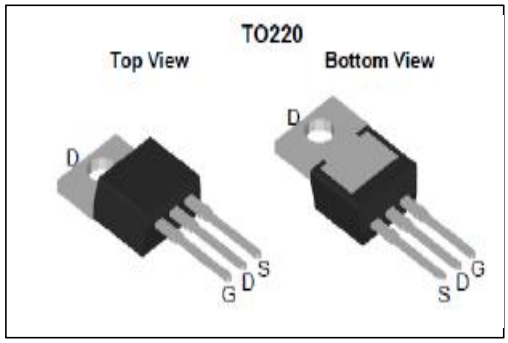
CHONGQING CLOUDCHILD TECHNOLOGY CO., LTD

TO-220 Plastic-Encapsulate MOSFETS

CCMB100N10S N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
100V	6.8 mΩ@10V	100A



DESCRIPTION

The CCMB100N10S uses advanced SGT technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

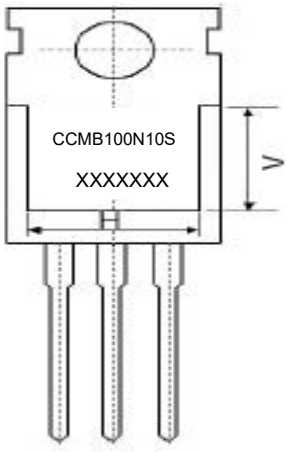
FEATURE

- Extremely low on-resistance RDS(on)
- Excellent Qg×RDS(on) product(FOM)
- Qualified according to JEDEC criteria
- AEC Q101 Qualified

APPLICATION

- Motor control and drive
- Battery management
- UPS(Uninterrupible Power Supplies)

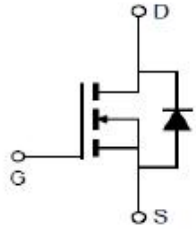
MARKING



CCMB100N10S =Part No.

XXXXXXX = Code

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS(TC=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±25	V
Continuous Drain Current	I_D	100	A
Pulsed Drain Current [1]	I_{DM}	400	A
Single Pulse AvalancheEnergy[2]	E_{AS}	20	mJ
Total Power Dissipation	P_D	192	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.78	℃/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55~+175	℃
Soldering Temperature , for 10S(1.6mm from case)	-	260	℃

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.EAS condition : Tj=25℃,L=0.1mH,Rg=25Ω,Ias=20A.

MOSFET ELECTRICAL CHARACTERISTICS

TC=25℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off characteristics						
Drain-Source breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V，I_D = 250 μA		100		V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 100V ，V_{GS} = 0 V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} = 0 V，V_{GS} = ±25 V		±10	±100	nA
On characteristics						
Gate threshold voltage[3]	$V_{GS(th)}$	V_{DS} = V_{GS}，I_D = 250 μA	1.5	2.0	3.0	V
Drain-source on-resistance[3]	$R_{DS(on)}$	V_{GS} = 10 V， I_D = 50 A		6.8	8.0	mΩ
Transconductance	gfs	V_{DS}=10V ，I_D=10A		58		S
Dynamic characteristics[1]						
Input Capacitance	Ciss	V_{DS} = 25V，V_{GS} = 0 V， f = 1 MHz		2960		pF
Output Capacitance	Coss			1036		
Reverse Transfer Capacitance	Crss			139		
Gate resistance	R_g	V_{GS} = 0V,V_{DS}=0V,f=1MHz		1.18		Ω
Switching characteristics[1]						
Total Gate Charge	Qg	V_{DD} = 50 V，V_{GS} = 10 V，I_D = 50 A， f = 1 MHz		105		nC
Gate-Source Charge	Qgs			22		
Gate-Drain Charge	Qgd			36		
Turn-on delay time	$t_{d(on)}$	V_{DD} = 50 V， V_{GS} = 10 V，R_G = 2.7Ω		18		ns
Turn-on rise time	t_r			80		
Turn-off delay time	$t_{d(off)}$			52		
Turn-off fall time	t_f			91		
Drain-Source Diode Characteristics						
Drain-source diode forward Voltage[3]	V_{SD}	V_{GS} =0V,I_{SD} = 50A,T_j = 25 °C		0.9	1.4	V
Continuous drain-source diode forward current[2]	I_S	Tc = 25 °C			100	A
Pulsed drain-source diode forward current	I_{SM}	—			400	A
Reverse recovery time	trr	I_F=100A，dI/dt=100A/us		50		ns
Reverse recovery charge	Qrr			102		nC

