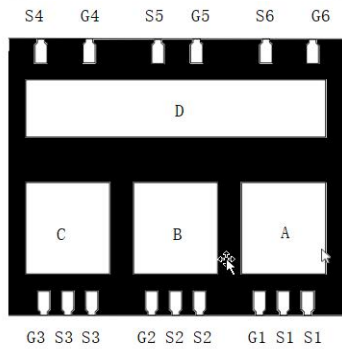




CHONGQING CLOUDCHILD TECHNOLOGY CO.,LTD
DFN14*12 Plastic-Encapsulate MOSFETS

CCM80N4-6A Full bridge N Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40 V	3.9mΩ@10V	80A
	5.0mΩ@4.5V	



DESCRIPTION

The CCM80N4-6A provides excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

FEATURE

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- AEC Q101 qualified

APPLICATION

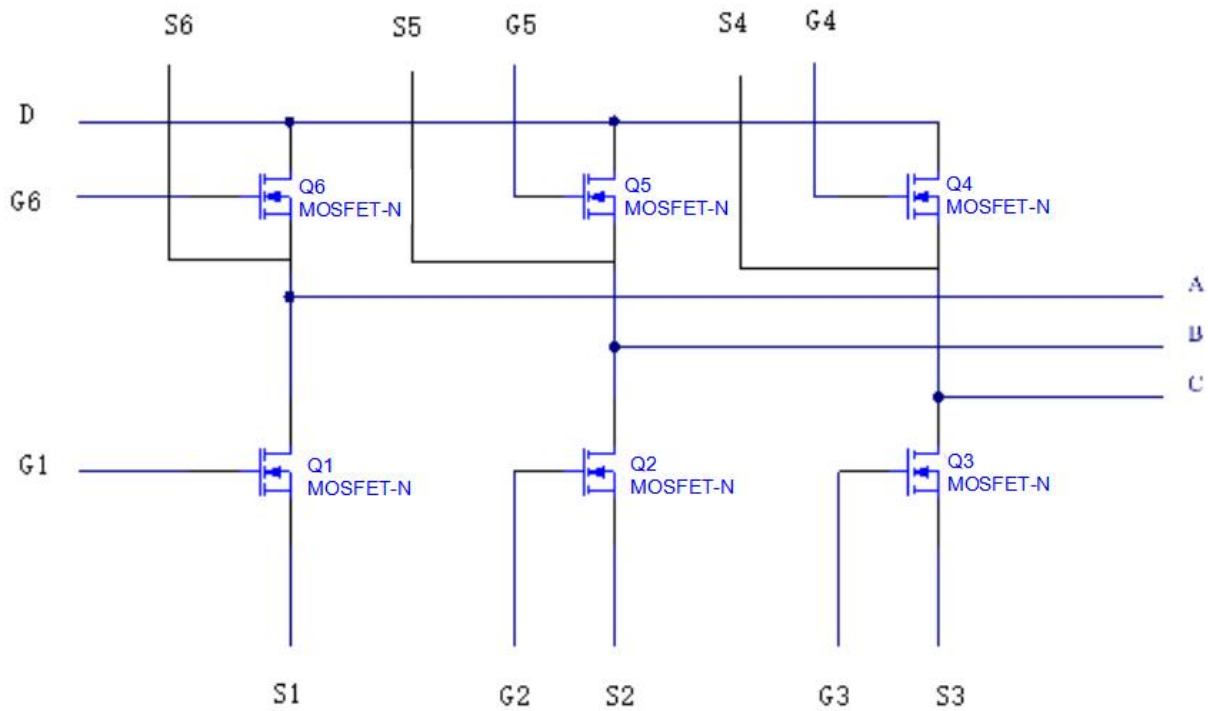
- motor control
- Full bridge module

MARKING



CCM80N4-6A =Part No.
 XXXXXXXX = Code

EQUIVALENT CIRCUIT



Pin Definition

Number	Pin Definition	Remark	Number	Pin Definition	Remark
1	S1	Lower bridge u phase source	11	G4	Upper bridge w gate
2	S1	Lower bridge u phase source	12	S5	Upper Bridge v phase source collection
3	G1	Lower bridge u phase gate	13	G5	Upper bridge v gate
4	S2	Lower bridge v phase source	14	S6	Upper Bridge u phase source collection
5	S2	Lower bridge v phase source	15	G6	Upper bridge u gate
6	G2	Lower bridge v phase gate	PAD 1	D	DC Input
7	S3	Lower bridge w phase source	PAD 2	A	A phase output
8	S3	Lower bridge w phase source	PAD 3	B	B phase output
9	G3	Lower bridge w phase gate	PAD 4	C	C phase output
10	S4	Upper Bridge w phase source collection			

ABSOLUTE MAXIMUM RATINGS (T_a=25C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹	I _D	80	A
Pulsed Drain Current ²	I _{DM}	320	A
Single Pulsed Avalanche Energy ³	EAS	240	mJ
Total Power Dissipation	P _D	83	W
