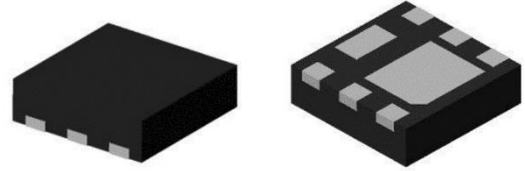


WNM3602A

SingleN-Channel, 30V,20.4A,Power MOSFET

[http://www. omnivision-group.com](http://www.omnivision-group.com)

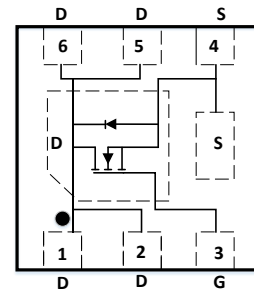
V_{DS} (V)	Max. $R_{DS(on)}$ (m Ω)
30	5.0 @ $V_{GS}=10V$
	7.7 @ $V_{GS}=4.5V$



Description

The WNM3602A is N-Channel enhancement MOS Field Effect Transistor. This N-Channel MOSFET is produced using advanced Split Gate Trench process that has been optimized for $R_{ds(on)}$, switching performance and ruggedness.

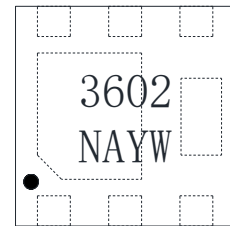
DFN2x2-6L



Pin configuration (Top view)

Features

- Split Gate Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Package DFN2x2-6L



3602 = Device Code

NA = Special Code

Y = Year

W = Week(A~z)

Marking

Applications

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

Order information

Device	Package	Shipping
WNM3602A-6/TR	DFN2x2-6L	3000/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^e	$T_A=25^{\circ}\text{C}$	20.4	A
	$T_A=70^{\circ}\text{C}$	16.3	
Pulsed Drain Current ^c	I_{DM}	104	A
Avalanche Energy $L=0.3\text{mH}$	E_{AS}	36	mJ
Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	3.6	W
	$T_A=70^{\circ}\text{C}$	2.3	
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation				
Parameter		Symbol	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	35	$^{\circ}\text{C/W}$
	Steady State		67	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10\text{ s}$	$R_{\theta JA}$	132	
	Steady State		209	

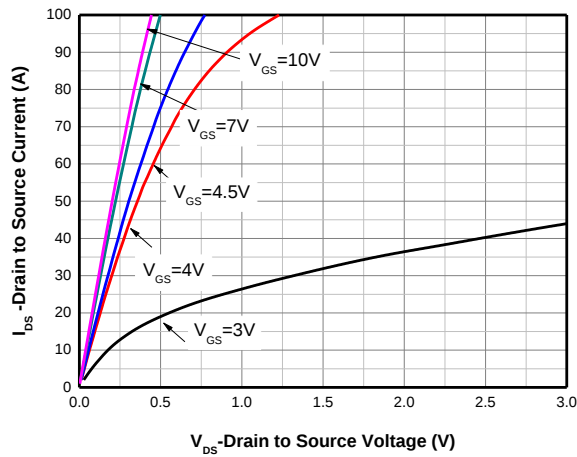
Note:

- a FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area)
- b FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) minimum pad covered with copper
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J=25^{\circ}\text{C}$, the maximum allowed junction temperature of 150°C .
- d The static characteristics are obtained using ~380us pulses, duty cycle ~1%.
- e The power dissipation PD is based on Junction-to-Ambient thermal resistance $R_{\theta JA}$ $t \leq 10\text{s}$ value and the $T_{J(MAX)}=150^{\circ}\text{C}$.

