preliminary

CMA015N06NH-TL

60V N-Channel Power MOSFET

Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

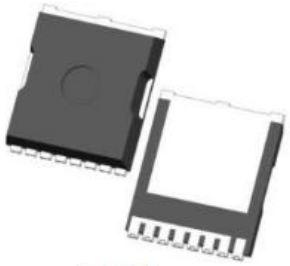
Applications

- DC-DC Converters
- Power management functions
- Synchronous-rectification applications
- UPS

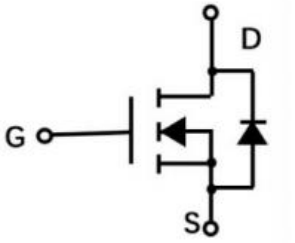
Product Summary

Item	Typical Value	Unit
V_{DS}	60	V
$R_{DS(on)}$ @ V_{GS} =10V (Max)	1.5	mΩ
I_D	300	A

Pin Description



TOLL



Absolute Ratings (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Single Pulse UIS Capability, 0.5mH	E_{AS}	256	mJ
Continuous Drain Current, T_C = 25°C	I_D	300	A
Maximum Power Dissipation, T_C = 25°C	P_D	290	W
Junction Temperature Maximum	T_{JMAX}	150	°C
Storage Temperature	$T_{Storage}$	-55 to 150	°C

Absolute Ratings

Parameter	Symbol	Value (max.)	Units
Thermal Resistance Junction-Ambient (min. footprint)	$R_{\theta JA}$	20	°C/W

Electrical Characteristics

Static (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250uA	60	---	---	V
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	---	---	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V,T_J=25℃	---	---	1	uA
		V_{DS} = 60V, V_{GS} = 0V,T_J=100℃	---	---	100	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	---	---	1.5	mΩ
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	2	---	4	V
Dynamic (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 30V, f = 1MHz	---	5417	---	pF
Output Capacitance	C_{oss}		---	2594	---	
Reverse Transfer Capacitance	C_{rss}		---	129	---	
Total Gate Charge	Q_g	V_{DS} = 30V, I_D = 50A, V_{GS} = 10V	---	77	---	nC
Gate-Source Charge	Q_{gs}		---	27	---	
Gate-Drain Charge	Q_{gd}		---	10	---	
Turn-on delay time	$T_{d(on)}$	V_{DD} = 11.7V, I_D = 50A, V_{GS} = 10V, R_G = 2.5Ω,	---	25	---	ns
Rise time	T_r		---	20	---	
Turn-off delay time	$T_{d(off)}$		---	38	---	
Fall time	T_f		---	11	---	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_F = 50A	---	---	1.2	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_F = 8A, dI_F/dt=100A/us	---	88	---	ns
Reverse Recovery Charge	Q_{rr}		---	258	---	nC

