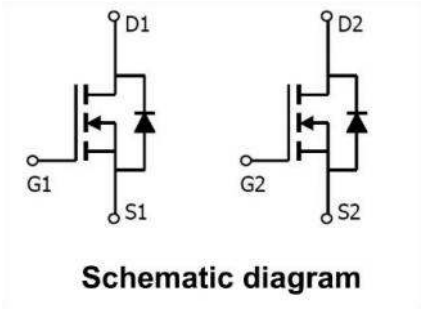
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RMD40N100DFV

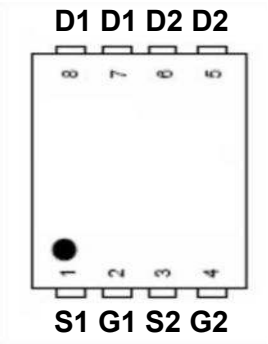
Dual N-Channel Enhancement Mosfet

Features

- 100V,40A
  $R_{DS(ON)}$ (TYP: 15.8mΩ) < 21mΩ @V_{GS}=10V
  $R_{DS(ON)}$ (TYP: 19.5mΩ) < 25mΩ @V_{GS} =4.5V
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- P/N suffix V means AEC-Q101 qualified, e.g:RMD40N100DFV
- Halogen-free



Schematic diagram



pin Assignment

Application

- High Frequency Switching
- Synchronous Rectification

Package Marking and Ordering Information

Device Marking	Device	Package	Packaging Code	Reel Size	Quantity(Pcs)	Carton(Pcs)
D40N100	RMD40N100DFV	DFN5X6	-W	13inch	5000	80000

ABSOLUTE MAXIMUM RATINGS (T_J=25℃ 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℃)	I_D	40	A
Continuous Drain Current (T_c =100℃)	I_D	30	A
Pulsed Drain Current (1)	I_{DM}	160	A
Single Pulsed Avalanche Energy (2)	E_{AS}	100	mJ
Power Dissipation	P_D	81	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.85	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	65	℃/W
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55~ +175	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_J=25℃ unless otherwise noted)

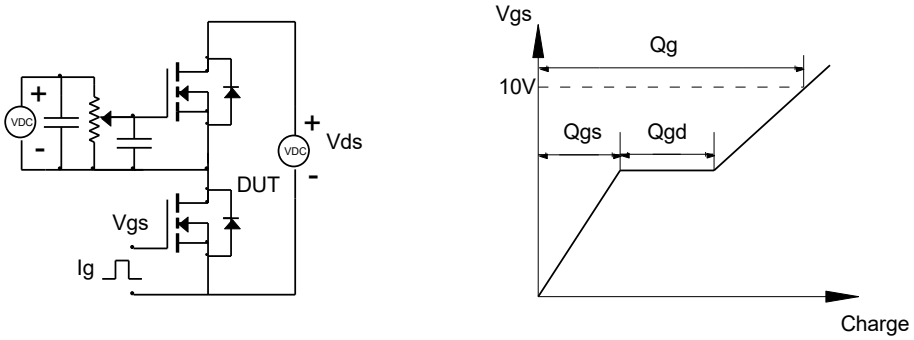
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	15.8	21.0	mΩ
		V_{GS} =4.5V, I_D =10A	-	19.5	25.0	
Gate Resistance	R_g	V_{DS} =V_{GS} =0V, f =1MHz	-	1.44	-	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz	-	1016	-	pF
Output Capacitance	C_{oss}		-	194	-	
Reverse Transfer Capacitance	C_{rss}		-	3.4	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, I_D=40A, V_{GS}=10V, R_G=3.3Ω	-	27	-	ns
Turn-on rise time	t_r		-	49	-	
Turn-off delay time	$t_{d(off)}$		-	225	-	
Turn-off fall time	t_f		-	94	-	
Total Gate Charge	Qg	VDS=50V, ID=40A, VGS=10V	-	13.8	-	nC
Gate-Source Charge	Qgs		-	4.0	-	
Gate-Drain Charge	Qgd		-	2.3	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=20A	-	-	1.0	V
Diode Forward current	I_S		-	-	40	A
Reverse Recovery Chrage	Qrr	I_F=20A,di/dt=100A/us		32		nC
Reverse Recovery Time	Trr	I_F=20A,di/dt=100A/us		33		ns

Notes:

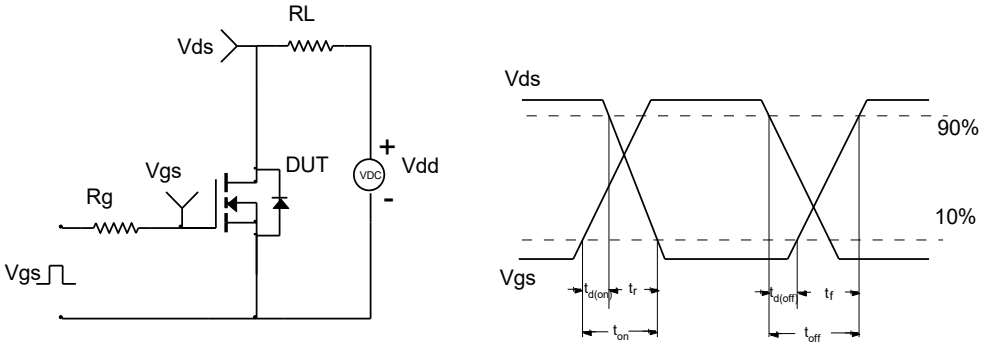
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25℃, V_{DD}=20V, I_{AS}=20A,R_G=25Ω, L=0.5mH
3. The value of $R_{\theta JA}$ Mounted on FR4 Board（2 5.4mm*25.4mm*t1.6mm）With 2oz Copper， Ta=25℃

Test Circuit

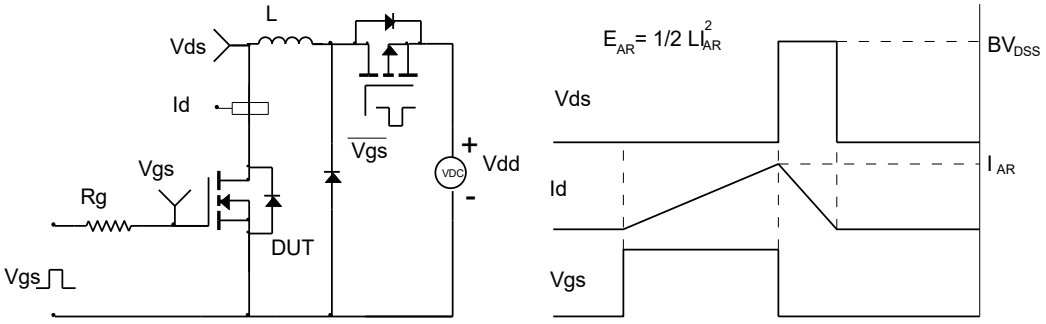
Gate Charge Test Circuit & Waveform



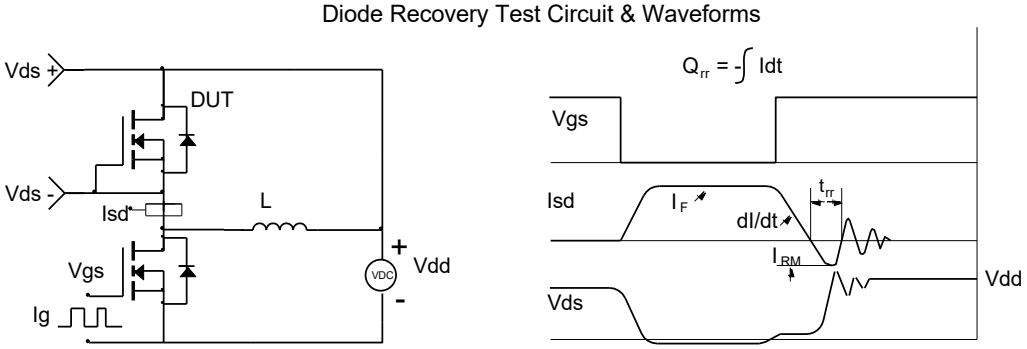
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



RATING AND CHARACTERISTICS CURVES (RMD40N100DFV)

