WNM3025

Single N-Channel, 50V, 0.3A, Power MOSFET

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V_{DS} (V)	Typical $R_{DS(on)}$ (Ω)
50	1.3 @V_{GS}=10V
	1.4 @V_{GS}=4.5V
	4.0 @V_{GS}=1.8V
ESD Protected	
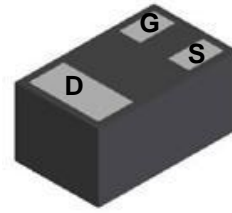
DFN1006-3L

Descriptions

The WNM3025 is N-Channel   enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM3025 is Pb-free.

Pin configuration (Top view)
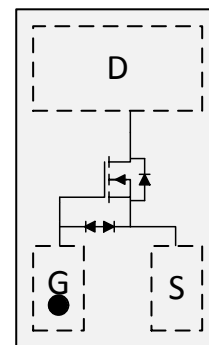
Features

- Trench Technology

- Supper high density cell design

- Excellent ON resistance

- Extremely Low Threshold Voltage

- Small package DFN1006-3L

J   = Device Code

*   = Month(A~z)

Marking

Order information

Applications

- DC/DC converters

- Power supply converters circuit

- Load/Power Switching for portable device

Device	Package	Shipping
WNM3025-3/TR	DFN1006-3L	10K/Tape&Reel

Absolute Maximum ratings

Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V_{DS}	50		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current [a][d]	T_A=25°C	I_D	0.23	0.21	A
	T_A=70°C		0.18	0.17	
Maximum Power Dissipation [a][d]	T_A=25°C	P_D	0.32	0.27	W
	T_A=70°C		0.20	0.18	
Continuous Drain Current [b][d]	T_A=25°C	I_D	0.22	0.20	A
	T_A=70°C		0.17	0.16	
Maximum Power Dissipation [b][d]	T_A=25°C	P_D	0.28	0.25	W
	T_A=70°C		0.18	0.16	
Pulsed Drain Current [c]		I_{DM}	0.9		A
Operating Junction Temperature		T_J	-55 to 150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	340	395	°C/W
	Steady State		390	455	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	387	441	
	Steady State		445	505	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	240	285	

a   Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

b   Surface mounted on FR4 board using minimum pad size, 1oz copper

c   Repetitive rating, pulse width limited by junction temperature, t_p=10μs, Duty Cycle=1%

d   Repetitive rating, pulse width limited by junction temperature T_J=150°C.

Electronics Characteristics (Ta=25°C, unless otherwise noted)

| Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	50			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =30V, V_{GS} = 0V			1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20V			±5	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.8	1.0	1.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.45A		1.2	1.8	Ω
		V_{GS} = 4.5V, I_D = 0.25A		1.4	2	
		V_{GS} = 2.5V, I_D = 0.01A		2	6	
		V_{GS} = 1.8V, I_D = 0.01A		4	15	
Forward Transconductance	g_{FS}	V_{DS} = 15V, I_D = 0.1A		0.5		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0MHz, V_{DS} = 15 V		23		pF
Output Capacitance	C_{OSS}			12		
Reverse Transfer Capacitance	C_{RSS}			5		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 10 V, V_{DS} = 30V, I_D =0.1A		1.6		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.25		
Gate-to-Source Charge	Q_{GS}			0.4		
Gate-to-Drain Charge	Q_{GD}			0.45		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 5V, V_{DS} = 5V, R_L = 500Ω, R_G = 10Ω, ID = 10mA		8.6		ns
Rise Time	tr			4		
Turn-Off Delay Time	td(OFF)			23.8		
Fall Time	tf			14.2		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 0.25A		0.8	1.5	V

