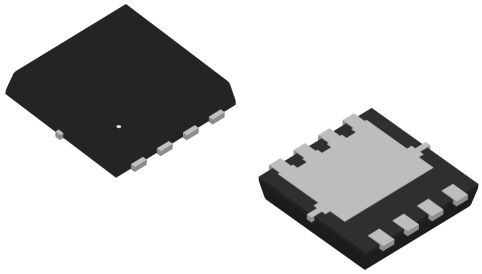
WNM3030

Single N-Channel, 30V, 13A, Power MOSFET

Http://www.sh-willsemi.com

V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
30	5.5 @ V_{GS}= 10V
	8.5 @ V_{GS}= 4.5V



PDFN3x3-8L

Descriptions

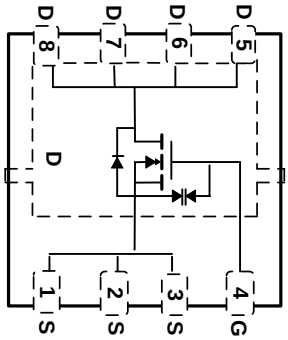
The WNM3030 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM3030 is Pb-free.

Features

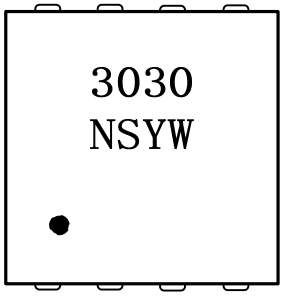
- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package PDFN3X3-8L-EP

Applications

- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device



Pin configuration (Top view)



3030 = Device Code
NS = Special Code
Y = Year
W = Week(A~z)

Marking

Order information

Device	Package	Shipping
WNM3030-8/TR	PDFN3x3-8L	3000/Tape&Reel

Absolute Maximum ratings

Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current [a d]	T_A=25°C	I_D	13.2	9.6	A
	T_A=70°C		10.5	7.7	
Maximum Power Dissipation [a d]	T_A=25°C	P_D	3.1	1.7	W
	T_A=70°C		2.0	1.1	
Continuous Drain Current [b d]	T_A=25°C	I_D	9.2	7.5	A
	T_A=70°C		7.4	6.0	
Maximum Power Dissipation [b d]	T_A=25°C	P_D	1.5	1.0	W
	T_A=70°C		1.0	0.6	
Pulsed Drain Current [c]		I_{DM}	50		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	$R_{\theta JA}$	30	40	°C/W
	Steady State		60	75	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	65	82	
	Steady State		90	125	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	16	22	

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

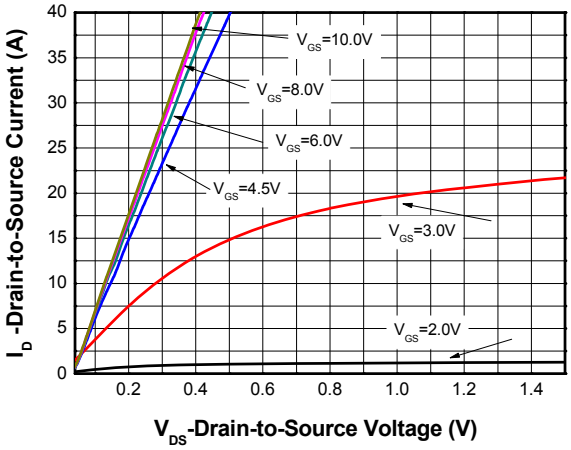
c Repetitive rating, pulse width limited by junction temperature, t_p=10μs, Duty Cycle=1%

