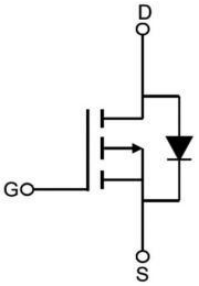
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RM65P40D3V

P-Channel Enhancement Mosfet

Features

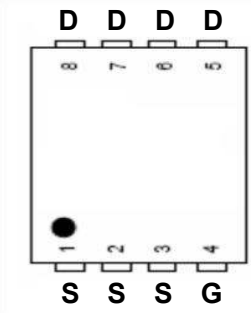
- -40V,-65A
  $R_{DS(ON)}$ (TYP: 7.2mΩ) < 8.9mΩ @V_{GS}=-10V
  $R_{DS(ON)}$ (TYP: 11.8mΩ) < 14.8mΩ @V_{GS}=-4.5V
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation
- Tjmax=175℃



Schematic Diagram

Applications

- DC/DC converters
- Load Switching
- General Automotive Applications
- Halogen-free
- P/N suffix V means AEC-Q101 qualified,e.g:RM65P40D3V



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Packaging Code	Reel Size	Quantity(PCS)
65P40V	RM65P40D3V	DFN3X3	-W	13inch	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃) (1)	I_D	-65	A
Continuous Drain Current (Tc=100℃)	I_D	-46	A
Pulsed Drain Current (1)	I_{DM}	-260	A
Drain Power Dissipation	P_D	60	W
Single Pulsed Avalanche Energy (2)	E_{AS}	210	mJ
Thermal Resistance from Junction to Ambient (3)	$R_{\theta JA}$	48	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.5	℃/W
Junction Temperature	T_J	-55~ +175	℃
Storage Temperature	T_{STG}	-55~ +175	℃

Notes:

2026-03/59
REV:O

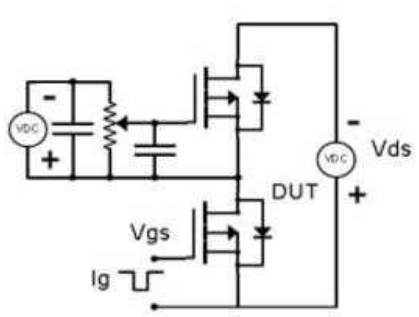
1) Repetitive Rating: pulse width limited by maximum junction temperature
2) EAS condition : T_J=25℃, V_{DD}=-20V, V_G=-10V, L=0.5mH, R_g=25Ω, I_{AS}=-29A
3) The value of RθJA Mounted on FR4 Board（25.4mm*25.4mm*t1.6mm）With 2oz Copper TA=25℃

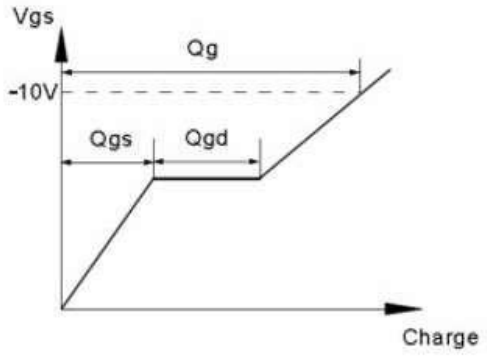
MOSFET ELECTRICAL CHARACTERISTICS(T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-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} =±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	-	7.2	8.9	mΩ
		V_{GS} =-4.5V, I_D =-15A	-	11.8	14.8	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-20V, V_{GS}=0V, f=1MHz	-	1511	-	pF
Output Capacitance	C_{oss}		-	1080	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V, I_D=-20A, R_G=3Ω, V_{GS}=-10V	-	5.5	-	ns
Turn-on rise time	t_r		-	13	-	
Turn-off delay time	$t_{d(off)}$		-	47	-	
Turn-off fall time	t_f		-	26	-	
Total Gate Charge	Qg	V_{DS}=-20V, I_D=-20A, V_{GS}=-10V	-	24	-	nC
Gate-Source Charge	Qgs		-	4.5	-	
Gate-Drain Charge	Qgd		-	3.8	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=-20A	-	-	-1.2	V
Diode Forward current	I_S	T_C=25℃	-	-	-65	A
Body Diode Reverse Recovery Time	Trr	di/dt=-100A/us,IF=-20A	-	38	-	ns
Body Diode Reverse Recovery Charge	Qrr	di/dt=-100A/us,IF=-20A	-	25	-	nC

