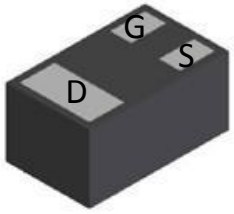
WNM2072

Single N-Channel, 20V, 0.71A, Power MOSFET

Http://www.sh-willsemi.com

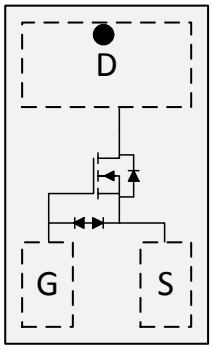
V_{DS} (V)	Typical Rds(on) (Ω)
20	0.220@ V_{GS}=4.5V
	0.260@ V_{GS}=2.5V
	0.315@ V_{GS}=1.8V
ESD Protected	



DFN1006-3L

Descriptions

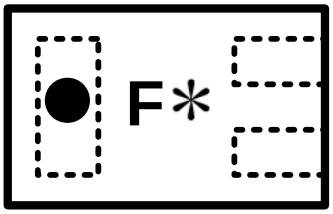
The WNM2072 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM2072 is Pb-free.



Pin configuration (Top view)

Features

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



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

Marking

Applications

- Small Signal Switching
- Small Moto Driver

Order information

Device	Package	Shipping
WNM2072-3/TR	DFN1006-3L	10K/Tape&Reel

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 ≤ 10 s	$R_{\theta JA}$	350	390	°C/W
	Steady State		395	455	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	397	435	
	Steady State		445	505	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	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<380μs, Single pulse

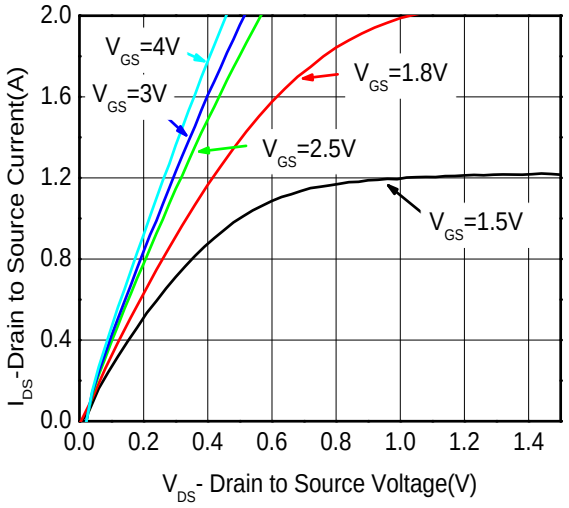
d Maximum junction temperature T_J=150° C.

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

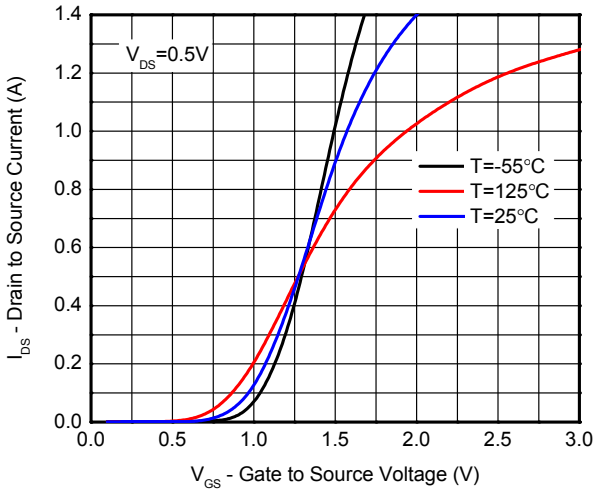
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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 = 1 MHz, 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		16		ns
Rise Time	tr			11.6		
Turn-Off Delay Time	td(OFF)			36		
Fall Time	tf			11		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 0.35A	0.5	0.7	1.1	V

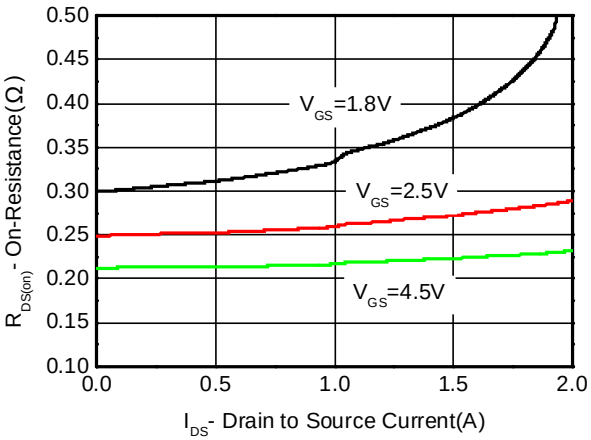
Typical Characteristics (Ta=25°C, unless otherwise noted)



