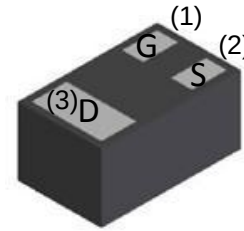
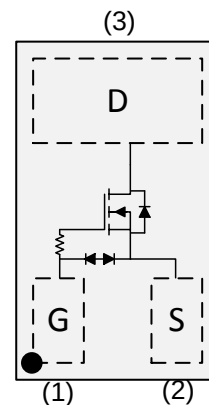
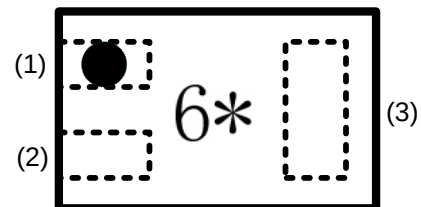


WNM2046
Single N-Channel, 20V, 0.71A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

V_{DS} (V)	Typical $R_{DS(on)}$ (Ω)
20	0.220@ $V_{GS}=4.5V$
	0.260@ $V_{GS}=2.5V$
	0.315@ $V_{GS}=1.8V$


DFN1006-3L

Pin configuration (Top view)


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

Marking
Order information

- Small Signal Switching
- Small Moto Driver

Device	Package	Shipping
WNM2046-3/TR	DFN1006-3L	10K/Reel&Tape

Descriptions

The WNM2046 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 WNM2046 is Pb-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package DFN1006-3L

Applications

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V _{DS}	20		V
Gate-Source Voltage		V _{GS}	±5		
Continuous Drain Current ^{a d}	T _A =25°C	I _D	0.71	0.66	A
	T _A =70°C		0.57	0.52	
Maximum Power Dissipation ^{a d}	T _A =25°C	P _D	0.32	0.27	W
	T _A =70°C		0.20	0.17	
Continuous Drain Current ^{b d}	T _A =25°C	I _D	0.67	0.62	A
	T _A =70°C		0.54	0.50	
Maximum Power Dissipation ^{b d}	T _A =25°C	P _D	0.28	0.24	W
	T _A =70°C		0.18	0.15	
Pulsed Drain Current ^c		I _{DM}	1.4		A
Operating Junction Temperature		T _J	150		°C
Lead Temperature		T _L	260		°C
Storage Temperature Range		T _{stg}	-55 to 150		°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	350	390	$^{\circ}\text{C/W}$
	Steady State		395	455	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	397	435	
	Steady State		445	505	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	240	280	