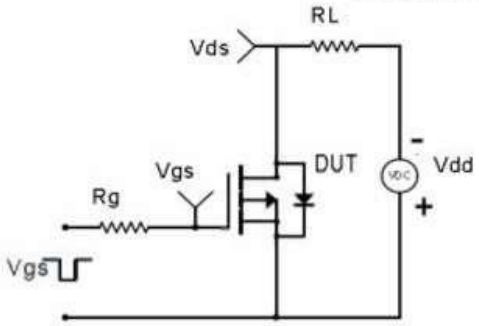
Test Circuit & Waveform

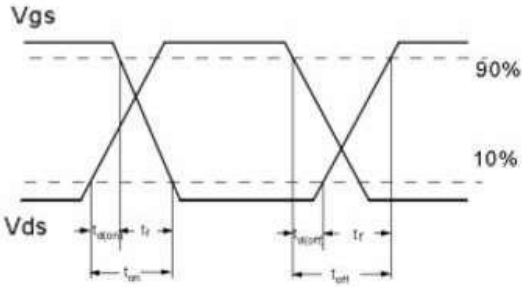
Gate Charge Test Circuit & Waveform



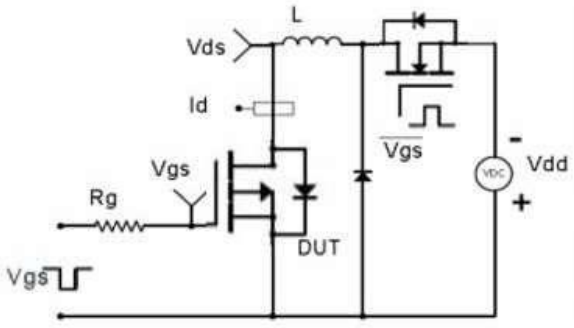


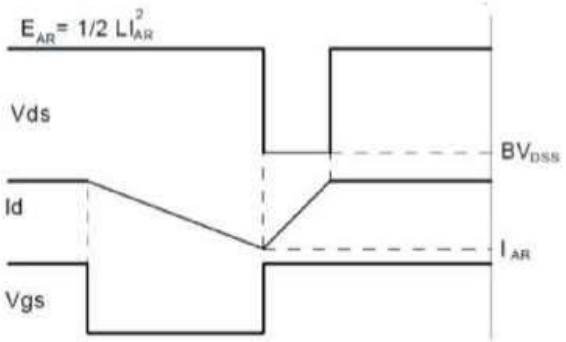
Resistive Switching Test Circuit & Waveforms



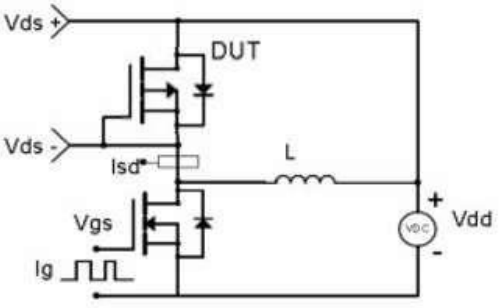


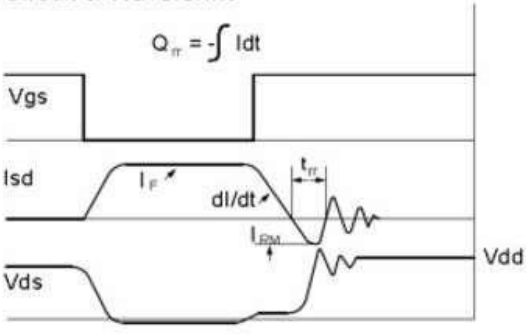
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms





RATING AND CHARACTERISTICS CURVES (RM65P40D3V)

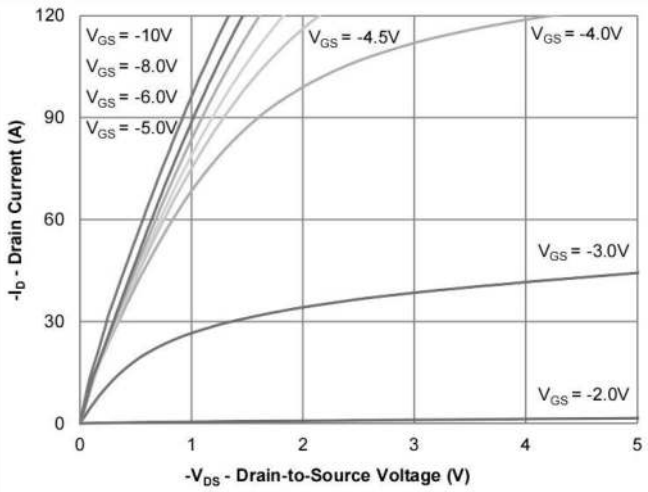


Figure 1: Output Characteristics

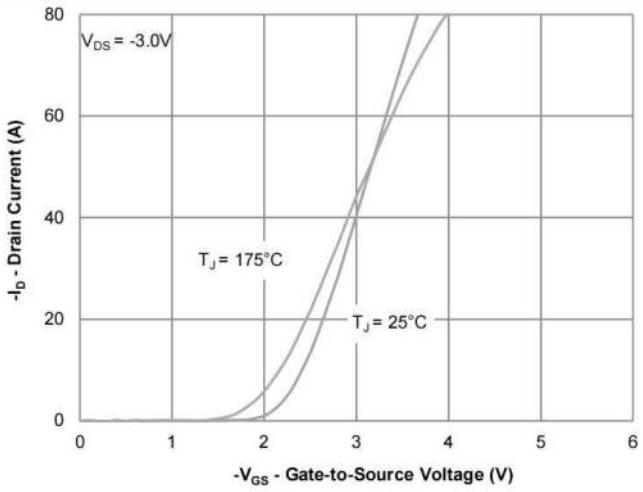


Figure 2: Transfer Characteristics

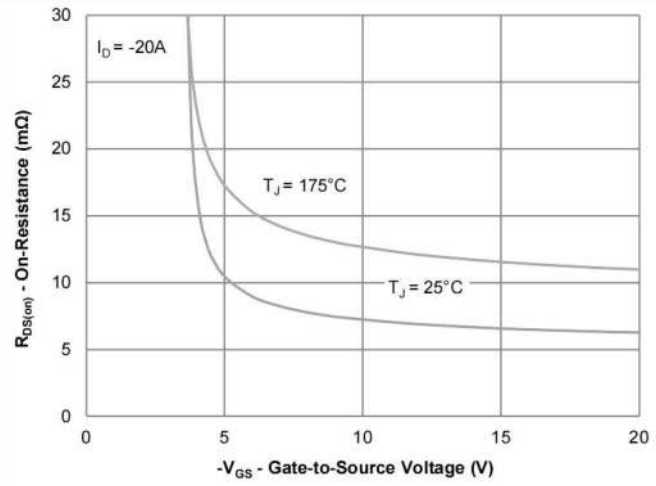


Figure 3: On-Resistance vs. Gate-Source Voltage

