CMB011N04L-7

40V, 1mΩ typ., 200A N-Channel MOSFET

General Description

The CMB011N04L-7 uses advanced SGT technology to provide excellent RDS(ON).These devices are well suited for high current switching applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
40V	1.2mΩ	200A

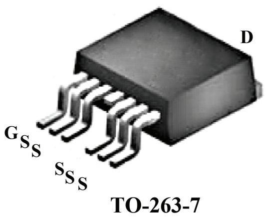
Applications

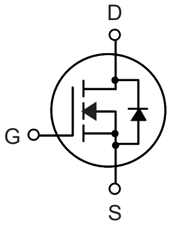
- DC Motor Drive
- Uninterruptible Power Supply
- High Speed Power Switching

Features

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

TO-263-7 Pin Configuration





Type	Package	Marking
CMB011N04L-7	TO-263-7	CMB011N04L-7

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	200	A
I_D@T_C=100℃	Continuous Drain Current	140	A
I_{DM}	Pulsed Drain Current	800	A
EAS	Single Pulse Avalanche Energy[1]	1326	mJ
P_D@T_C=25℃	Total Power Dissipation	300	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	---	33	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.42	℃/W

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	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=100A	---	1	1.2	mΩ
		V_{GS}=4.5V , I_D=40A	---	1.2	1.6	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	---	2.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=32V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	58	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.9	---	Ω
Q_g	Total Gate Charge	I_D=180A V_{DD}=32V V_{GS}=0 to 10V (Note 2)	---	188	---	nC
Q_{gs}	Gate-Source Charge		---	42	---	
Q_{gd}	Gate-Drain Charge		---	11	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD} =20V V_{GS} =10V R_G =3.5Ω I_D =180A (Note 2)	---	20	---	ns
T_r	Rise Time		---	21	---	
$T_{d(off)}$	Turn-Off Delay Time		---	90	---	
T_f	Fall Time		---	80	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	7300	---	pF
C_{oss}	Output Capacitance		---	1500	---	
C_{rss}	Reverse Transfer Capacitance		---	250	---	

Diode Characteristics

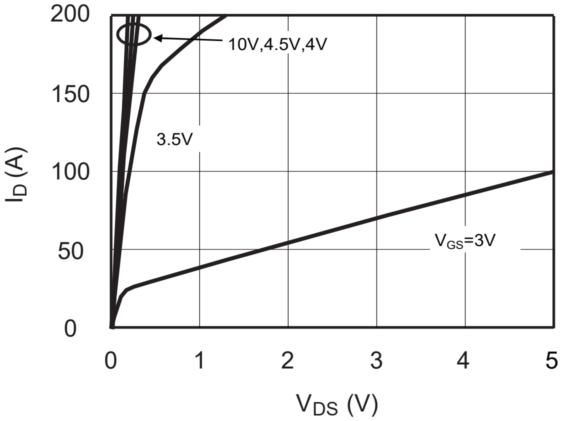
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	200	A
I_{SM}	Pulsed Source Current		---	---	800	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=60A ,T_J=25℃	---	0.82	1.3	V

Note :

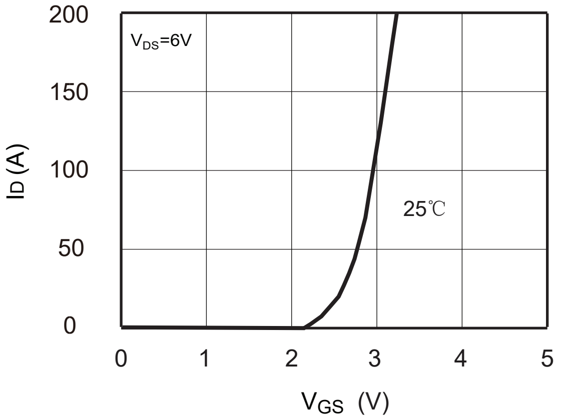
1.The EAS data shows Max. rating . The test condition is V_{DD}=40V , V_{GS}=10V , L=1mH , I_{AS}=51.5A.

2.Defined by design. Not subject to production test.