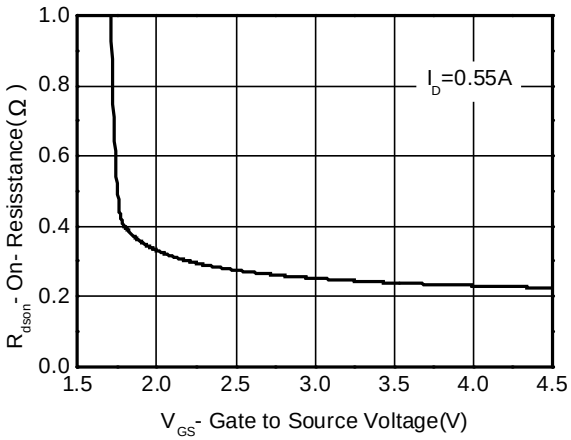
Output characteristics



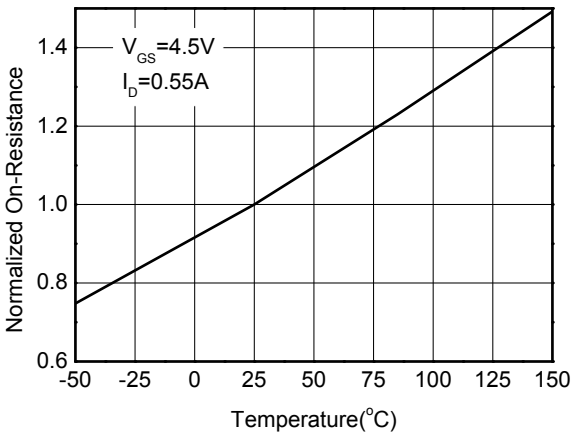
Transfer characteristics



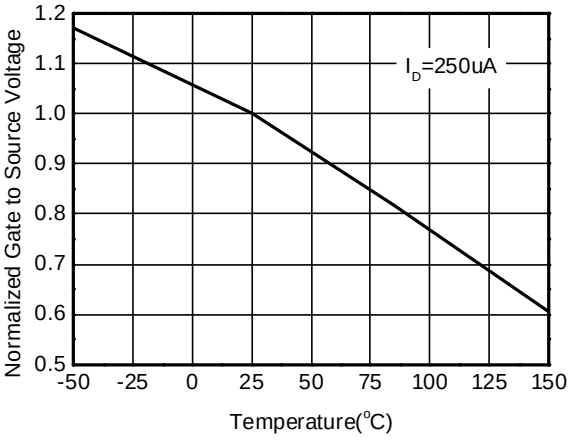
On-Resistance vs. Drain current



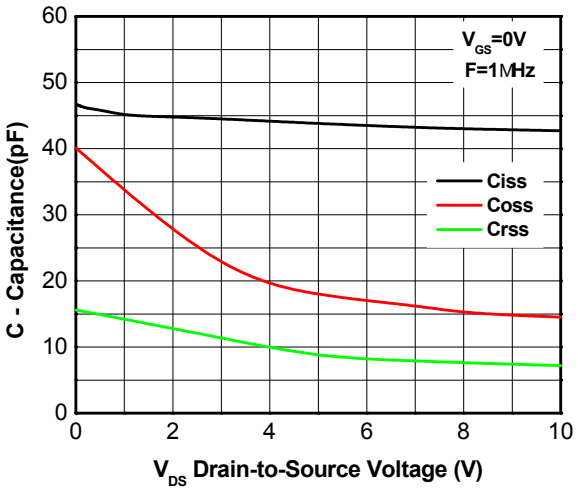
On-Resistance vs. Gate-to-Source voltage