Notes :

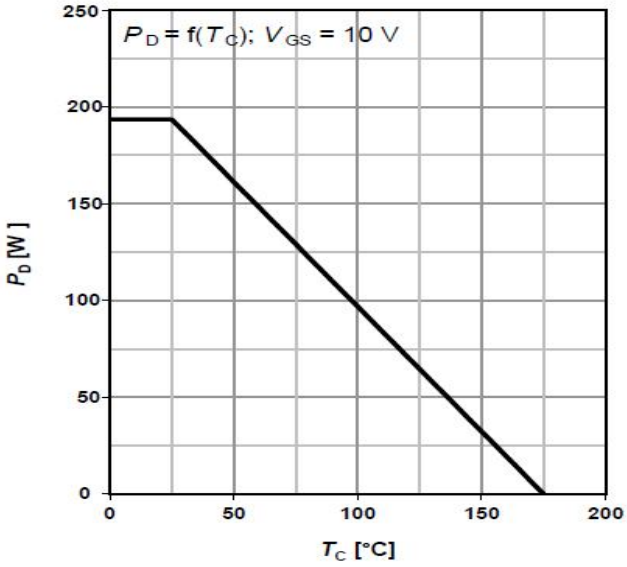
1.Guaranteed by design, not subject to production.

2.Surface Mounted on FR4 Board, t ≤ 10 sec.

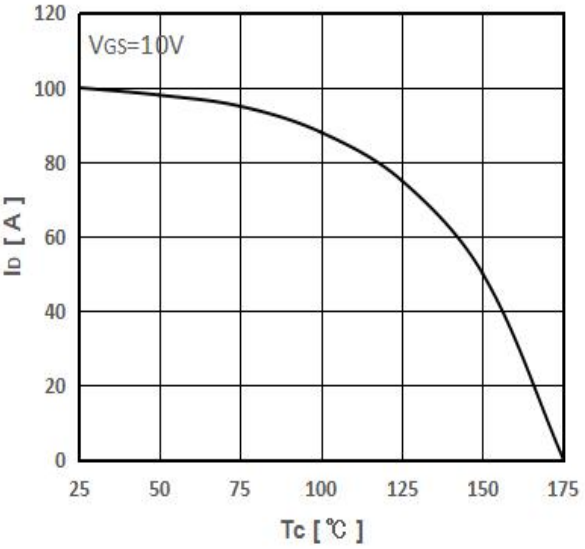
3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Typical Characteristics

