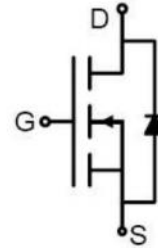


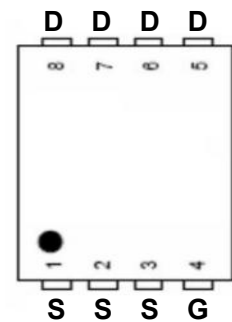
N-Channel Enhancement Mosfet

Features

- 100V,120A
 $R_{DS(on)}$ (TYP: $3.4m\Omega$) < $3.8m\Omega$ @ $V_{GS}=10V$
 $R_{DS(on)}$ (TYP: $4.1m\Omega$) < $4.9m\Omega$ @ $V_{GS}=4.5V$
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(on)}$ and Low Gate Charge



Schematic Diagram



Pin Assignment

Applications

- Load Switch
- PWM Application
- Power Management
- Halogen-free

Package Marking and Ordering Information

Device Marking	Device	Package	Packaging Code	Reel Size	Quantity(Pcs)	Carton(Pcs)
120N100	RM120N100DF	DFN5X6	-W	13inch	5000	80000

ABSOLUTE MAXIMUM RATINGS ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c=25^\circ\text{C}$) ⁽¹⁾	I_D	120	A
Continuous Drain Current ($T_c=100^\circ\text{C}$)	I_D	75	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	480	A
Drain Power Dissipation	P_D	104	W
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	462	mJ
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ⁽³⁾	$R_{\theta JA}$	44	$^\circ\text{C/W}$
Junction Temperature	T_J	-55~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

Notes:

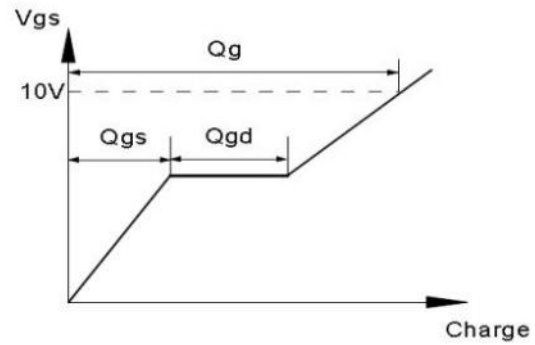
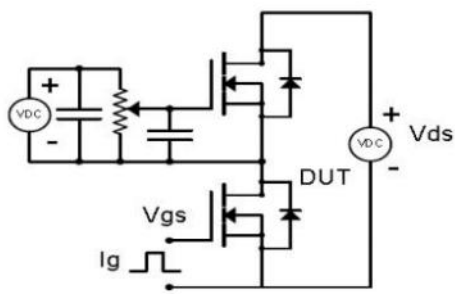
- 1) Repetitive Rating: pulse width limited by maximum junction temperature
- 2) EAS condition : $T_J=25^\circ\text{C}$, $V_{DD}=30V$, $V_G=10V$, $L=0.5mH$, $R_g=25\Omega$, $I_{AS}=43A$
- 3) The value of $R_{\theta JA}$ Mounted on FR4 Board (25.4mm*25.4mm*t1.6mm) With 2oz Copper $T_A=25^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS($T_J=25^{\circ}\text{C}$ unless otherwise noted)

