

preliminary

CMA007N06NH-TL

60V N-Channel Power MOSFET

Features

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

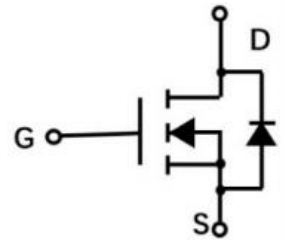
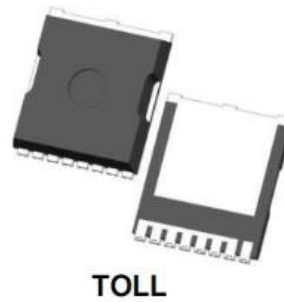
Applications

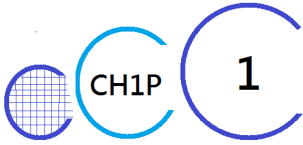
- LCD TV appliances
- High power inverter system
- LCDM appliances

Product Summary

Item	Typical Value	Unit
V_{DS}	60	V
$R_{DS(on)}$ @ $V_{GS} = 10V$ (Max)	0.77	m Ω
I_D	400	A

Pin Description





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Absolute Ratings ($T_A = 25^\circ\text{C}$ 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, 1mH	E_{AS}	2738	mJ
Continuous Drain Current, $T_C = 25^\circ\text{C}/100^\circ\text{C}$	I_D	400/362	A
Maximum Power Dissipation, $T_C = 25^\circ\text{C}$	P_D	375	W
Junction Temperature Maximum	T_{JMAX}	175	$^\circ\text{C}$
Storage Temperature	$T_{Storage}$	-55 to 175	$^\circ\text{C}$

Absolute Ratings

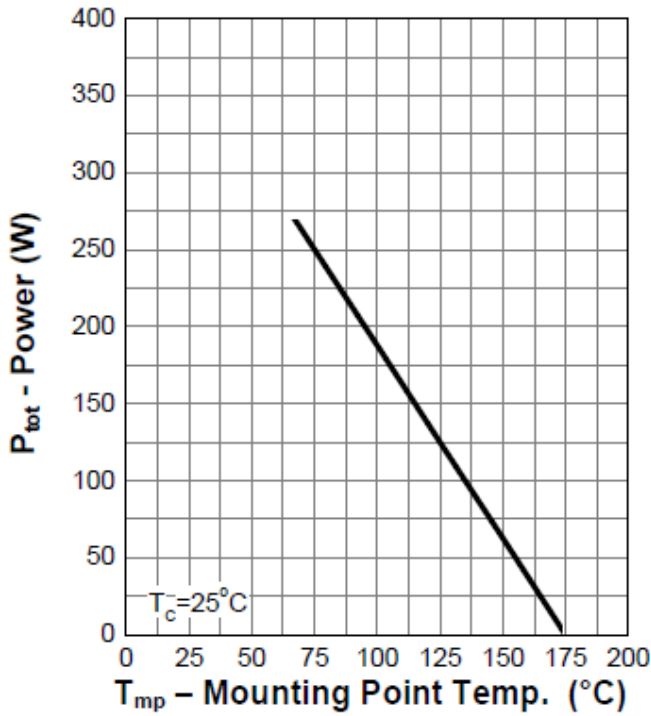
Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	40	$^\circ\text{C}/\text{W}$