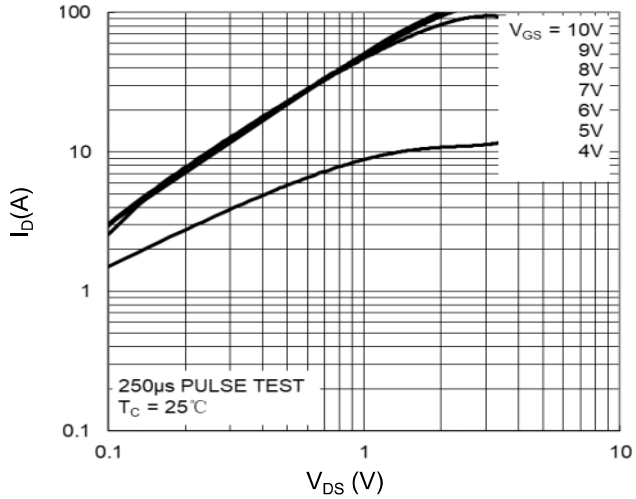


Figure 1: On-Region Characteristics

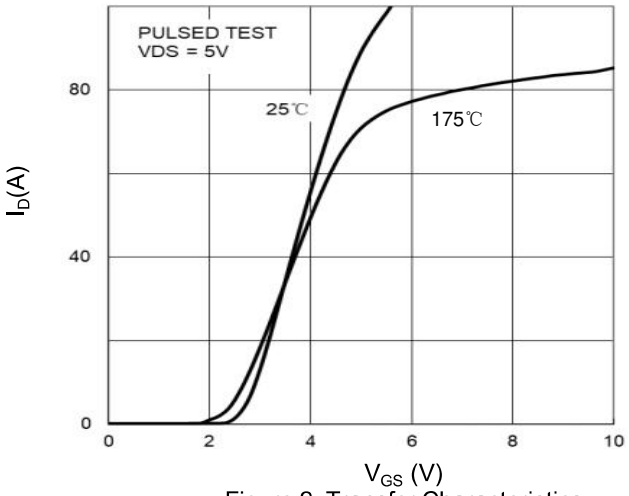


Figure 2: Transfer Characteristics

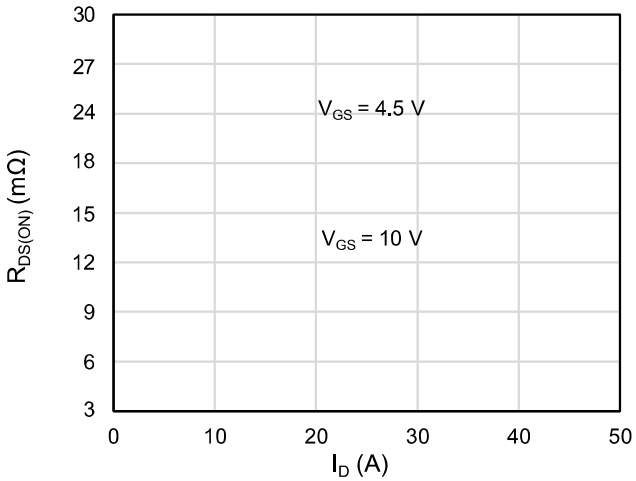


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

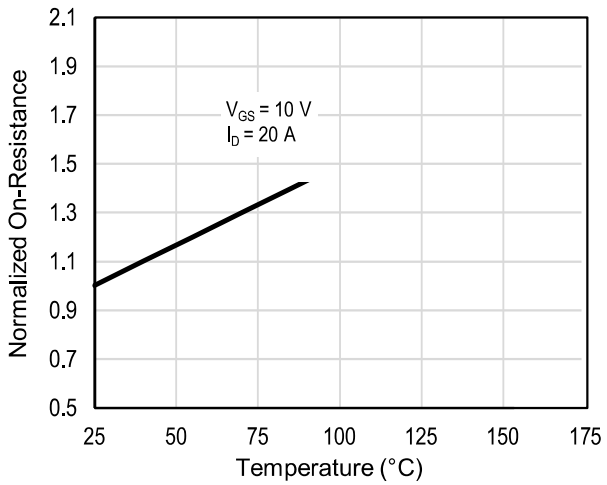