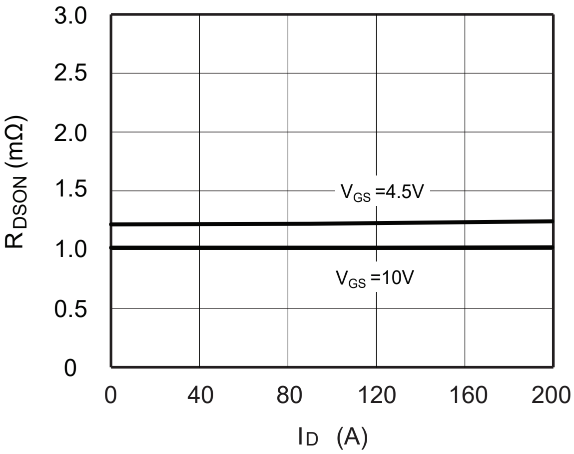
Typical Characteristics



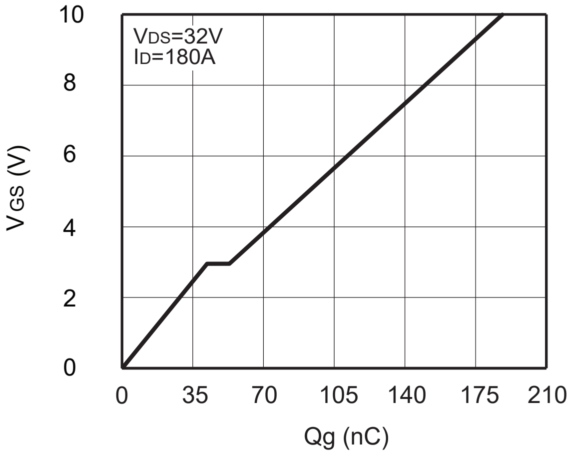
Output Characteristics



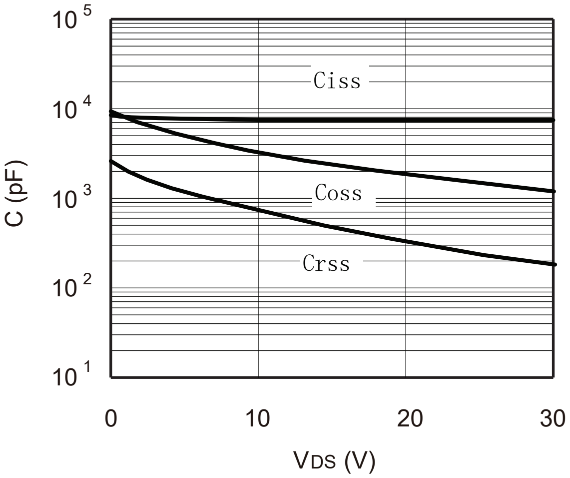
transfer characteristics



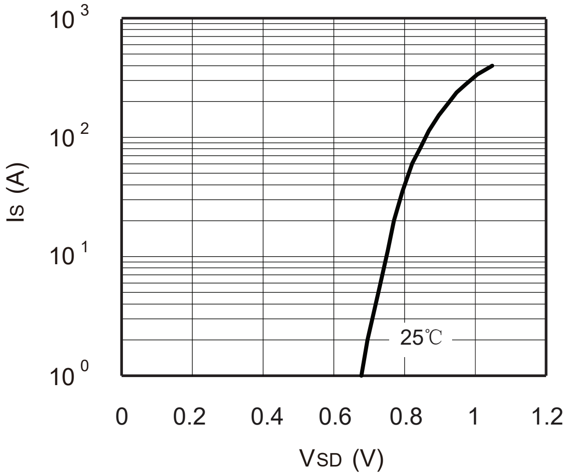
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



