preliminary

CMA020N10NH-TL

100V N-Channel Power MOSFET

Features

- High Speed Power Switching
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- Lead Free, Halogen Free

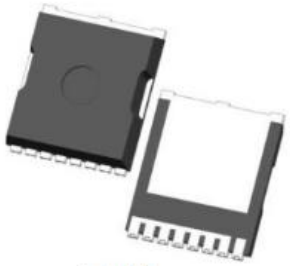
Product Summary

Item	Typical Value	Unit
V_{DS}	100	V
$R_{DS(on)}$ @ V_{GS} =10V (Max)	2.0	mΩ
I_D	290	A

Applications

- DC/DC in Telecoms and Industrial
- Portable Equipment
- Power management

Pin Description



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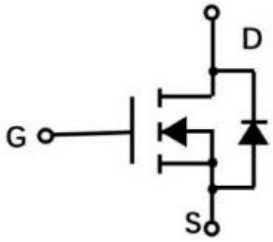


Absolute Ratings (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Single Pulse UIS Capability, 0.5mH	E_{AS}	1225	mJ
Continuous Drain Current, T_C = 25°C/100°C	I_D	290/160	A
Maximum Power Dissipation, T_C = 25°C	P_D	312	W
Junction Temperature Maximum	T_{JMAX}	150	°C
Storage Temperature	$T_{Storage}$	-55 to 150	°C

Absolute Ratings

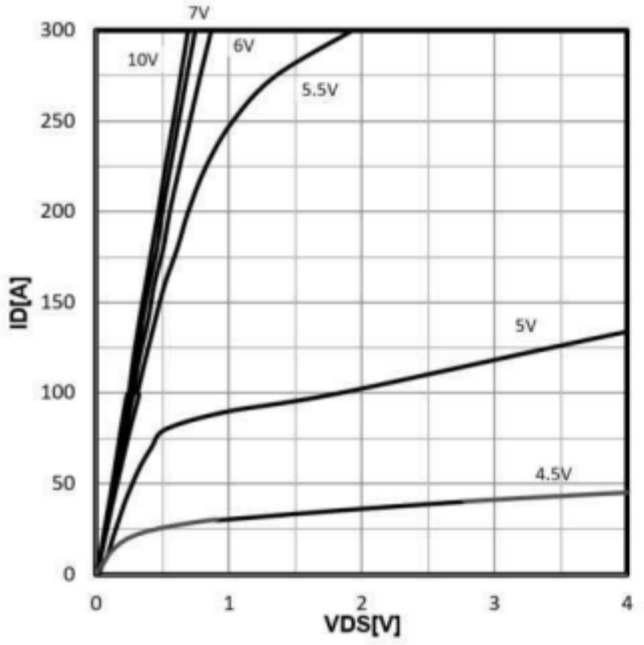
Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	60	°C/W

Electrical Characteristics

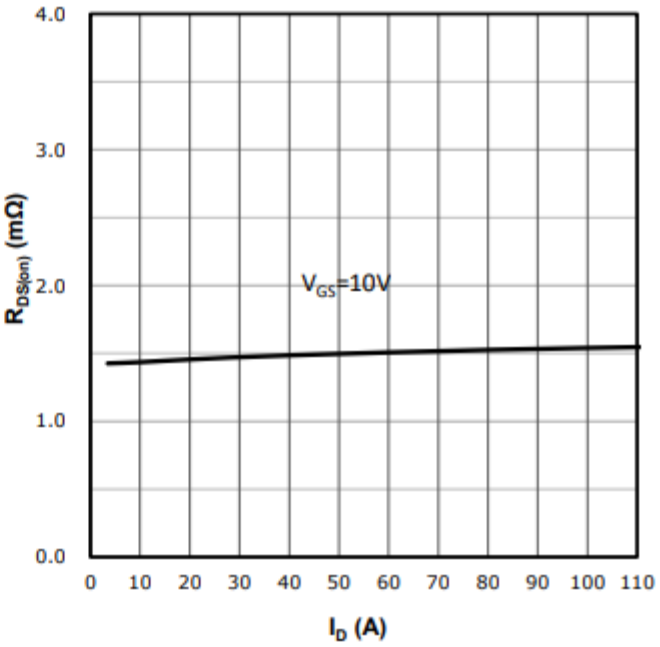
Static (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250uA	100	---	---	V
Gate-Source Leakage	I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V	---	---	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V,T_J=25℃	---	---	1	uA
		V_{DS} = 100V, V_{GS} = 0V,T_J=100℃	---	---	100	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 50A	---	---	2.0	mΩ
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	2.8	---	4.5	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} = 50 V, f = 1MHz	---	6554	---	pF
Output Capacitance	C_{oss}		---	4855	---	
Reverse Transfer Capacitance	C_{rss}		---	309	---	
Total Gate Charge	Q_g	V_{DS} = 50V, I_D = 20A, V_{GS} = 10V	---	122	---	nC
Gate-Source Charge	Q_{gs}		---	37	---	
Gate-Drain Charge	Q_{gd}		---	27	---	
Turn-on delay time	$T_{d(on)}$	V_{DS} = 50V, I_D = 20A, V_{GS} = 10V, R_G = 5Ω,	---	25	---	ns
Rise time	T_r		---	33	---	
Turn-off delay time	$T_{d(off)}$		---	95	---	
Fall time	T_f		---	75	---	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_F = 50A	---	0.7	1.2	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_F = 20A, dI_F/dt=100A/us	---	95	---	ns
Reverse Recovery Charge	Q_{rr}		---	300	---	nC