Typical Characteristics

Fig 1: Output Characteristics

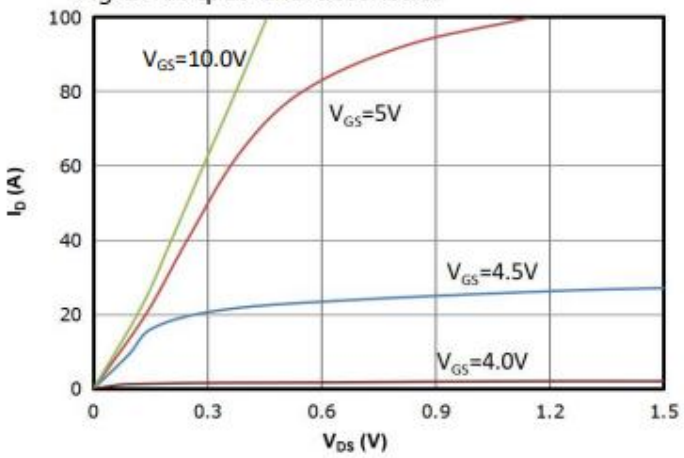


Fig 2: Transfer Characteristics

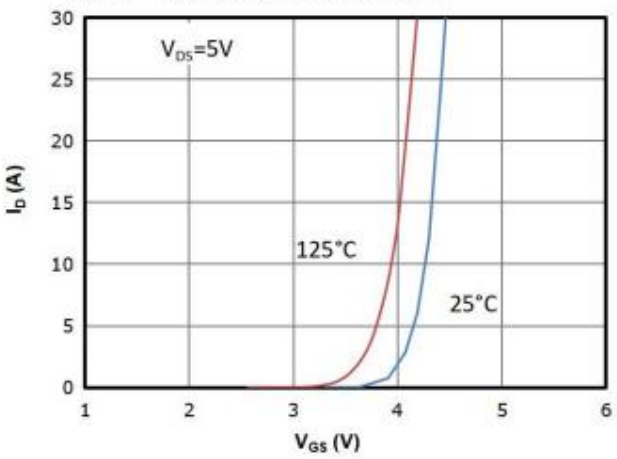


Fig 3: Rds(on) vs Drain Current and Gate Voltage

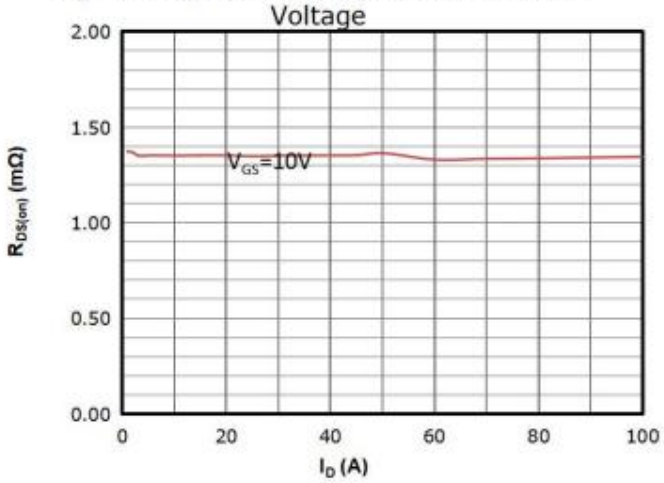