Electrical Characteristics

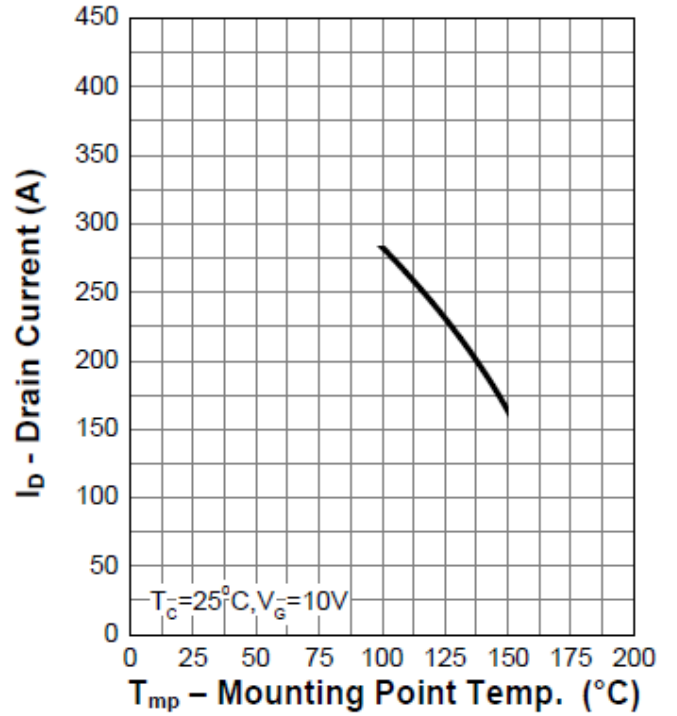
Static ($T_J=25^{\circ}\text{C}$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	60	---	---	V
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	---	---	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V, T_J=25^{\circ}\text{C}$	---	---	1	uA
		$V_{DS} = 48V, V_{GS} = 0V, T_J=100^{\circ}\text{C}$	---	---	100	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	---	---	0.77	m Ω
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	---	4	V
Dynamic ($T_J=25^{\circ}\text{C}$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 30V, f = 1\text{MHz}$	---	15766	---	pF
Output Capacitance	C_{oss}		---	4340	---	
Reverse Transfer Capacitance	C_{rss}		---	1822	---	
Total Gate Charge	Q_g	$V_{DS} = 30V, I_D = 20A, V_{GS} = 10V$	---	274	---	nC
Gate-Source Charge	Q_{gs}		---	96	---	
Gate-Drain Charge	Q_{gd}		---	53	---	
Turn-on delay time	$T_{d(on)}$	$V_{DD} = 30V, I_D = 20A, V_{GS} = 10V, R_G = 3.9\Omega,$	---	46	---	ns
Rise time	T_r		---	73	---	
Turn-off delay time	$T_{d(off)}$		---	161	---	
Fall time	T_f		---	88	---	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_F = 20A$	---	---	1.3	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, I_F = 20A, dI_F/dt=100A/\mu s$	---	115	---	ns
Reverse Recovery Charge	Q_{rr}		---	377	---	nC