Typical Characteristics

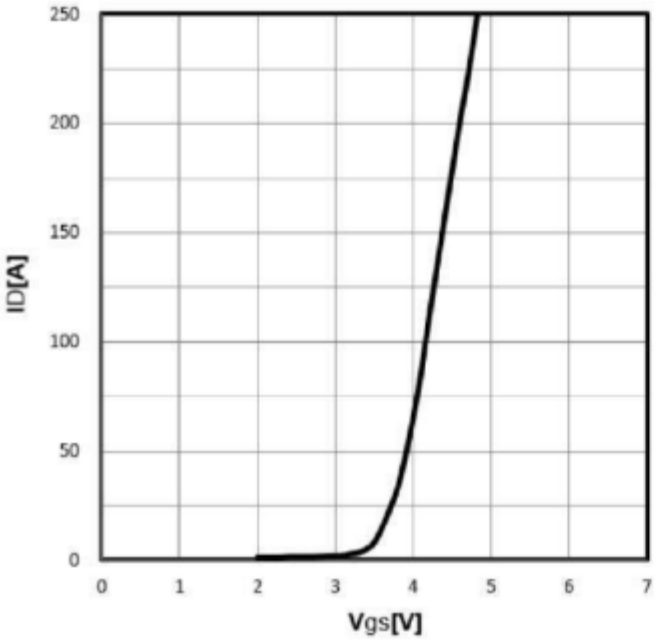
Typ. output characteristics
$I_D=f(V_{DS})$



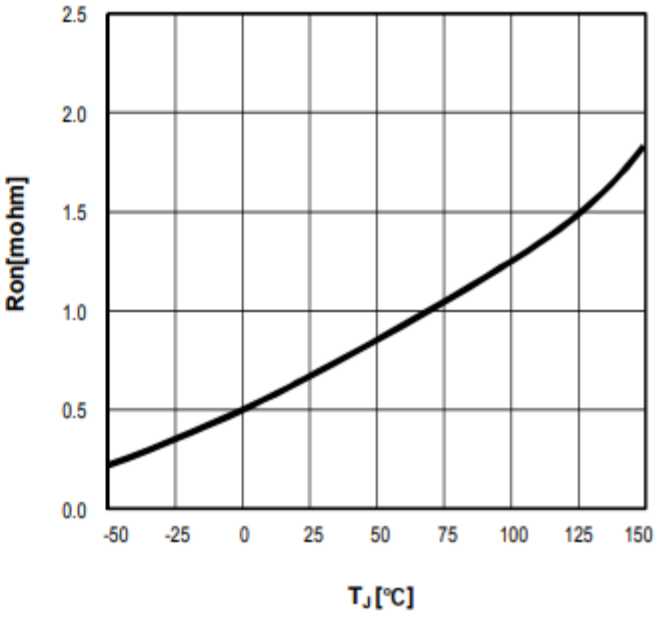
Typ. drain-source on resistance
$R_{DS(on)}=f(I_D)$