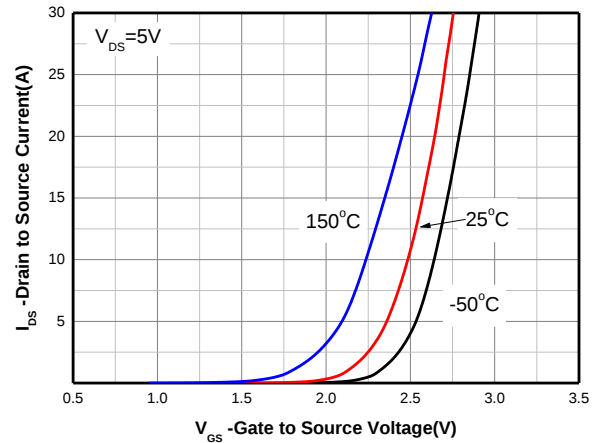
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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} =30V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.2	1.6	2.2	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D = 18A		4.0	5.0	mΩ
		V _{GS} = 4.5V, I _D =18A		5.7	7.7	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0V, f = 1.0MHz, V _{DS} = 15 V		854.0		pF
Output Capacitance	C _{OSS}			550.4		
Reverse Transfer Capacitance	C _{RSS}			17.8		
Total Gate Charge (V _{GS} =10V)	Q _{G(TOT)}	V _{GS} = 10V, V _{DD} = 15V, I _D = 18 A		16.2		nC
Total Gate Charge (V _{GS} =4.5V)	Q _{G(TOT)}			7.8		
Gate-to-Source Charge	Q _{GS}			3.3		
Gate-to-Drain Charge	Q _{GD}			1.9		
Gate Resistance	R _g	f = 1MHz		1.85		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10V, V _{DD} = 15 V, I _D = 18A, R _G = 3Ω		5.1		ns
Rise Time	tr			49.0		
Turn-Off Delay Time	td(OFF)			15.0		
Fall Time	tf			3.8		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.2	V
Reverse Recovery Time	trr	I _F =18A, di/dt=100A/us		24.8		nS
Reverse Recovery Charge	Qrr			8.9		nC

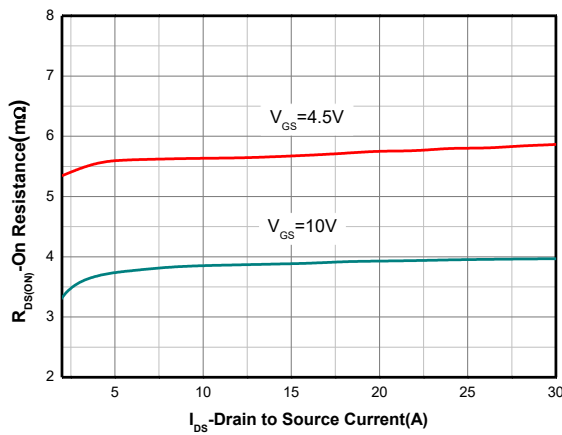
Typical Characteristics (Ta=25°C, unless otherwise noted)