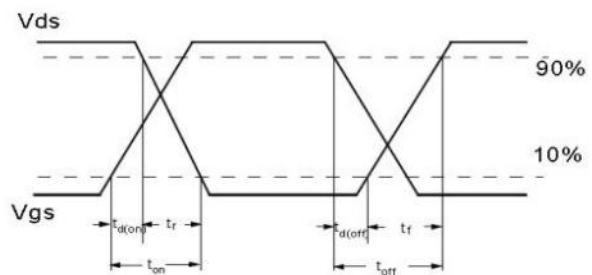
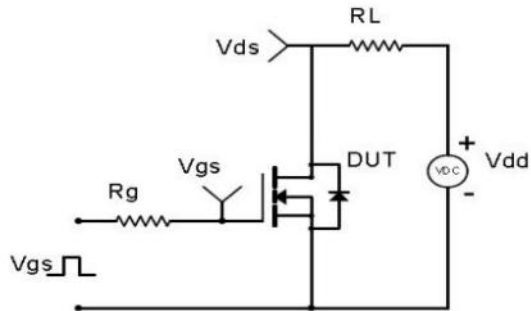
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =± 20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	3.4	3.8	mΩ
		V _{GS} =4.5V, I _D =15A	-	4.1	4.9	mΩ
Forward transconductance	g _{fs}	V _{DS} =5V, I _D =20A	-	55	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz	-	3060	-	pF
Output Capacitance	C _{oss}		-	1330	-	
Reverse Transfer Capacitance	C _{rss}		-	20	-	
Gate resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f=1.0MHz	-	1.7	-	Ω
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =50V, I _D =20A, R _G =3Ω, V _{GS} =10V	-	5.8	-	ns
Turn-on rise time	t _r		-	9.4	-	
Turn-off delay time	t _{d(off)}		-	45	-	
Turn-off fall time	t _f		-	24	-	
Total Gate Charge	Q _g	V _{DS} =50V, I _D =20A, V _{GS} =10V	-	51	-	nC
Gate-Source Charge	Q _{gs}		-	8	-	
Gate-Drain Charge	Q _{gd}		-	10.2	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	T _J =25℃, V _{GS} =0V, I _S =20A	-	0.7	1.2	V
Diode Forward current	I _S	T _C =25℃	-	-	120	A
Body Diode Reverse Recovery Time	T _{rr}	di/dt =100A/us,I _F =20A	-	38	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt =100A/us,I _F =20A	-	46	-	nC

Test Circuit & Waveform

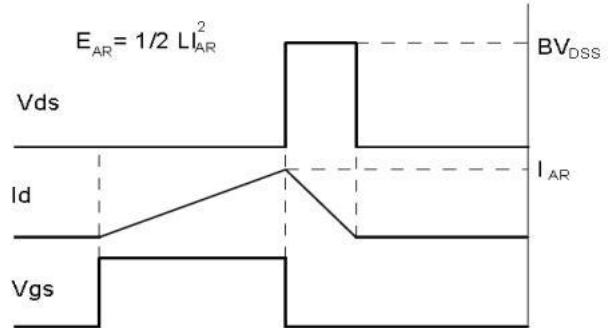
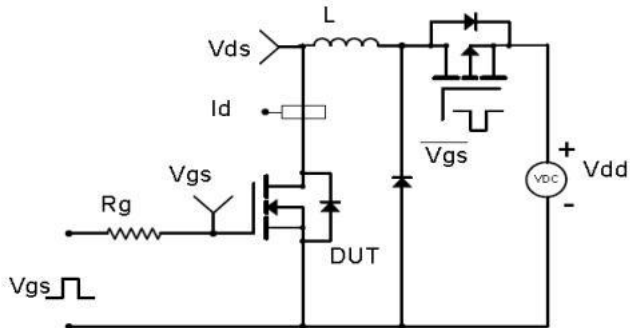
Gate Charge Test Circuit & Waveform



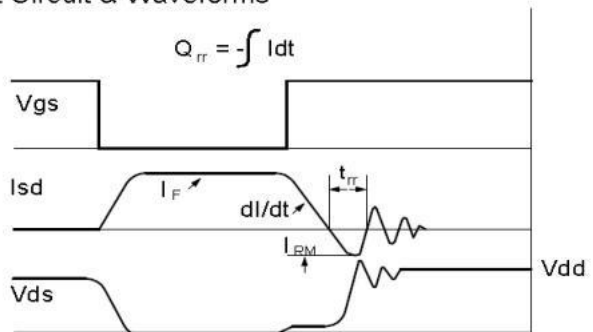
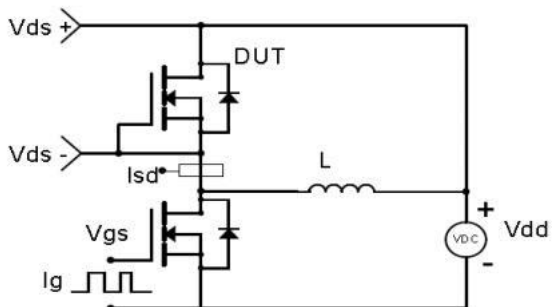
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



