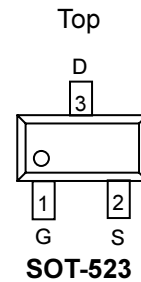


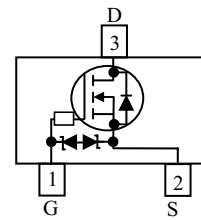
N-Channel, 20V, 0.88A, Small Signal MOSFET

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



Descriptions

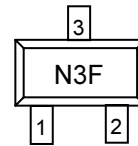
The WNM4153 is the N-Channel enhancement MOS Field Effect Transistor, uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion applications. Standard Product WNM4153 is Pb-free.



Pin Configuration

Features

- Trench N-Channel
- Supper high density cell design for extremely low $R_{ds(on)}$
- Exceptional ON resistance and maximum DC current capability
- Small package design with SOT-523



N3 = Device Code

F = Month

Marking

Applications

- Driver: Relays, Solenoids, Lamps, Hammers
- Power supply converters circuit
- Load/Power Switching for potable device

Order Information

Device	Package	Shipping
WNM4153-3/TR	SOT-523	3000/Tape&Reel

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	10 S	Steady State	Unit	
Drain-Source Voltage	V_{DS}	+20		V	
Gate-Source Voltage	V_{GS}	± 6			
Continuous Drain Current ^a	I_D	$T_A=25^\circ\text{C}$	0.88	0.80	A
		$T_A=70^\circ\text{C}$	0.71	0.64	
Maximum Power Dissipation ^a	P_D	$T_A=25^\circ\text{C}$	0.37	0.30	W
		$T_A=70^\circ\text{C}$	0.23	0.19	
Continuous Drain Current ^b	I_D	$T_A=25^\circ\text{C}$	0.76	0.69	A
		$T_A=70^\circ\text{C}$	0.60	0.55	
Maximum Power Dissipation ^b	P_D	$T_A=25^\circ\text{C}$	0.27	0.22	W
		$T_A=70^\circ\text{C}$	0.17	0.14	
Pulsed Drain Current ^c	I_{DM}	1.4		A	
Operating Junction Temperature	T_J	150		$^\circ\text{C}$	
Lead Temperature	T_L	260		$^\circ\text{C}$	
Storage Temperature Range	T_{stg}	-55 to 150		$^\circ\text{C}$	

Thermal Resistance Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	$t \leq 10 \text{ s}$	285	335	$^\circ\text{C/W}$
		Steady State	340	405	
Junction-to-Ambient Thermal Resistance ^b	$R_{\theta JA}$	$t \leq 10 \text{ s}$	385	450	
		Steady State	455	545	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	260	300		

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

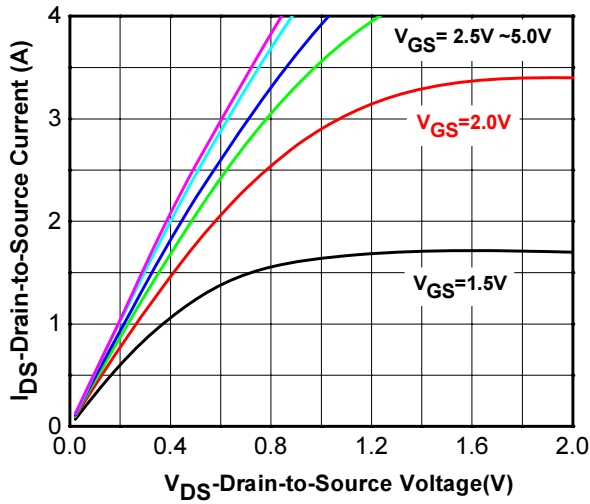
c Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, Duty Cycle=1%

d Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ\text{C}$.

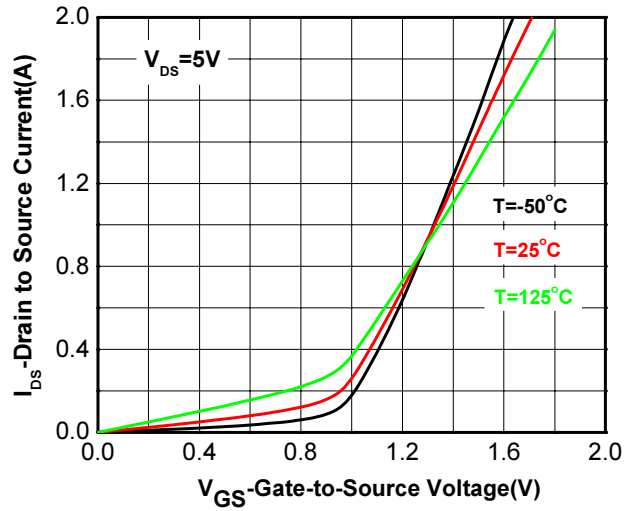
Electronics Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ.	Max	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1	μA
I_{GSS}	Gate –Source leakage current	$V_{DS}=0V, V_{GS}=\pm 5V$			± 5	μA
ON Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	0.55	1.0	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=0.55A$		220	310	$m\Omega$
		$V_{GS}=2.5V, I_D=0.45A$		260	360	$m\Omega$
		$V_{GS}=1.8V, I_D=0.35A$		320	460	$m\Omega$
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=0.4A$		1.0		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=100kHz$		68		pF
C_{oss}	Output Capacitance			9.0		pF
C_{rss}	Reverse Transfer Capacitance			7.5		pF
$Q_{G(TOT)}$	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=0.55A$		1.15		nC
$Q_{G(TH)}$	Threshold gate charge			0.06		nC
Q_{GS}	Gate-Source Charge			0.15		nC
Q_{GD}	Gate-Drain Charge			0.23		nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=10V, V_{GS}=4.5V, I_D=0.55A, R_G=6\Omega$		22		ns
t_r	Turn-On Rise Time			80		ns
$t_{d(off)}$	Turn-Off Delay Time			700		ns
t_f	Turn-Off Fall Time			380		ns
Body Diode Characteristics						
V_{SD}	Forward Diode Voltage	$V_{GS}=0V, I_S=0.35A$	0.5	0.7	1.5	V