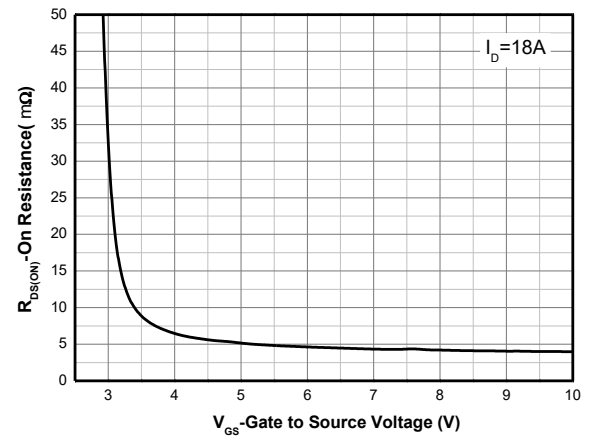
Output Characteristics ^d



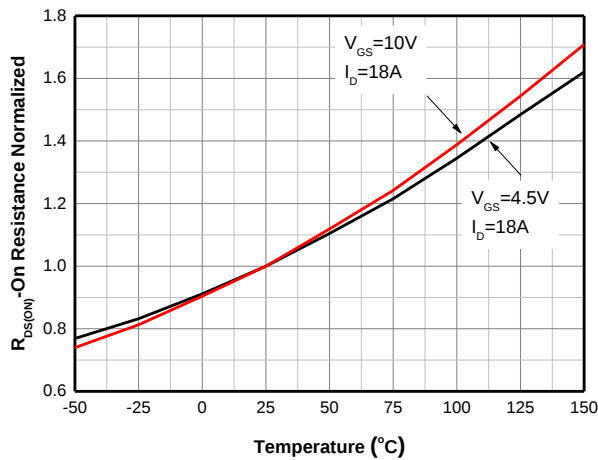
Transfer Characteristics ^d



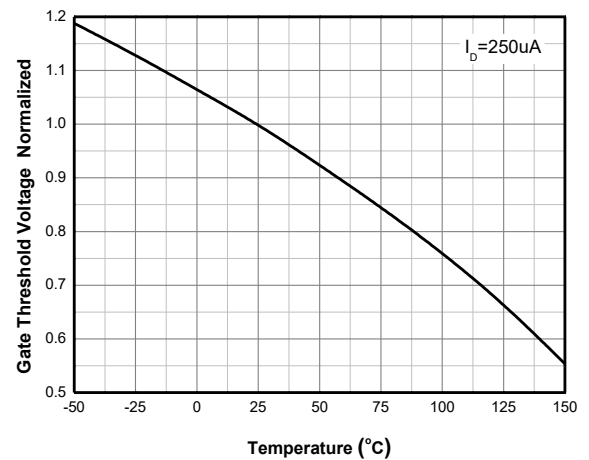
On-Resistance vs. Drain Current ^d



