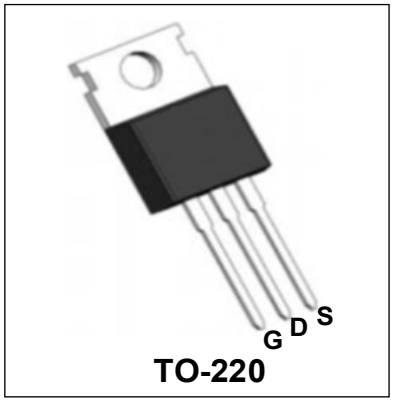
WMK025N06LG2

60V N-Channel Enhancement Mode Power MOSFET



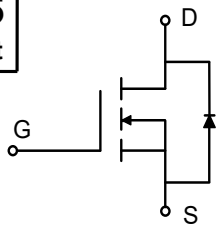
Description

WMK025N06LG2 uses Wayon's 2nd generation power trench MOSFET technology that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance. This device is well suited for high efficiency fast switching applications.

Features

- V_{DS} = 60V, I_D = 200A(Silicon Limited)
  $R_{DS(on)}$ < 2.8mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 3.8mΩ @ V_{GS} = 4.5V
- Low $R_{DS(ON)}$
- 100% EAS Guaranteed
- Excellent Package for Heat Dissipation

RoHS compliant



Applications

- DC/DC Converter
- Synchronous Rectification

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C=25°C	I_D	200	A
	T_C=100°C		126	
Pulsed Drain Current[2]		I_{DM}	588	A
Single Pulse Avalanche Energy[3]		EAS	625	mJ
Avalanche Current		I_{AS}	50	A
Total Power Dissipation[4]	T_C=25°C	P_D	255	W
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]	$R_{\theta JA}$	29	°C/W
Thermal Resistance from Junction-to-Case[1]	$R_{\theta JC}$	0.49	°C/W

Electrical Characteristics T_c = 25°C, unless otherwise noted

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	-	-	V
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.6	2.4	V
Drain-Source on-Resistance[2]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	-	2.3	2.8	mΩ
		V_{GS} = 4.5V, I_D = 15A	-	2.9	3.8	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	6105	-	pF
Output Capacitance	C_{oss}		-	1128	-	
Reverse Transfer Capacitance	C_{rss}		-	75	-	
Switching Characteristics						
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} =0V, f =1MHz	-	2.1	-	Ω
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 30V, I_D= 20A	-	90.7	-	nC
Gate-Source Charge	Q_{gs}		-	15	-	
Gate-Drain Charge	Q_{gd}		-	11	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS} =10V, V_{DS} = 30V, R_G = 3Ω, I_D= 20A	-	21.2	-	nS
Rise Time	t_r		-	5.8	-	
Turn-off Delay Time	$t_{d(off)}$		-	78.7	-	
Fall Time	t_f		-	25.4	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage[2]	V_{SD}	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current[1,5]	I_S	V_G=V_D=0V , Force Current	-	-	200	A
Reverse Recovery Time	t_{rr}	V_R =30V, I_F=20A, dI/dt=100A/μs	-	67	-	nS
Reverse Recovery Charge	Q_{rr}		-	72	-	nC

Notes:

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}=40V, V_{GS}=10V, L=0.5mH, I_{AS}=50A

4.The power dissipation is limited by 150°C 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.