Fig 4: Rds(on) vs Gate Voltage

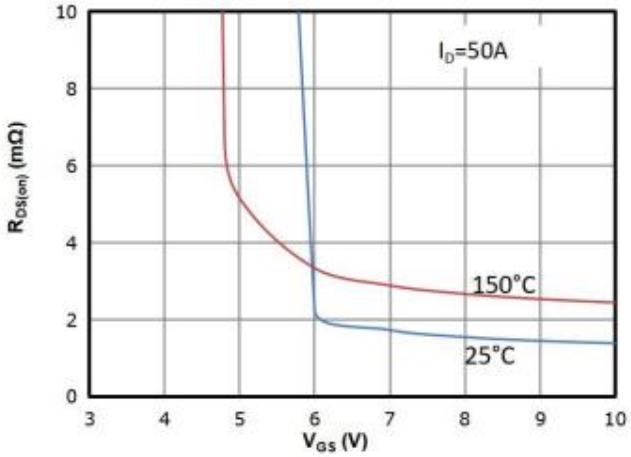


Fig 5: Rds(on) vs. Temperature

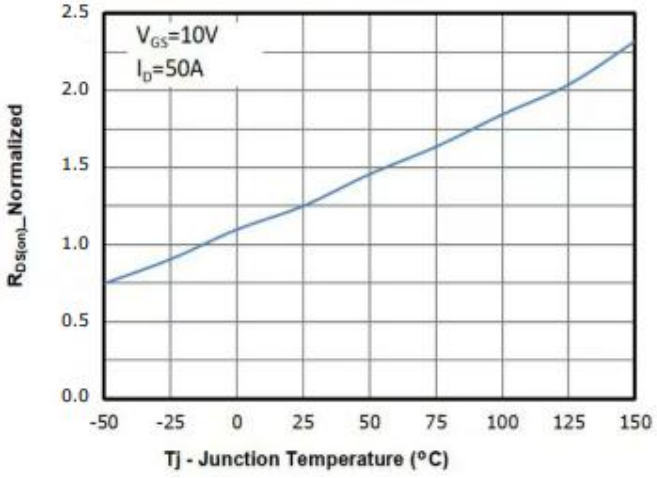


Fig 6: Vgs(th) vs. Temperature

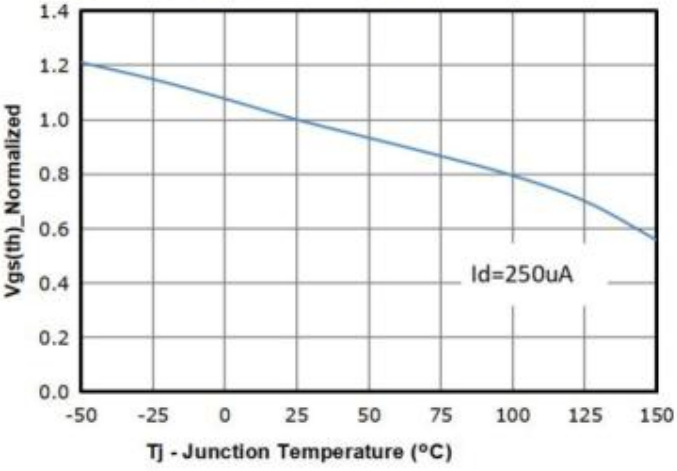


Fig 7: BVdss vs. Temperature