Thermal Resistance from Junction to Case ¹	R _{thJC}	1.8	°C/W
Junction Temperature	T _J	175	°C
Storage Temperature	T _{stg}	-55~+175	°C
Soldering Temperature , for 10S(1.6mm from case)	-	260	°C

Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: VDD = 20V,VGS = 10V, L = 0.5mH, RG = 25Ω, Ias=31A, Starting T_J = 25°C.

MOSFET ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise specified

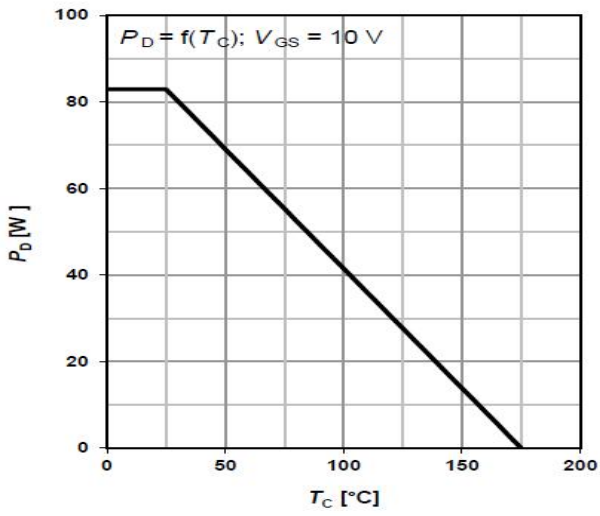
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	3.0	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$		3.9	6.2	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		5.0	7.2	
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 10A$		100		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		2260		pF
Output Capacitance	C_{oss}			625		
Reverse Transfer Capacitance	C_{rss}			34		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DD} = 20V, V_{GS} = 10V, I_D = 20A$		31		nC
Gate-source Charge	Q_{gs}			6		
Gate-drain Charge	Q_{gd}			3.8		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, R_L = 1\Omega, R_G = 3\Omega$		7		ns
Turn-on Rise Time	t_r			2.8		
Turn-off Delay Time	$t_{d(off)}$			24		
Turn-off Fall Time	t_f			3.9		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS} = 0V, I_S = 10A$			1.2	V
Continuous drain-source diode forward Current ¹	I_S	-			80	A
Pulsed drain-source diode forward current ²	I_{SM}	-			320	A
Reverse recovery time	T_{rr}	$I_F = 10A, di/dt = 100A/\mu s$		26		ns
Reverse recovery charge	Q_{rr}				28	

Notes :