Typical Characteristics

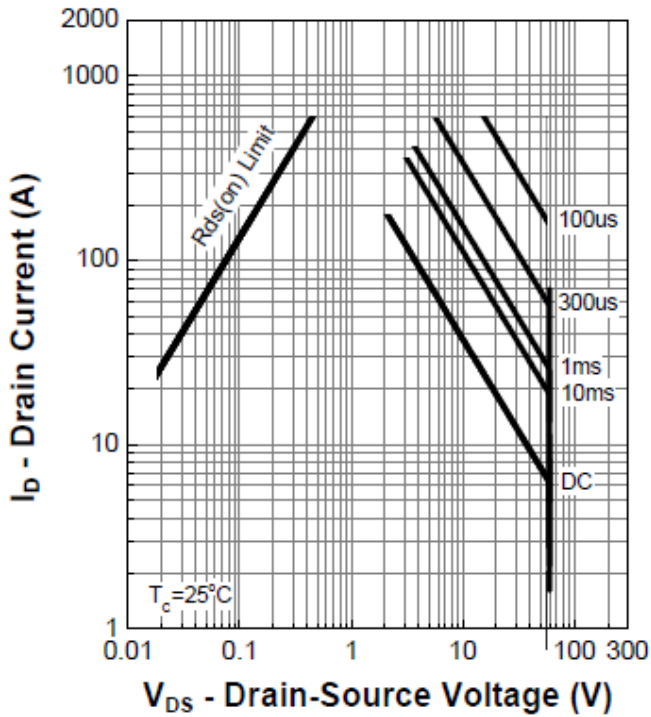
Power Capability



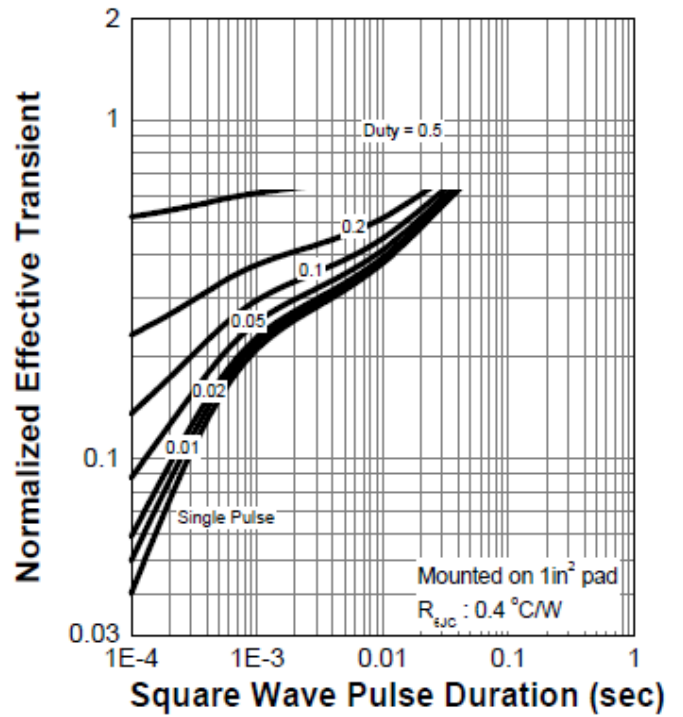
Current Capability



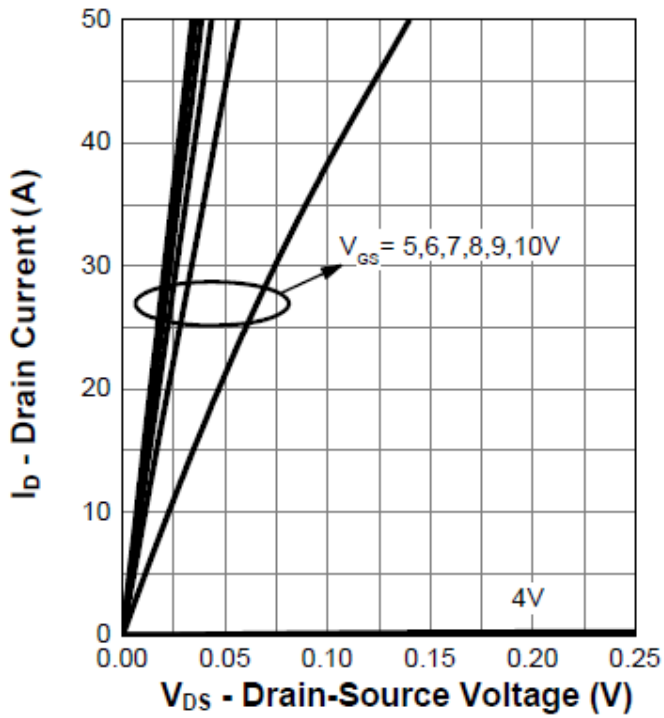
Safe Operating Area