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

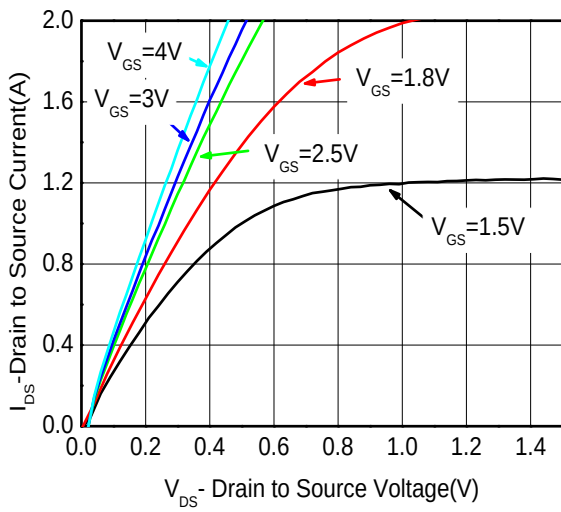
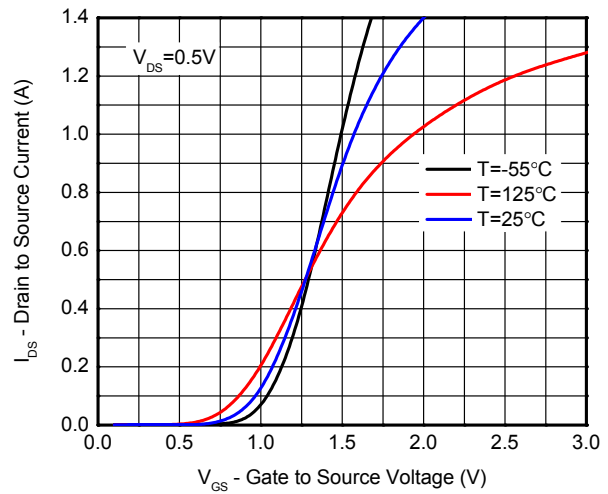
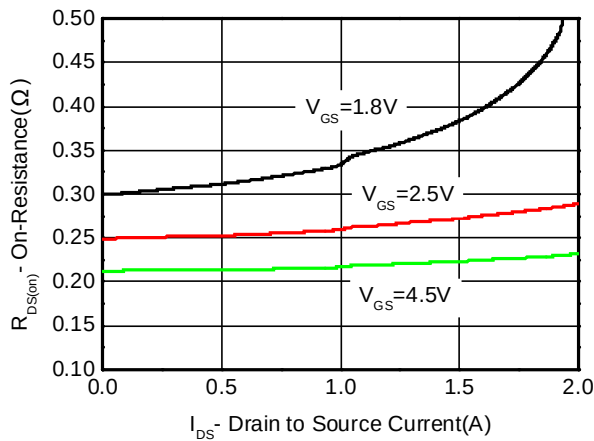
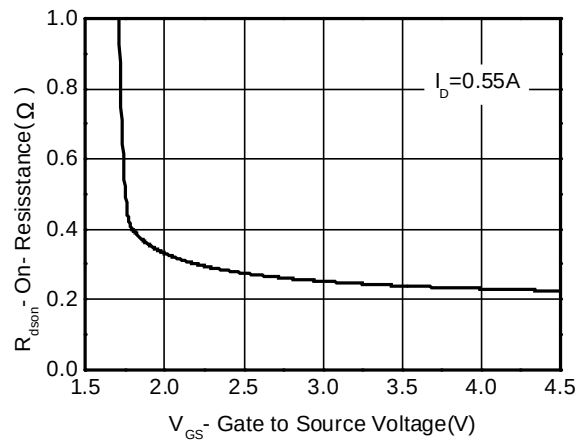
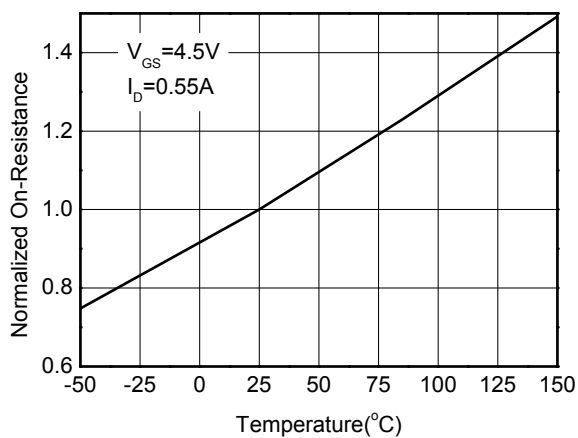
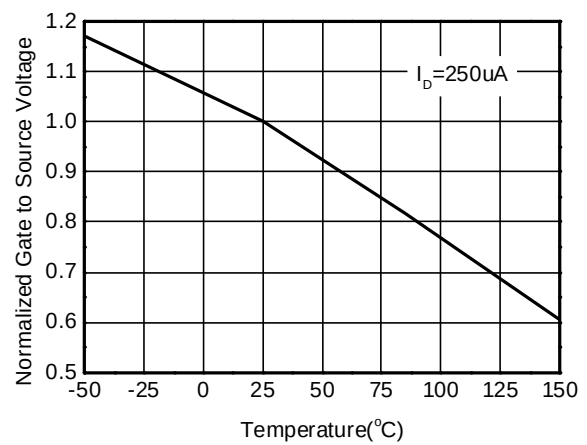
c Pulse width<380 μs , Single pulse