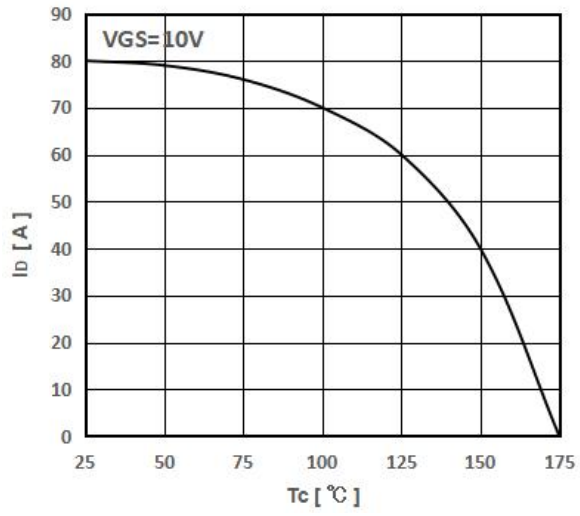
1. $T_C = 25^\circ C$ Limited only by maximum temperature allowed.
2. $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics

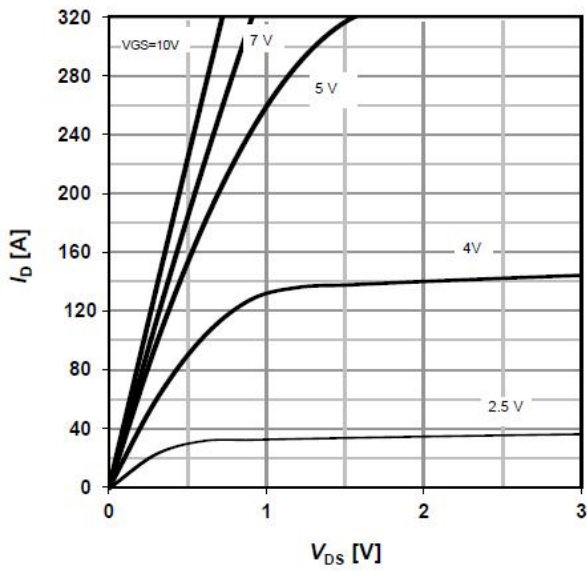
PD-Tc



