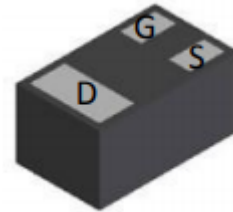
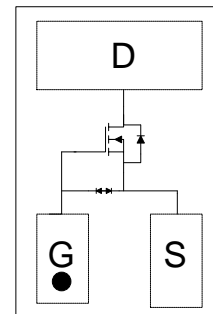


WNM2096
Single N-Channel, 20V, 0.8A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

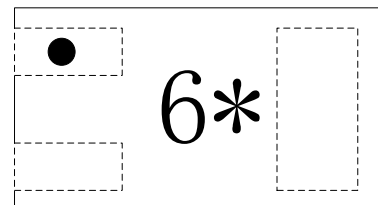
V _{DS} (V)	Typical R _{DS(on)} (mΩ)
20	325 @ V _{GS} =4.5V
	370 @ V _{GS} =3.1V
	420 @ V _{GS} =2.5V
	560 @ V _{GS} =1.8V
ESD Rating: 2000V HBM	


DFN1006-3L
Description

The WNM2096 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 WNM2096 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



6 = Device Code
* = Month (A~z)

Marking
Applications

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

Order information

Device	Package	Shipping
WNM2096-3/TR	DFN1006-3L	10K/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	
Continuous Drain Current ^d	I_D	$T_A=25^{\circ}C$	800
		$T_A=70^{\circ}C$	640
Pulsed Drain Current ^c	I_{DM}	3000	mA
Power Dissipation ^a	P_D	$T_A=25^{\circ}C$	480
		$T_A=70^{\circ}C$	305
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$