RATING AND CHARACTERISTICS CURVES (RM120N100DF)

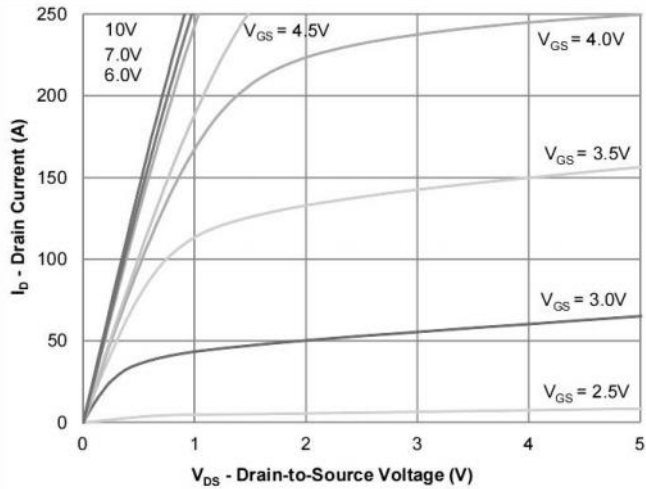


Figure 1: Output Characteristics

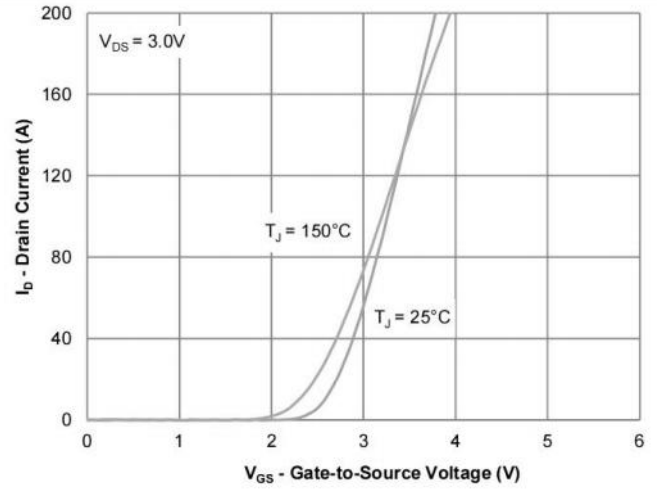


Figure 2: Transfer Characteristics

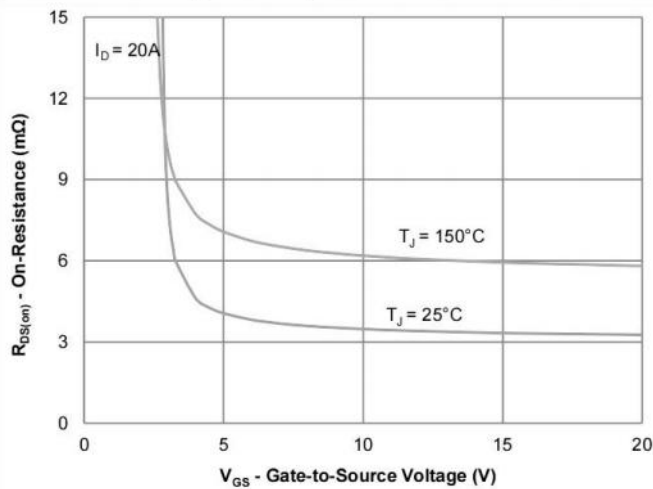


Figure 3: On-Resistance vs. Gate-Source Voltage