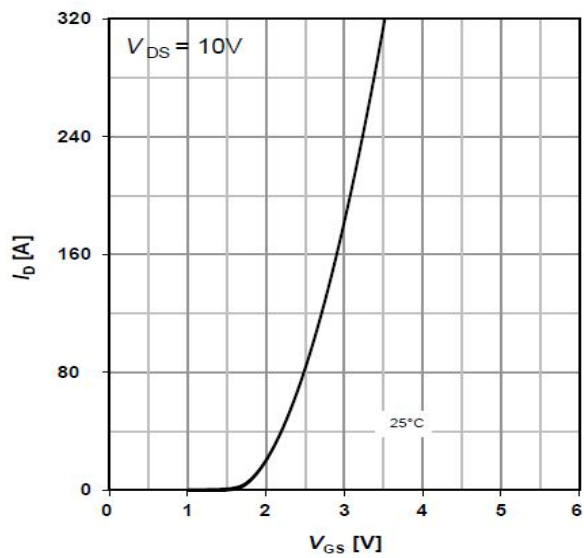
ID - Tc



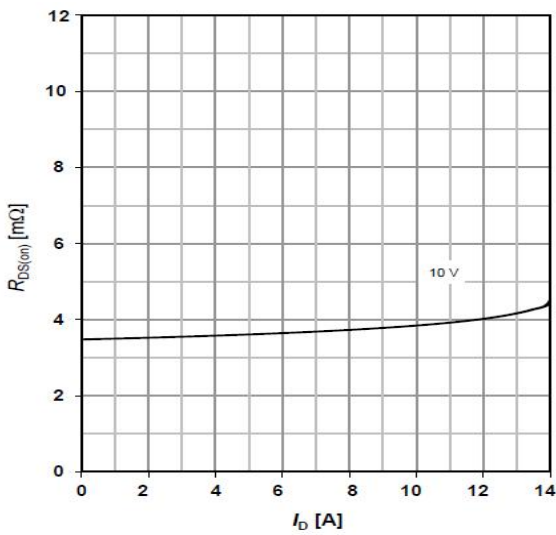
ID - VDS



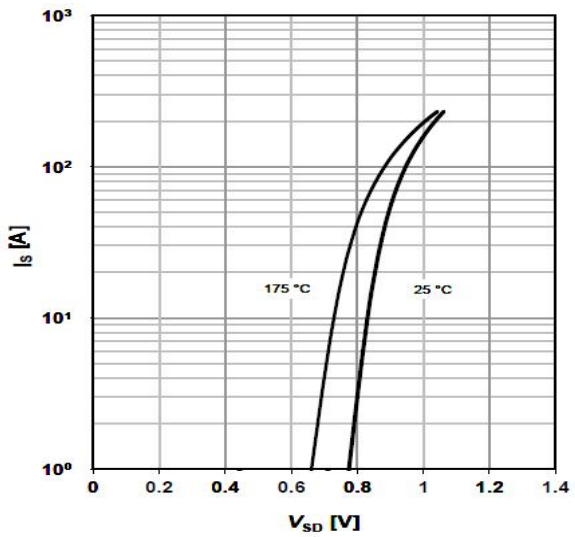
ID - VGS



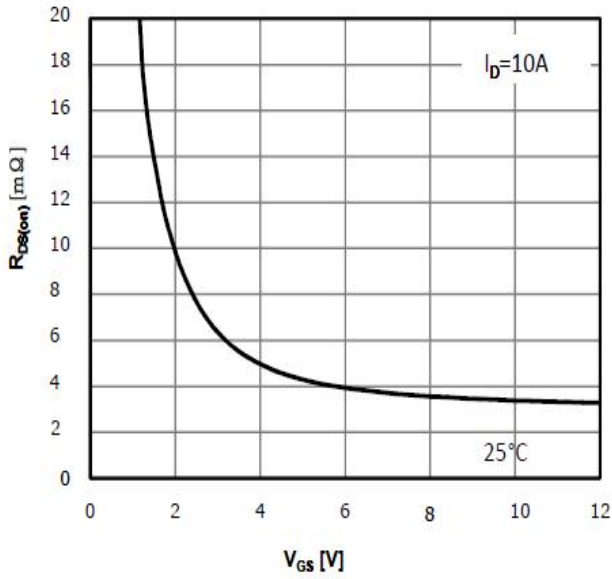
RDS(on) - ID