Typ. transfer characteristics
$I_D=f(V_{GS})$

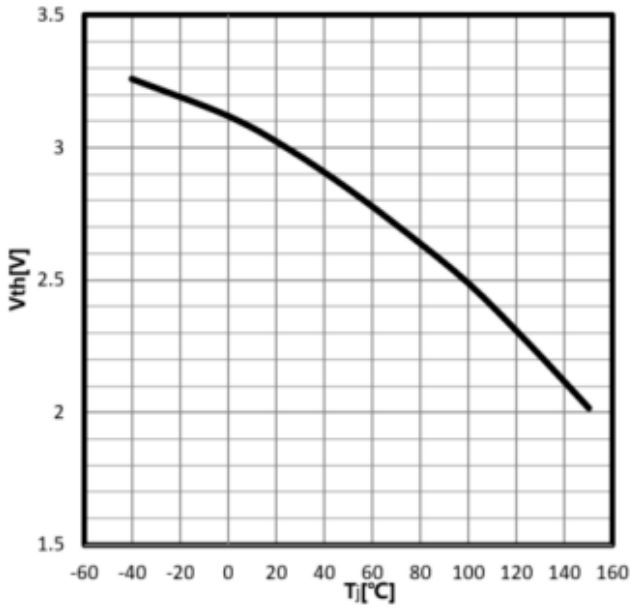


Drain-source on-state resistance
$R_{DS(on)}= f(T_j)$; I_D=50A; V_{GS}=10V



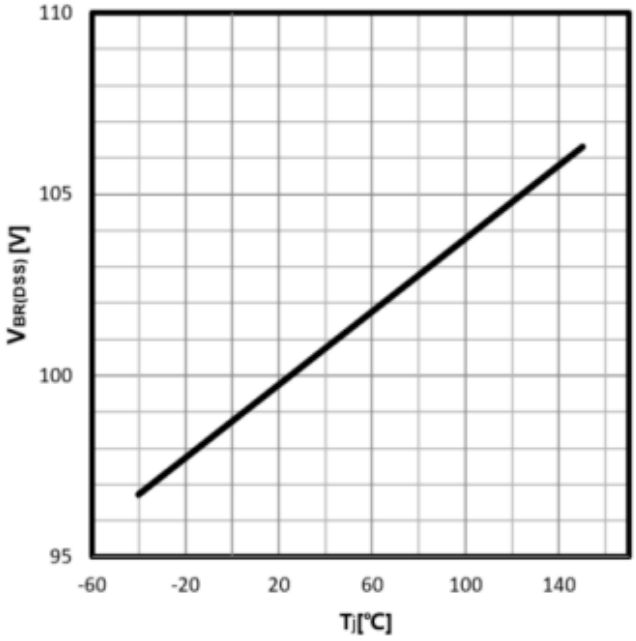
Gate Threshold Voltage

$V_{TH}=f(T_j)$; $I_D=250uA$



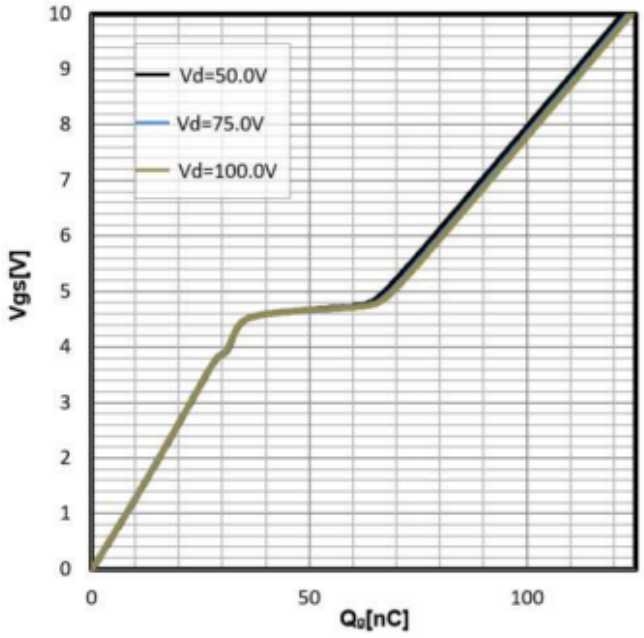
Drain-source breakdown voltage

$V_{BR(DSS)}=f(T_j)$; $I_D=250uA$