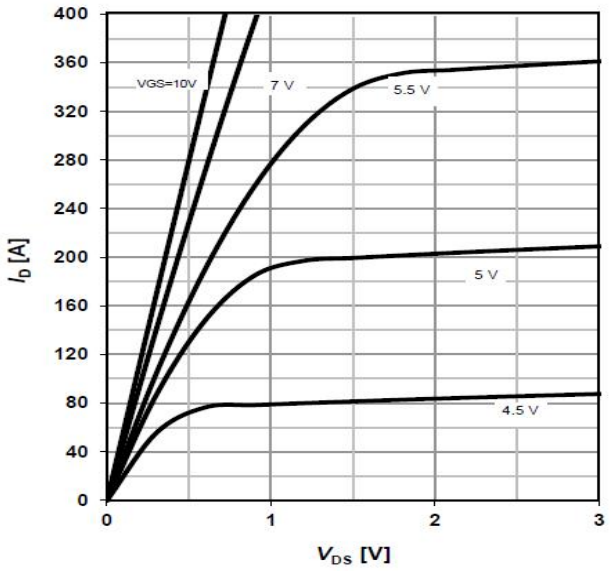
PD -- Tc



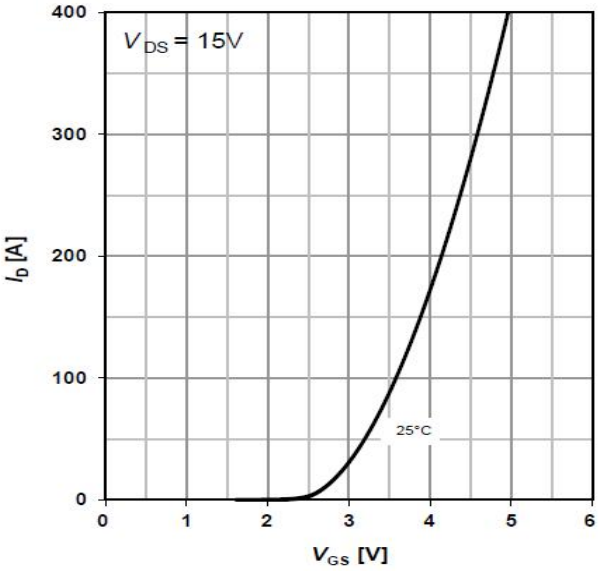
ID -- Tc



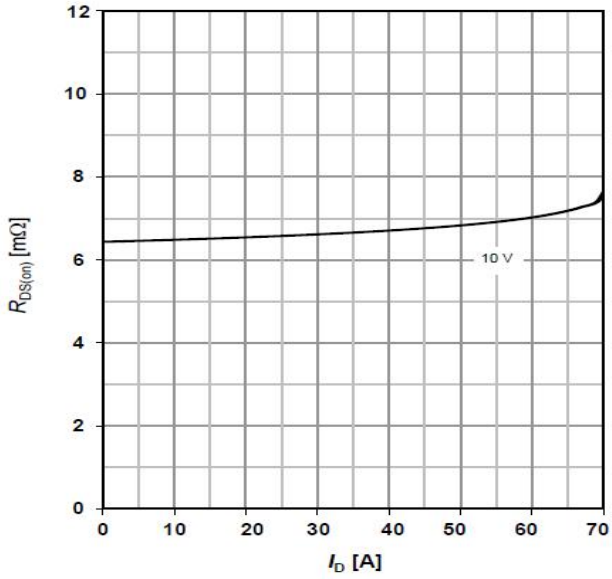
ID -- VDS



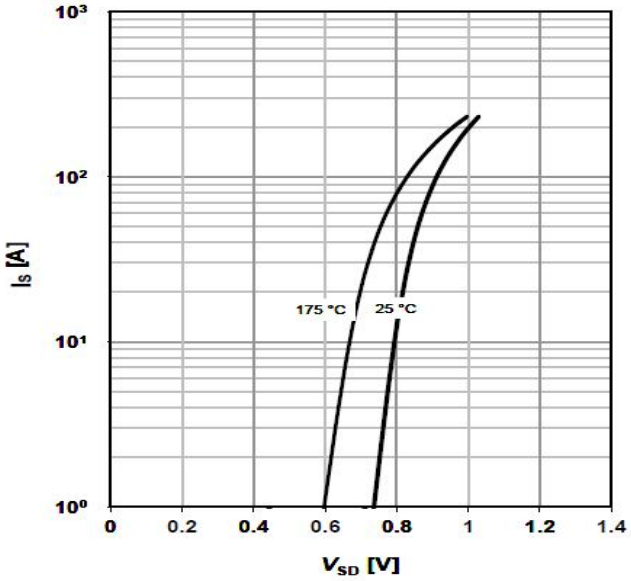
ID -- VGS



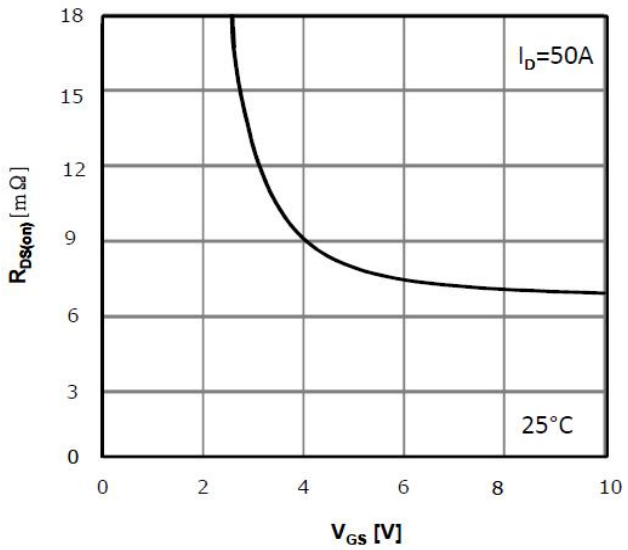
RDS(on) -- ID



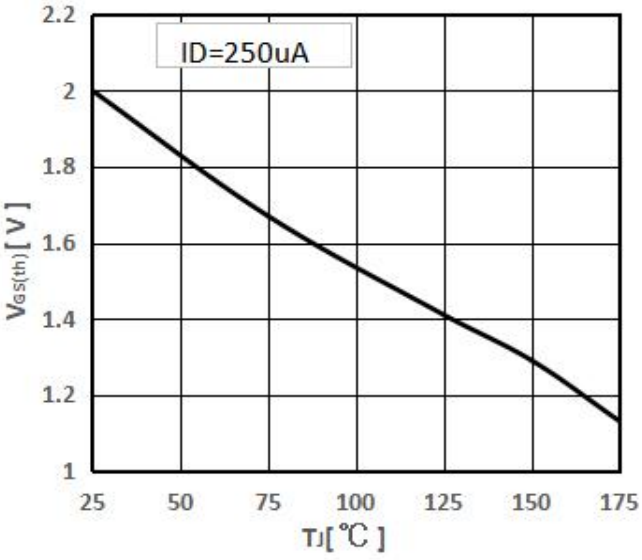