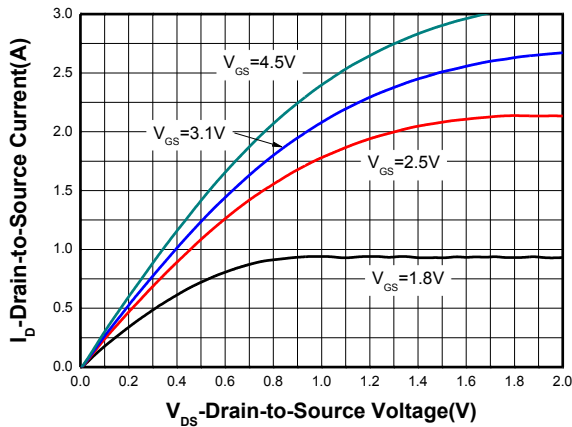
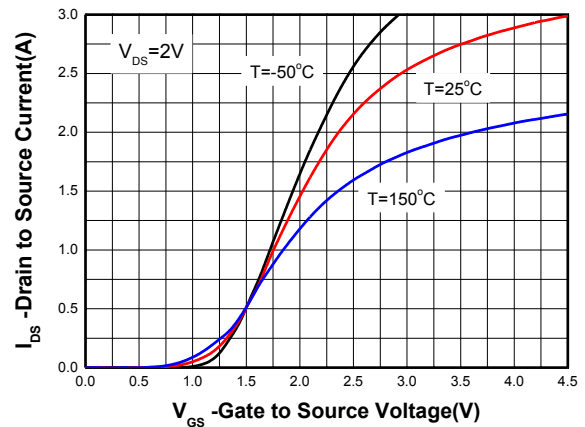
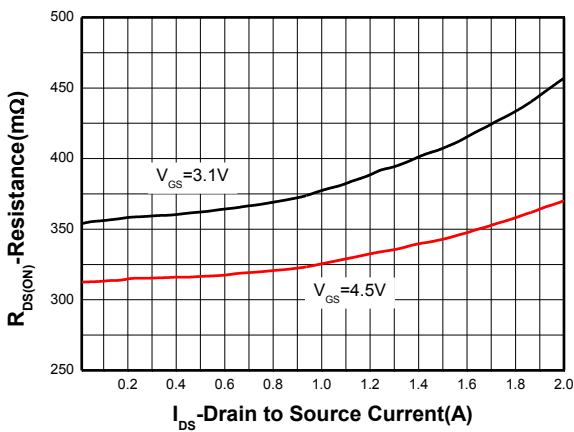
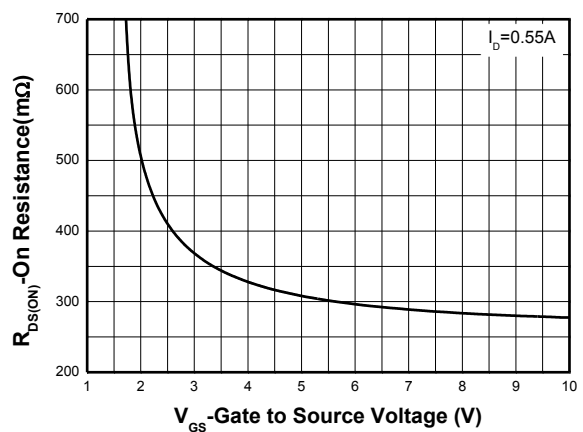
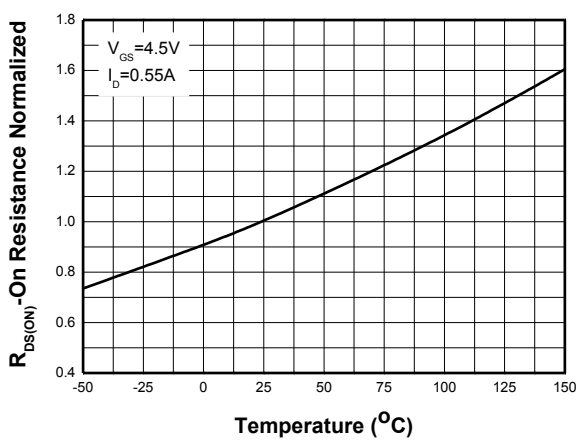
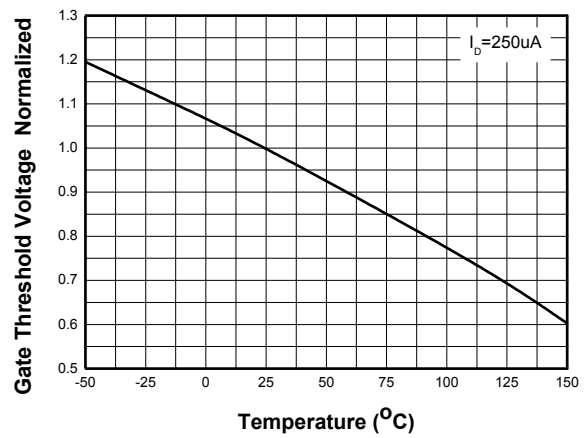
Thermal resistance ratings