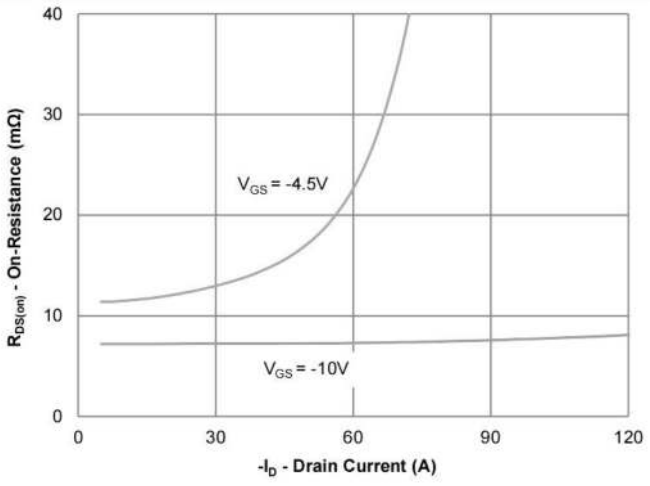


Figure 4: On-Resistance vs. Gate-Source Voltage

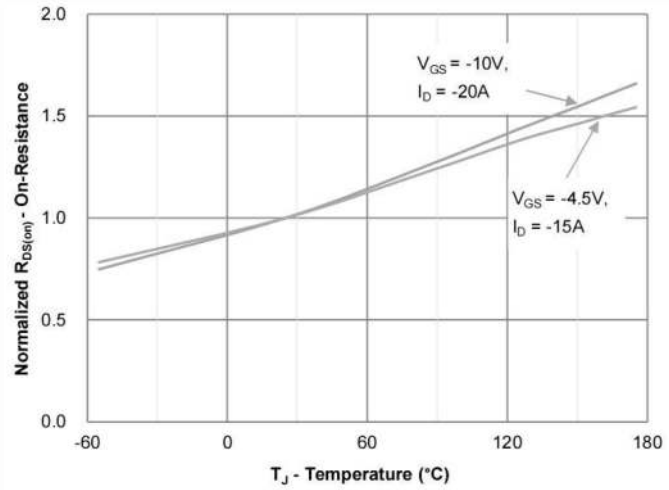


Figure 5: On-Resistance vs. Junction Temperature

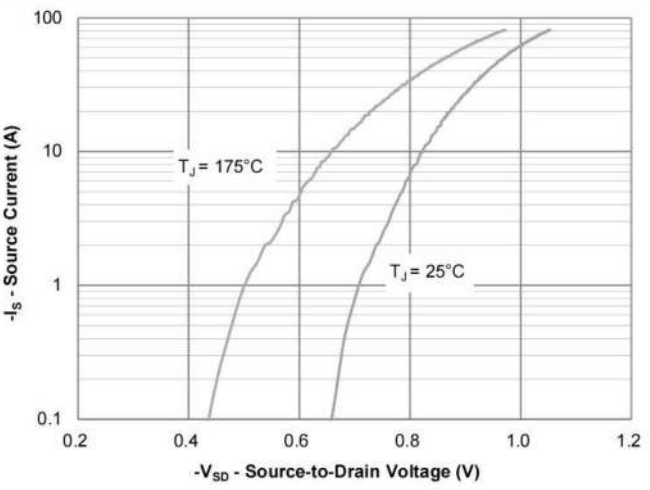


Figure 6: Source-Drain Diode Forward Voltage

RATING AND CHARACTERISTICS CURVES (RM65P40D3V)

