WNM2029

Single N-Channel, 20V, 1.85A, Power MOSFET

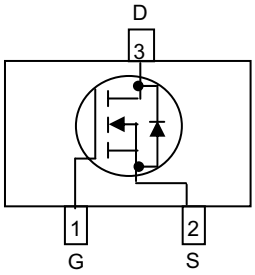
Http//:www.willsemi.com

V_{DS} (V)	Rds(on) (Ω)	I_D (A)
20	0.072@ V_{GS}=4.5V	1.8
	0.088@ V_{GS}=2.5V	1.5
	0.115@ V_{GS}=1.8V	1.0

SOT-323

Descriptions

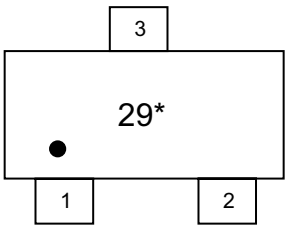
The WNM2029 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM2029 is Pb-free.



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 SOT-323



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

Marking

Applications

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

Order information

Device	Package	Shipping
WNM2029-3/TR	SOT-323	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain Current [a]	T_A=25°C	I_D	1.85	1.69	A
	T_A=70°C		1.48	1.35	
Maximum Power Dissipation [a]	T_A=25°C	P_D	0.36	0.3	W
	T_A=70°C		0.23	0.19	
Continuous Drain Current [b]	T_A=25°C	I_D	1.65	1.51	A
	T_A=70°C		1.32	1.21	
Maximum Power Dissipation [b]	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}	8		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	$R_{\theta JA}$	290	345	°C/W
	Steady State		335	415	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	380	435	
	Steady State		450	520	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	270	310	

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

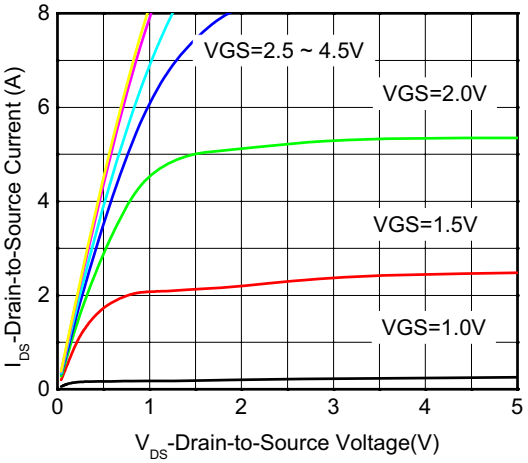
c Repetitive rating, pulse width limited by junction temperature, t_p=10μs, Duty Cycle=1%

d Repetitive rating, pulse width limited by junction temperature T_J=150°C.

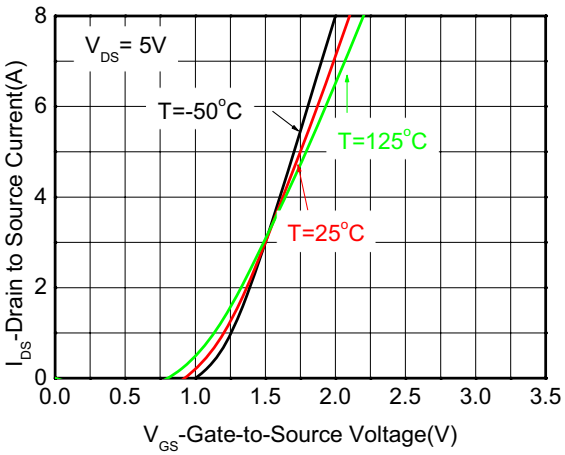
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	20.5			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16 V, V_{GS} = 0V			100	nA
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	0.50	0.65	0.80	V
Drain-to-source On-resistance	$R_{DS(on)}$	VGS = 4.5V, ID = 1.8A		72	87	mΩ
		VGS = 2.5V, ID = 1.5A		88	105	
		VGS = 1.8V, ID = 1.0A		115	138	
Forward Transconductance	g_{FS}	VDS = 5 V, ID = 1.8A		6		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 10 V		185		pF
Output Capacitance	C_{OSS}			58		
Reverse Transfer Capacitance	C_{RSS}			54		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V, I_D =1.8A		4.1		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.2		
Gate-to-Source Charge	Q_{GS}			0.6		
Gate-to-Drain Charge	Q_{GD}			1.25		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DS} = 6 V, R_L=3 Ω, R_G=6 Ω		9.0		ns
Rise Time	tr			14.0		
Turn-Off Delay Time	td(OFF)			25.0		
Fall Time	tf			9.0		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A	0.5	0.7	1.0	V