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

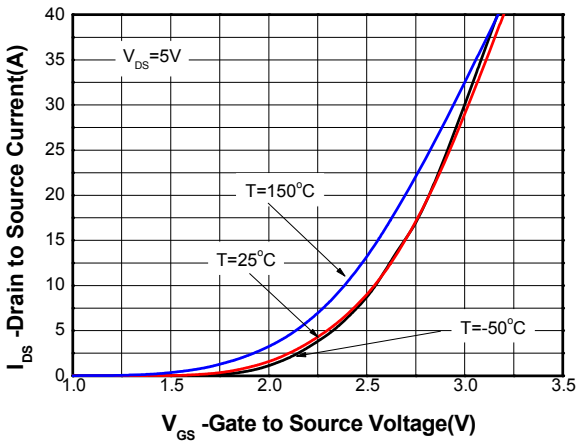
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =24V, 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	1.0	1.4	2.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		5.5	9	mΩ
		V_{GS} = 4.5V, I_D = 8A		8.5	13	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0MHz, V_{DS} = 15 V		1384		pF
Output Capacitance	C_{OSS}			255		
Reverse Transfer Capacitance	C_{RSS}			218		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 10 V, V_{DS} = 15 V, I_D =10 A		28.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.3		
Gate-to-Source Charge	Q_{GS}			4.3		
Gate-to-Drain Charge	Q_{GD}			5.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 10 V, V_{DS} = 15 V, R_L=1.5 Ω , R_G=3Ω		16.0		ns
Rise Time	tr			9.0		
Turn-Off Delay Time	td(OFF)			55.0		
Fall Time	tf			10.0		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1A		0.7	1.2	V

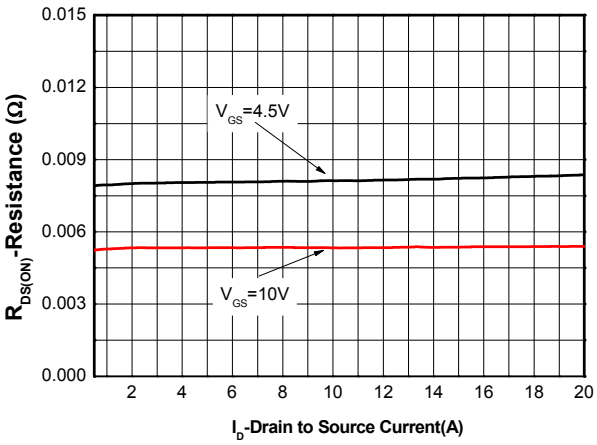
Typical Characteristics (Ta=25°C, unless otherwise noted)