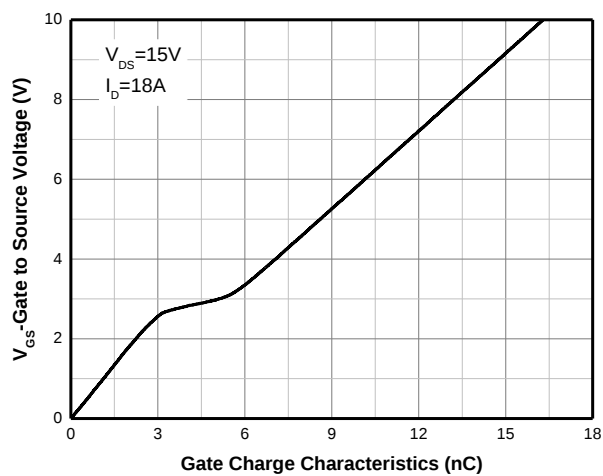
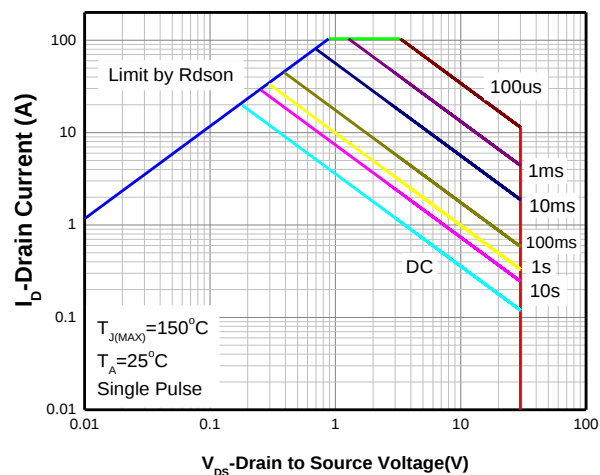
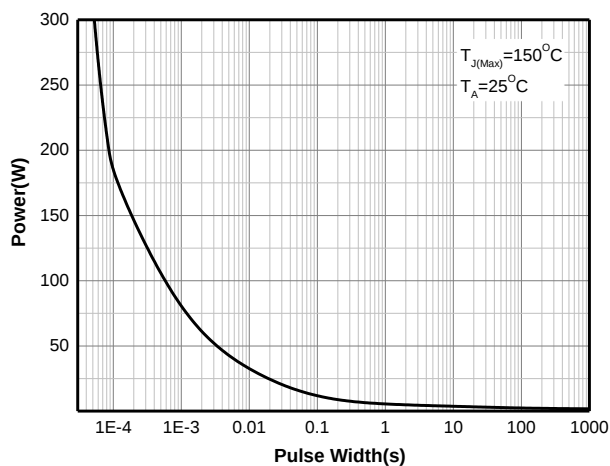
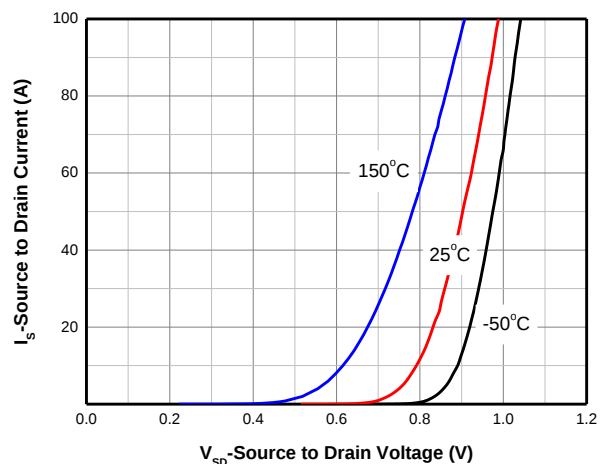
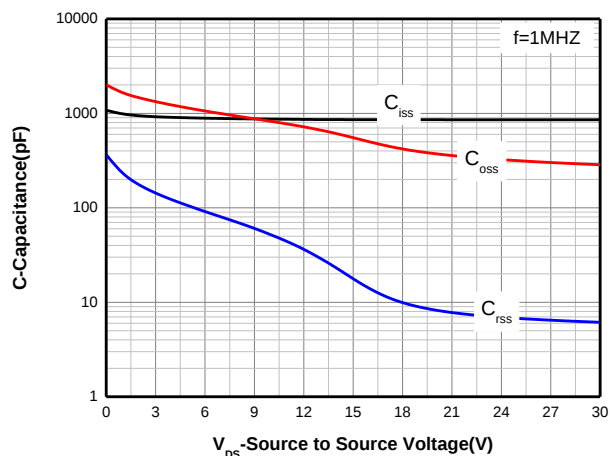
On-Resistance vs. V_{GS} ^d