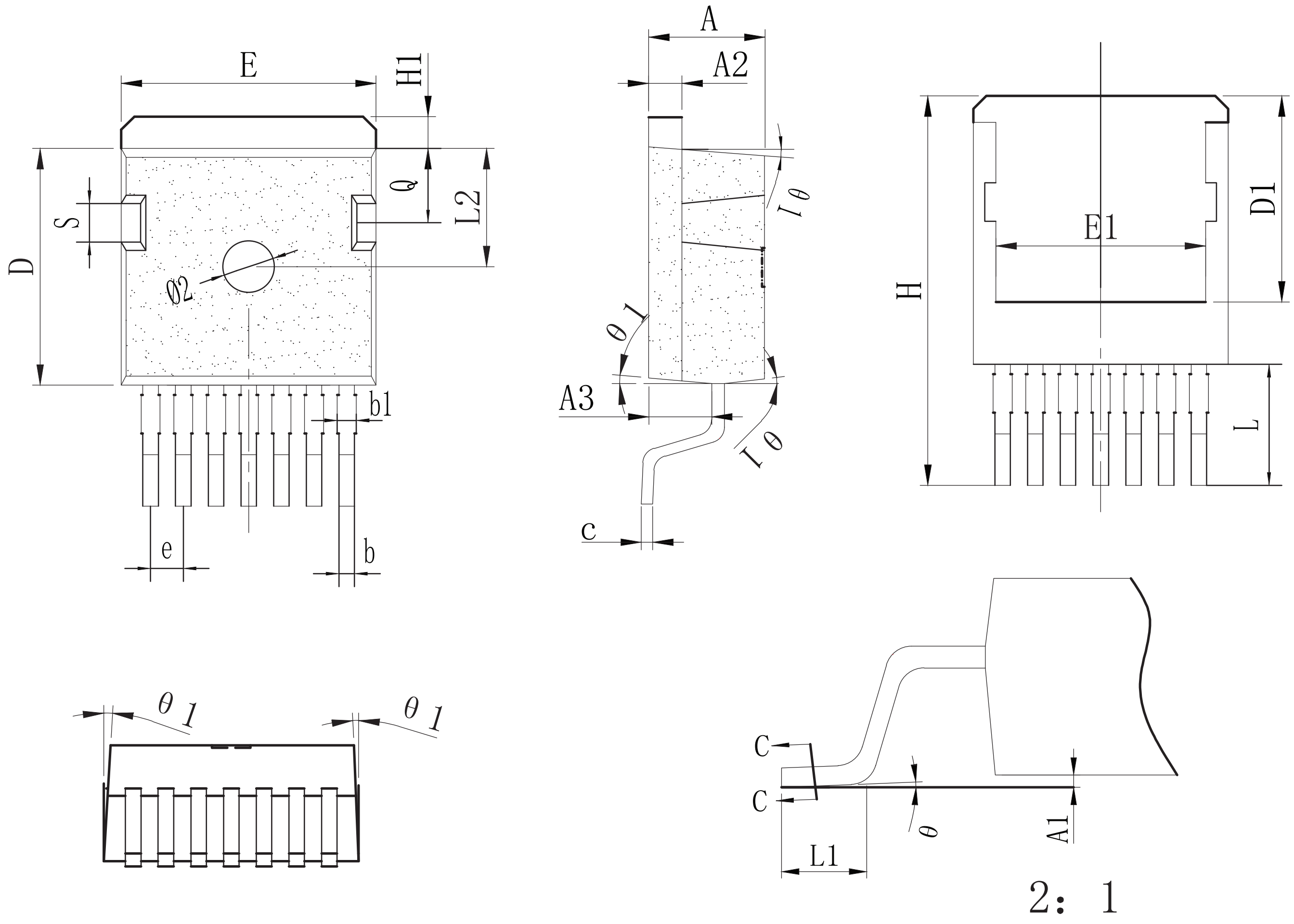
Capacitance Characteristics



Body-Diode Characteristics

Package Dimension

TO-263-7 Unit :mm



SYMBOL	mm			SYMBOL	mm		
	MIN	NOM	MAX		MIN	NOM	MAX
✻A	4.30	4.40	4.50	E1	8.20	8.40	8.60
✻A1	0.00	0.10	0.20	✻e	1.25	1.27	1.29
✻A2	1.22	1.27	1.32	✻H	14.85	15.00	15.15
✻A3	2.30	2.40	2.50	H1	1.10	1.20	1.30
✻b	0.50	0.60	0.70	✻L	4.50	4.70	4.90
✻b1	-	-	0.63	L1	1.70	2.00	2.30
✻c	0.45	0.50	0.55	L2	4.55	4.65	4.75
✻D	9.15	9.30	9.45	S	1.40	1.50	1.60
D1	规格A: 8.00REF			Q	2.80	2.90	3.00
	规格B: 5.70REF			✻θ	0°	2.5°	8°
✻E	10.12	10.16	10.20	θ1	5°	7°	9°