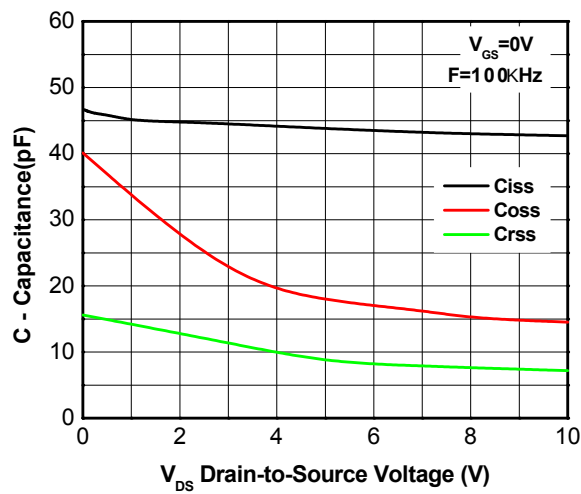
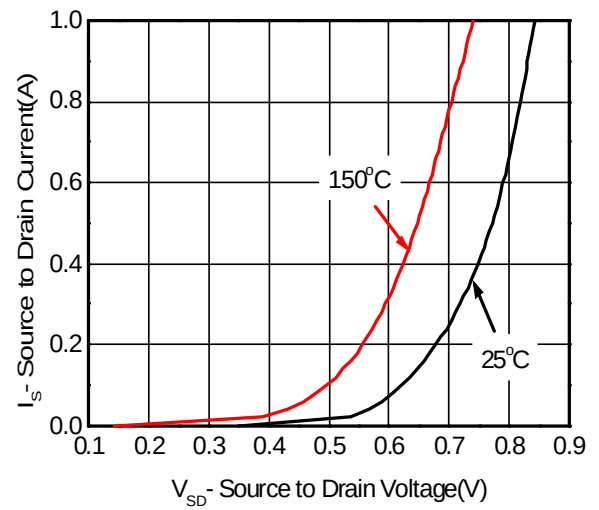
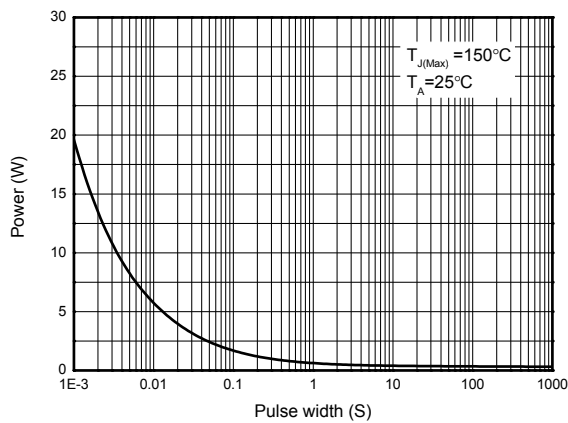
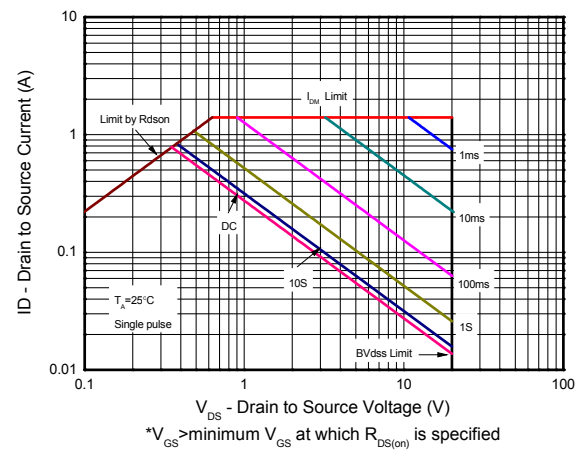
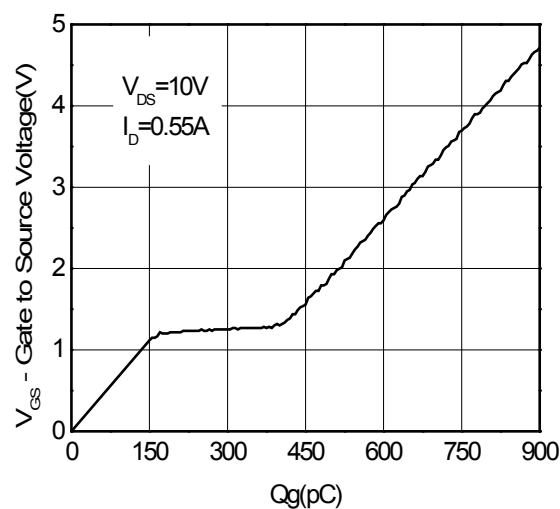
d Maximum junction temperature $T_J=150^{\circ}\text{C}$.