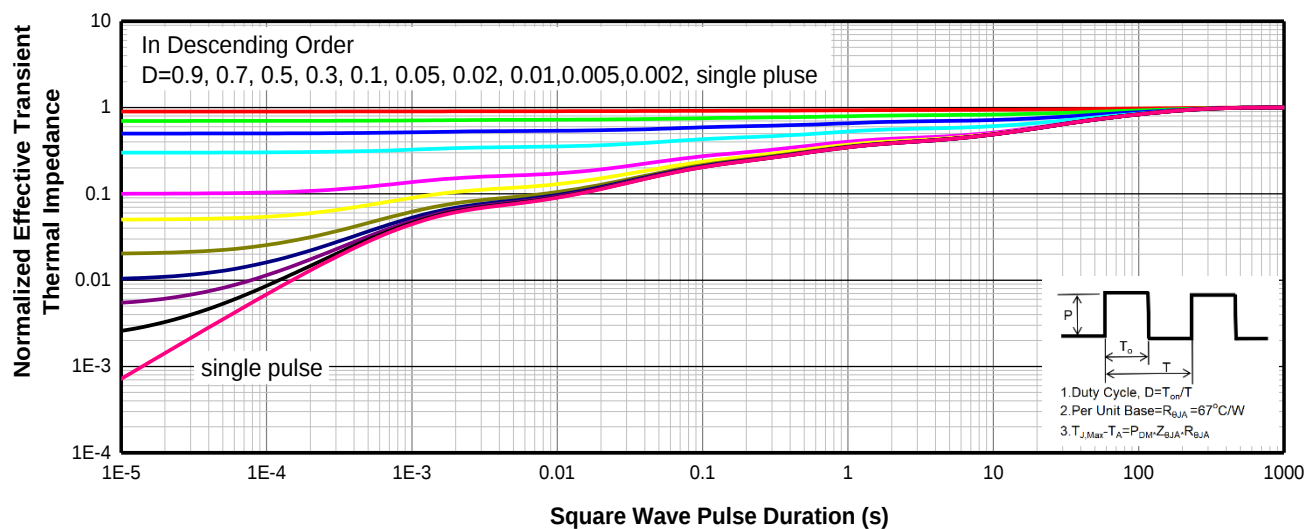


On-Resistance vs. Junction Temperature ^d



Threshold Voltage vs. Temperature

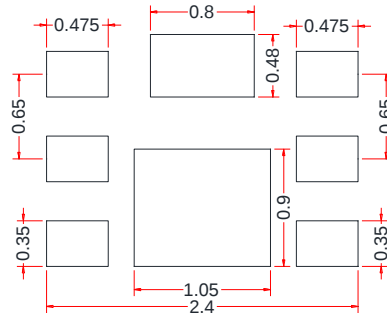
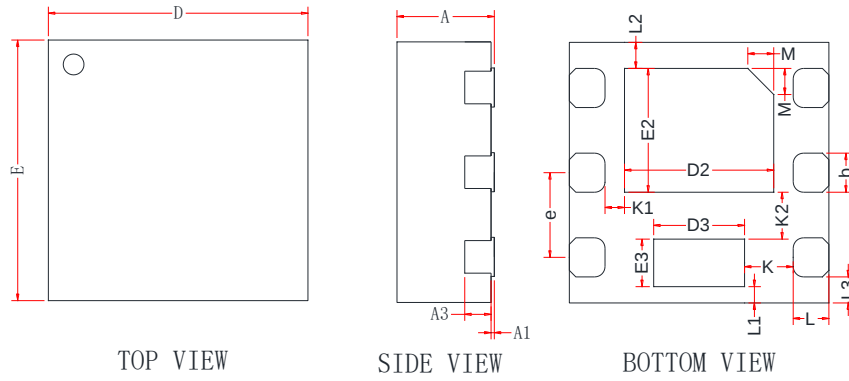




Transient Thermal Response (Junction-Ambient)

PACKAGE OUTLINE DIMENSIONS

DFN2x2-6L

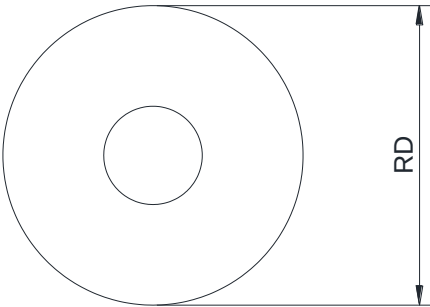


RECOMMENDED LAND PATTERN (Unit:mm)

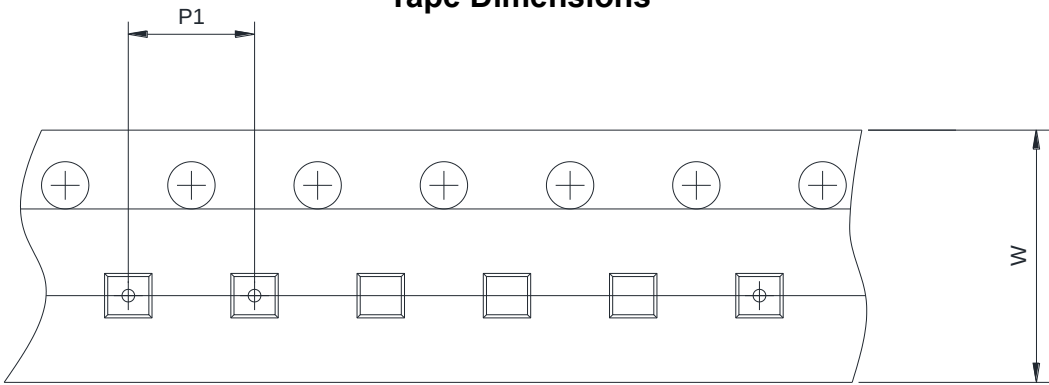
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A3	0.203 Ref.		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	1.05	1.15	1.25
E2	0.85	0.95	1.05
D3	0.60	0.70	0.80
E3	0.265	0.365	0.465
e	0.55	0.65	0.75
K	0.37 REF		
K1	0.15 REF		
K2	0.36 REF		
L	0.225	0.275	0.325
L1	0.125 REF		
L3	0.20 REF		
L3	0.20 REF		
M	0.20 REF		

TAPE AND REEL INFORMATION

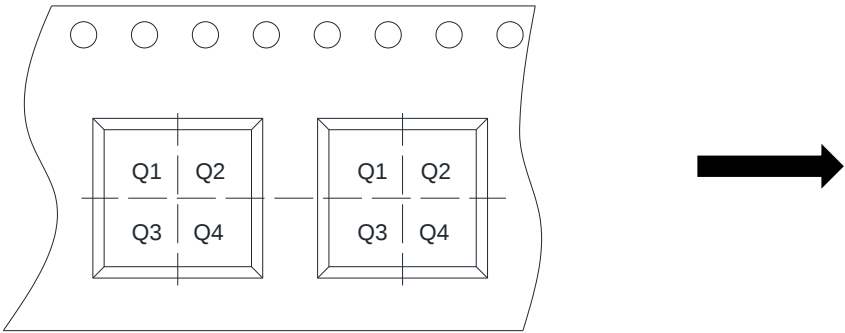
Reel Dimensions



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