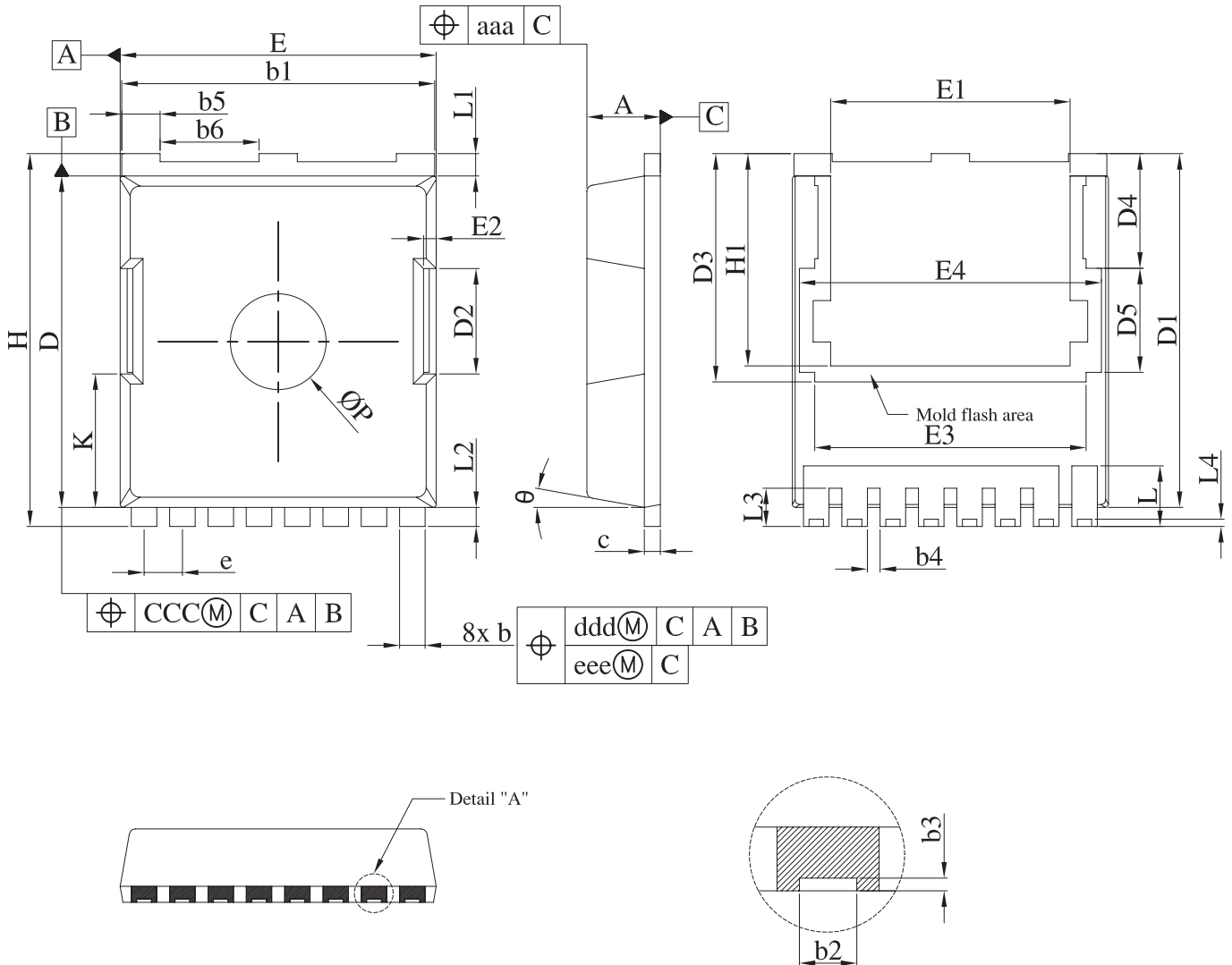
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Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

Typical Characteristics



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						