Figure 4: On-Resistance vs. Junction Temperature

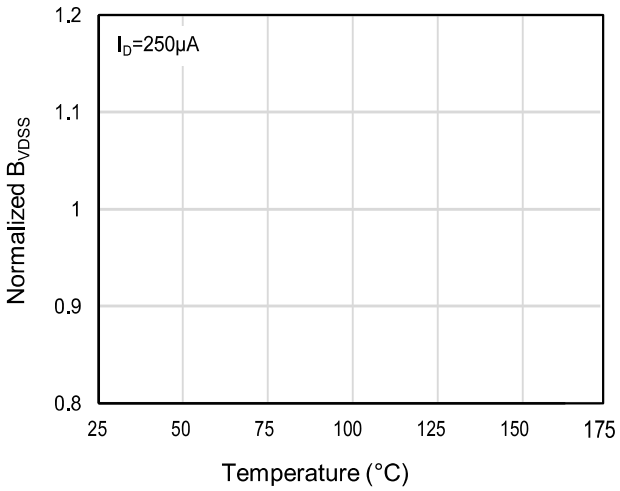


Figure 5: Breakdown Voltage vs. Junction Temperature

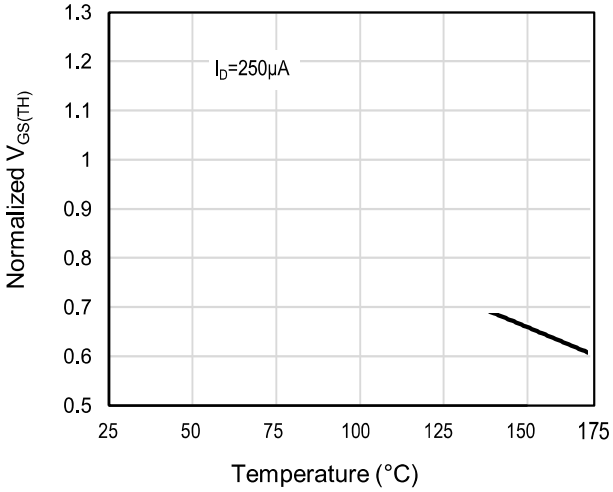


Figure 6: Threshold Voltage vs. Junction Temperature

RATING AND CHARACTERISTICS CURVES (RMD40N100DFV)