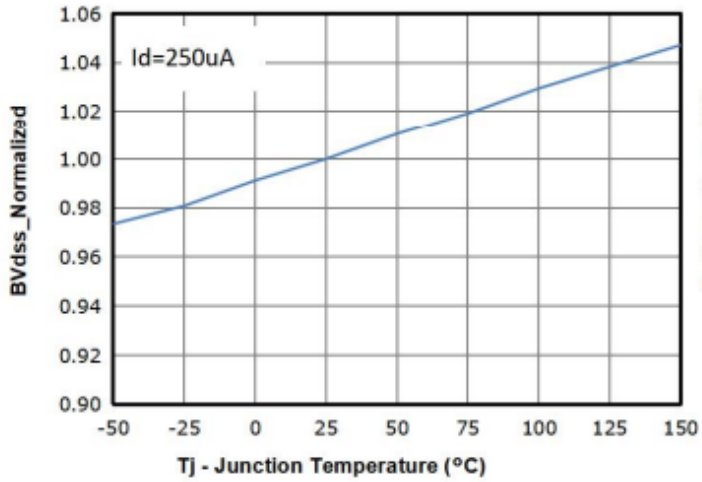


Fig 8: Capacitance Characteristics

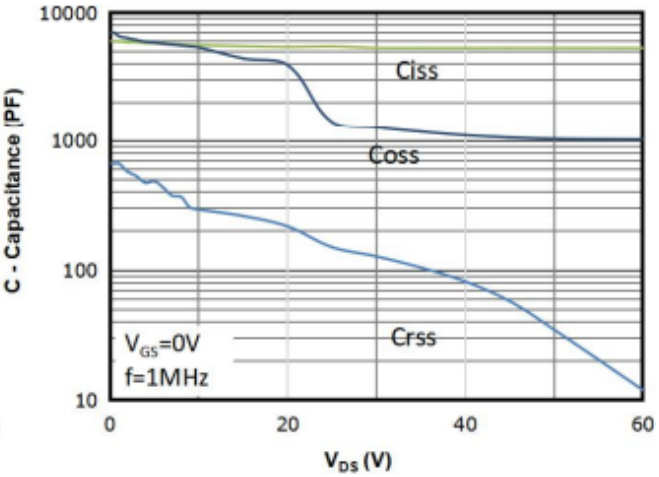


Fig 9: Gate ChargeCharacteristics

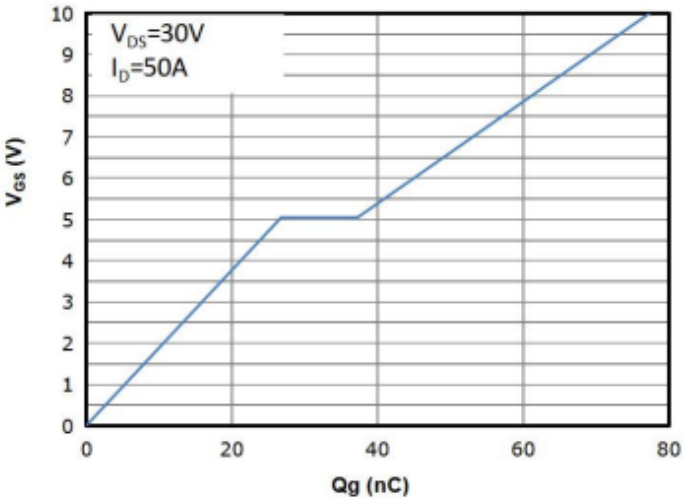


Fig 10: Body-diode Forward Characteristics

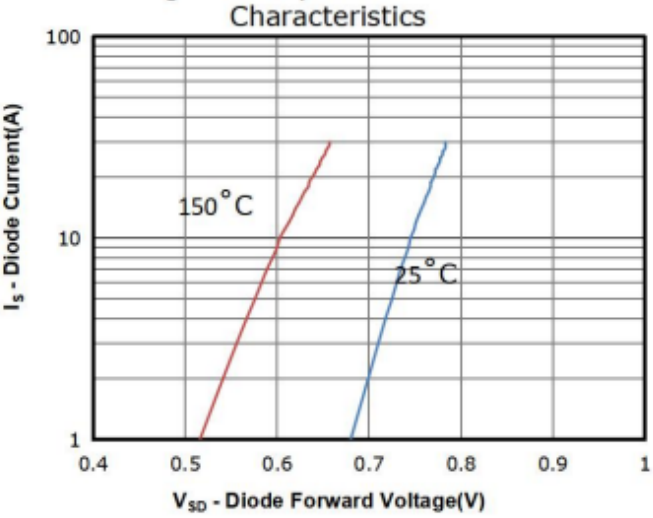