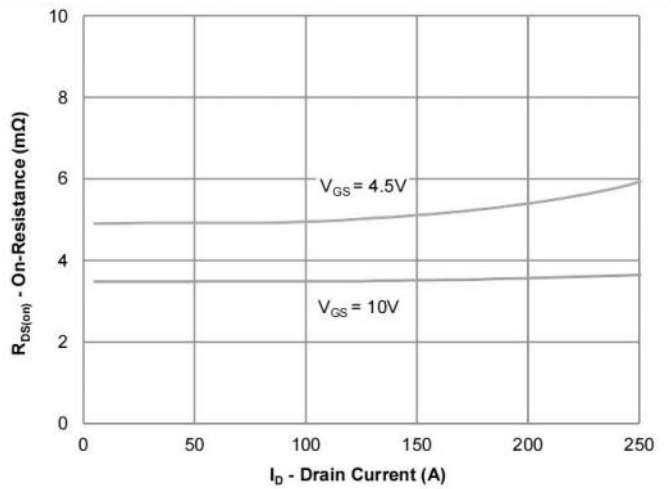


Figure 4: On-Resistance vs. Gate-Source Voltage

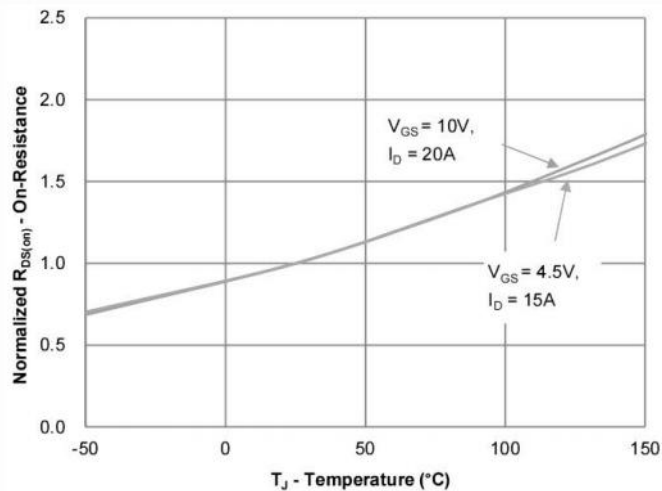


Figure 5: On-Resistance vs. Junction Temperature

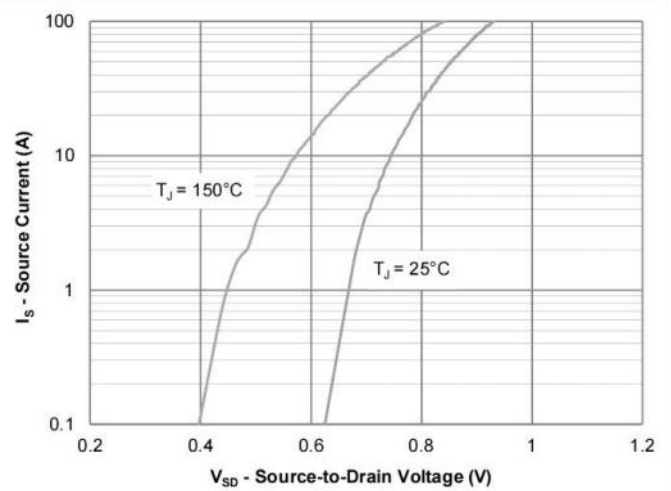


Figure 6: Source-Drain Diode Forward Voltage

RATING AND CHARACTERISTICS CURVES (RM120N100DF)

