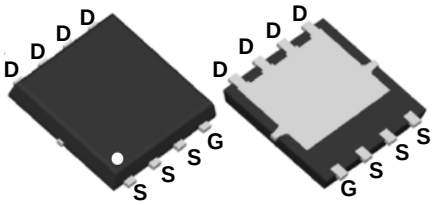
WMQ80N03T1

30V N-Channel Enhancement Mode Power MOSFET

Description

WMQ80N03T1 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

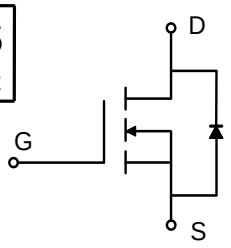


PDFN3030-8L

Features

- V_{DS}= 30V, I_D = 80A(Silicon Limited)
  $R_{DS(on)}$ < 4mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 6mΩ @ V_{GS} = 4.5V
- Green Device Available
- Low Gate Charge
- Advanced High Cell Density Trench Technology
- 100% EAS Guaranteed

RoHS compliant



Applications

- Power Management Switches
- DC/DC Converter

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current@10V[1]	T_C=25℃	I_D	80	A
	T_C=100℃		50	
	T_A=25℃		17	
	T_A=70℃		14	
Pulsed Drain Current[2]		I_{DM}	160	A
Single Pulse Avalanche Energy[3]		EAS	144.7	mJ
Avalanche Current		I_{AS}	53.8	A
Total Power Dissipation[4]	T_C=25℃	P_D	43.4	W
	T_A=25℃		1.67	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[1]	$R_{\theta JA}$	75	°C/W
Thermal Resistance from Junction-to-Case[1]	$R_{\theta JC}$	2.88	°C/W

Electrical Characteristics T_c = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D= 250μA	30	-	-	V
Gate−to−Source leakage	I_{GSS}	V_{DS}= 0V, V_{GS}= ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 24V,V_{GS}= 0V	-	-	1	μA
Drain−to−Source On Resistance[2]	$R_{DS(on)}$	V_{GS}= 10V,I_D= 30A	-	-	4	mΩ
		V_{GS}= 4.5V,I_D= 15A	-	-	6	
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.7	2.5	V
Forward Transconductance	g_{fs}	V_{DS} = 5V, I_D = 30A	-	26.5	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} =0V ,V_{DS} = 15V, f=1.0MHz	-	2808	-	pF
Output Capacitance	C_{oss}		-	420	-	
Reverse Transfer Capacitance	C_{rss}		-	297	-	
Switching Characteristics						
Gate Resistance	R_g	V_{DS} = 0V, V_{GS}= 0V, f=1.0MHz	-	0.84	-	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=15V, I_D = 20A , V_{GS}=10V, R_G= 1.5Ω	-	11.2	-	ns
Turn-On Rise Time	t_r		-	49	-	
Turn-Off Delay Time	$t_{d(off)}$		-	35	-	
Turn- Off Fall Time	t_f		-	7.8	-	
Total Gate Charge	Q_g	V_{GS} = 4.5V,I_D = 12A, V_{DS} = 20V	-	31.6	-	nC
Gate-Source Charge	Q_{gs}		-	6.07	-	
Gate-Drain Charge	Q_{gd}		-	13.8	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S= 1A, V_{GS} = 0V	-	-	1	V

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=53.8A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