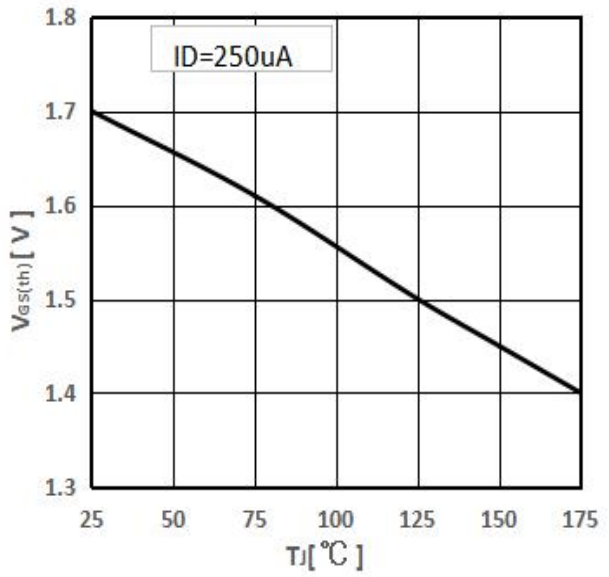
IS - VSD



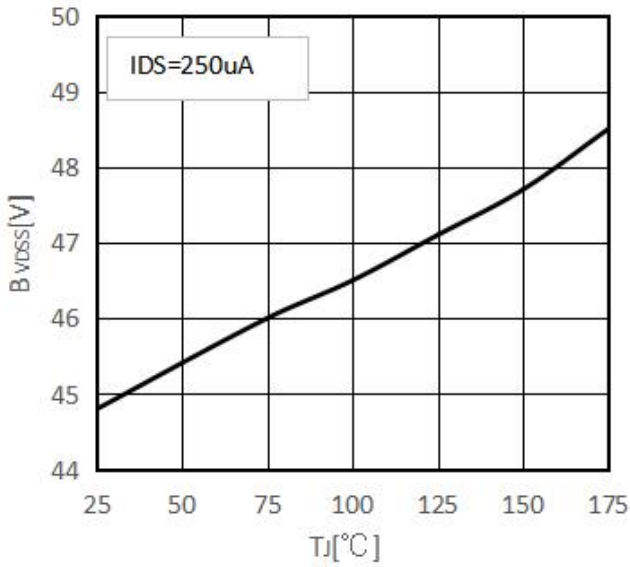
RDS(on) -- VGS



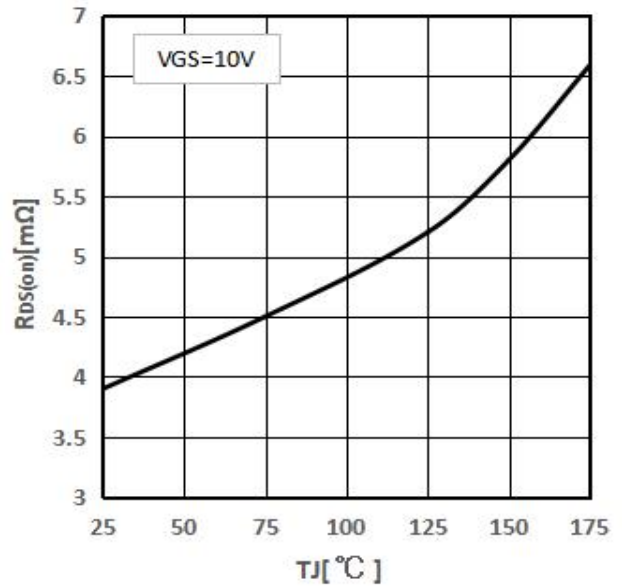
Threshold Voltage



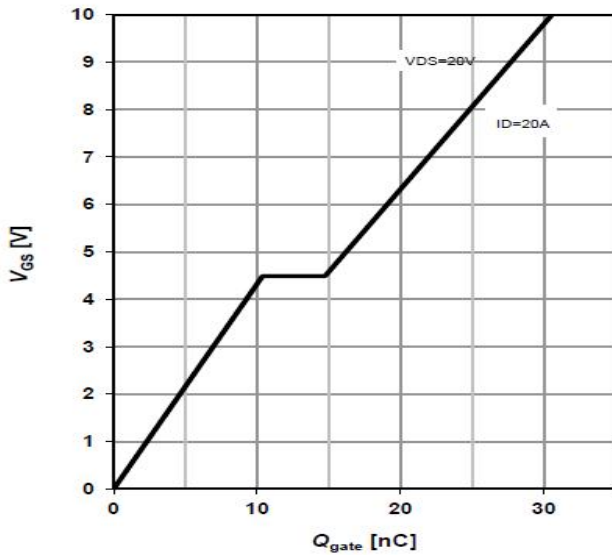