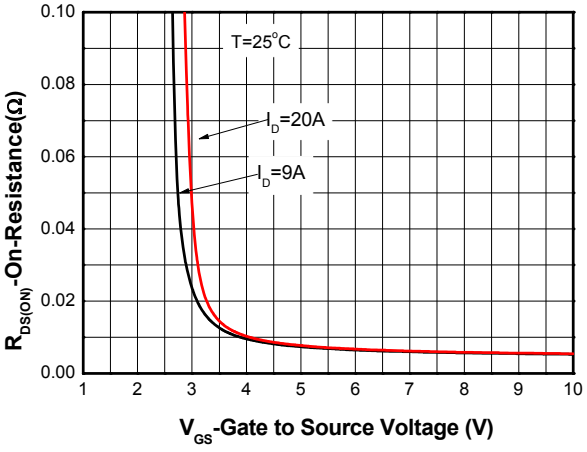
Output characteristics



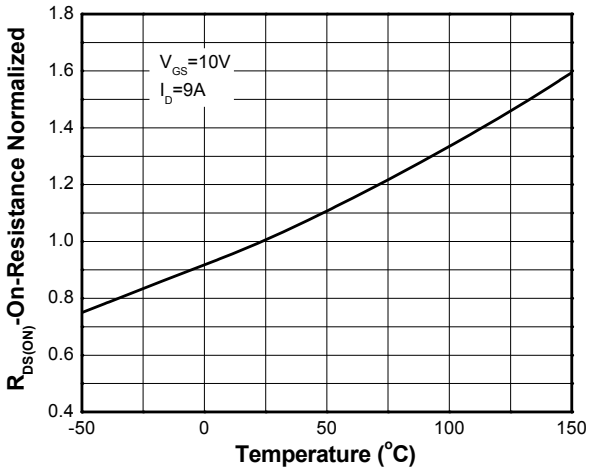
Transfer characteristics



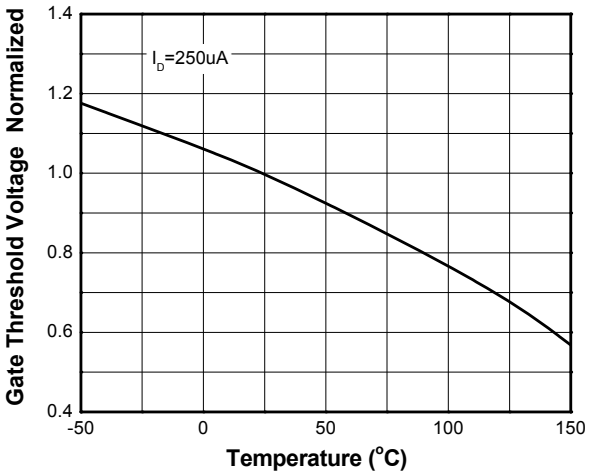
On-Resistance vs. Drain current



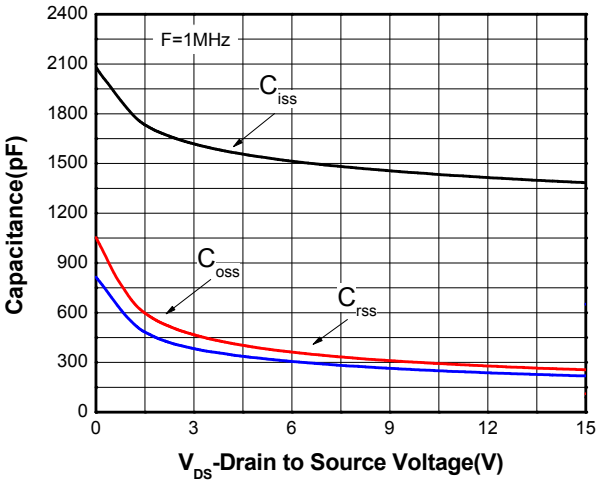
On-Resistance vs. Gate-to-source voltage