Typical Characteristics

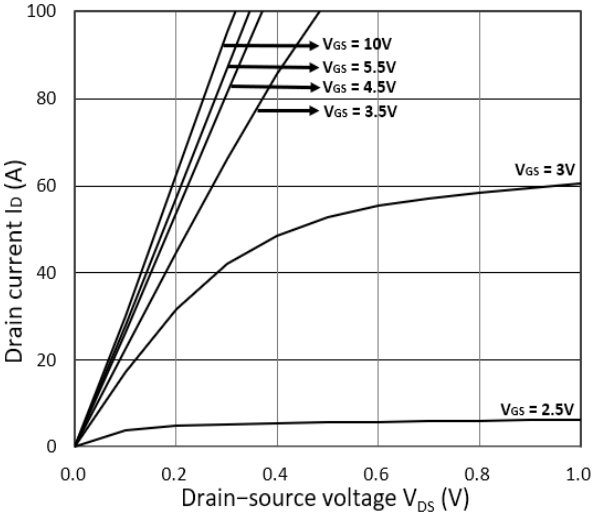


Figure 1. Output Characteristics

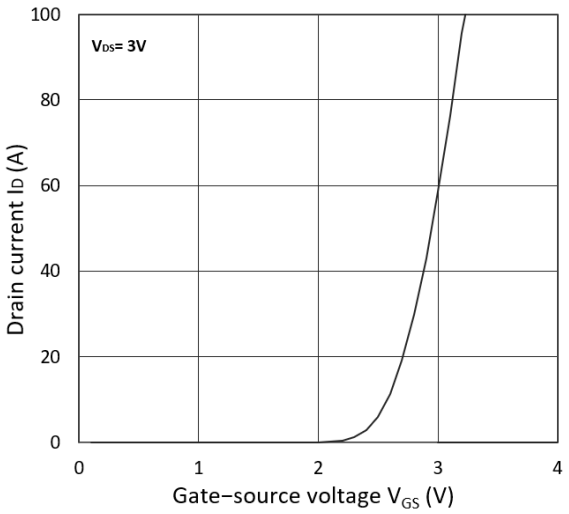


Figure 2. Transfer Characteristics

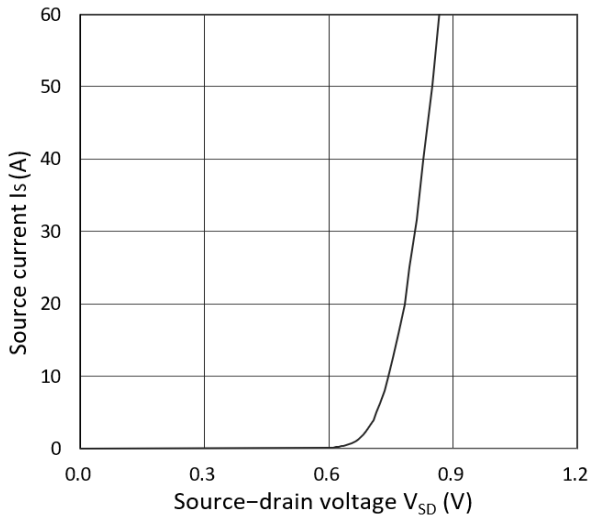


Figure 3. Forward Characteristics of Reverse

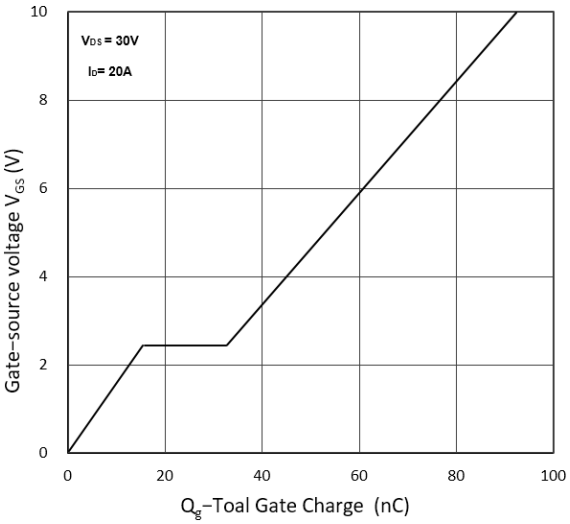