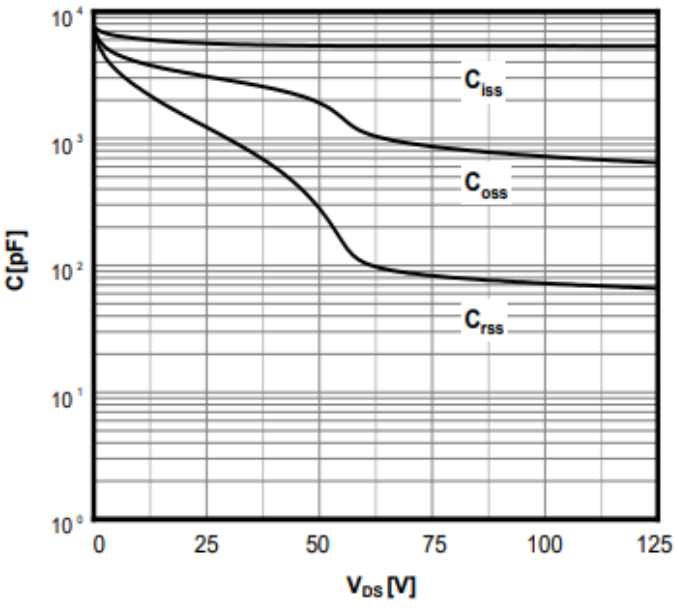
Typ. gate charge

$V_{GS}=f(Q_g)$; $I_D=20A$



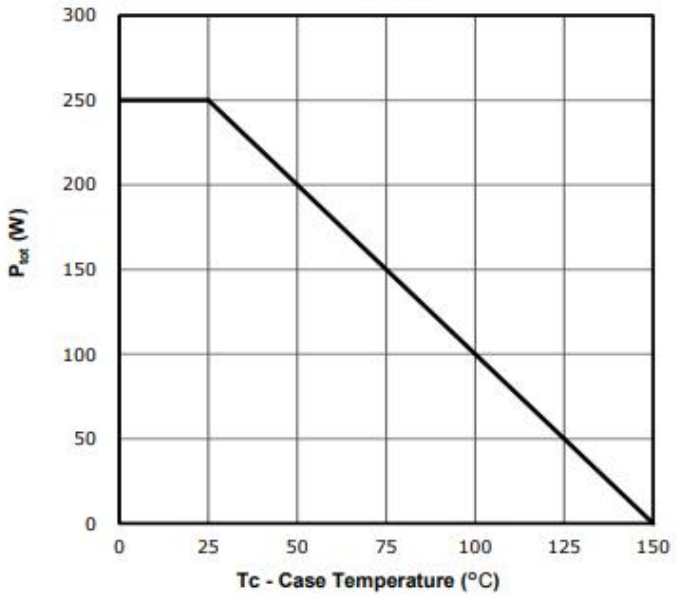
Typ. capacitances

$C=f(V_{DS})$; $V_{GS}=0V$; $f=1MHz$



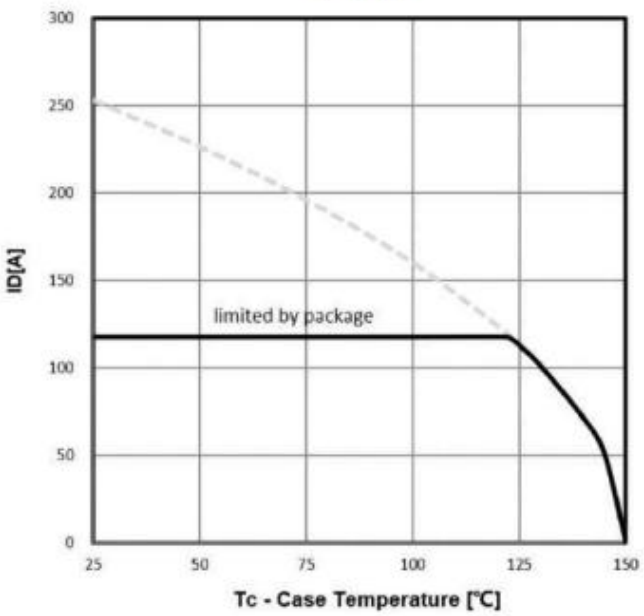
Power Dissipation

$P_{tot}=f(T_C)$



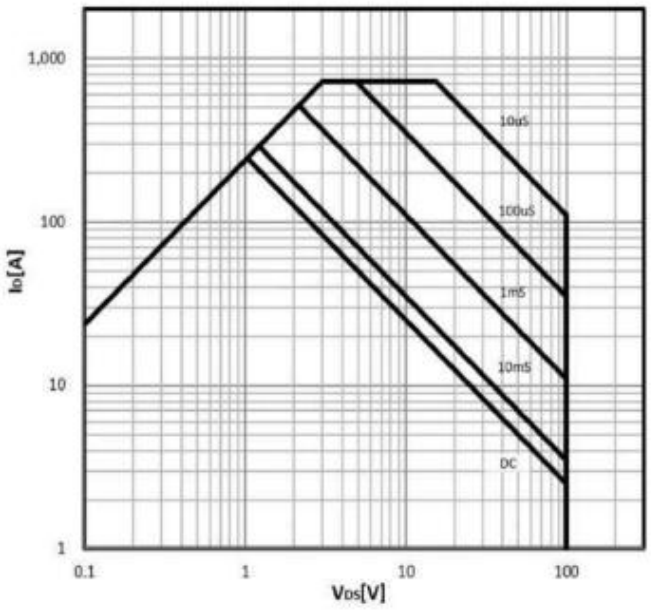
Maximum Drain Current

$I_D=f(T_C)$



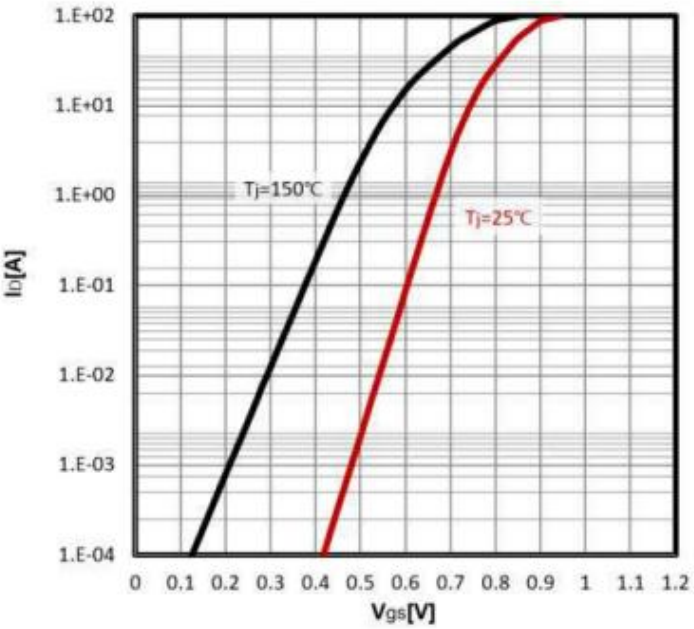
Safe operating area

