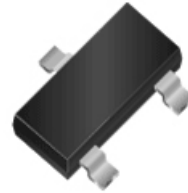


WNM2034

N-Channel, 20V, 3.6A, Power MOSFET

[Http://www.willsemi.com](http://www.willsemi.com)

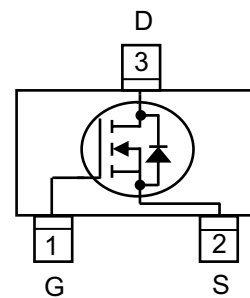
V _{DS} (V)	R _{dson} (Ω)
20	0.037 @ 10V
	0.045 @ 4.5V



SOT-23

Descriptions

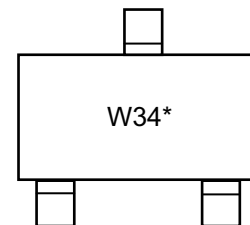
The WNM2034 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R_{DS (ON)} with low gate charge. This device is suitable for use in DC-DC conversion and power switch applications. Standard Product WNM2034 is Pb-free.



Configuration (Top View)

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23



W34 = Device Code
* = Month (A~Z)

Marking

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch

Order Information

Device	Package	Shipping
WNM2034-3/TR	SOT-23	3000/Tape&Reel

ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted					
Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Drain Current ($T_J = 150\text{ }^\circ\text{C}$) ^a	$T_A = 25\text{ }^\circ\text{C}$	I_D	3.6	3.3	A
	$T_A = 70\text{ }^\circ\text{C}$		2.8	2.6	
Maximum Power Dissipation ^a	$T_A = 25\text{ }^\circ\text{C}$	P_D	0.8	0.7	W
	$T_A = 70\text{ }^\circ\text{C}$		0.5	0.4	
Continuous Drain Current ($T_J = 150\text{ }^\circ\text{C}$) ^b	$T_A = 25\text{ }^\circ\text{C}$	I_D	3.2	3	A
	$T_A = 70\text{ }^\circ\text{C}$		2.6	2.4	
Maximum Power Dissipation ^b	$T_A = 25\text{ }^\circ\text{C}$	P_D	0.6	0.5	W
	$T_A = 70\text{ }^\circ\text{C}$		0.4	0.3	
Pulsed Drain Current ^c		I_{DM}	10		A
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