IS -- VSD



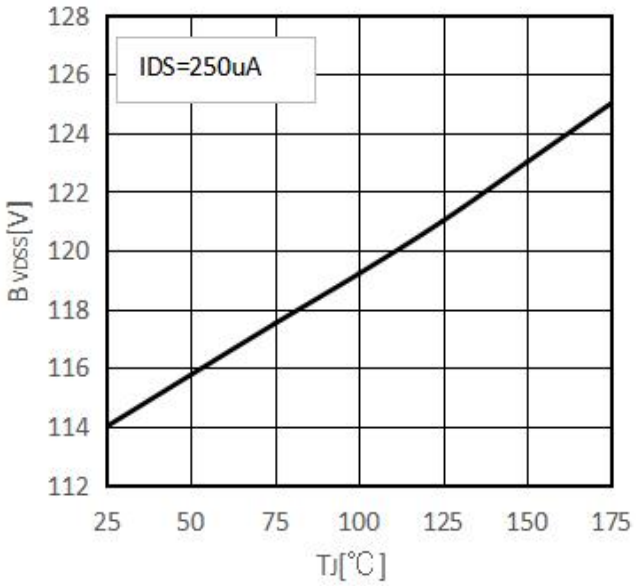
RDS(on) -- VGS



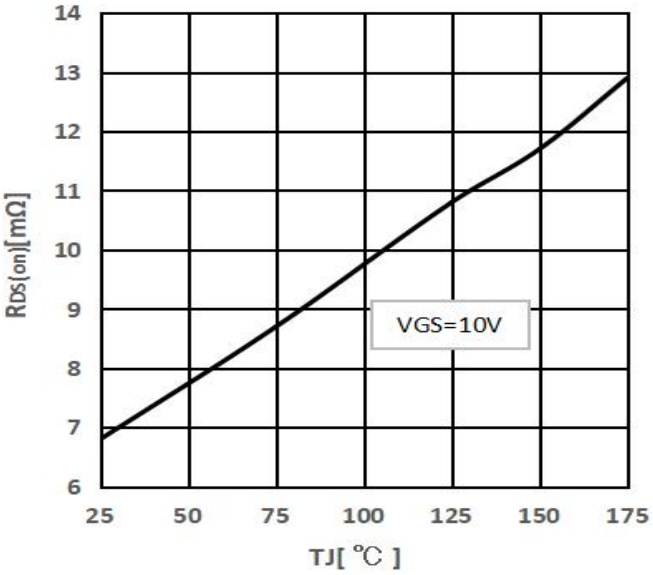
Threshold Voltage



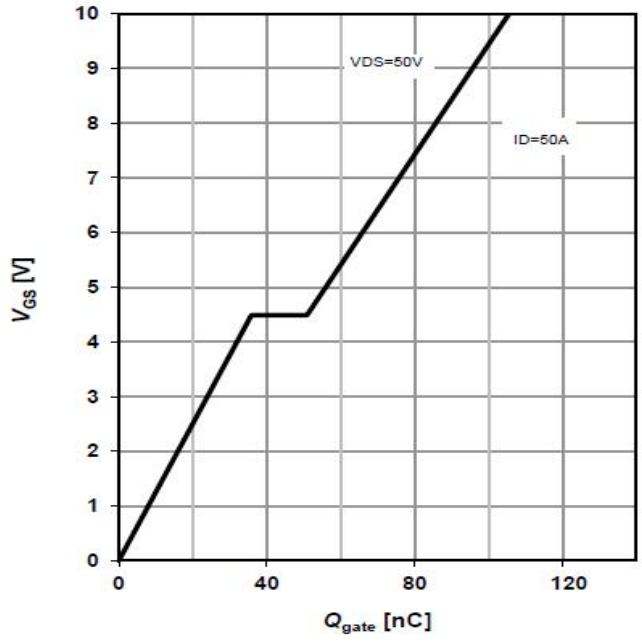
Drain-source breakdown voltage



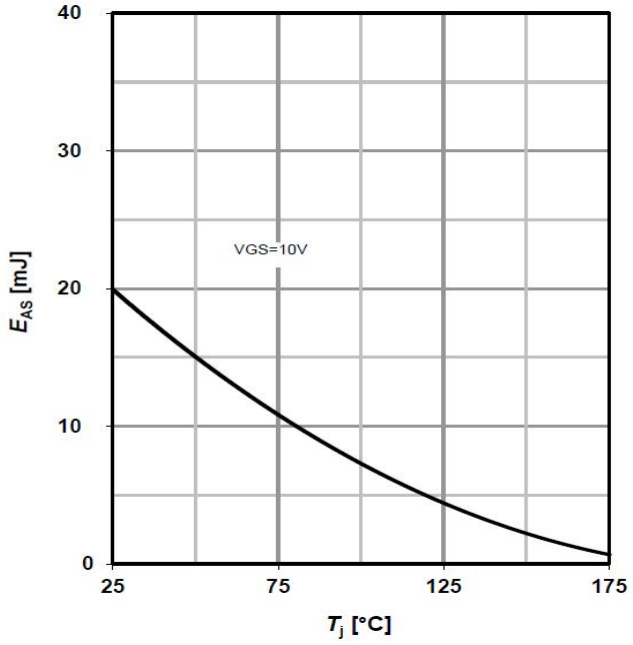
RDS（on） -- Tj



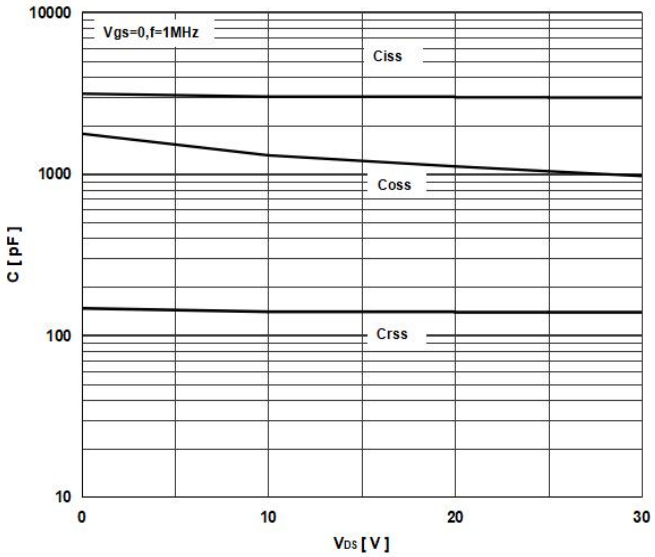