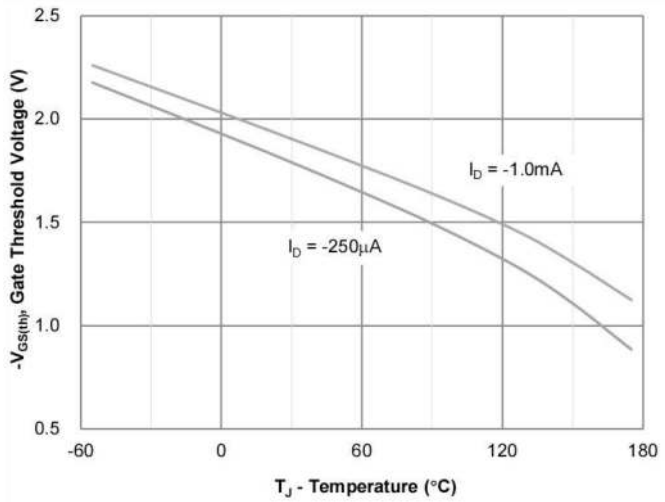


Figure 7: Gate Threshold Variation vs. Junction Temperature

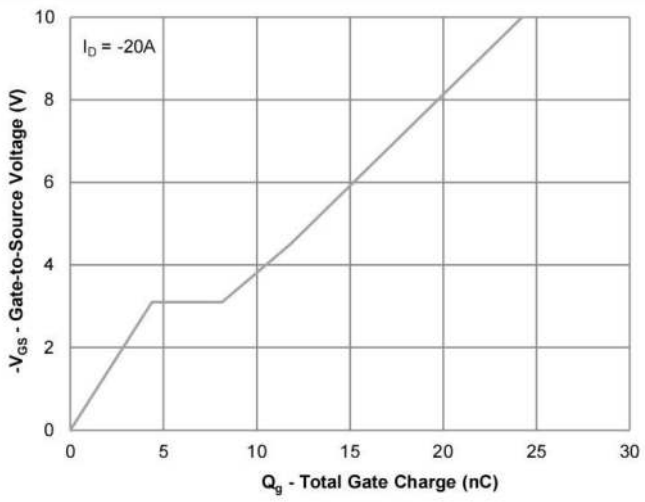


Figure 8: Gate Charge Characteristics

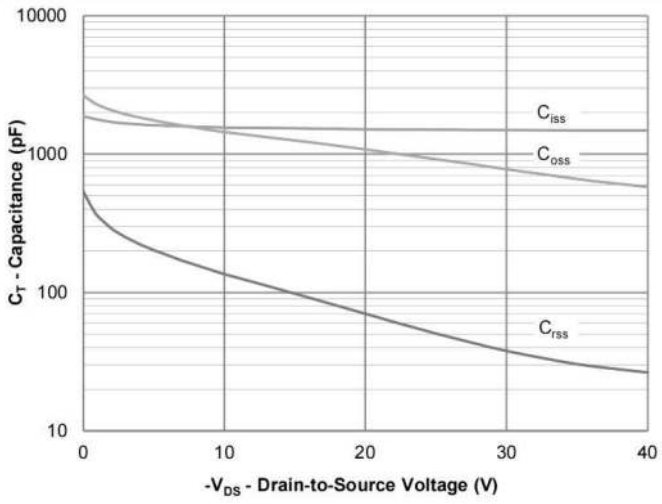


Figure 9: Capacitance Characteristics