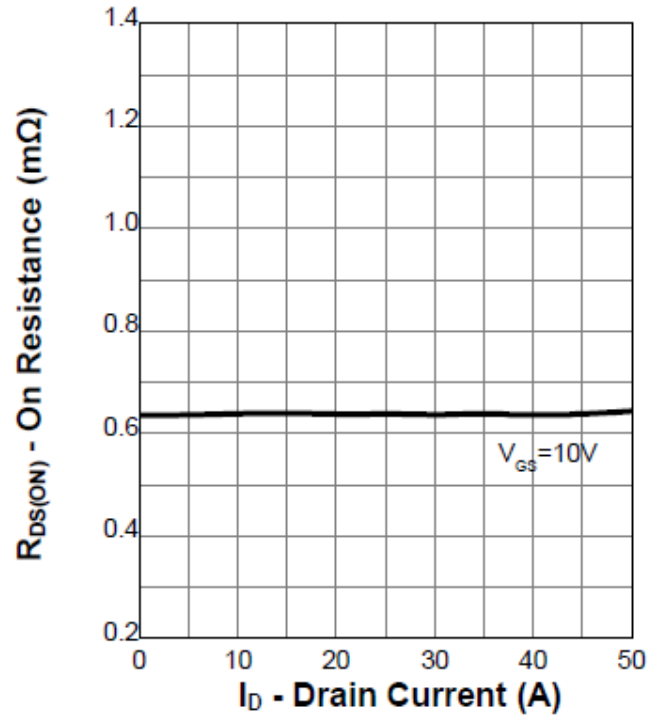
Transient Thermal Impedance



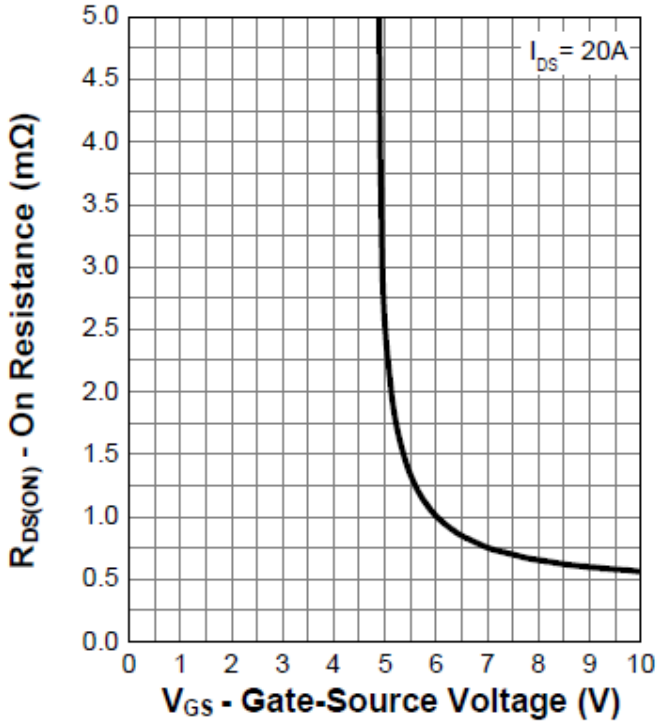
Output Characteristics



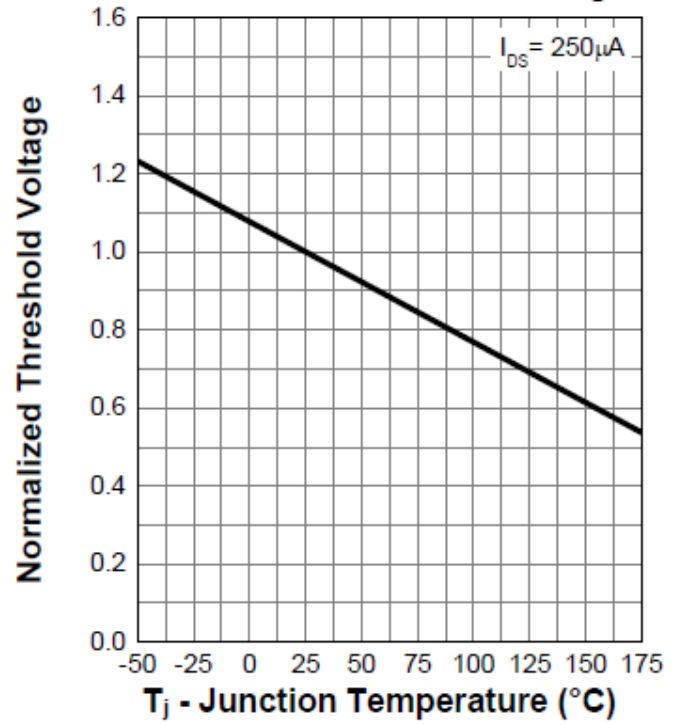
On Resistance