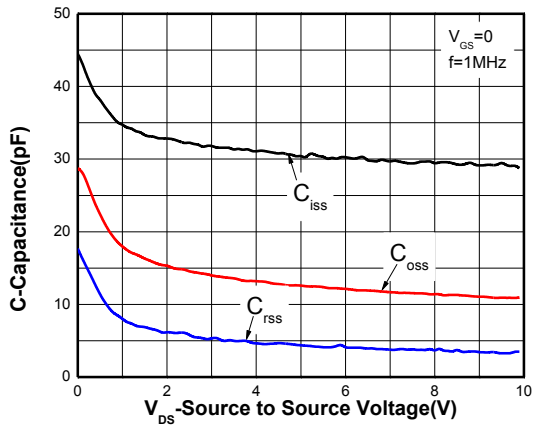
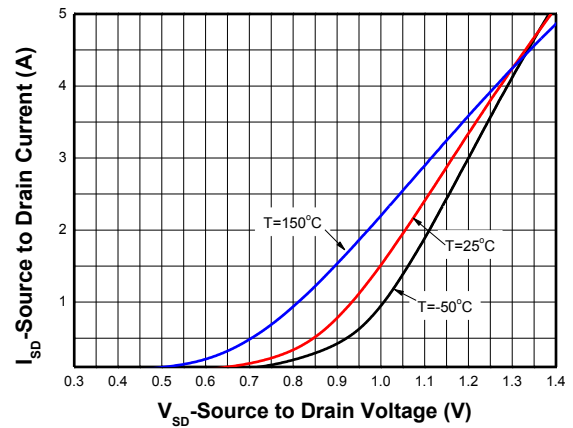
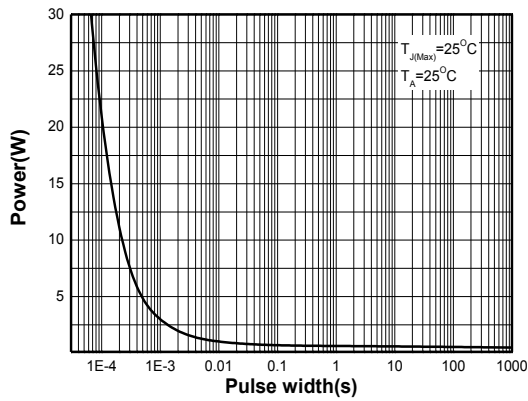
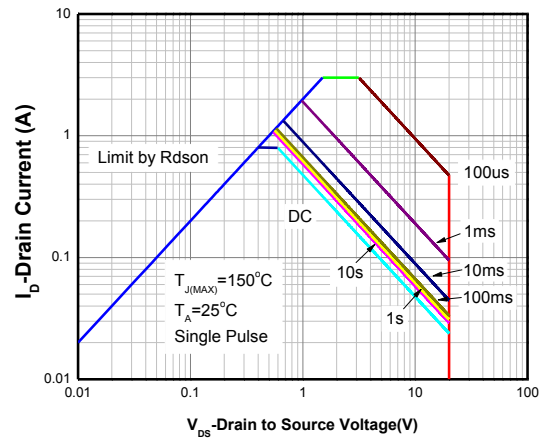
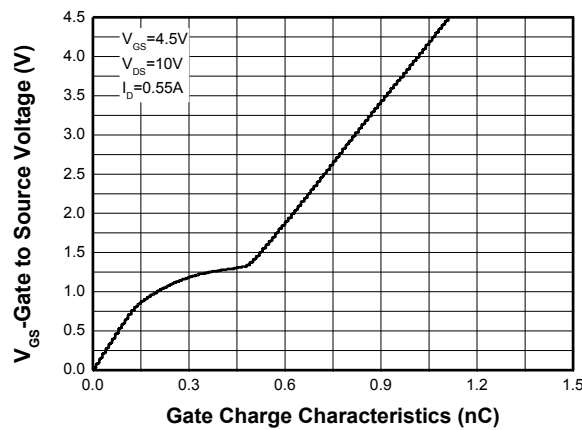
Single Operation				
Parameter		Symbol	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10$ s	$R_{\theta JA}$	216	$^{\circ}C/W$
	Steady State		262	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10$ s	$R_{\theta JA}$	464	
	Steady State		580	