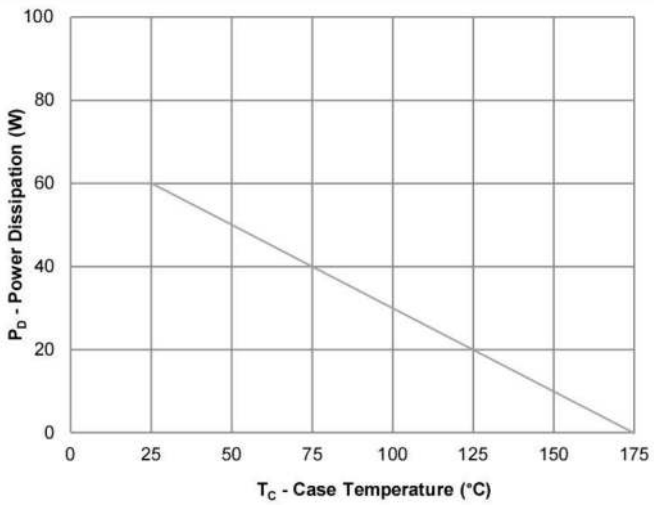


Figure 10: Power Derating

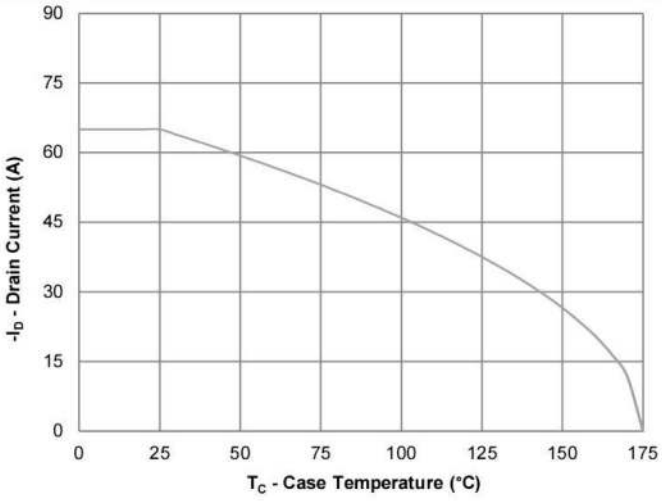


Figure 11: Current Derating

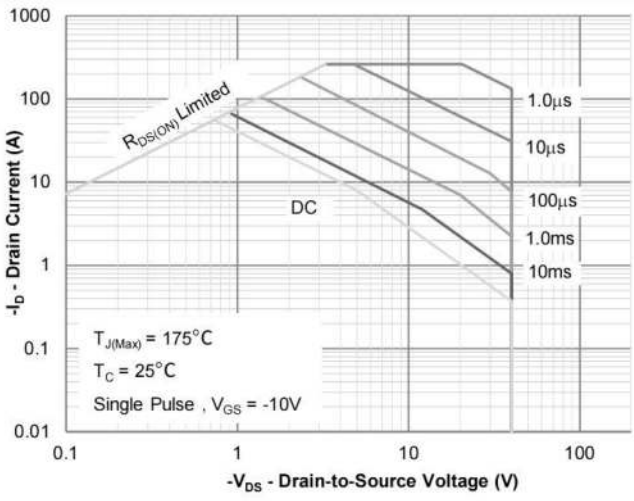


Figure 12: Safe Operating Area

RATING AND CHARACTERISTICS CURVES (RM65P40D3V)