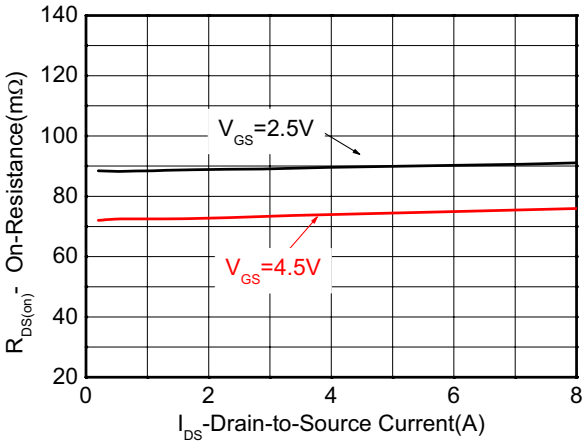
Typical Characteristics (Ta=25°C, unless otherwise noted)



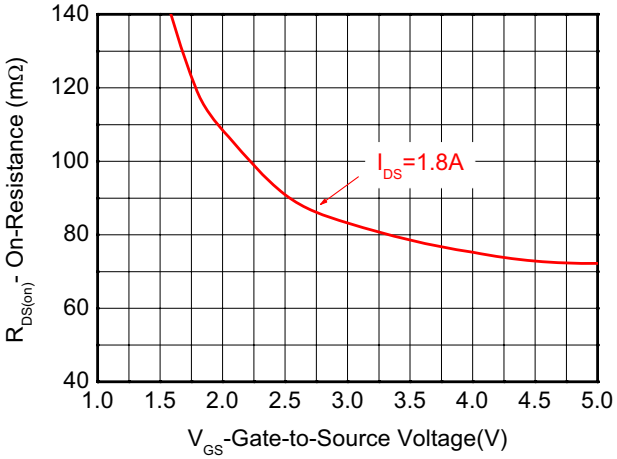
Output characteristics



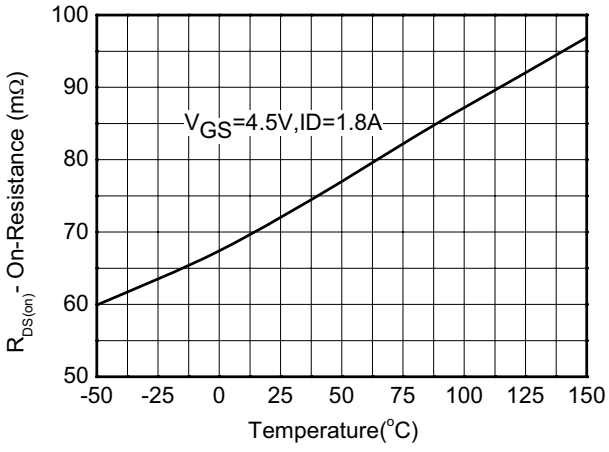
Transfer characteristics



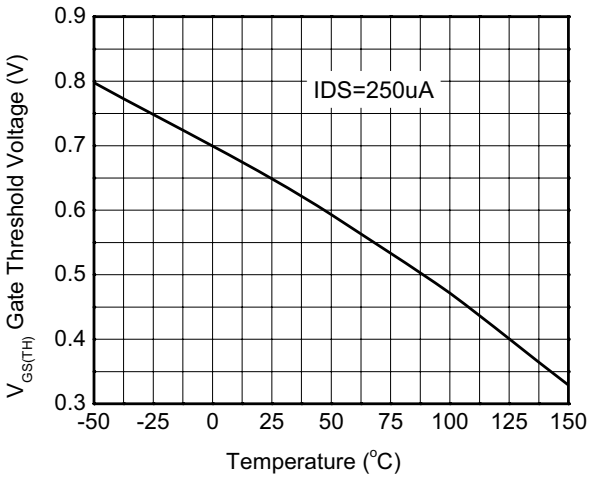
On-Resistance vs. Drain current



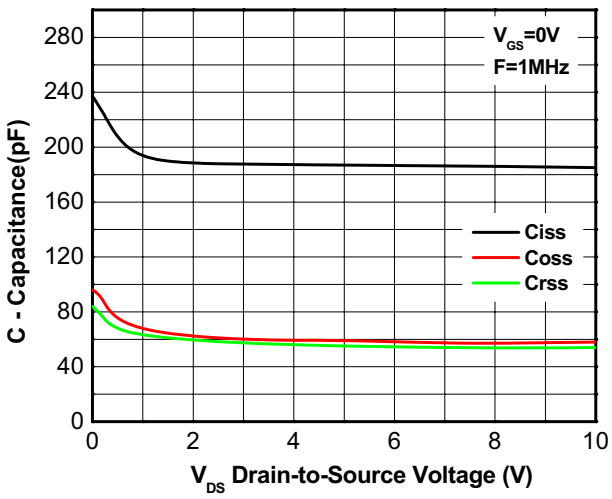
On-Resistance vs. Gate-to-Source voltage