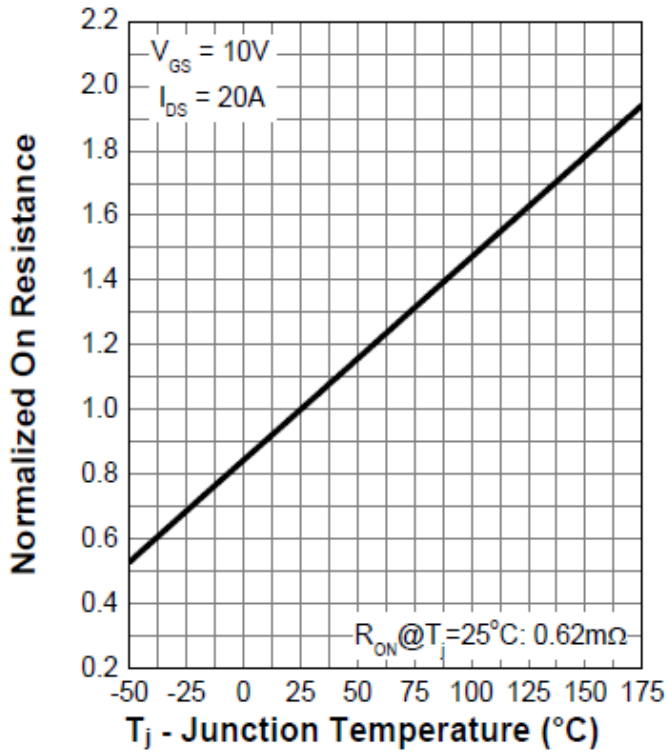
Transfer Characteristics



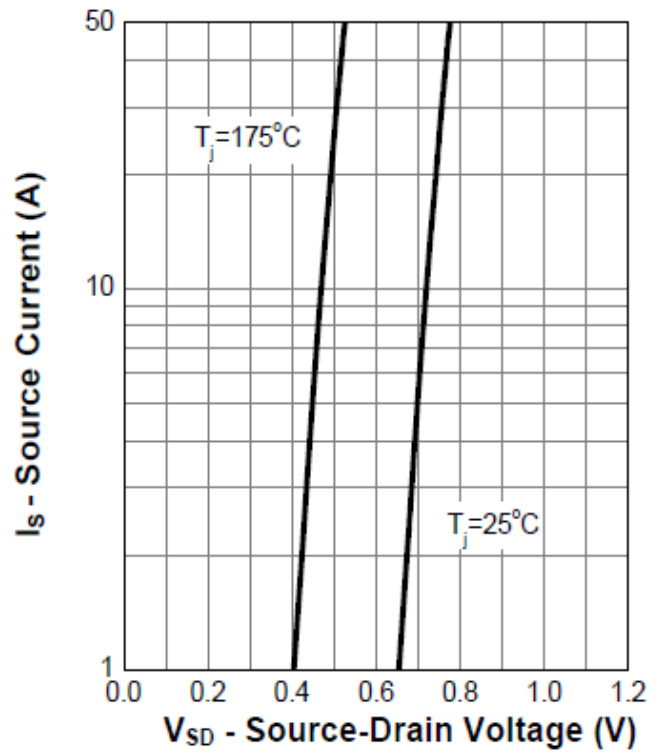
Normalized Threshold Voltage



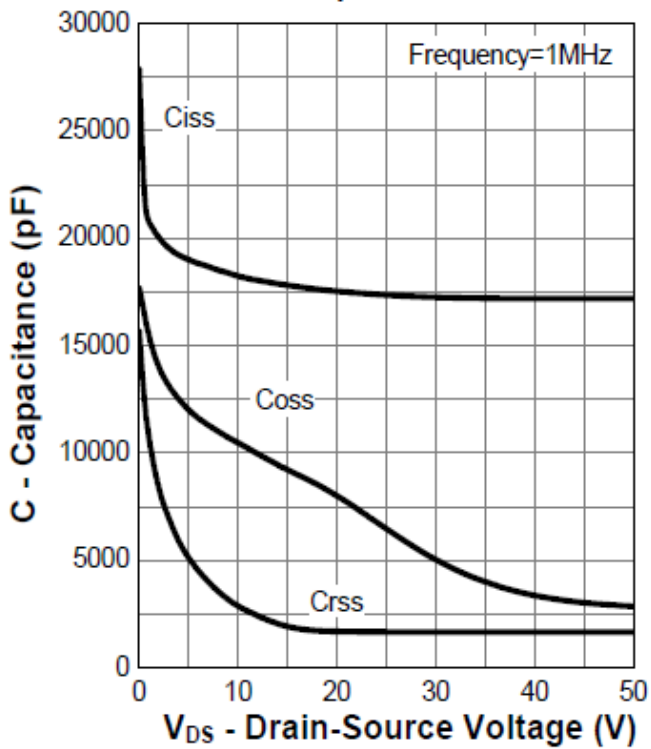
Normalized On Resistance