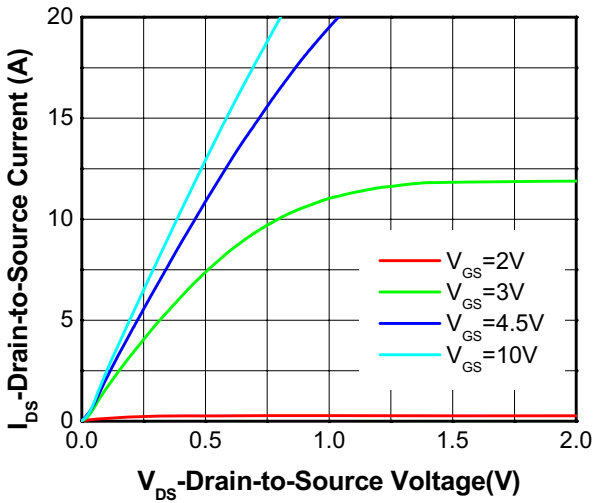
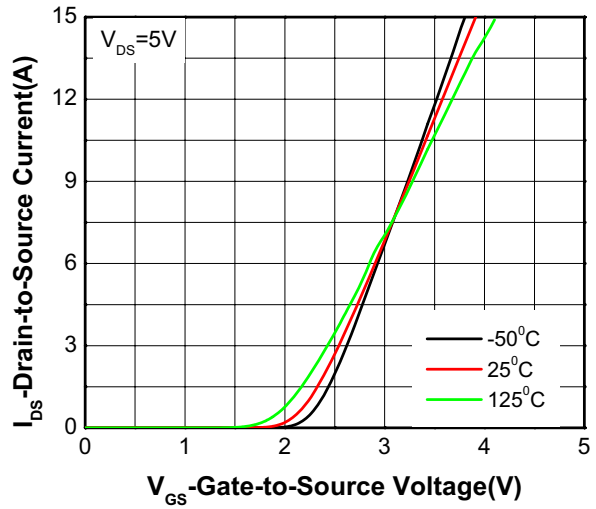
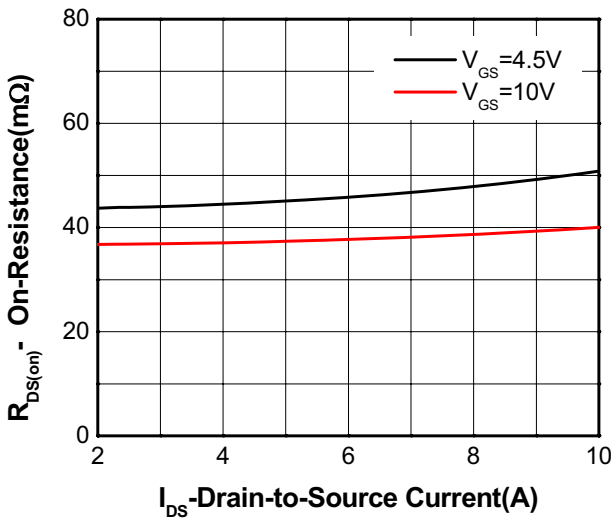
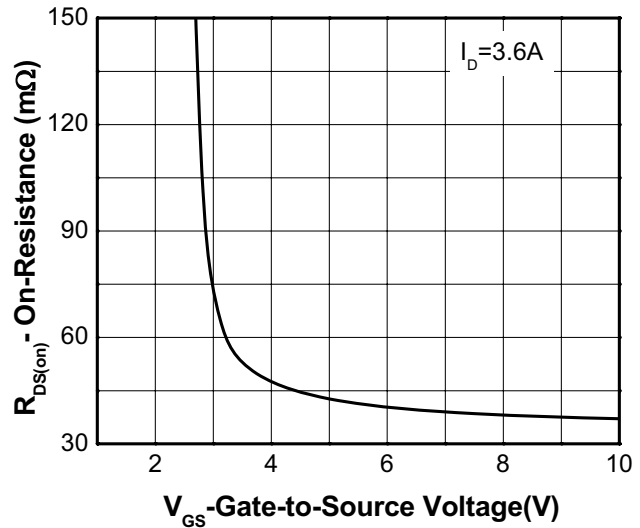
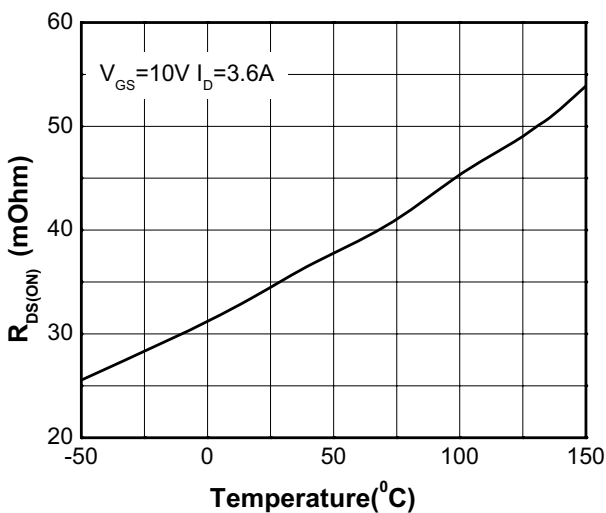
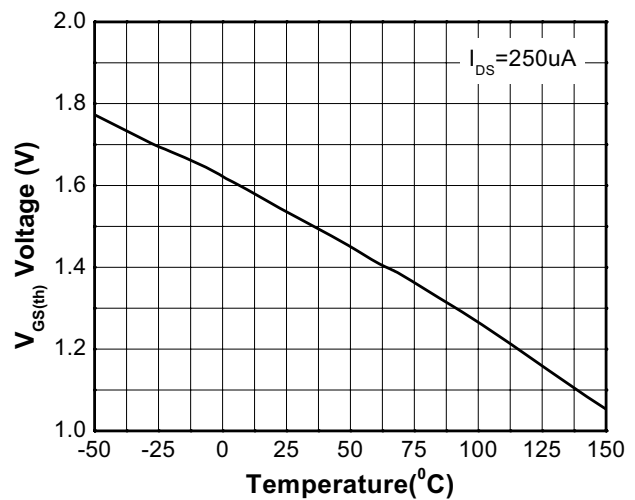
THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	125	150	$^\circ\text{C/W}$
	Steady State		140	175	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10\text{ s}$	$R_{\theta JA}$	150	180	
	Steady State		165	210	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	60	75	