Drain-source breakdown voltage



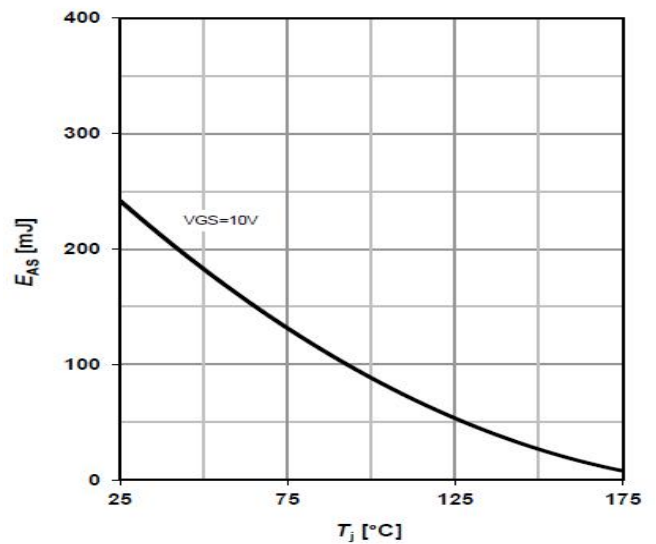
RDS(on) -- TJ



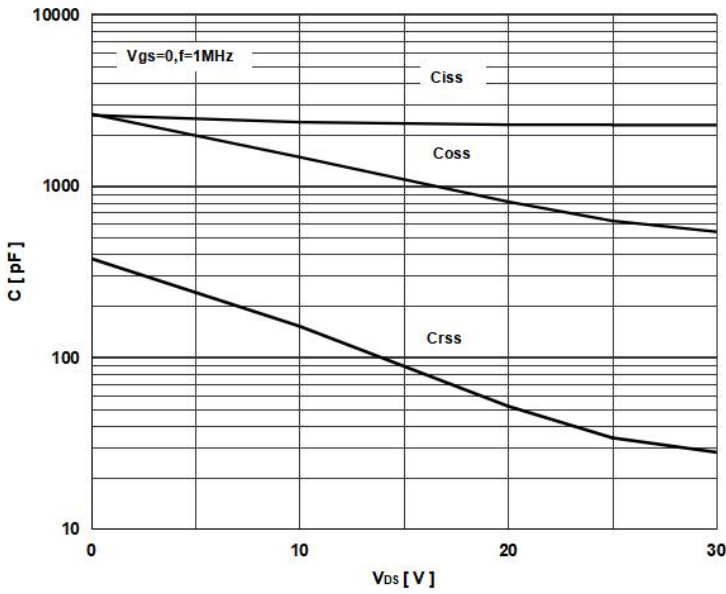
Typ.gate charge



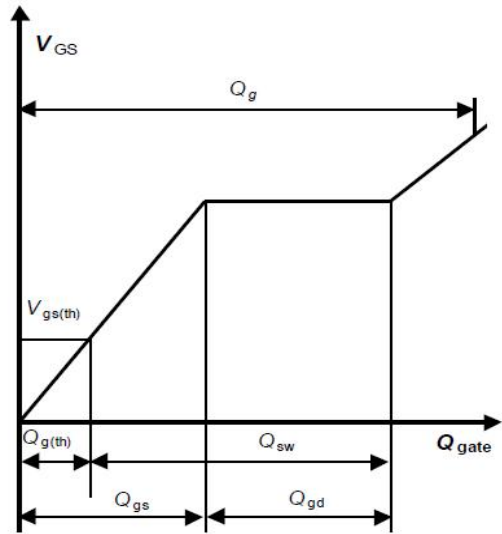
Avalanche energy