Typical Characteristics (Ta=25°C, unless otherwise noted)
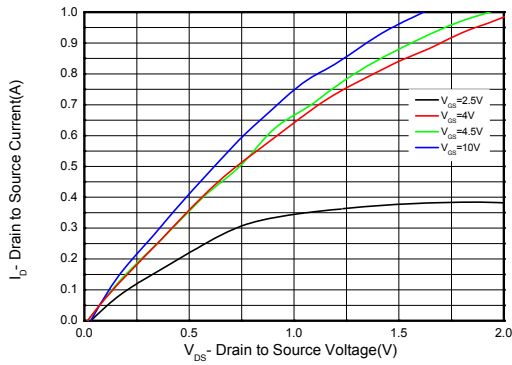
Output characteristics
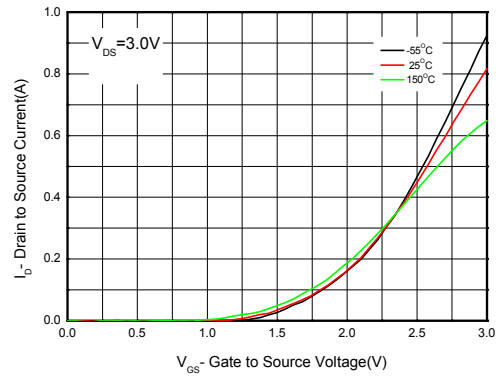
Transfer characteristics
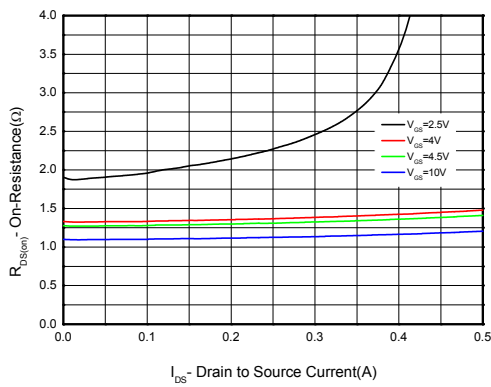
On-Resistance vs. Drain current
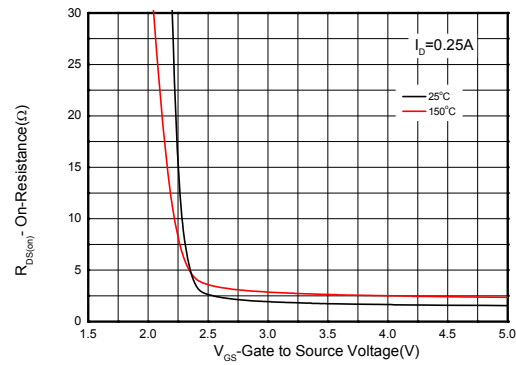
On-Resistance vs. Gate-to-Source voltage
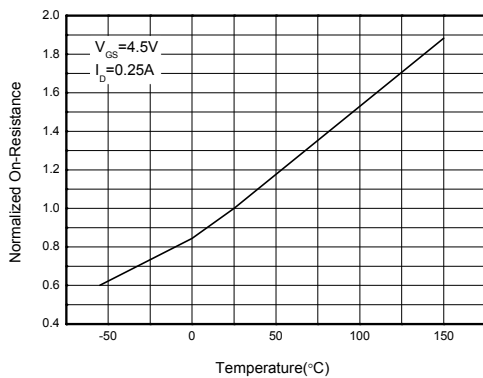
On-Resistance vs. Junction temperature
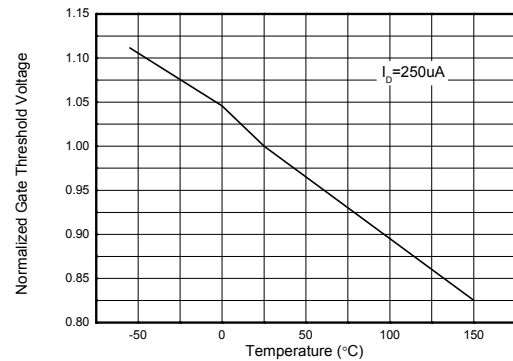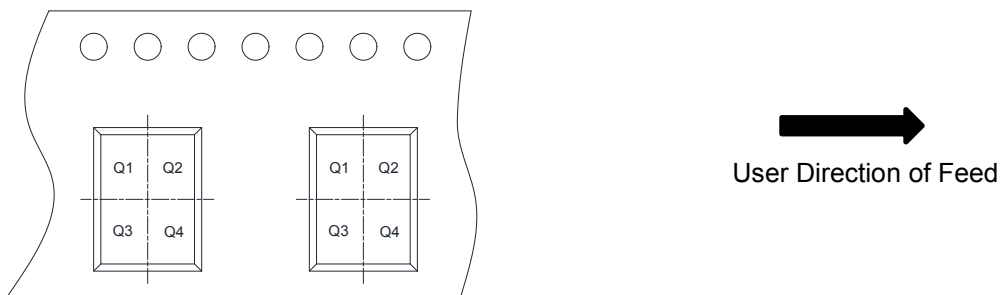