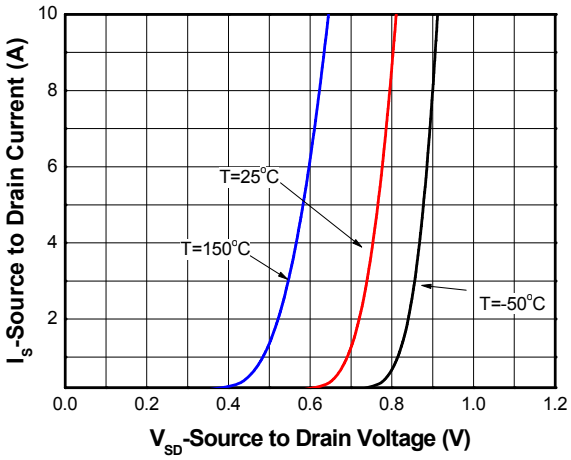
On-Resistance vs. Junction temperature



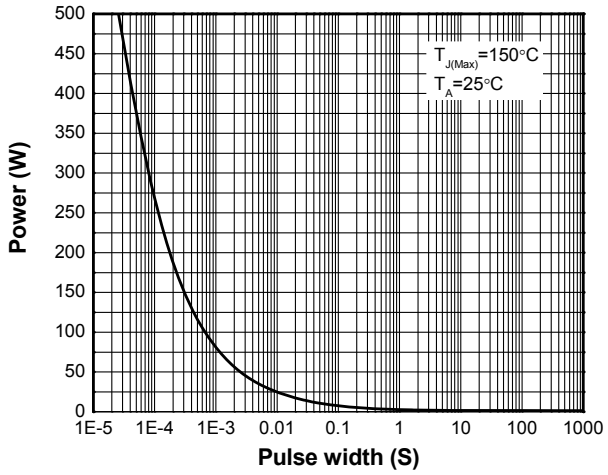
Threshold voltage vs. Temperature



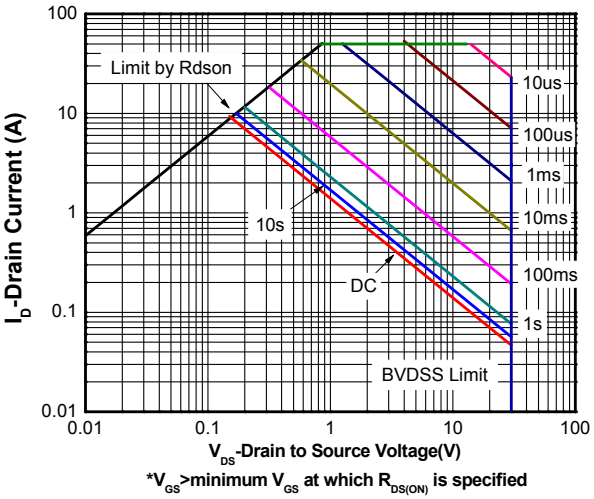
Capacitance



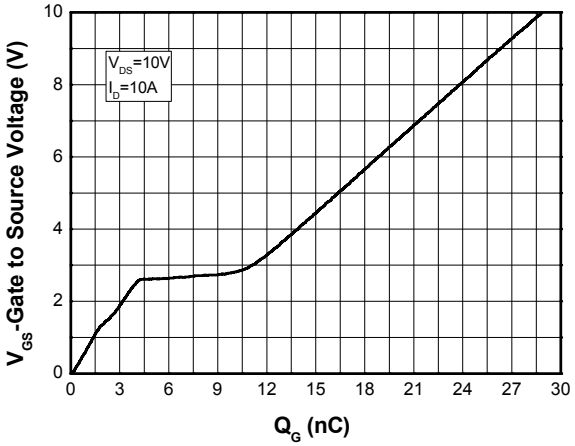
Body diode forward voltage



Single pulse power

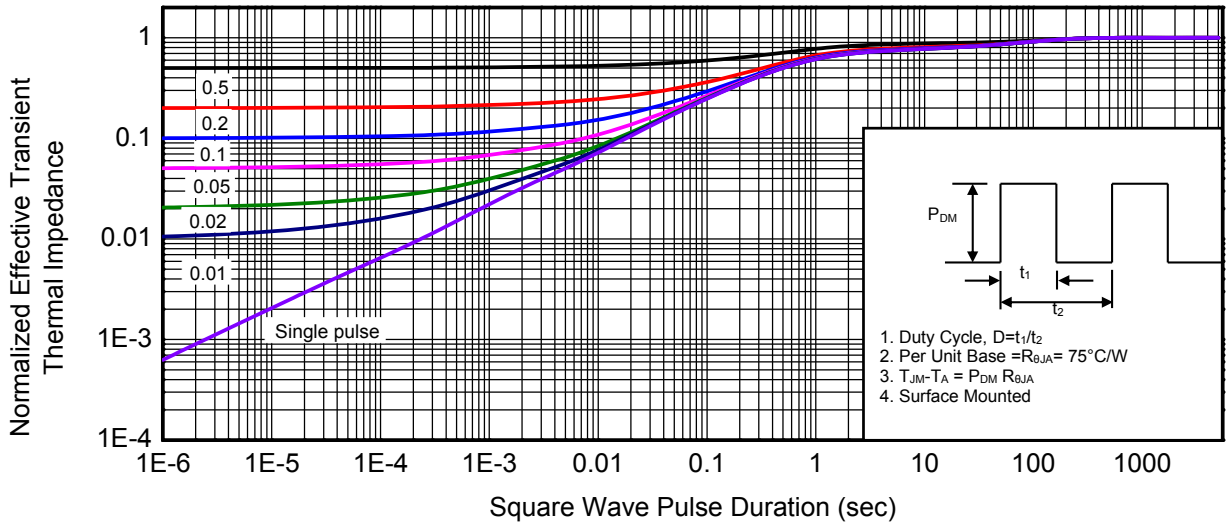


Safe operating power



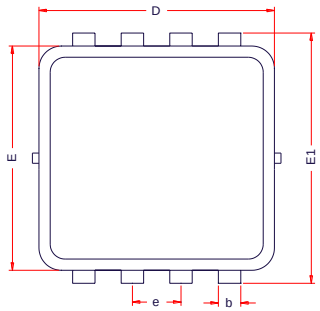
Gate Charge Characteristics

Transient thermal response (Junction-to-Ambient)