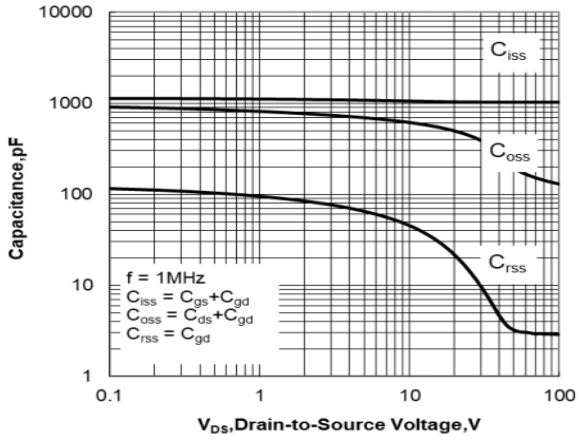


Figure 7. Capacitance Characteristics

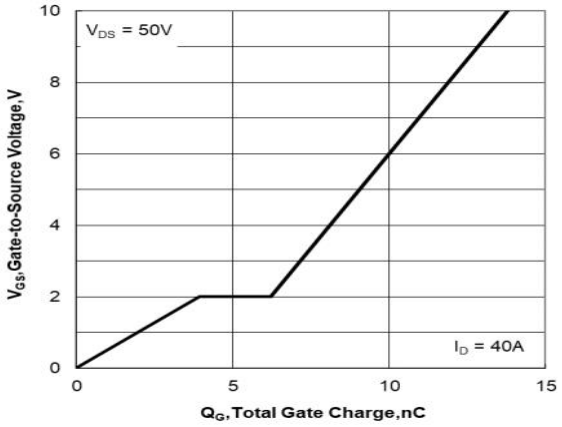


Figure 8. Gate Charge Characteristics

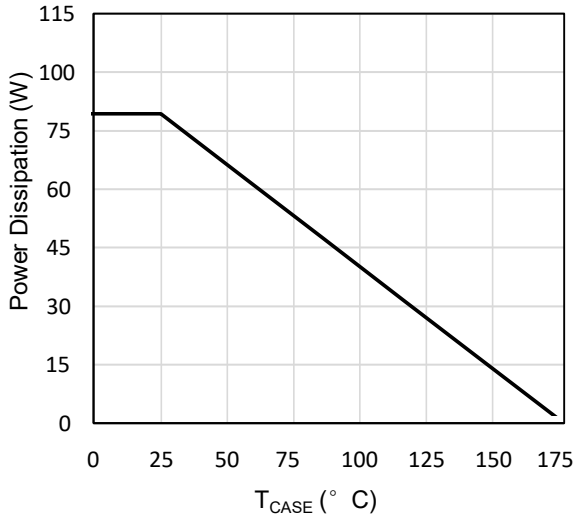


Figure 9. Maximum Continuous Drain Current vs Case Temperature

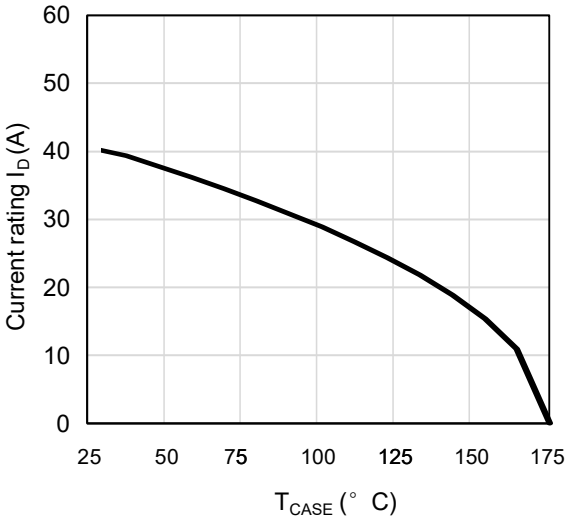


Figure 10. Maximum Power Dissipation vs Case Temperature

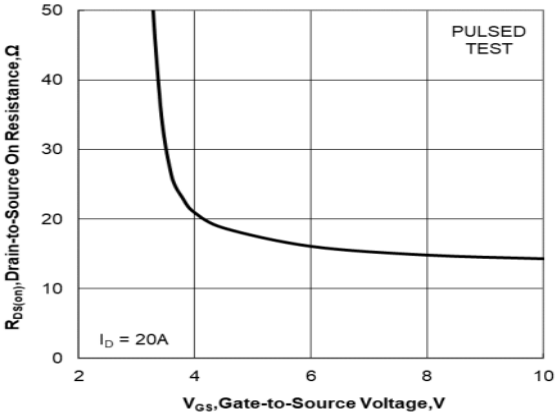


Figure11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

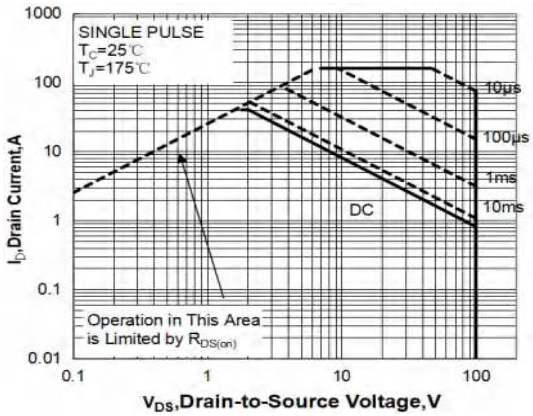


Figure 12. Maximum Safe Operating Area

RATING AND CHARACTERISTICS CURVES (RMD40N100DFV)