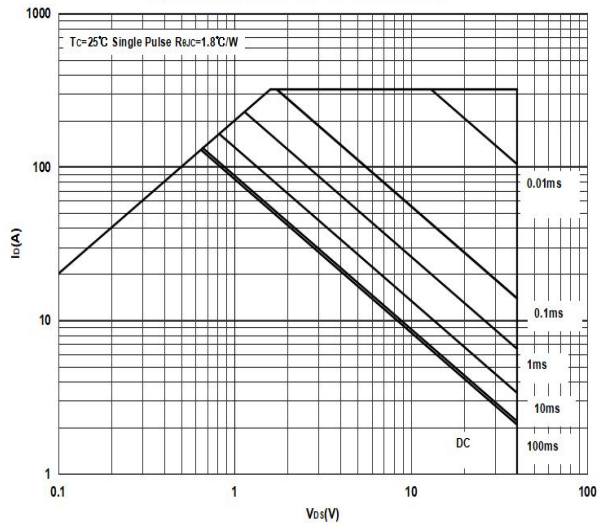
Typ. capacitances



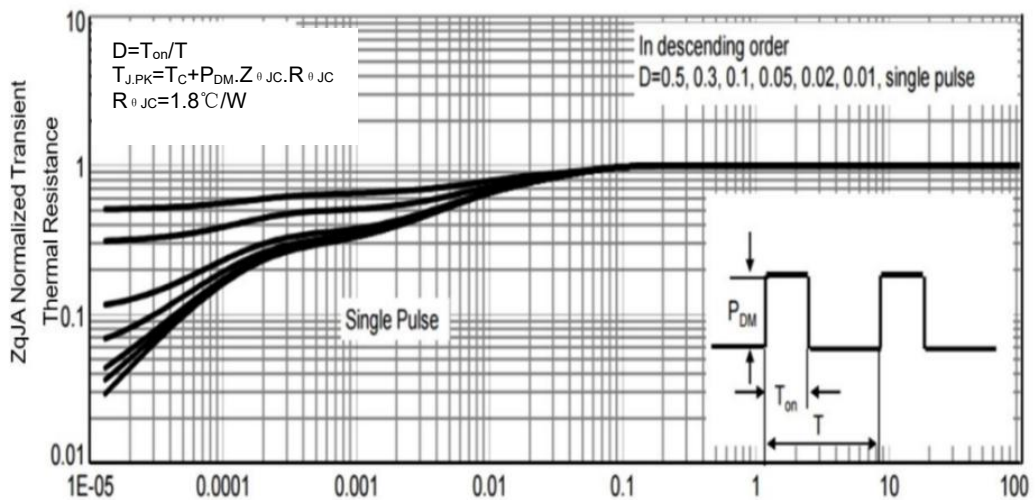
Gate charge waveforms



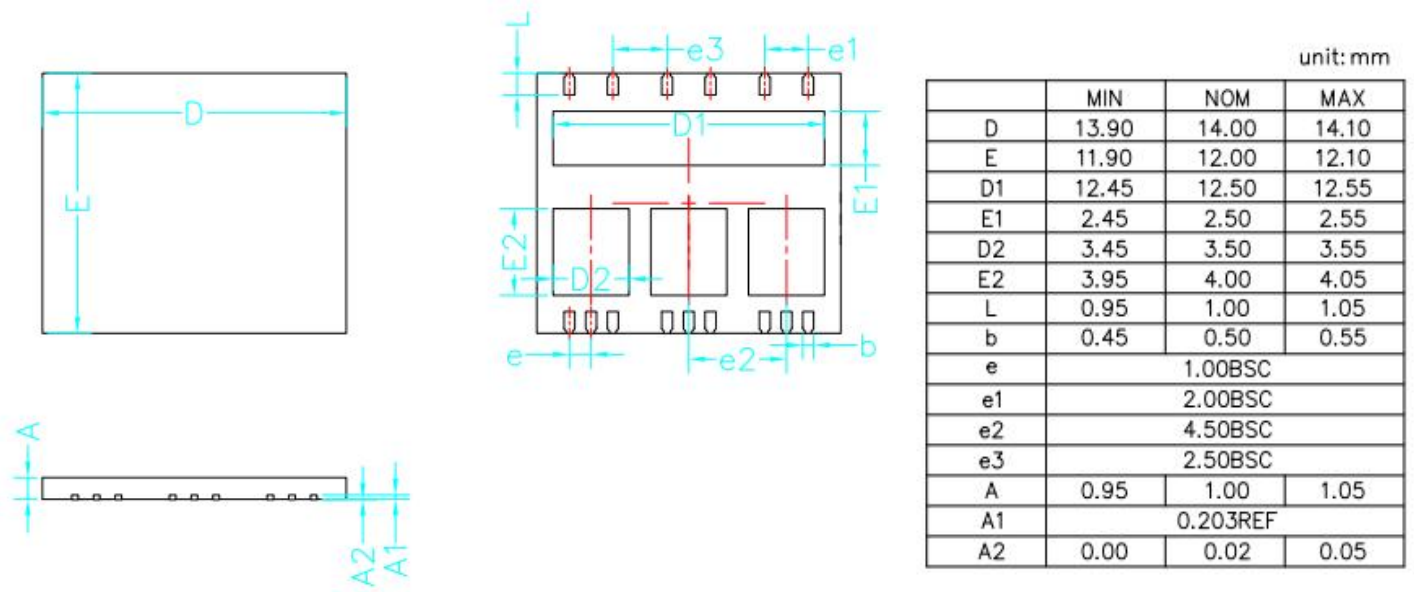
Maximum Forward Biased Safe Operating Area