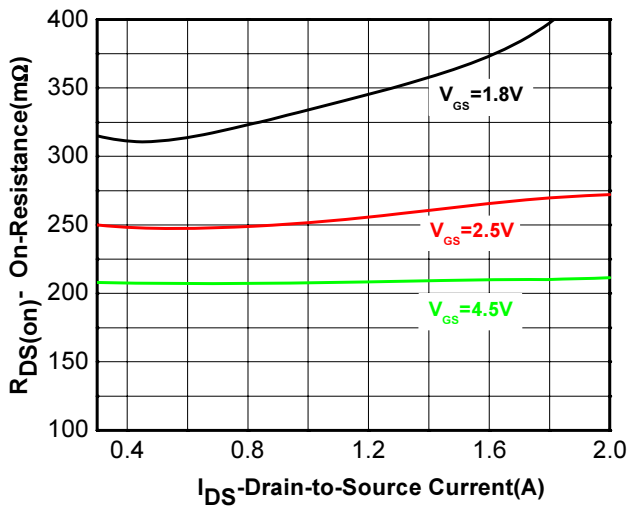
Typical Performance Graph



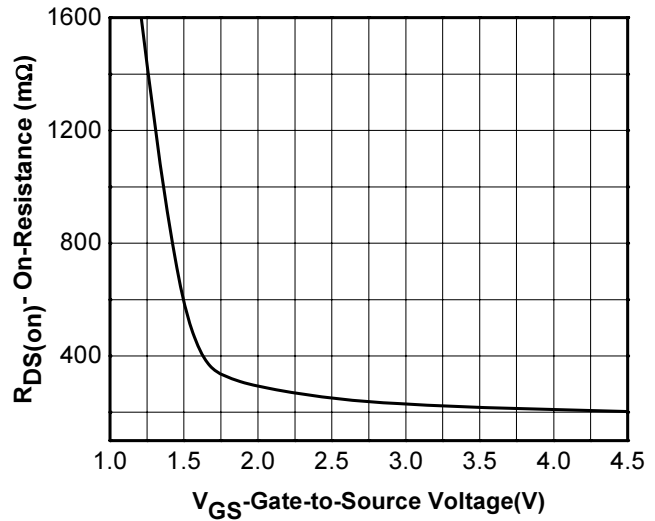
Output Characteristics



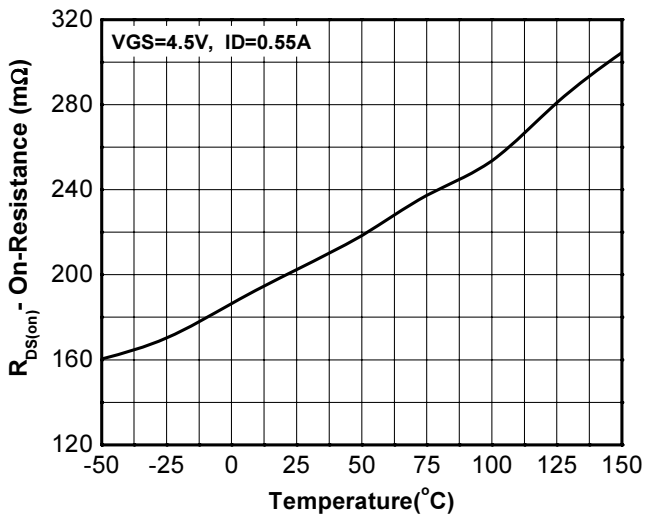
Transfer Characteristics



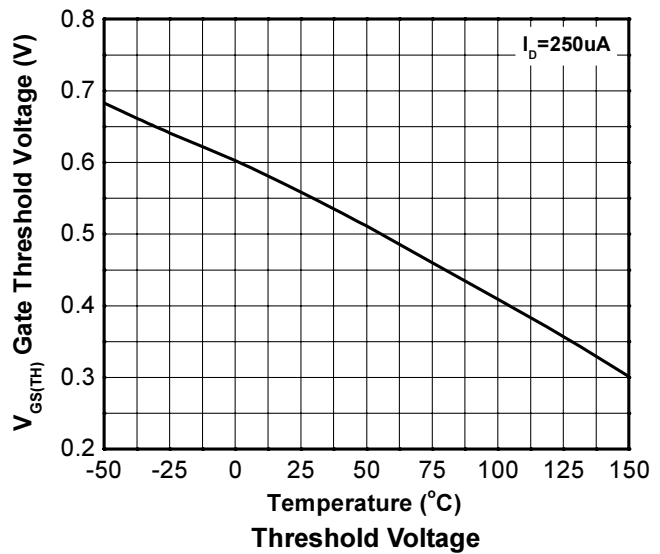
On Resistance vs. Drain Current



On Resistance vs. V_{GS} vs. Temperature



On Resistance vs. Junction Temperature



Threshold Voltage