Threshold voltage vs. Temperature
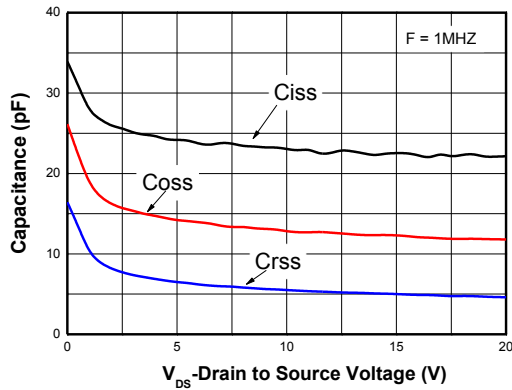
Capacitance
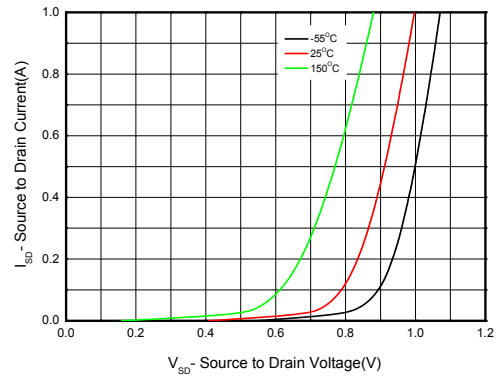
Body diode forward voltage
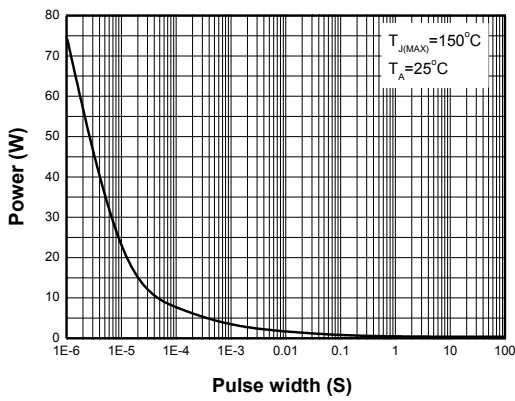
Single pulse power