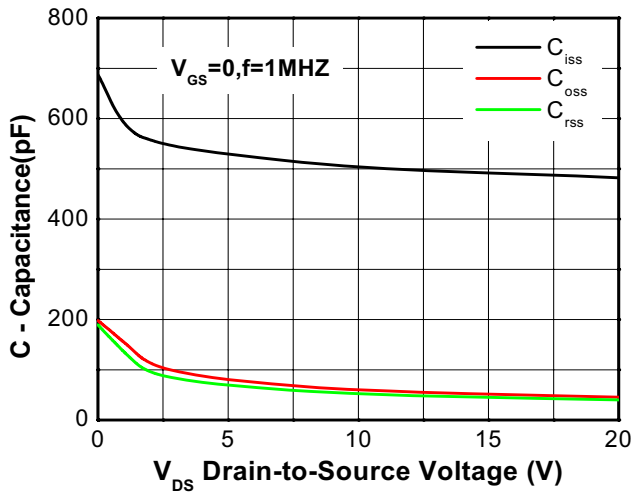
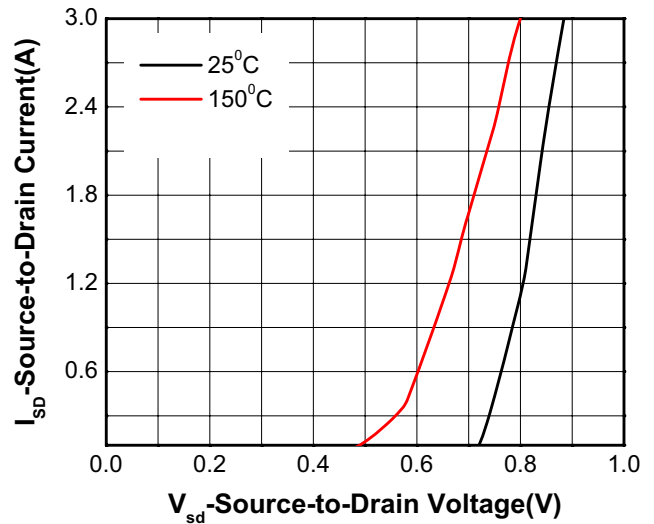
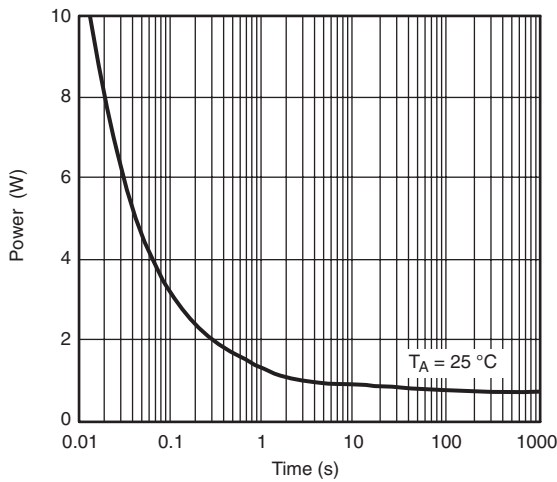
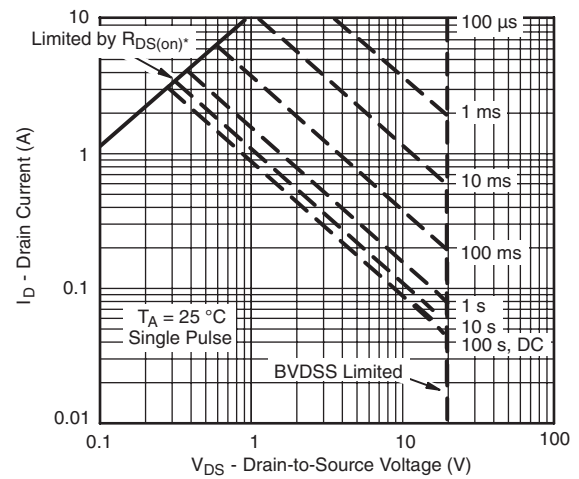
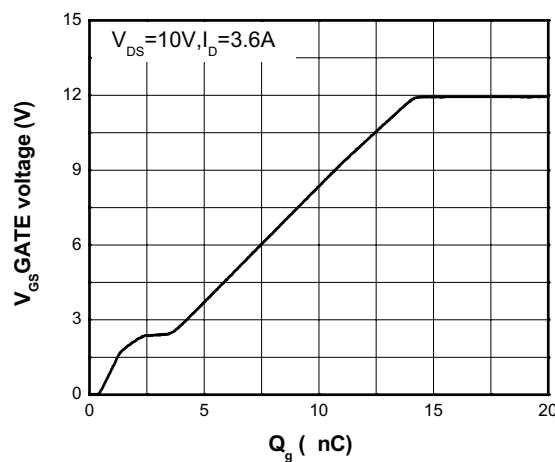
- a Surface mounted on FR4 Board using 1 in sq pad size, 1oz Cu.
- b Surface mounted on FR4 board using the minimum recommended pad size, 1oz Cu.
- c Repetitive rating, pulse width limited by junction temperature, $t_p = 10\mu\text{s}$, Duty Cycle=1%
- d Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150\text{ }^\circ\text{C}$.