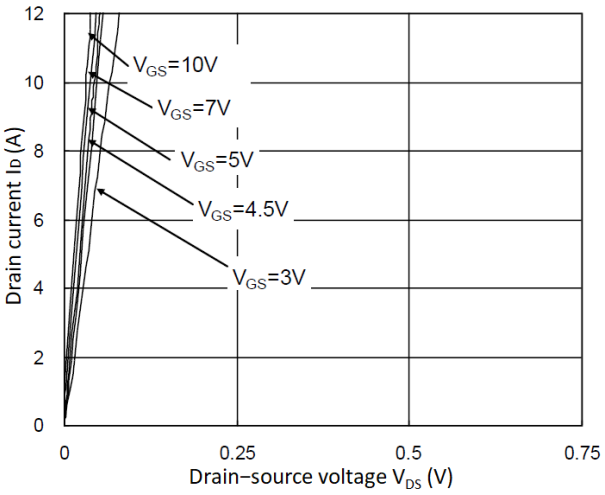


Figure 1. Output Characteristics

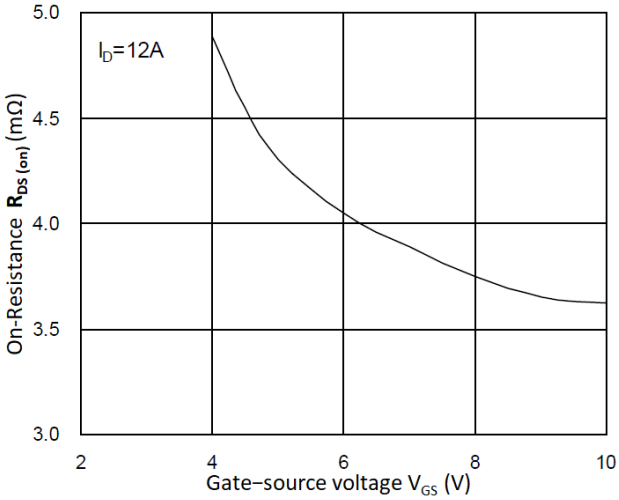


Figure 2. R_{DS}(on) vs. V_{GS}

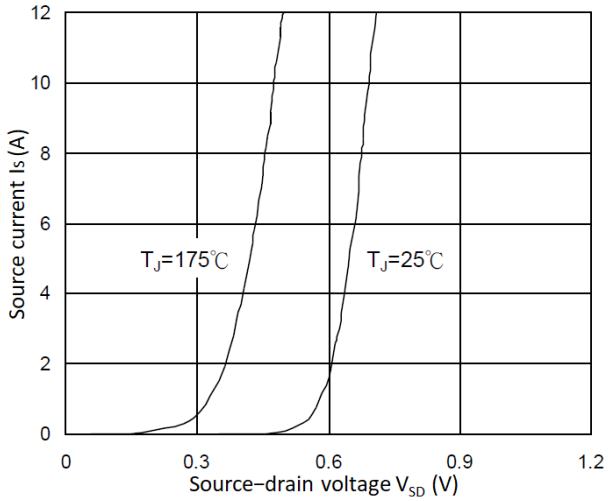


Figure 3. Forward Characteristics of Reverse

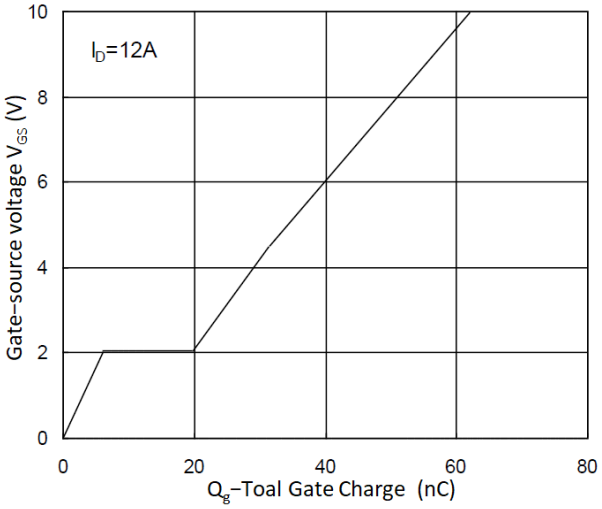


Figure 4. Gate Charge Characteristics

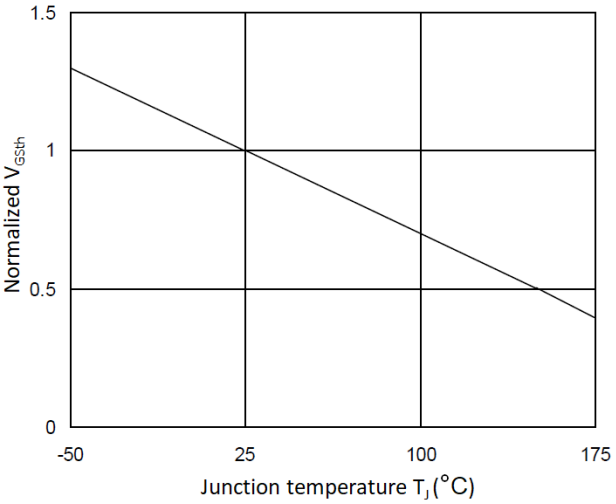


Figure 5. Normalized V_{GSth} vs. T_J

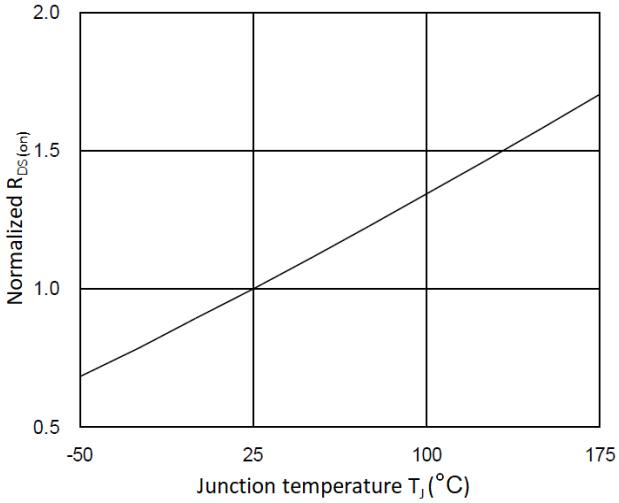


Figure 6. Normalized $R_{DS(on)}$ vs. T_J

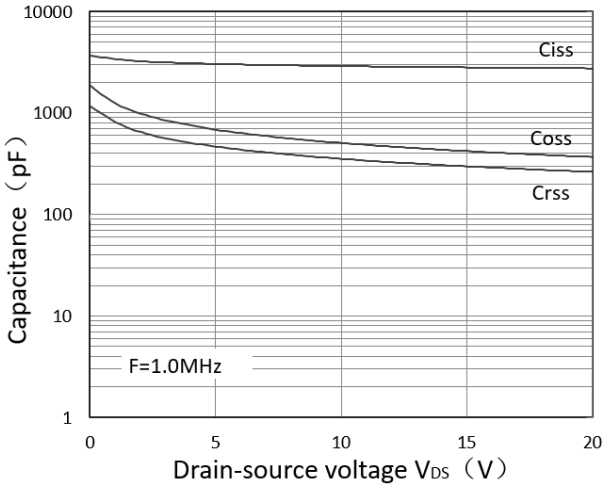