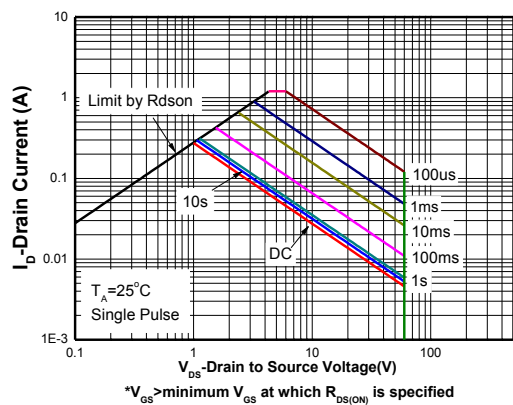
Safe operating power
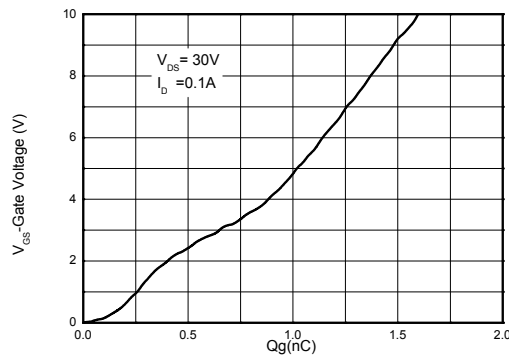
Gate charge Characteristics
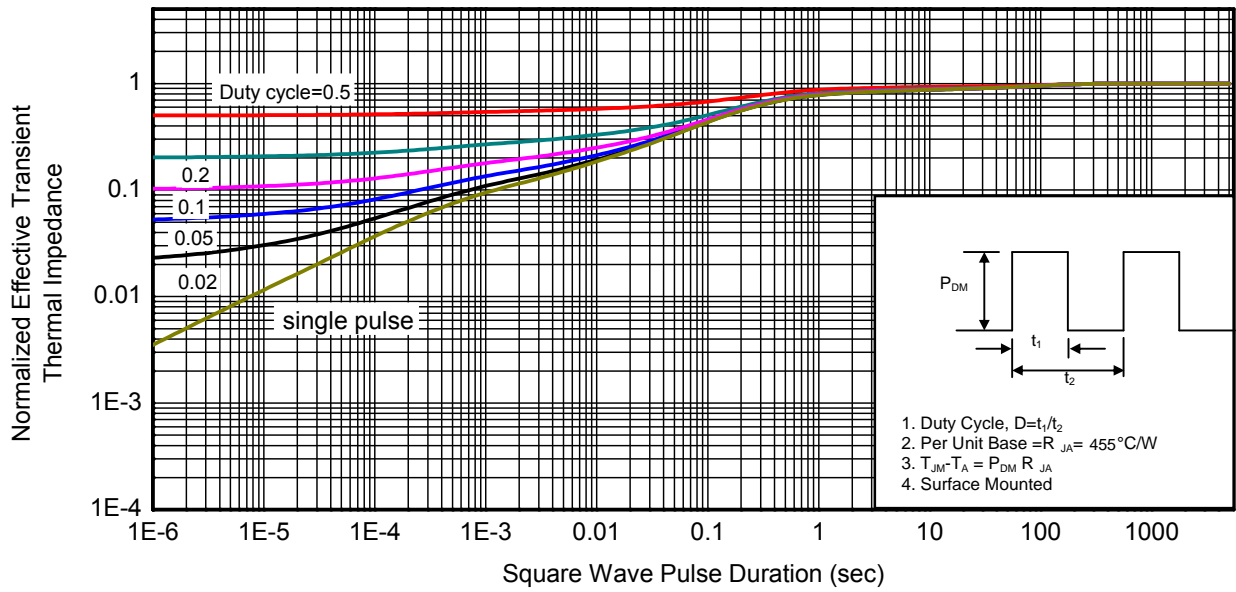
Transient thermal response (Junction-to-Ambient)