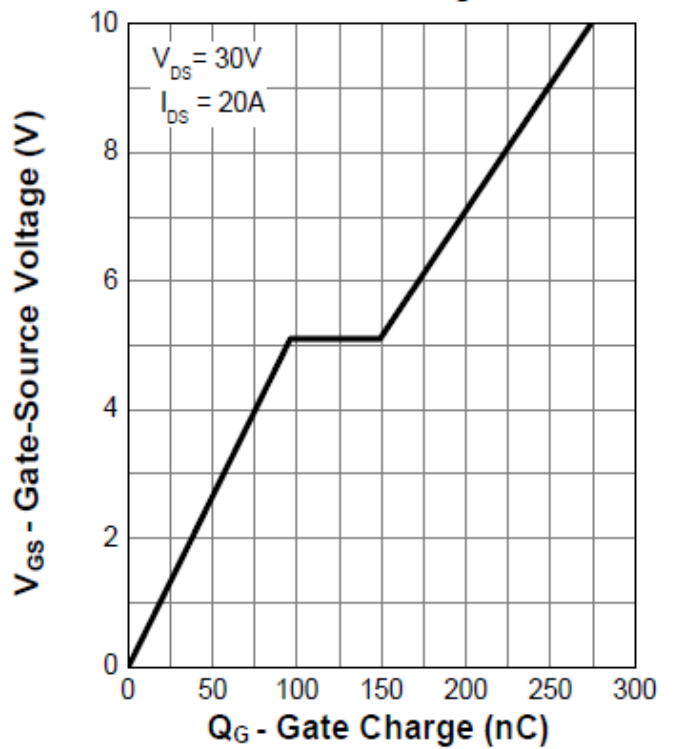
Diode Forward Current



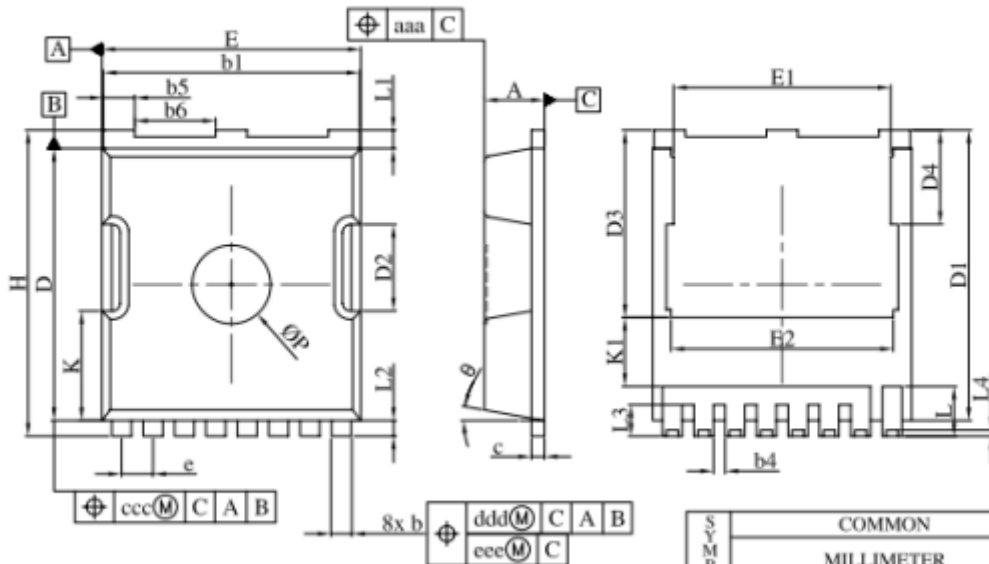
Capacitance



Gate Charge



TOLL



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		