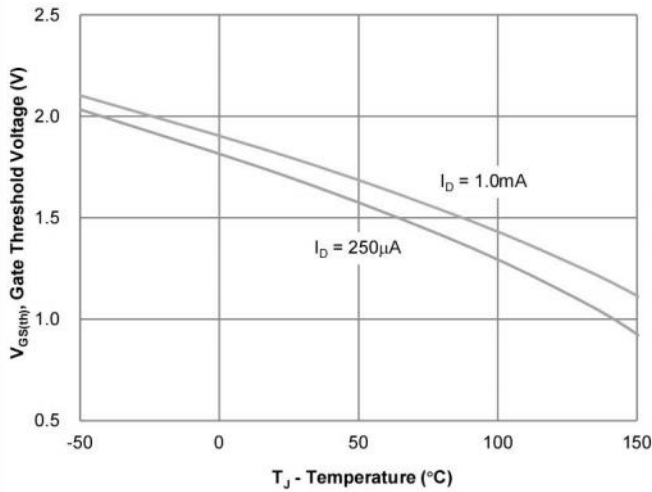


Figure 7: Gate Threshold Variation vs. Junction Temperature

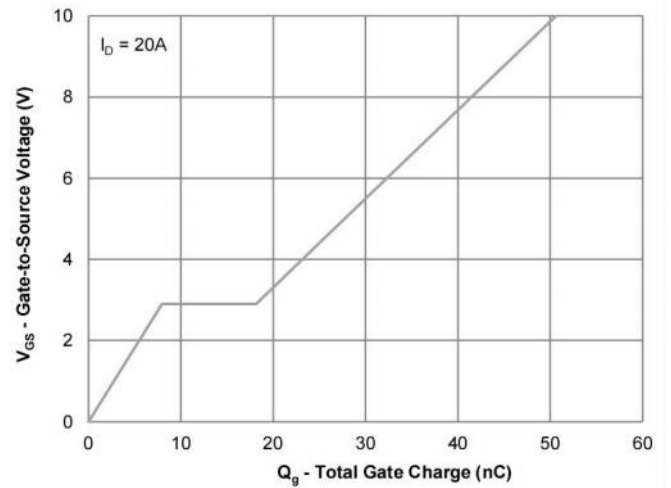


Figure 8: Gate Charge Characteristics

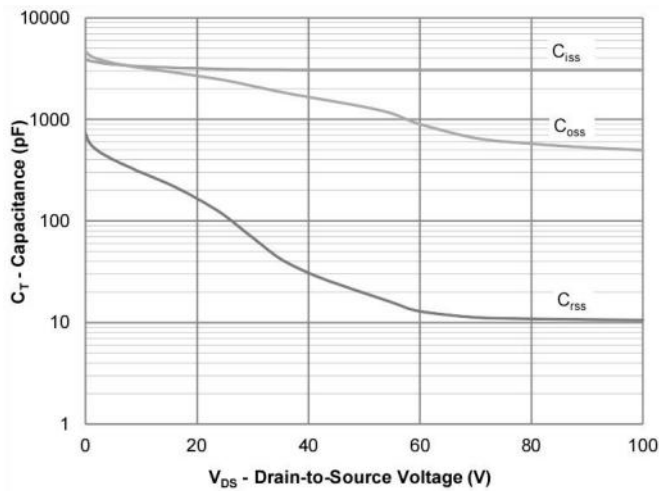


Figure 9: Capacitance Characteristics