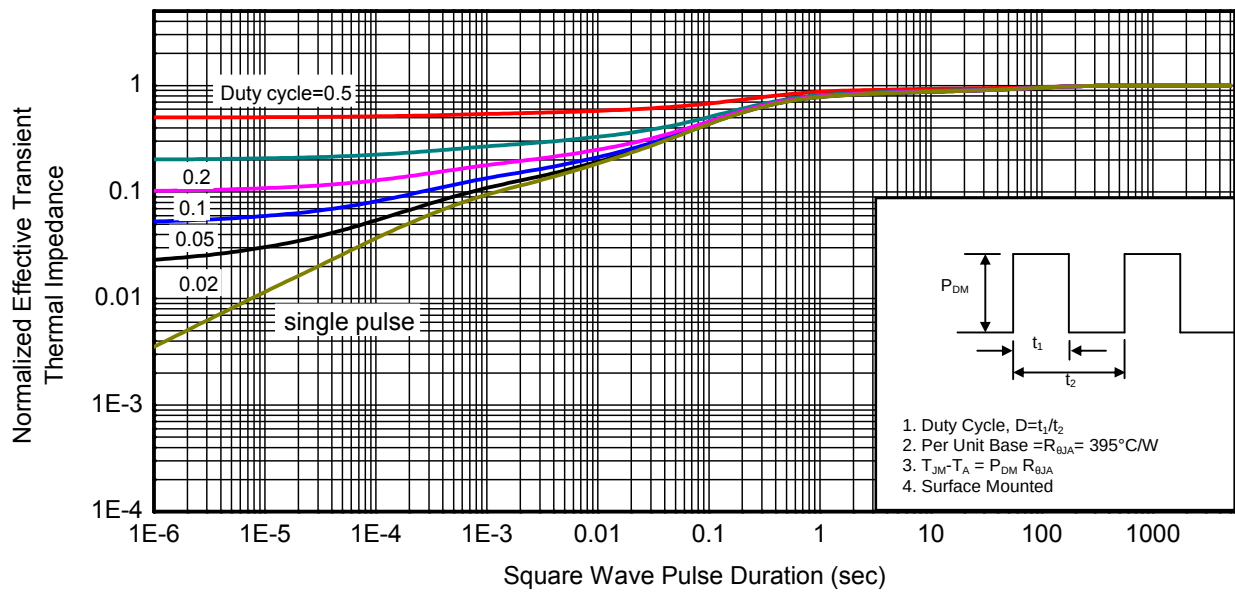
e Pulse test: Pulse width <380 us duty cycle <2%.

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} =16 V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} =±5V			±5	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	0.45	0.58	0.85	V
Drain-to-source On-resistance ^e	R _{DS(on)}	V _{GS} = 4.5V, I _D = 0.55A		220	420	mΩ
		V _{GS} = 2.5V, I _D = 0.45A		260	500	
		V _{GS} = 1.8V, I _D = 0.35A		315	600	
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 0.55A		2.0		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 100KHz, V _{DS} = 10 V		50.6		pF
Output Capacitance	C _{OSS}			13.2		
Reverse Transfer Capacitance	C _{RSS}			8.3		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 0.55A		0.87		nC
Threshold Gate Charge	Q _{G(TH)}			0.06		
Gate-to-Source Charge	Q _{GS}			0.15		
Gate-to-Drain Charge	Q _{GD}			0.27		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 4.5 V, V _{DS} = 10V, I _D =0.55A, R _G =6 Ω		34		ns
Rise Time	tr			97.6		
Turn-Off Delay Time	td(OFF)			606		
Fall Time	tf			318		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 0.35A	0.5	0.7	1.1	V