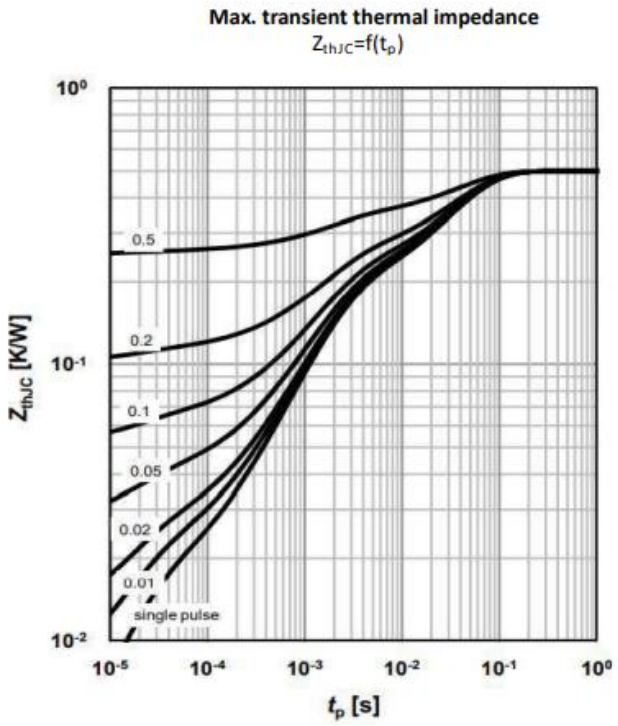
$I_D=f(V_{DS})$



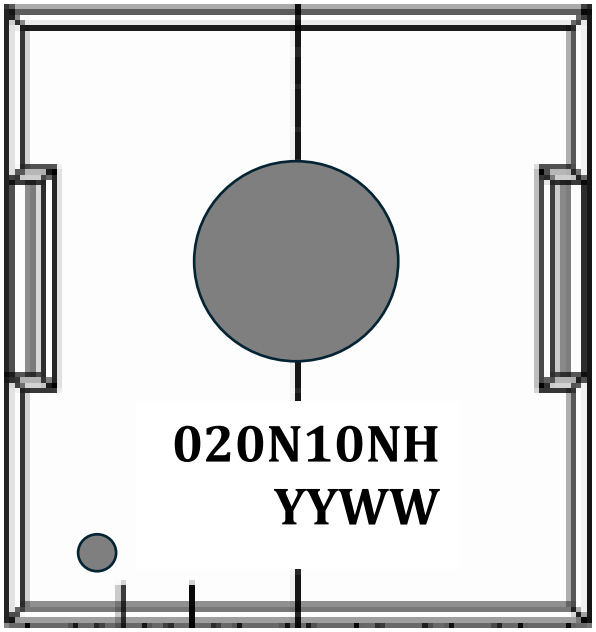
Body Diode Forward Voltage Variation

$I_F=f(V_{GS})$





Marking Distinguish



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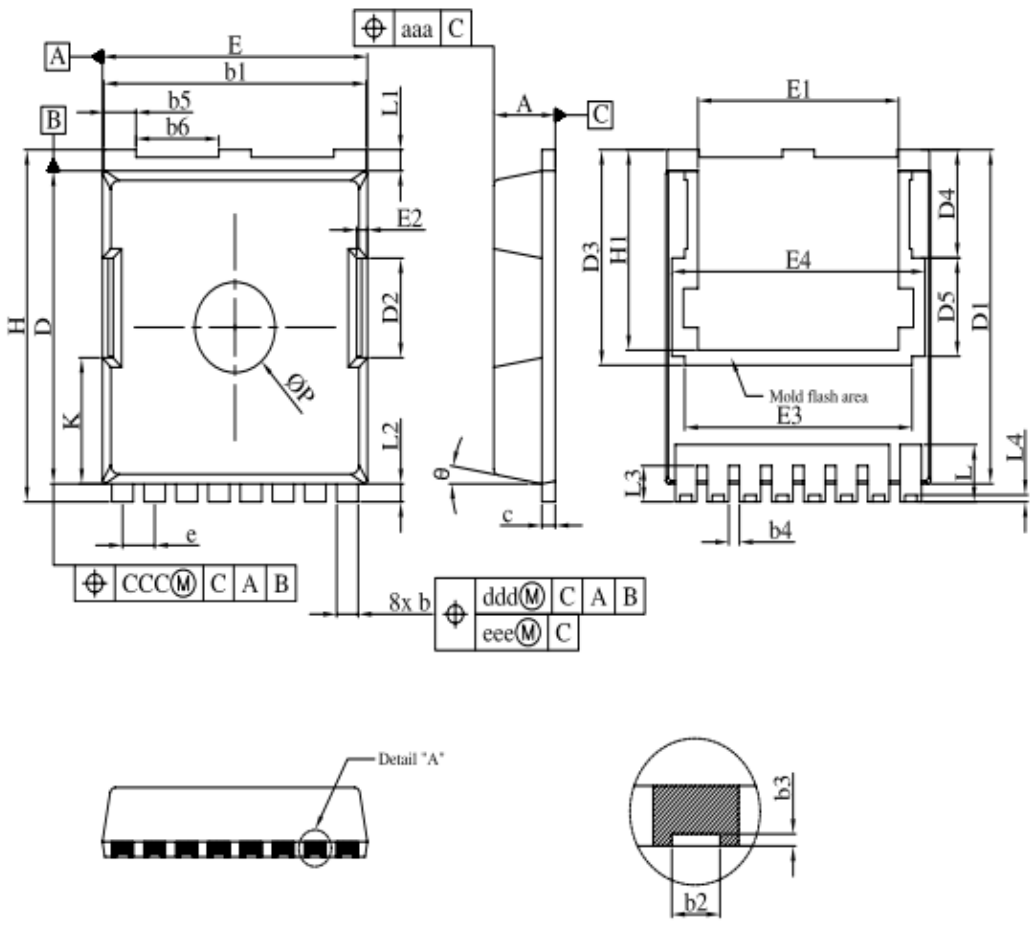

SYMBOL	COMMON MILLIMETER		
	MIN.	NOMINAL	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.36	0.45	0.55
b3	0.05	0.100	/
b4	0.30	0.40	0.50
b5	1.10	1.20	1.30
b6	3.00	3.10	3.20
c	0.40	0.50	0.60
D	10.28	10.38	10.55
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D3		7.15	
D4		3.59	
D5		3.26	
e	1.10	1.20	1.30
E	9.80	9.90	10.00
E1	7.40	7.50	7.60
E2	0.30	0.40	0.50
E3		8.50	
E4		9.46	
H	11.50	11.68	11.85
H1	6.55	6.65	6.75
K	4.08	4.18	4.28
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	