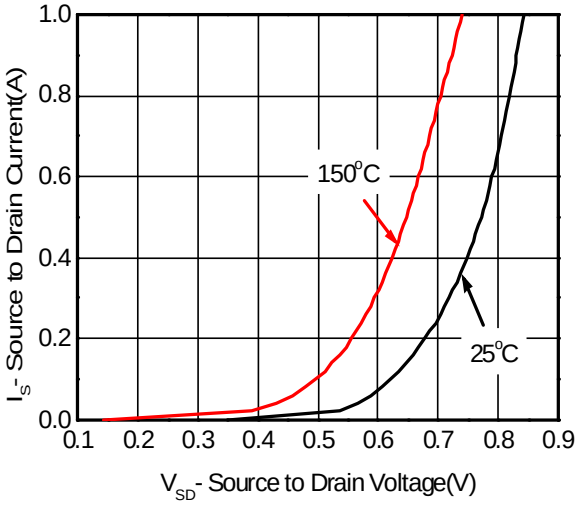
On-Resistance vs. Junction temperature



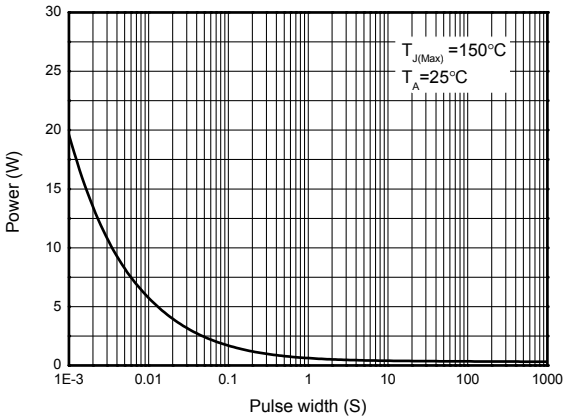
Threshold voltage vs. Temperature



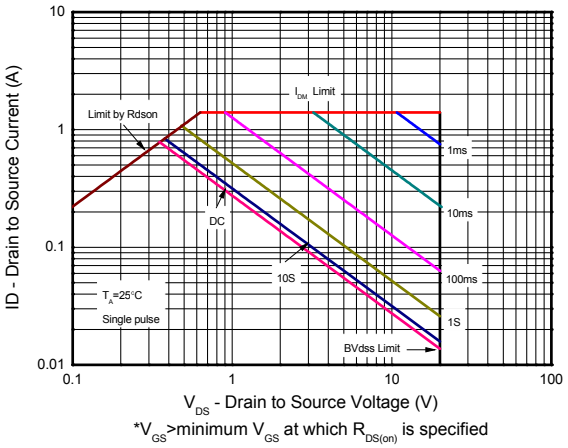
Capacitance



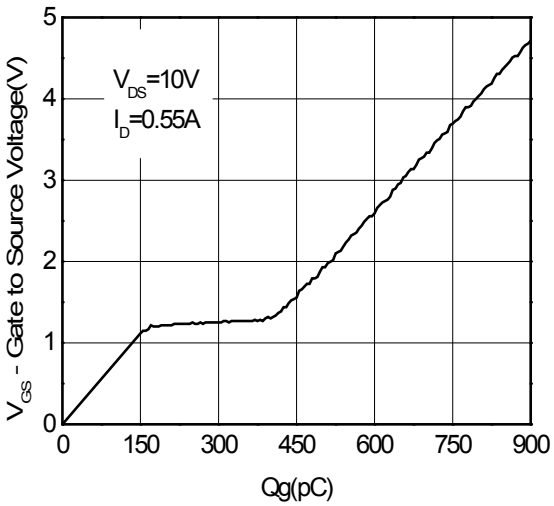
Body diode forward voltage

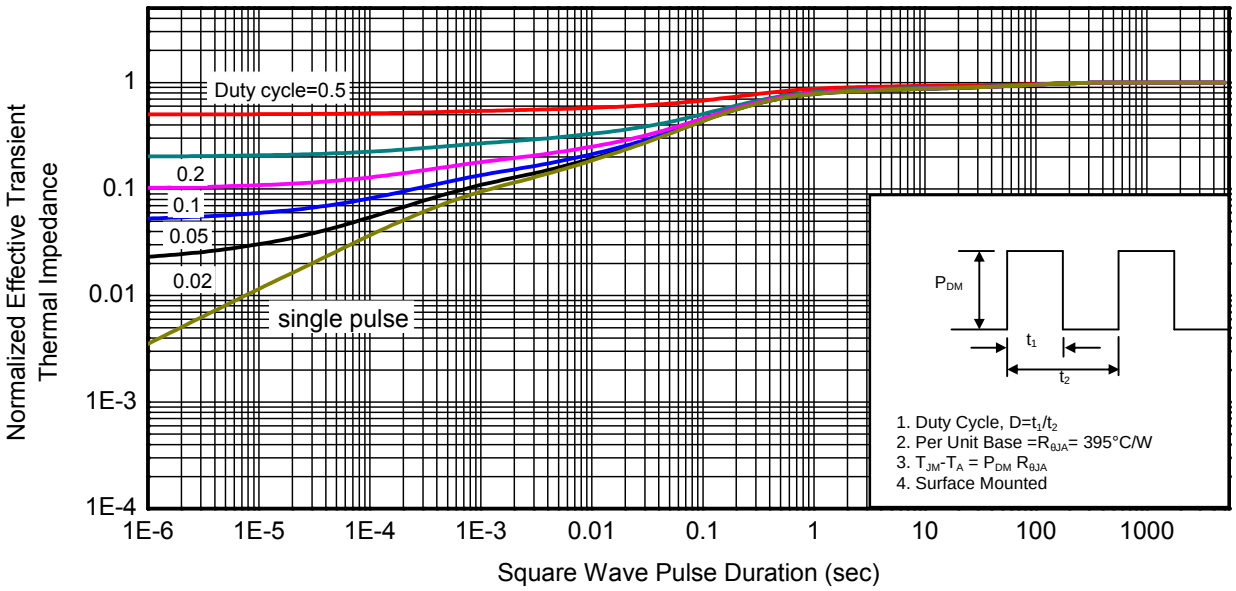