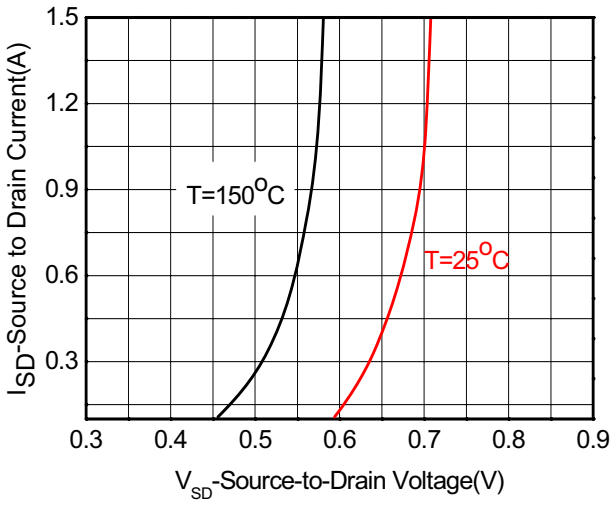
On-Resistance vs. Junction temperature



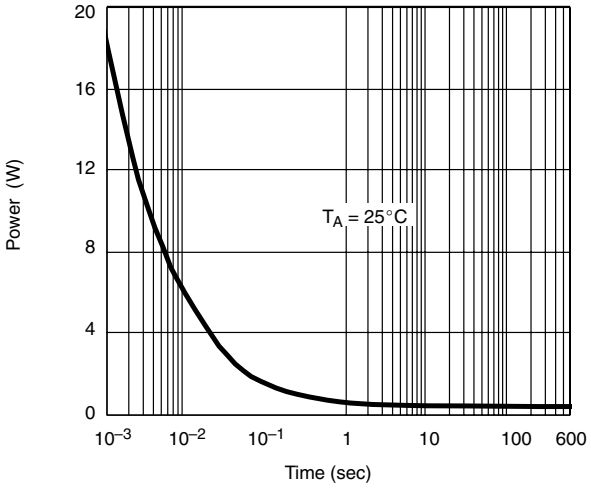
Threshold voltage vs. Temperature



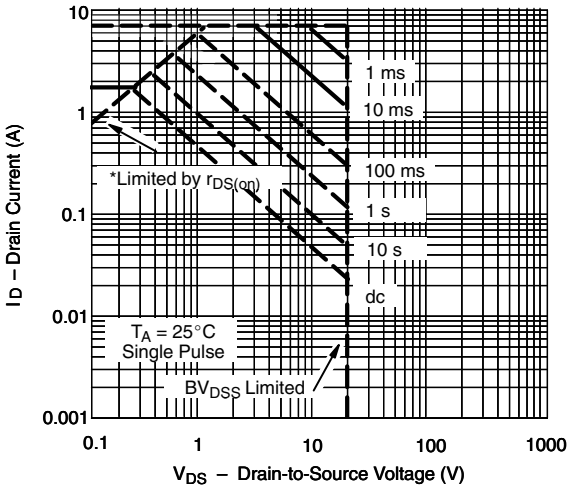
Capacitance



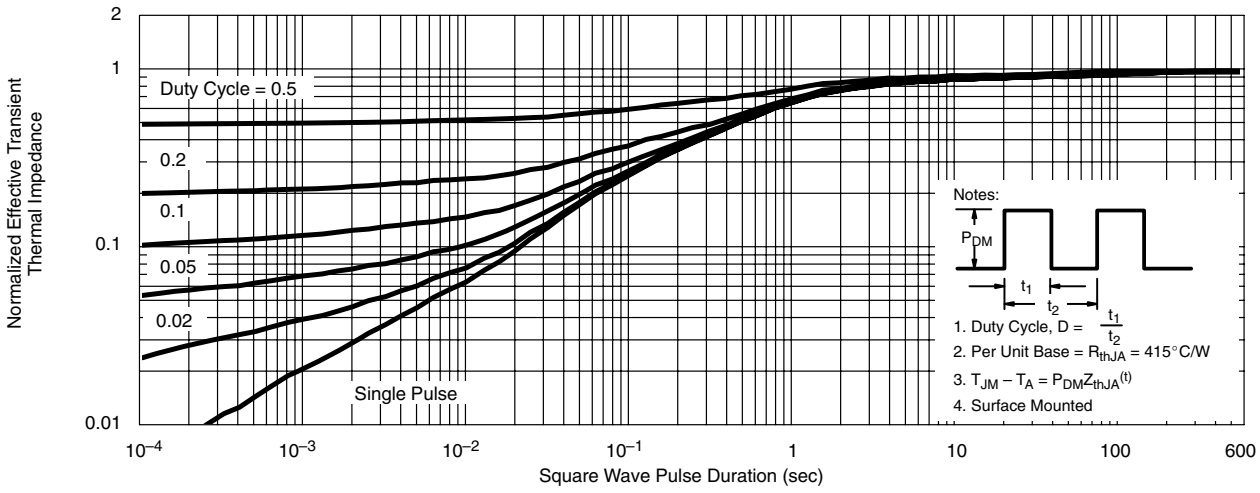
Body diode forward voltage



Single pulse power



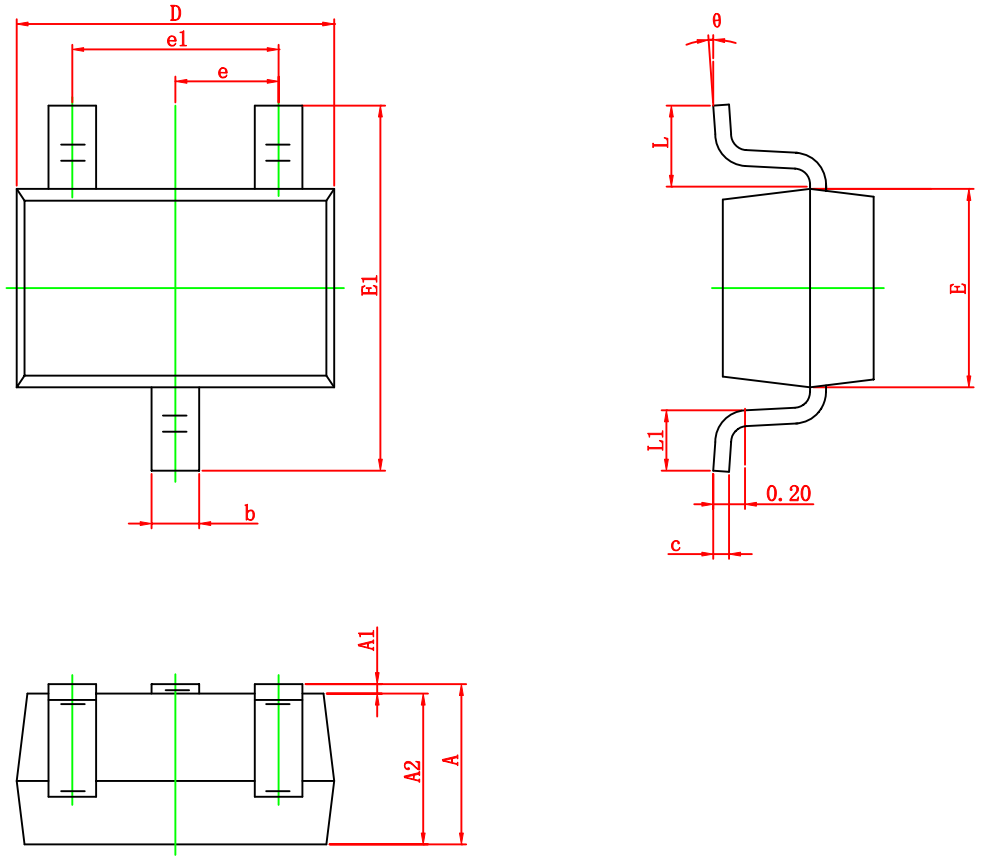
Safe operating power



Transient thermal response (Junction-to-Ambient)

Package outline dimensions

SOT-323



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
A2	0.900	0.950	1.000
b	0.200	0.300	0.400
c	0.080	0.115	0.150
D	2.000	2.100	2.200
E	1.150	1.250	1.350
E1	2.150	2.300	2.450
e	0.650TYP		
e1	1.200	1.300	1.400
L	0.525REF		
L1	0.260		0.460
θ	0°		8°