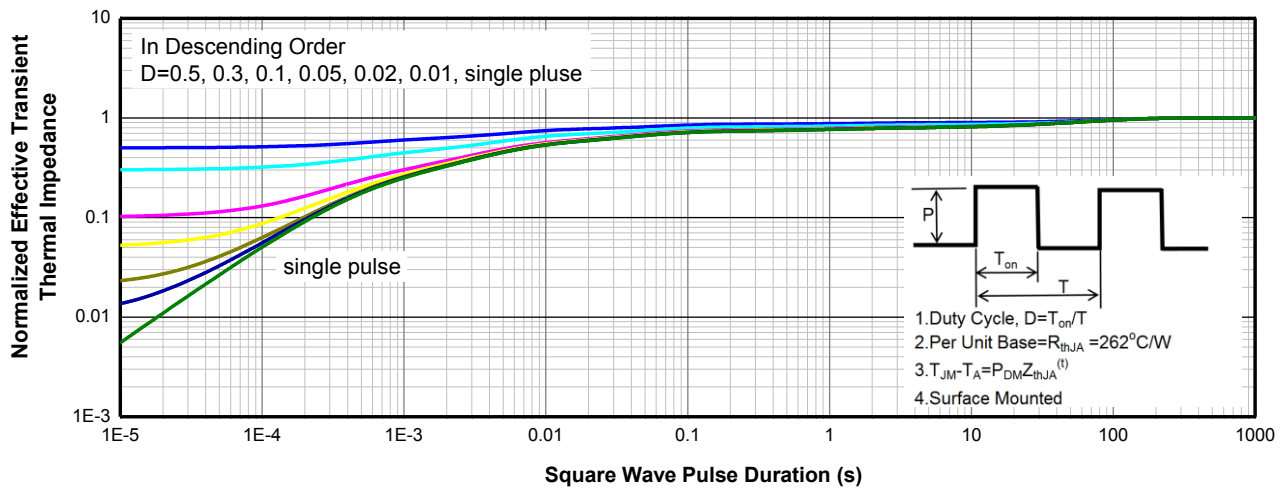
- a The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch² (6.45cm²) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch², 0.06-inch thick FR4 PCB, in a still air environment with $T_A = 25^{\circ}C$. The power dissipation P_D is based on $R_{\theta JA}$ value and the $T_{J(MAX)}=150^{\circ}C$. The value in any given application is determined by the user's specific board design, and the maximum temperature of $150^{\circ}C$ may be used if the PCB allows it to.
- b The value of $R_{\theta JA}$ is measured with the device mounted on FR-4 minimum pad board, in a still air environment with $T_A = 25^{\circ}C$. The power dissipation P_D is based on $R_{\theta JA}$ value and the $T_{J(MAX)}=150^{\circ}C$. The value in any given application is determined by the user's specific board design, and the maximum temperature of $150^{\circ}C$ may be used if the PCB allows it to.
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^{\circ}C$, the maximum allowed junction temperature of $150^{\circ}C$.
- d The maximum current rating by source bonding technology
- e The static characteristics are obtained using ~380us pulses, duty cycle ~1%..

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

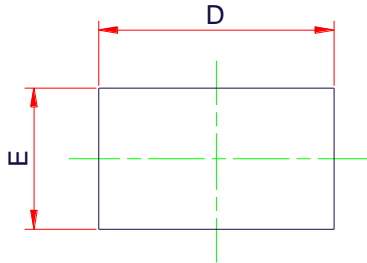
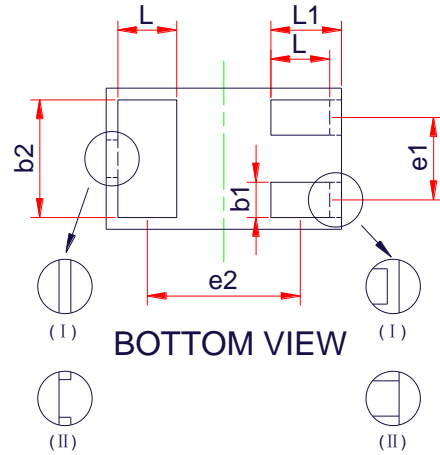
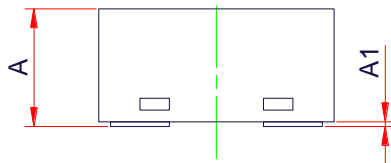
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±10V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	0.4	0.7	1.0	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 0.55A		325	500	mΩ
		V _{GS} = 3.1V, I _D = 0.35A		370	570	
		V _{GS} = 2.5V, I _D = 0.25A		420	700	
		V _{GS} = 1.8V, I _D = 0.15A		560	1500	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 10 V		29		pF
Output Capacitance	C _{OSS}			11		
Reverse Transfer Capacitance	C _{RSS}			4		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 4.5 V, V _{DS} = 10V, I _D = 0.55 A		1.1		nC
Threshold Gate Charge	Q _{G(TH)}			0.11		
Gate-to-Source Charge	Q _{GS}			0.15		
Gate-to-Drain Charge	Q _{GD}			0.32		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 0.55A, R _G = 6Ω		5		ns
Rise Time	tr			5.8		
Turn-Off Delay Time	td(OFF)			15.4		
Fall Time	tf			3.6		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 0.8A		0.9	1.1	V