Fig 11: Power Dissipation

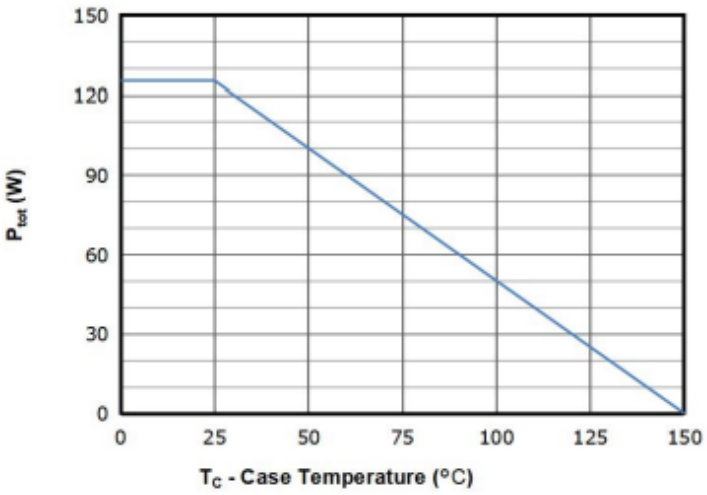


Fig 12: Drain Current Derating

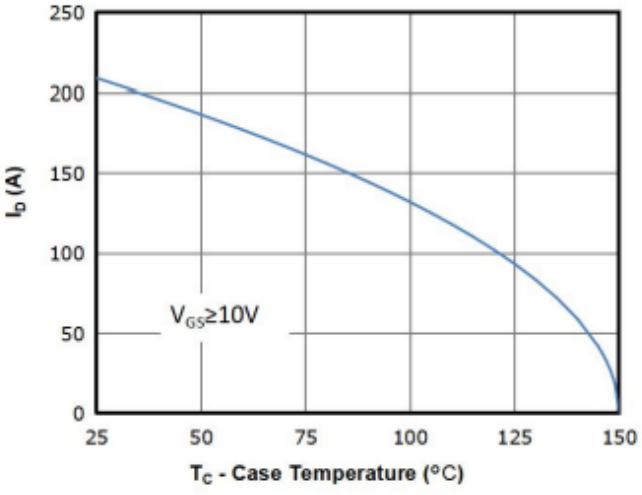


Fig 13: Safe Operating Area

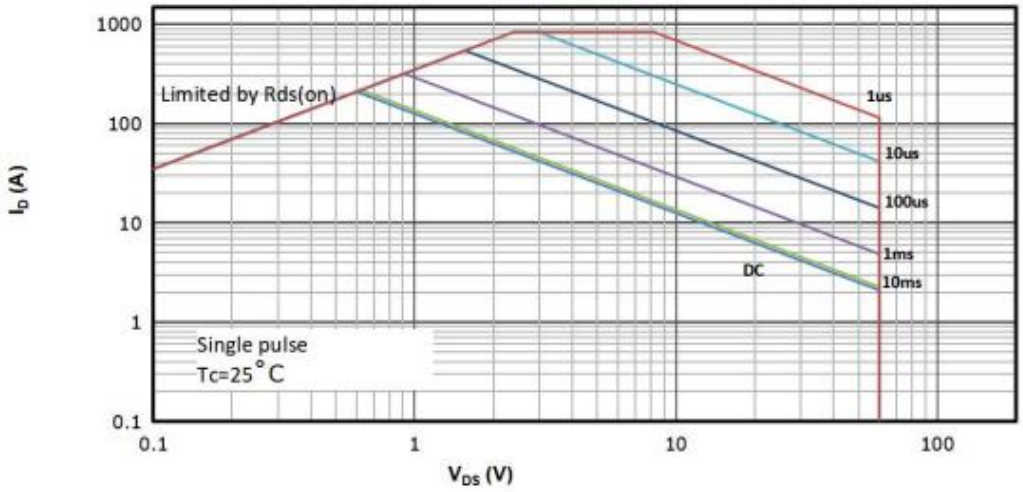
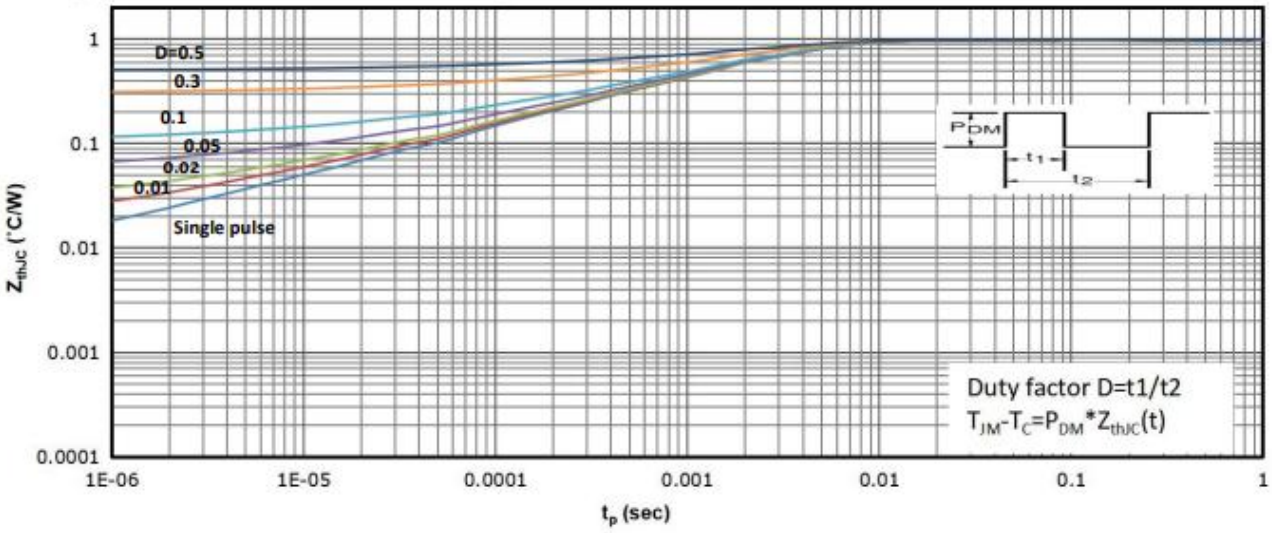