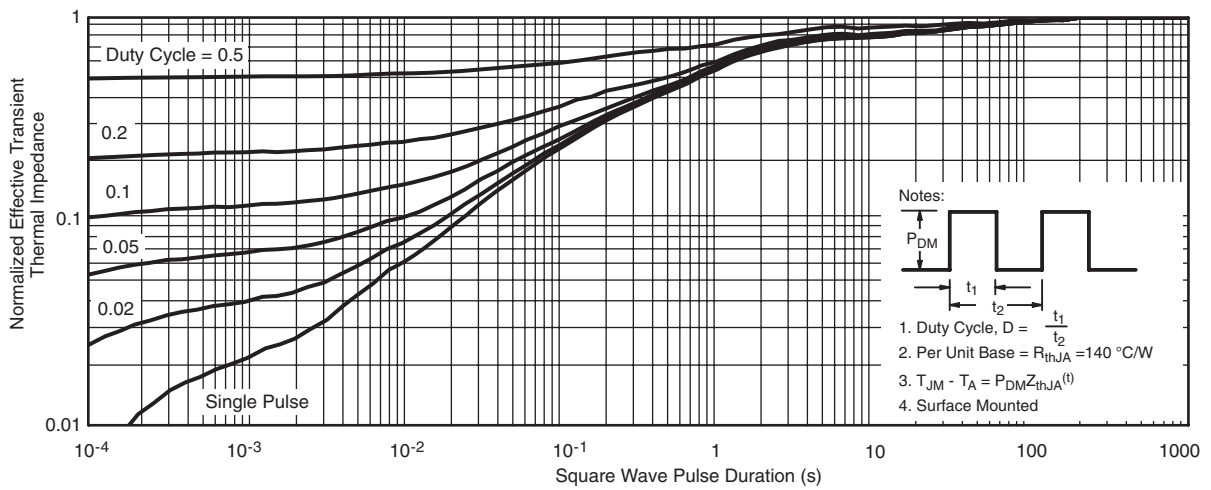
Electronics Characteristics

(Ta=25°C, unless otherwise noted)