Typ.gate charge



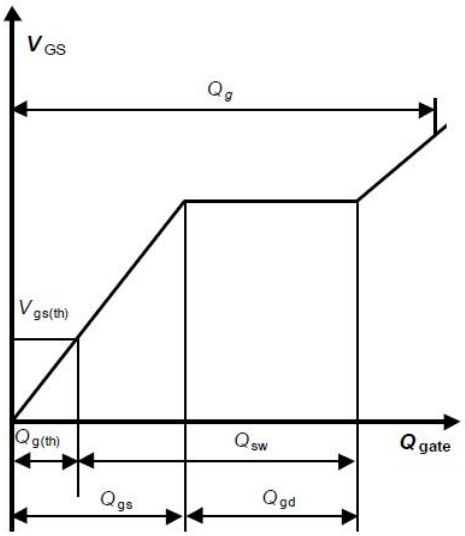
Avalanche energy



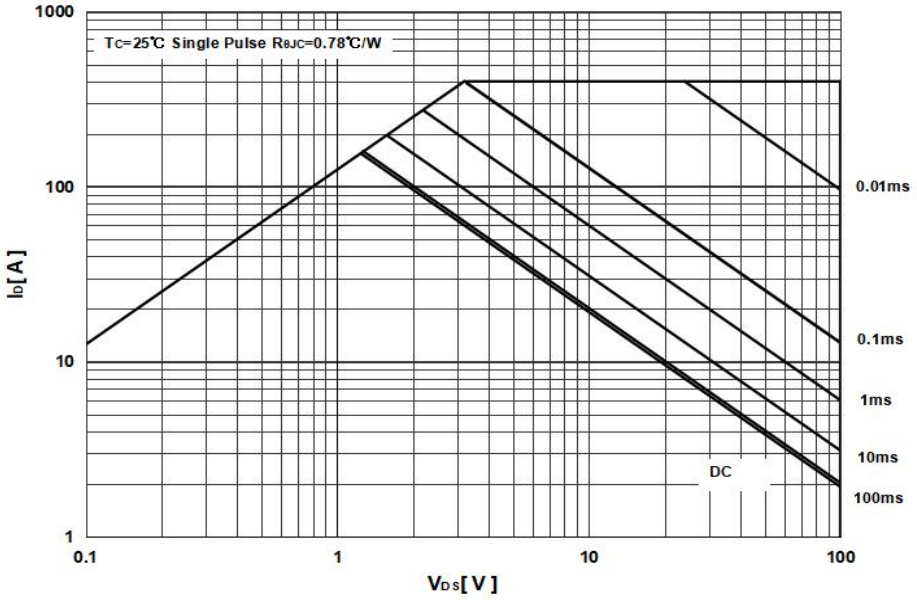
Typ.capacitance



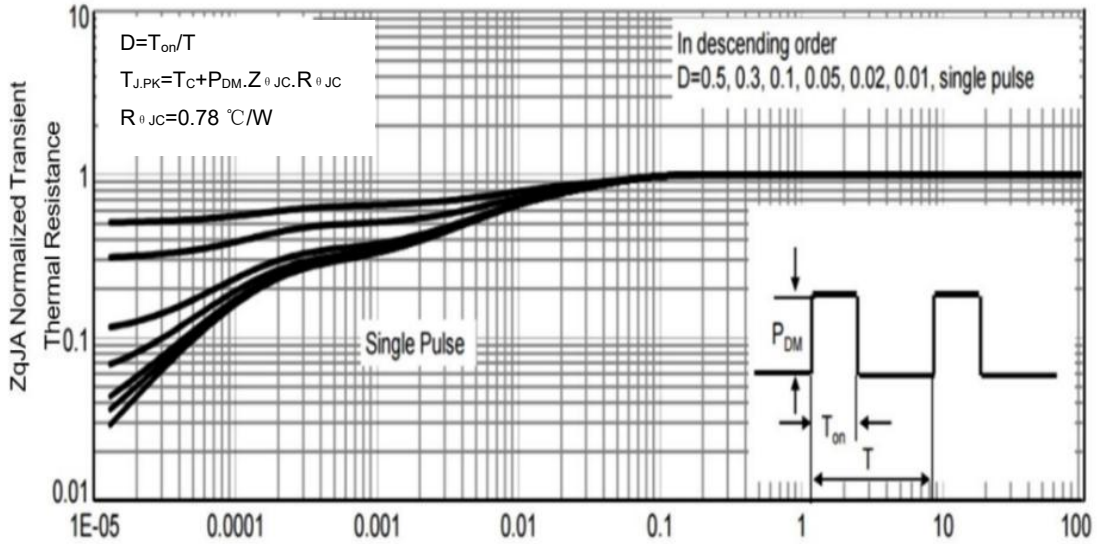
Gate charge waveforms



Maximum Forward Biased Safe Operating Area

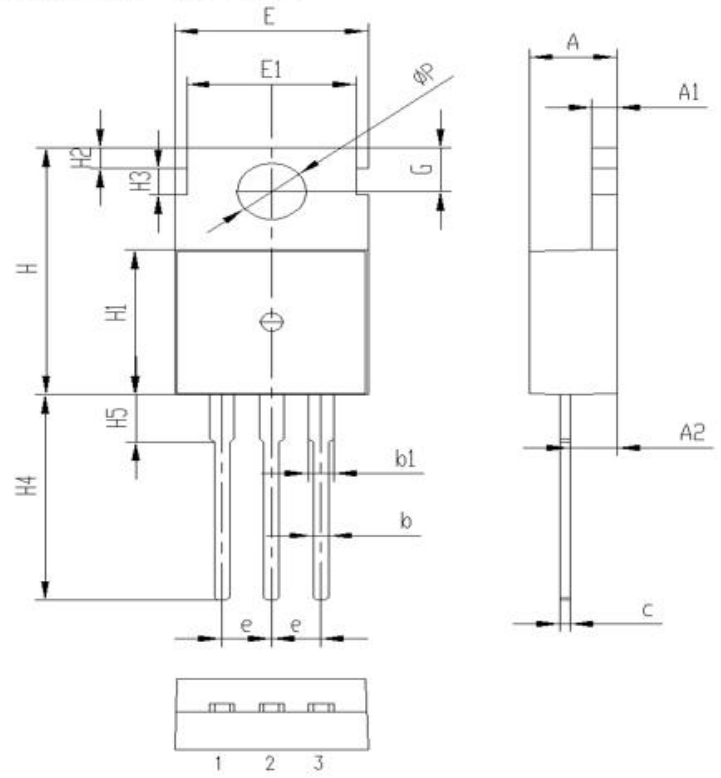


Normalized Thermal Transient Impedance



TO-220 Package Outline Dimensions

外形名称：TO-220C



Symbol	单位 mm		
	Min	Nom	Max
A	4.30	4.5	4.70
A1	1.17	1.27	1.37
A2	2.20	2.4	2.60
b	0.60	0.8	1.00
b1	1.17	1.27	1.37
b2	1.90	2.1	2.30
c	0.40	0.5	0.60
e	2.44	2.54	2.64
E	9.90	10	10.1
E1	8.50	8.7	8.90
H	15.5	15.7	15.9
H1	9.00	9.2	9.40
H2	1.10	1.3	1.50
H3	1.50	1.7	1.90
H4	12.8	13.2	13.6
H5	2.80	3.0	3.20
G	2.60	2.8	3.00
ΦP	3.40	3.6	3.80

基本尺寸

TO-220-2L Tubing

Tubing	Box	Box Size(mm)	Carton	Carton Size(mm)
50pcs	1000pcs	575*152*48	5000pcs	590*275*175

NOTICE

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Date of change	Rev #	revise content
2022/12/06	A/0	/