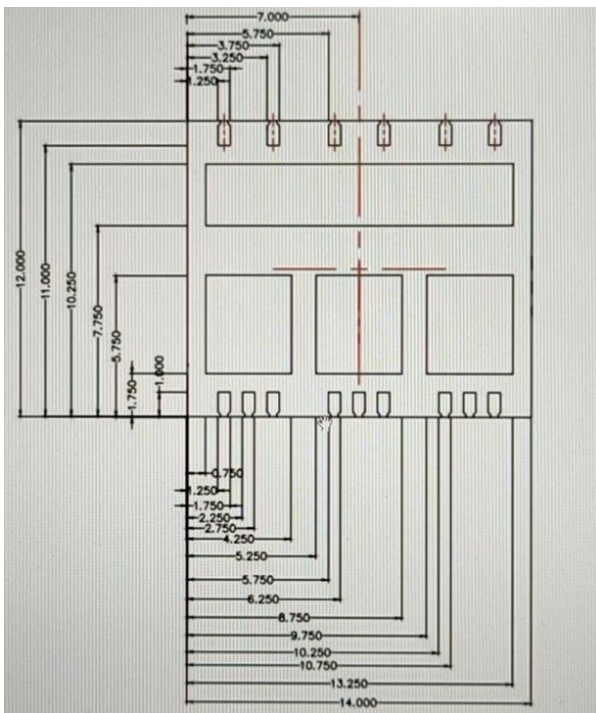
Normalized Thermal Transient Impedance



DFN14*12 Package Outline Dimensions



DFN14*12 Suggested Pad Layout



Note:

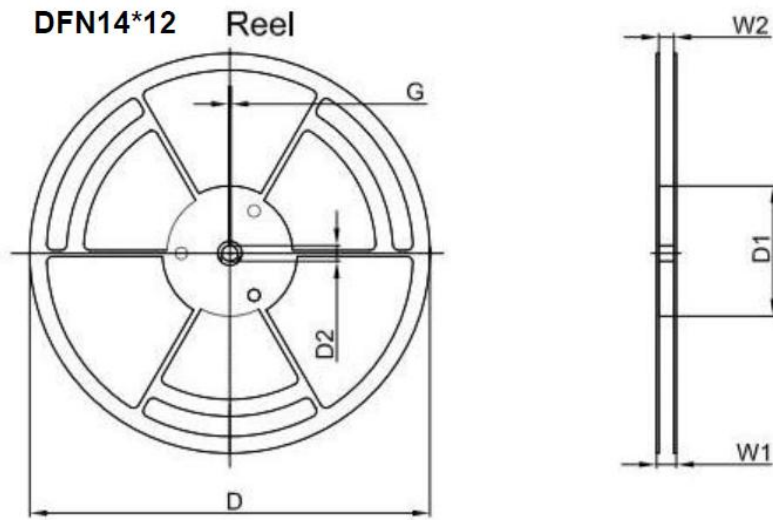
1. Controlling dimension: in millimeters.
2. General tolerance: 0.5mm.
3. The pad layout is for reference purposes only.

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DFN14*12 Tape and Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	G	W1	W2
13"D1a	Ø330,00	100,00	13,00	1,90	28,40	24,00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
2,000 pcs	13 inch	4,000 pcs	340×336×29	20,000 pcs	353×346×365

Date of change	Rev #	revise content
2022/11/21	A/0	/