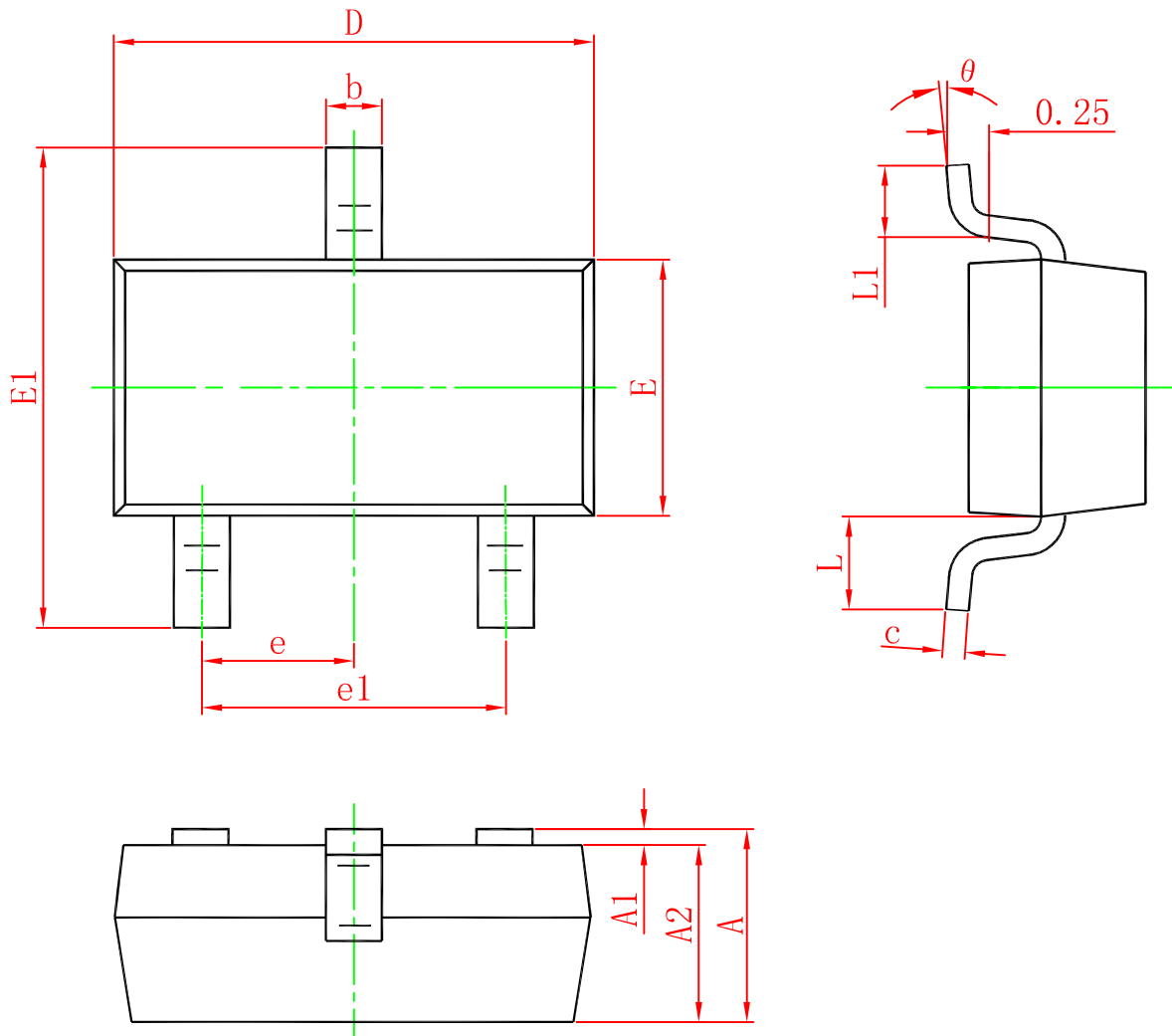
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.0	1.5	2.0	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 3.6A		37	47	mΩ
		V _{GS} = 4.5V, I _D = 3.0A		45	56	
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 3.6A		5.3		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0 MHz, V _{DS} = 10 V		505		pF
Output Capacitance	C _{OSS}			60		
Reverse Transfer Capacitance	C _{RSS}			50		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 10 V, I _D = 3.1A		11.4		nC
Threshold Gate Charge	Q _{G(TH)}			0.90		
Gate-to-Source Charge	Q _{GS}			1.18		
Gate-to-Drain Charge	Q _{GD}			2.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} = 10 V, R _L = 3 Ω, R _G = 6 Ω		4.4		ns
Rise Time	tr			3.2		
Turn-Off Delay Time	td(OFF)			24.5		
Fall Time	tf			3.2		
SOURCE-to-DRAIN DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1.5A	0.80	0.95	1.50	V

Typical Performance Graph

Output Characteristics

Transfer Characteristics

Rds(on) vs. Drain Current

Rds(on) vs. Gate to Source Voltage

Rds(on) vs. Junction Temperature

Threshold voltage vs. Temperature


Capacitance

Source to Drain Diode Forward Voltage

Single Pulse Power

Safe Operating Area

Gate Charge Characteristics



Transient Thermal Response

Package Outline Dimension
SOT-23


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 (Typ.)	
e1	1.800	2.000
L	0.550 (Typ.)	
L1	0.300	0.500
θ	0°	8°