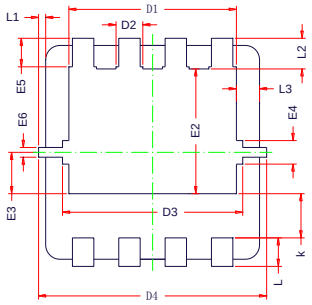


PACKAGE OUTLINE DIMENSIONS

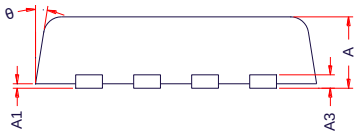
PDFN3x3-8L



TOP VIEW



BOTTOM VIEW

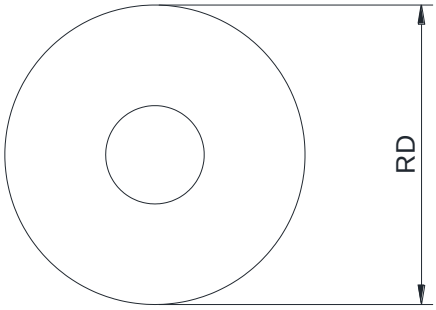


SIDE VIEW

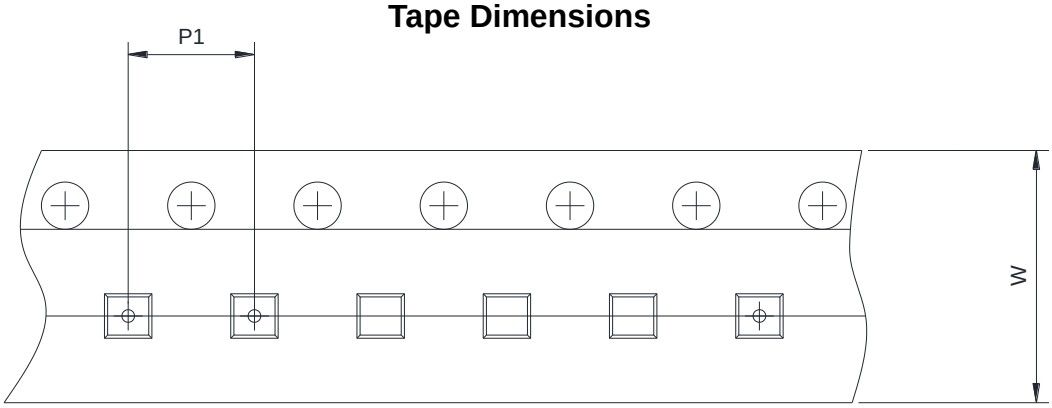
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
A1	0.00	0.02	0.05
A3	0.10	0.15	0.25
b	0.24	0.30	0.35
D	2.90	3.00	3.10
D1	2.25	2.35	2.45
D2	0.30	0.40	0.50
D3	2.50	2.60	2.70
D4	3.00	3.10	3.20
E	2.90	3.00	3.10
E1	3.10	3.20	3.30
E2	1.65	1.75	1.85
E3	0.48	0.58	0.68
E4	0.23	0.33	0.43
E5	0.20	0.30	0.40
E6	0.07	0.12	0.18
e	0.60	0.65	0.70
K	0.52	0.62	0.72
L	0.30	0.40	0.50
L1	0.00	0.05	0.10
L2	0.33	0.43	0.53
L3	0.27	0.37	0.48
θ	0°	10°	12°

TAPE AND REEL INFORMATION

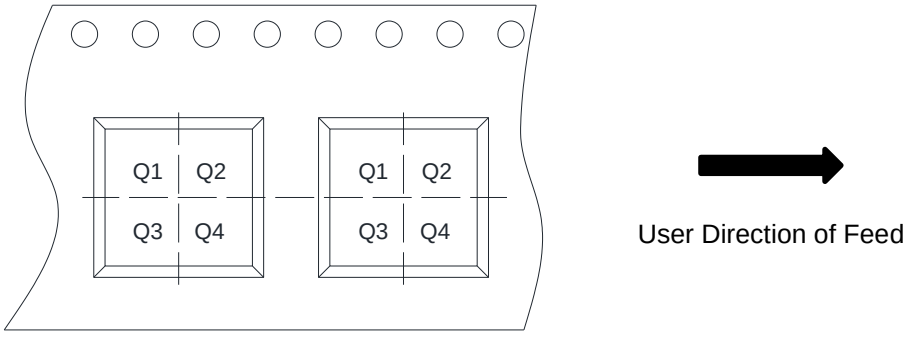
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



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