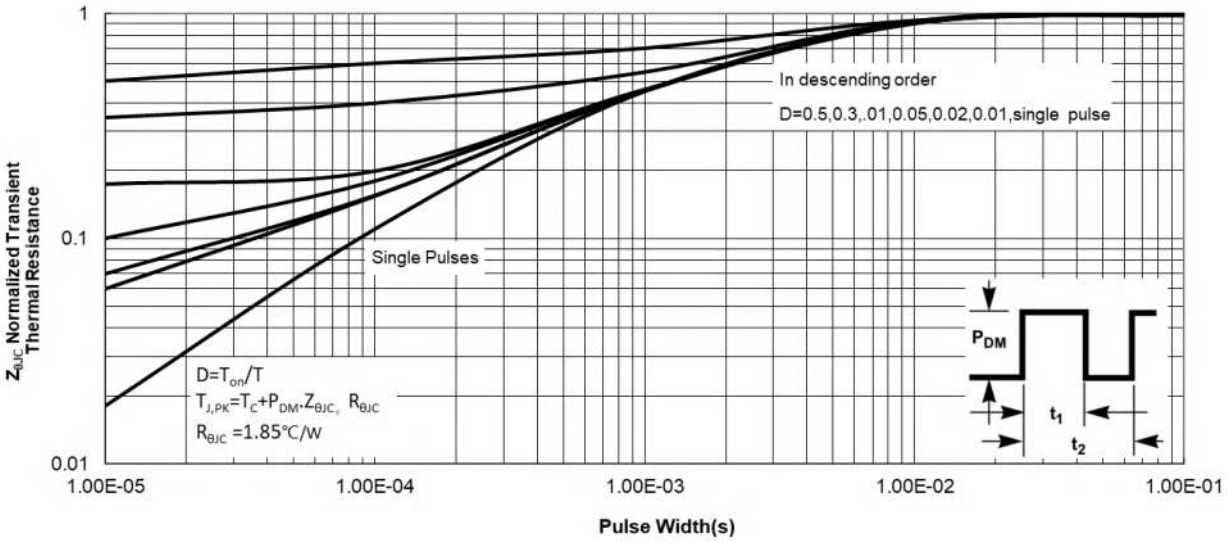


Figure.13: Maximum Effective Transient Thermal Impedance, Junction-to-Case

RECTRON

Marking on the body

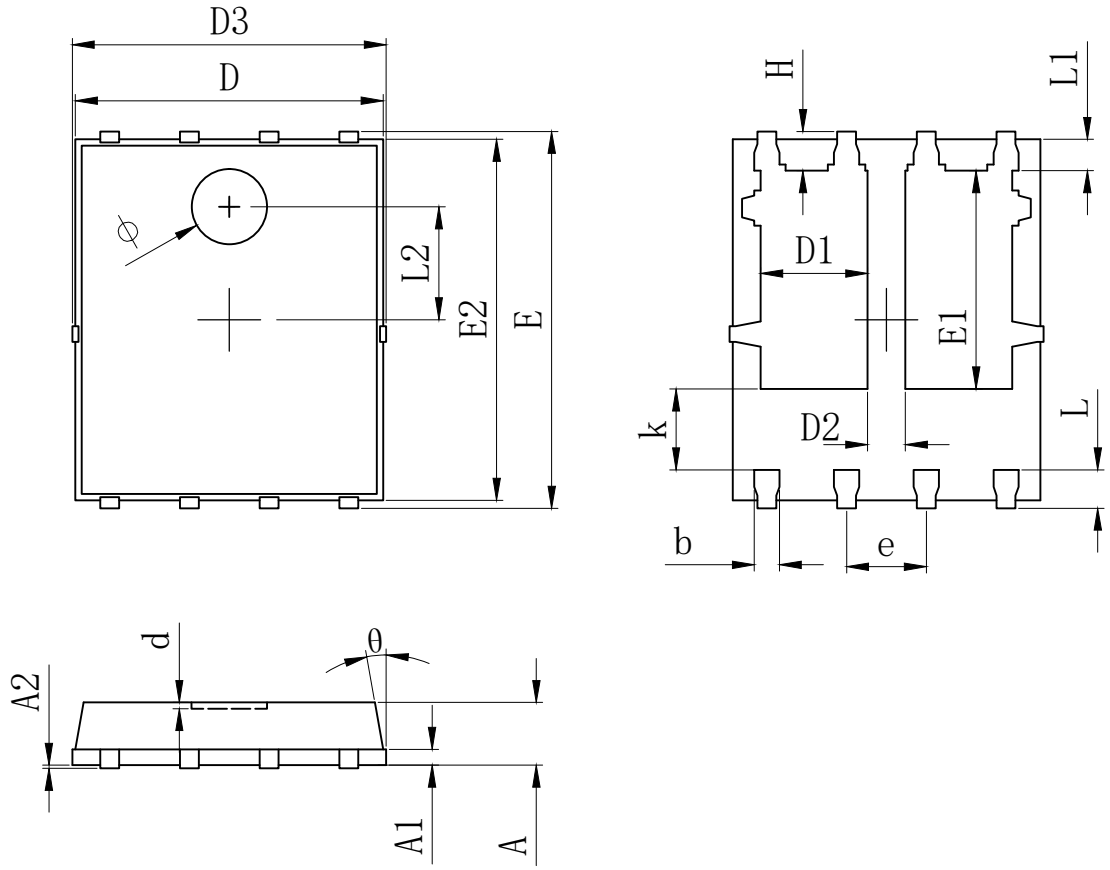
Rectron Logo → Y Y W W

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

Week – code
(WW:01~52)

D 4 0 N 1 0 0 ← Part No.

DFN5X6 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	1.605	1.705	1.805
D2	0.500	0.600	0.700
D3	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100

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