Figure 7. Capacitance Characteristics

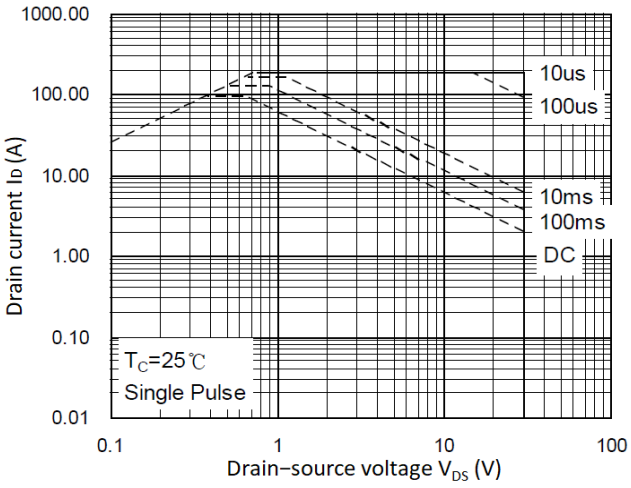


Figure 8. Safe Operating Area

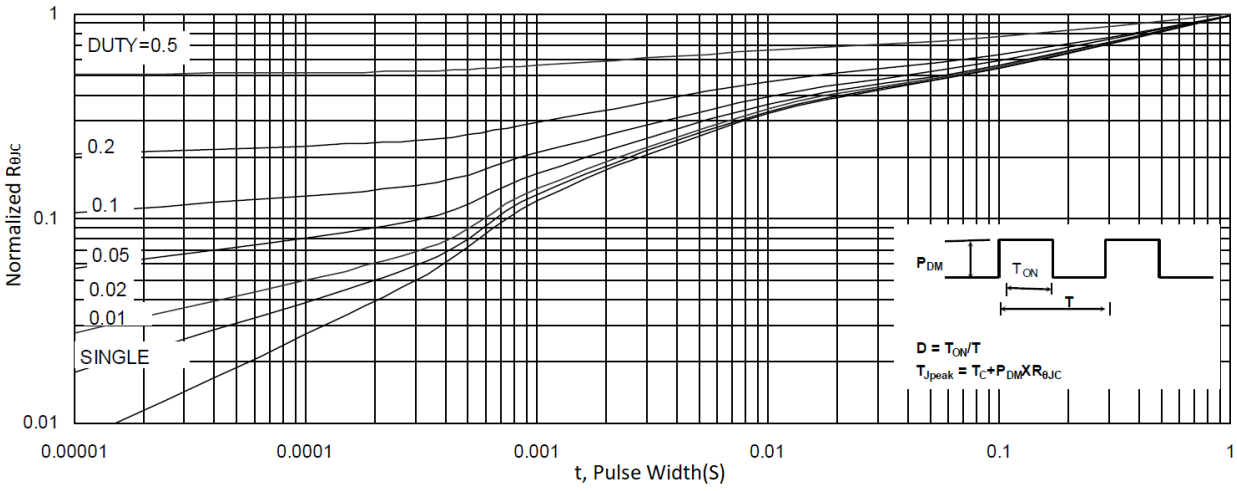


Figure 9. Normalized Maximum Transient Thermal Impedance

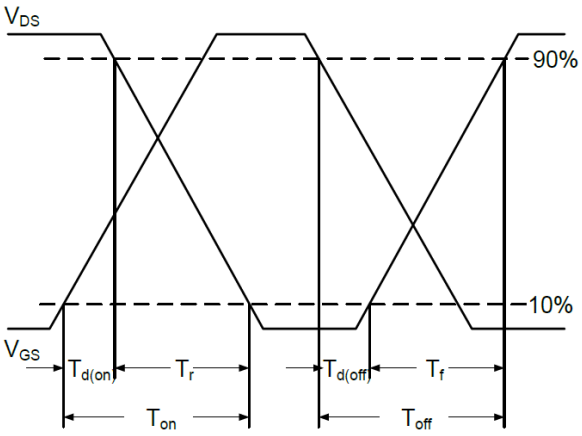


Figure 10. Switching Time Waveform

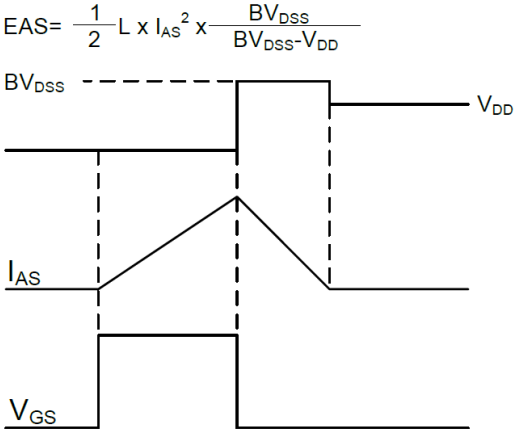
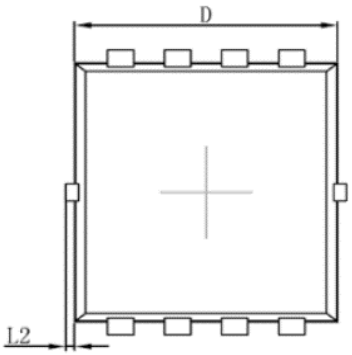
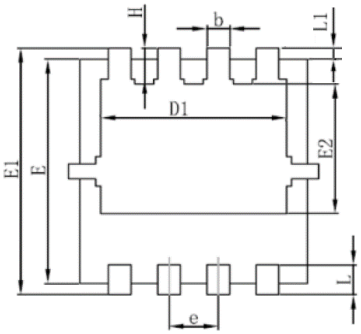


Figure 11. Unclamped Inductive Switching Waveform

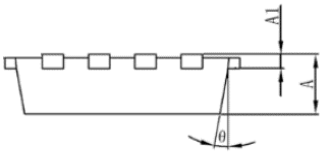
Mechanical Dimensions for PDFN3030-8L



Top View



Bottom View



Side View

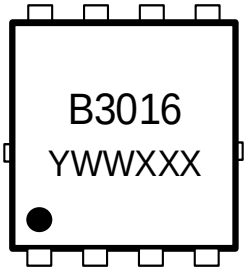
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.70	0.85
A1	0.10	0.25
D	2.90	3.25
D1	2.25	2.65
E	2.90	3.20
E1	3.10	3.45
E2	1.54	1.98
b	0.20	0.40
e	0.60	0.70
L	0.30	0.50
L1	0.13BSC	
L2	0.00	0.15
H	0.20	0.65
θ	0°	14°

Ordering Information

Part	Package	Marking	Packing method
WMQ80N03T1	PDFN3030-8L	B3016	Tape and Reel

Marking Information



B3016 = Device code

YWWXXX= Date code

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