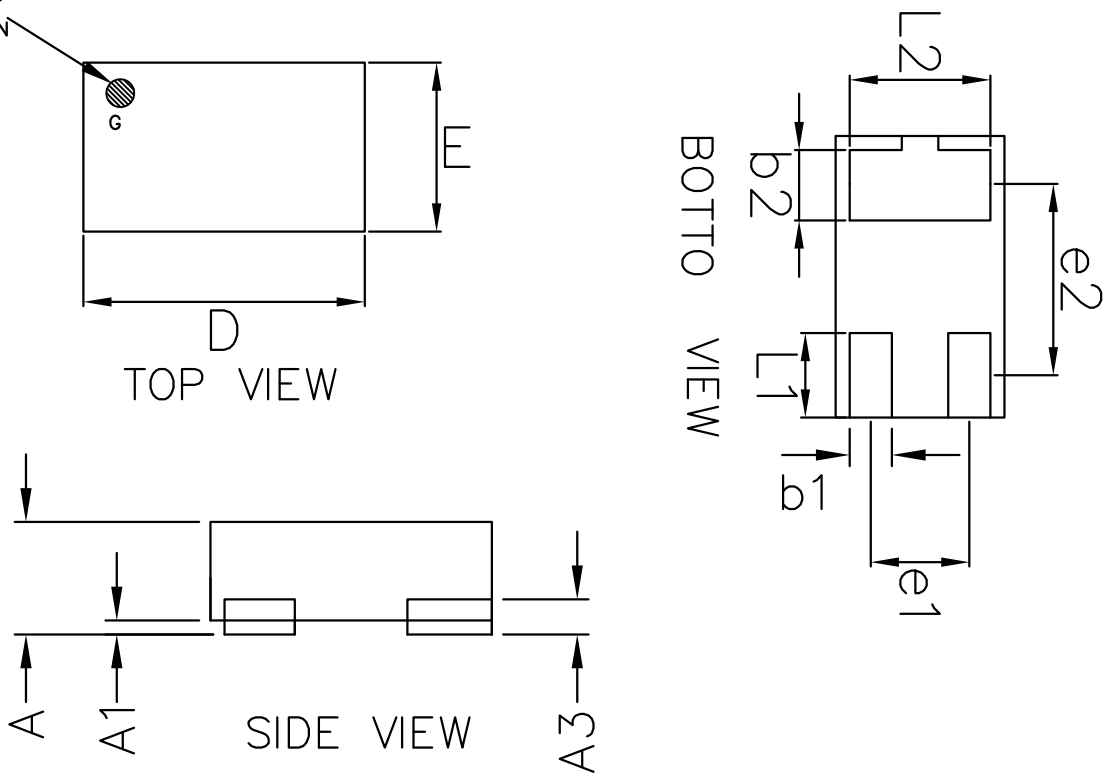
Typical Characteristics (Ta=25°C, unless otherwise noted)

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


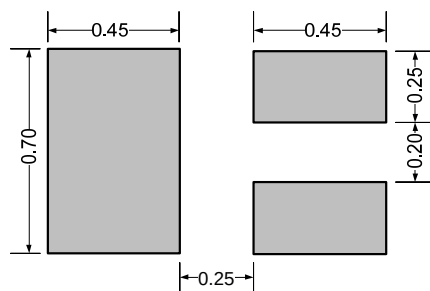


Transient thermal response (Junction-to-Ambient)

Package outline dimensions
DFN1006-3L

 PIN 1 DOT
BY MARKIN


COMMON DIMENSIONS(MM)			
PKG.	X1: EXTREME THIN		
REF.	MIN.	NOM.	MAX
A	>0.40	—	0.50
A1	0.00	—	0.05
A3	0.125 REF.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e1	0.35 BSC		
e2	0.675 BSC		

Recommend land pattern (Unit: mm)


Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.