Package outline dimensions

DFN1006-3L

D

E

TOP VIEW

L   L1
L

b2   b1   e1

e2

(Ⅰ)   BOTTOM VIEW   (Ⅰ)

(Ⅱ)   (Ⅱ)

A   A1
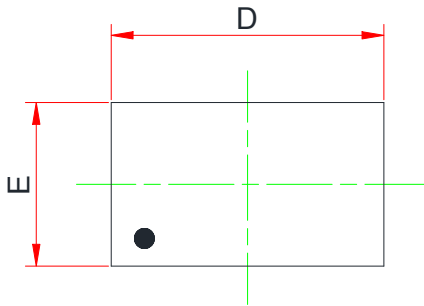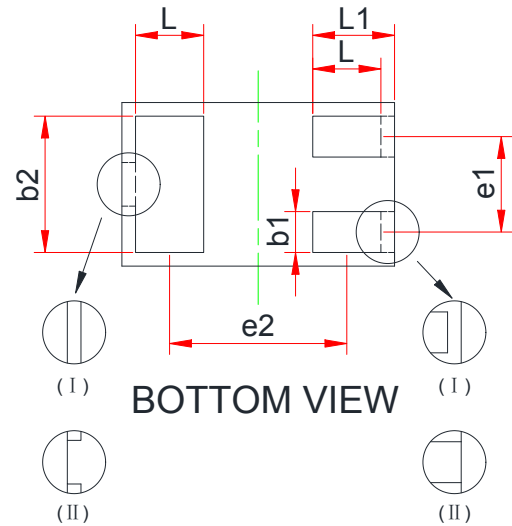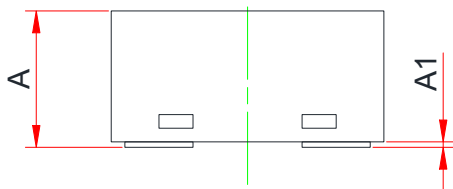
SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.36	-	0.50
A1	0.00	-	0.05
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.40	0.50	0.60
L	0.20	0.25	0.30
L1	0.20	0.30	0.40
e1	0.35Ref		
e2	0.65 Ref		

APE AND REEL INFORMATION

Reel Dimensions
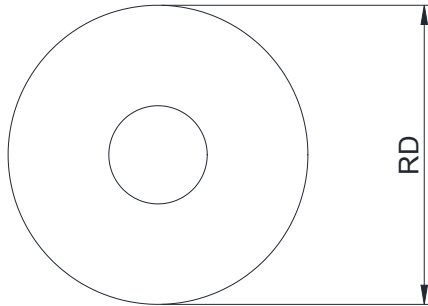
Tape Dimensions
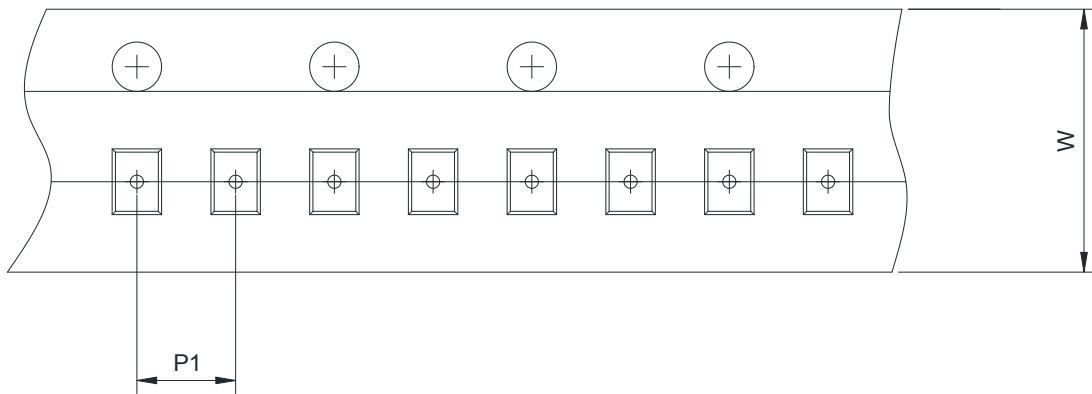
Quadrant Assignments For PIN1 Orientation In Tape

Q1 | Q2
Q3 | Q4

Q1 | Q2
Q3 | Q4

User Direction of Feed

RD	Reel Dimension	☑ 7inch	☐ 13inch	
W	Overall width of the carrier tape	☑ 8mm	☐ 12mm	☐ 16mm
P1	Pitch between successive cavity centers	☑ 2mm	☐ 4mm	☐ 8mm
Pin1	Pin1 Quadrant	☐ Q1	☑ Q2	☐ Q3 ☐ Q4

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