Single pulse power



Safe operating power

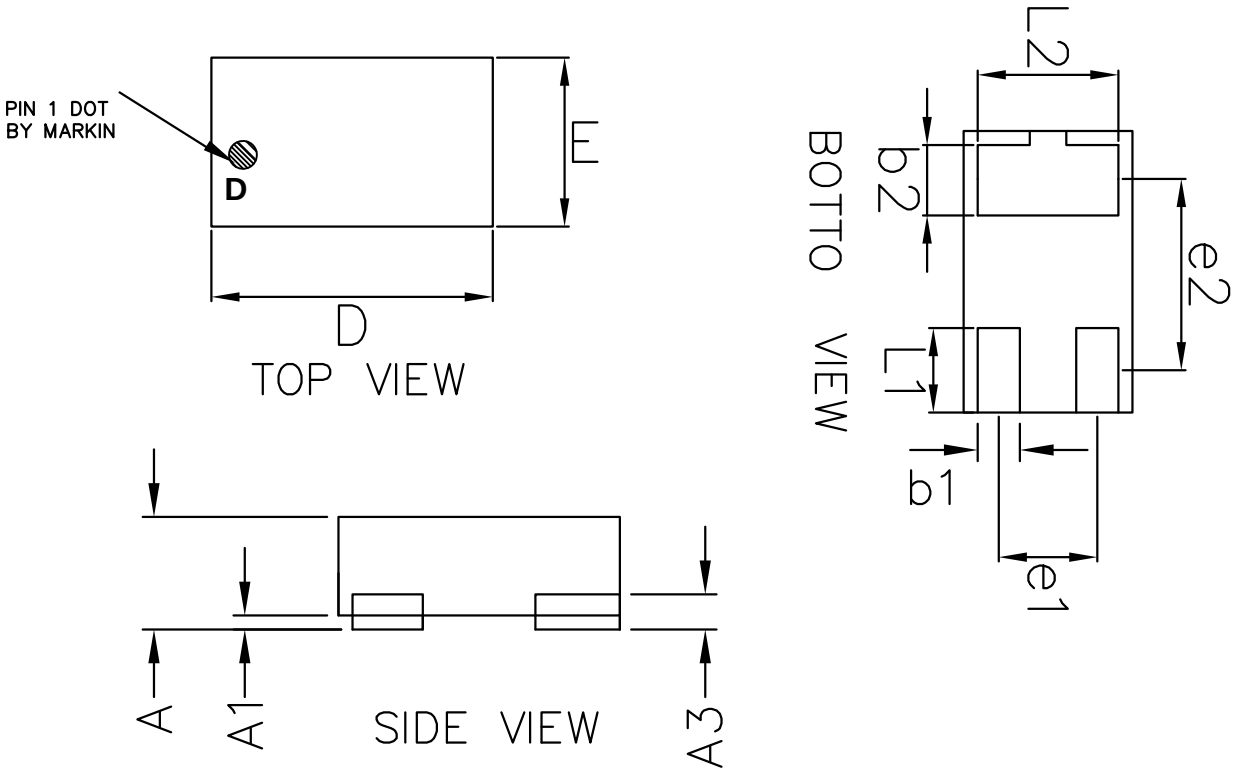




Transient thermal response (Junction-to-Ambient)

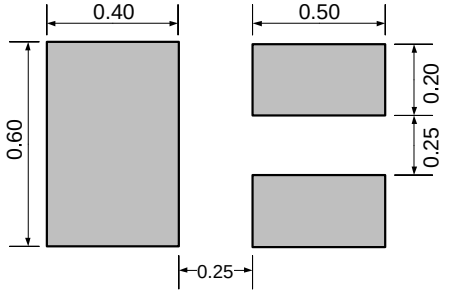
Package outline dimensions

DFN1006-3L



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	0.45	0.50	0.55
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.