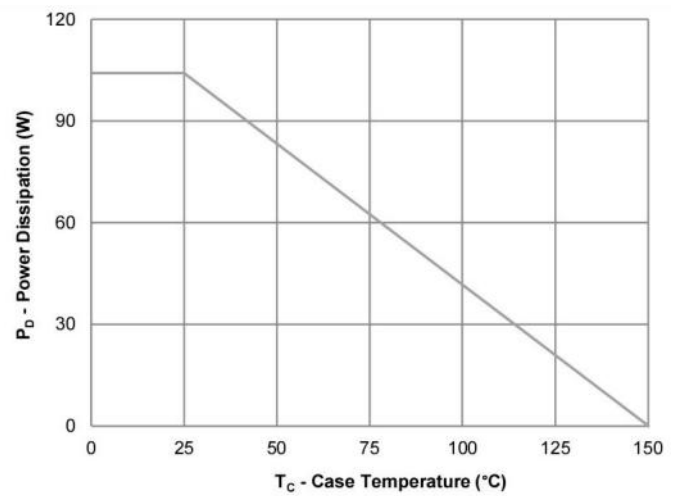


Figure 10: Power Derating

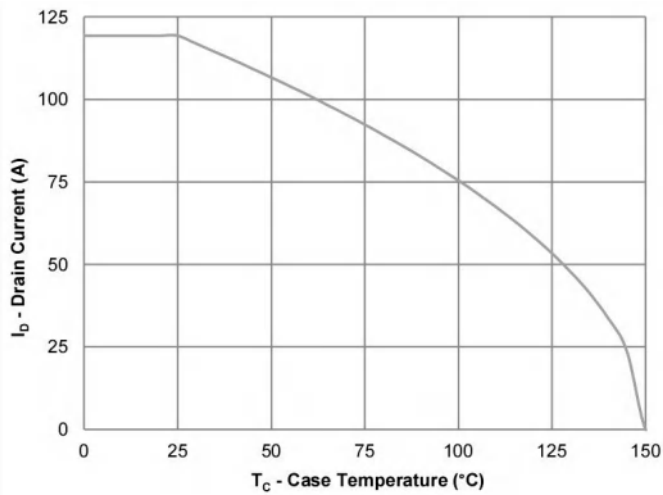


Figure 11: Current Derating

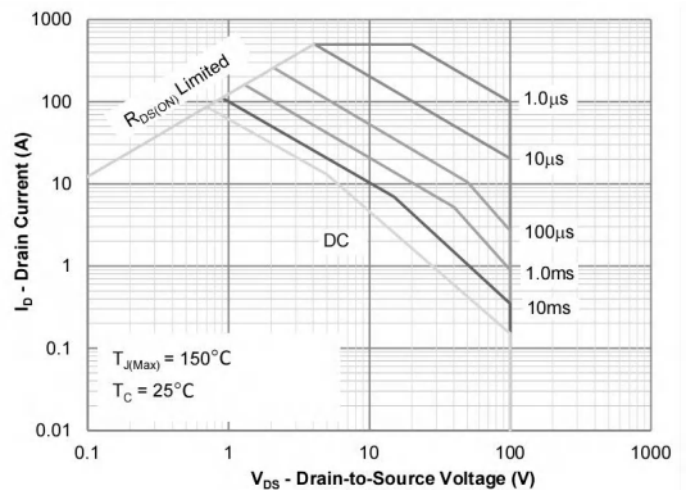


Figure 12: Safe Operating Area

RATING AND CHARACTERISTICS CURVES (RM120N100DF)