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

Output Characteristics ^e

Transfer Characteristics ^e

On-Resistance vs. Drain Current ^e

On-Resistance vs. Gate-to-Source Voltage ^e

On-Resistance vs. Junction Temperature ^e

Threshold Voltage vs. Temperature

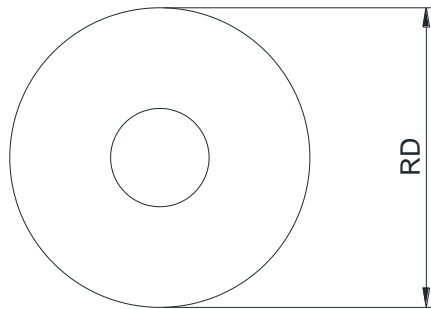
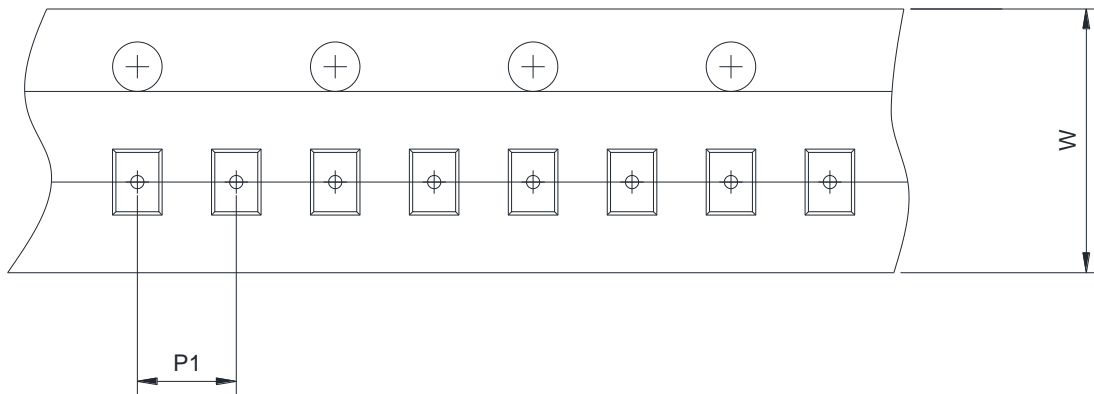
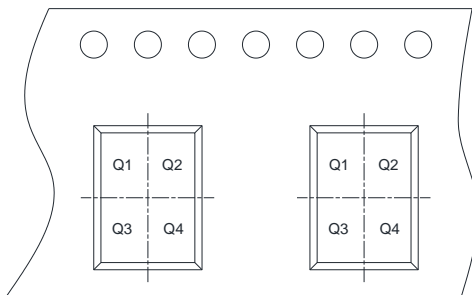

Capacitance

Body Diode Forward Voltage^e

Single Pulse power

Safe Operating Power

Gate Charge Characteristics



Transient Thermal Response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS
DFN1006-3L

TOP VIEW

BOTTOM VIEW

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		

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape



 User Direction of Feed

RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input checked="" type="checkbox"/> 2mm	<input type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1	<input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4