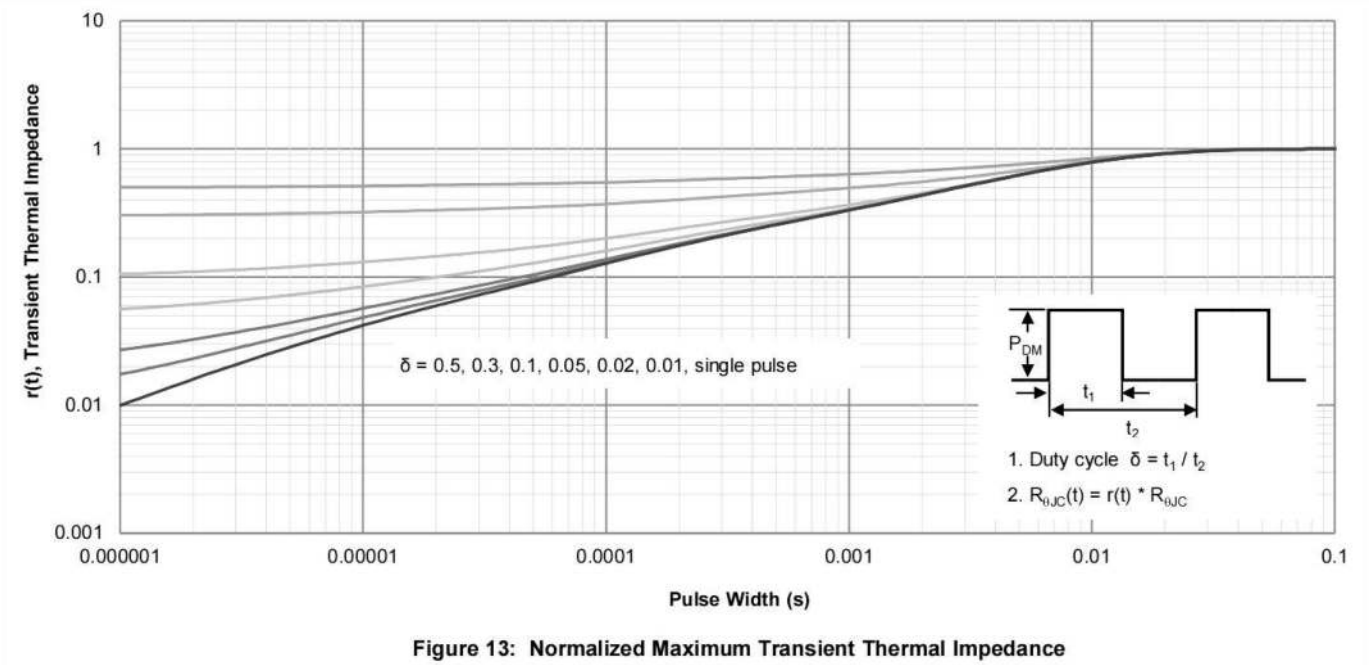


Figure 13: Normalized Maximum Transient Thermal Impedance

RECTRON

Marking on the body

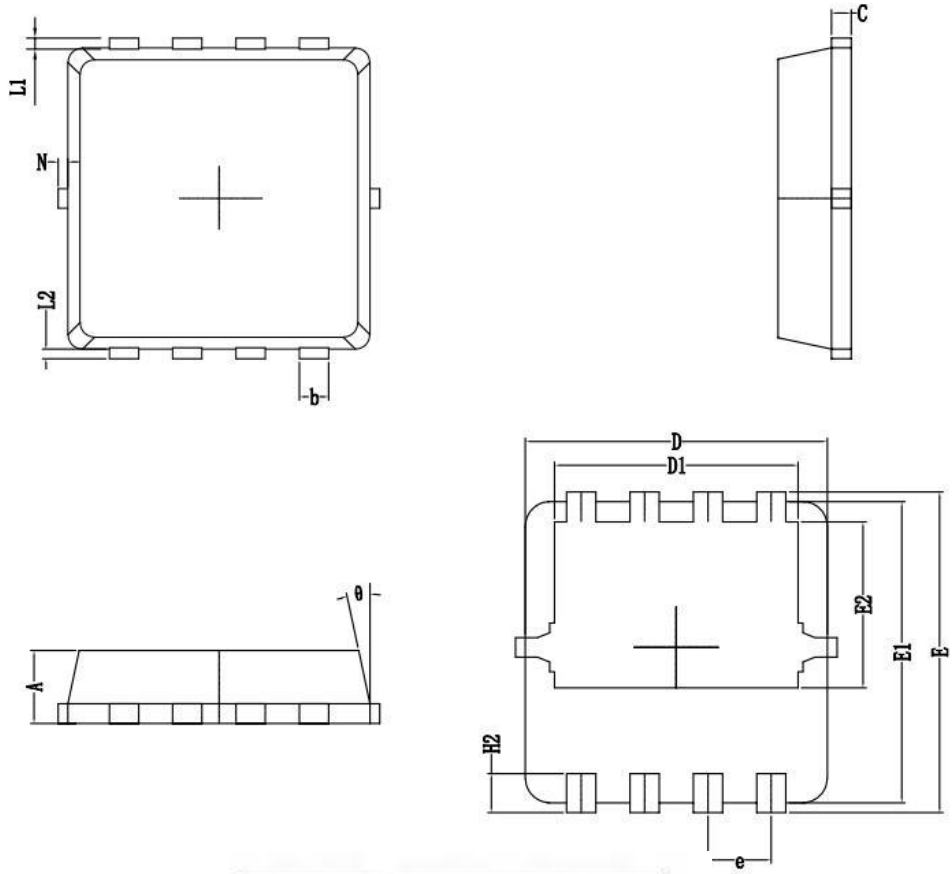
Rectron Logo →  Y Y W W

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

Week – code
(WW:01~52)

6 5 P 4 0 V ← Part No.

DFN3X3 Package Information



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
C	0.14	0.15	0.16
D	3.00	3.10	3.20
L1/L2	0.10 REF.		
D1	2.35	2.50	2.60
N	0	-	0.10
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.72	1.82	1.92
e	0.65 BSC.		
θ	11°	12°	13°
H2	0.30	0.40	0.50

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