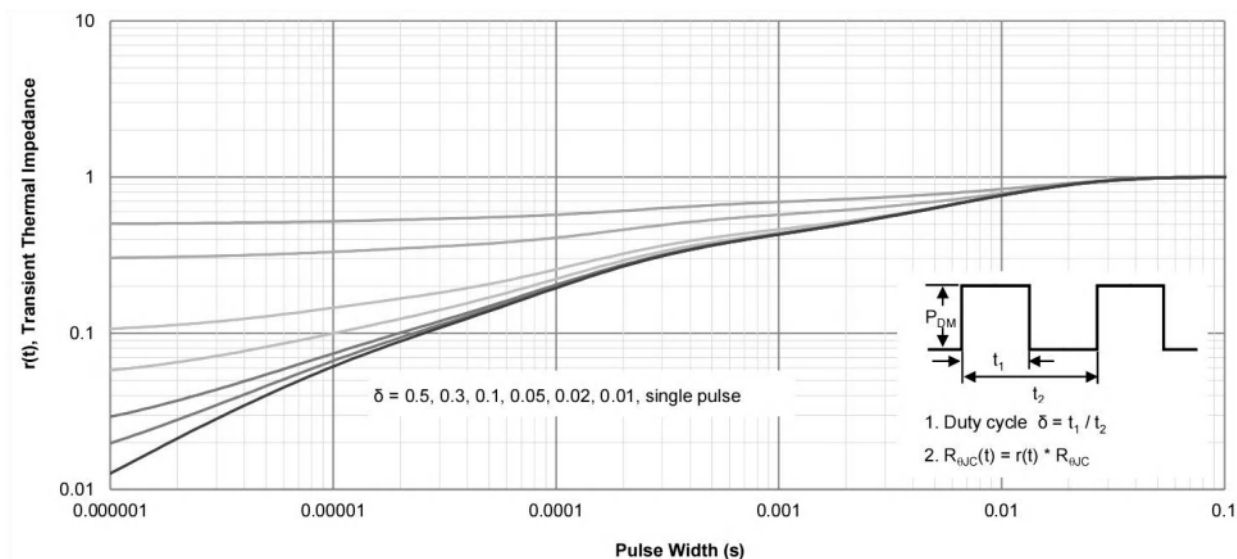


Figure 13: Normalized Maximum Transient Thermal Impedance



RECTRON

Marking on the body

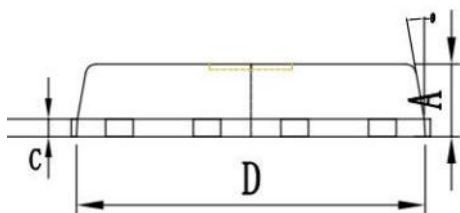
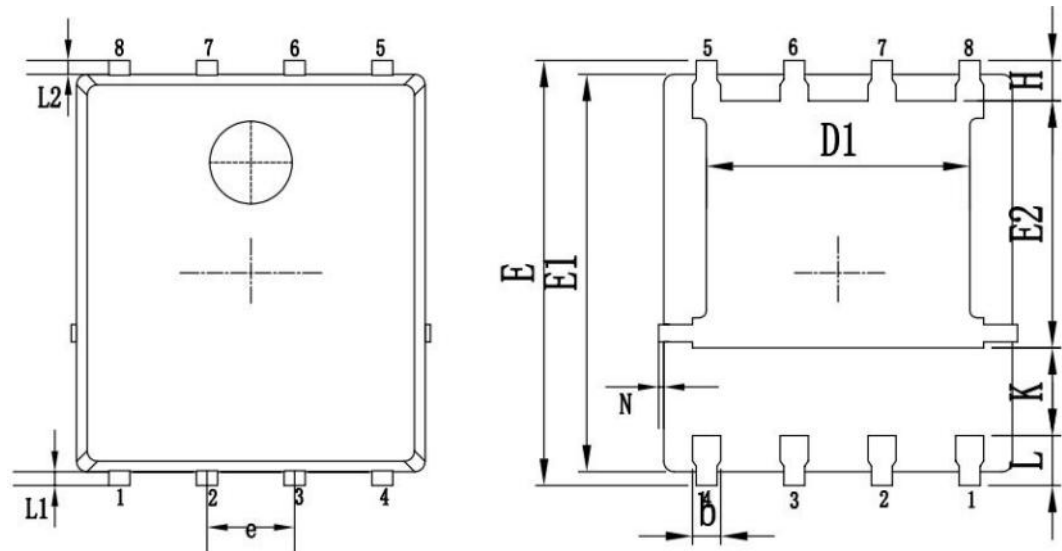
Rectron Logo →  Y Y W W

Year – Code
(Y:26-----2026
27-----2027.....)

Week – code
(WW:01~52)

1 2 0 N 1 0 0 ← Part No.

DFN5X6 Package Information



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.20	0.40	0.50
C	0.20	0.25	0.35
D	4.80	5.05	5.20
D1	3.80	3.90	4.10
E	5.90	6.00	6.20
E1	5.60	5.75	5.90
E2	3.40	3.50	3.60
e	1.27 BSC.		
H	0.40	0.60	0.70
K	1.17	1.27	1.37
L	0.50	0.74	0.84
L1/L2	0.10	0.16	0.20
θ	8°	10°	12°
N	0	-	0.15

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