Fig 14: Max. Transient Thermal Impedance



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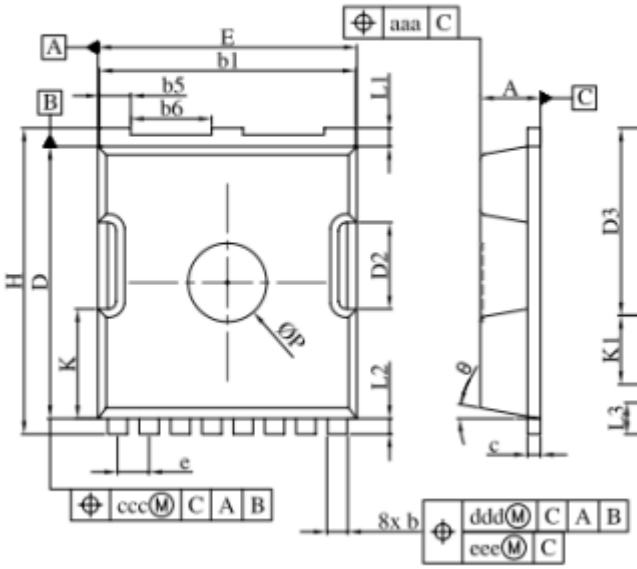

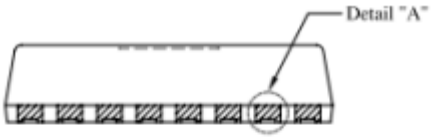

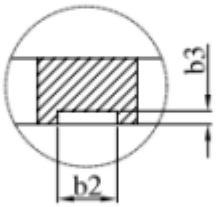

SYMBOL	COMMON MILLIMETER		
	MIN.	NOMINAL	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.36	0.45	0.55
b3	0.05	0.100	0.35
b4	0.30	0.40	0.50
b5	1.10	1.20	1.30
b6	3.00	3.10	3.20
c	0.40	0.50	0.60
D	10.28	10.38	10.55
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D3	7.00	7.15	7.30
D4	3.44	3.59	3.74
e	1.10	1.20	1.30
E	9.80	9.90	10.00
E1	8.20	8.30	8.40
E2	8.35	8.50	8.65
H	11.50	11.68	11.85
K	4.08	4.18	4.28
K1	2.45	---	---
L	1.60	1.90	2.10
L1	0.50	0.70	0.90
L2	0.50	0.60	0.70
L3	1.00	1.20	1.30
L4	0.13	0.23	0.33
P	2.85	3.00	3.15
θ	10° REF		
aaa	0.20		
ccc	0.20		
ddd	0.25		
eee	0.20		