Figure 4. Gate Charge Characteristics

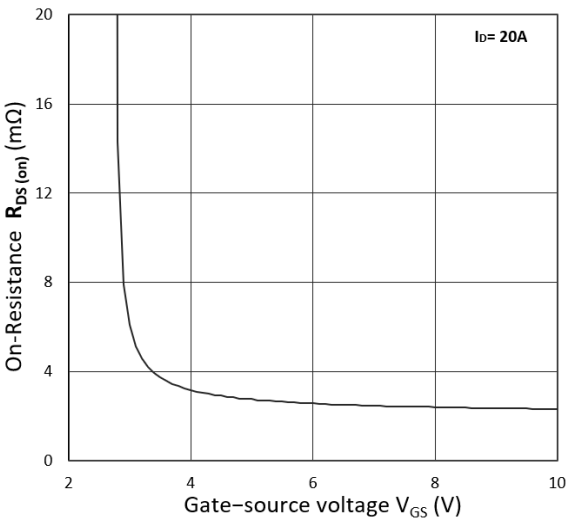


Figure 5. $R_{DS(ON)}$ vs. V_{GS}

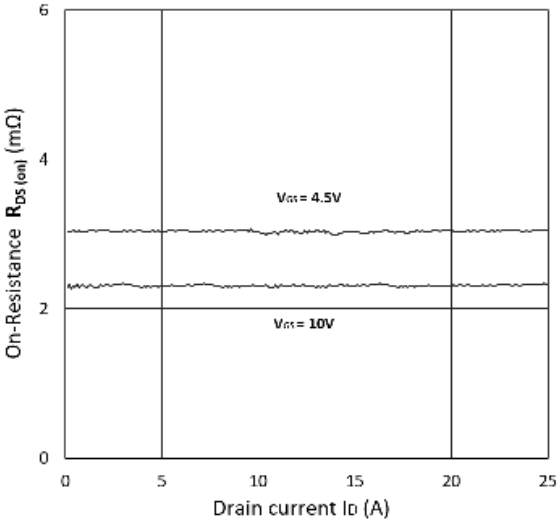


Figure 6. $R_{DS(ON)}$ vs. I_D

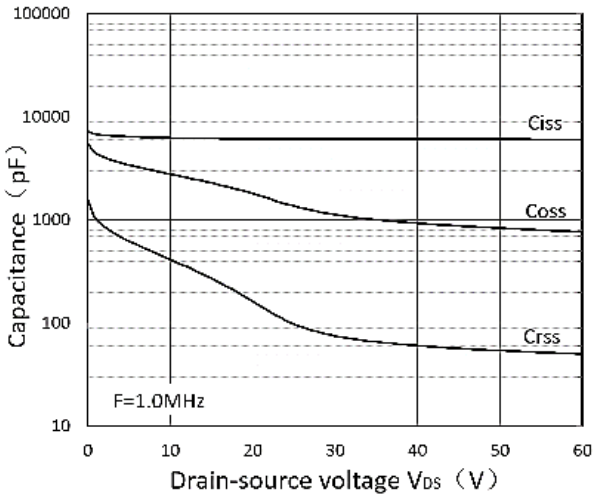


Figure 7. Capacitance Characteristics

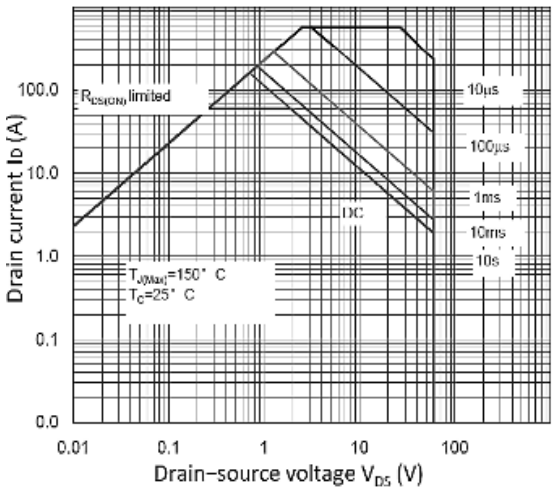


Figure 8. Safe Operating Area

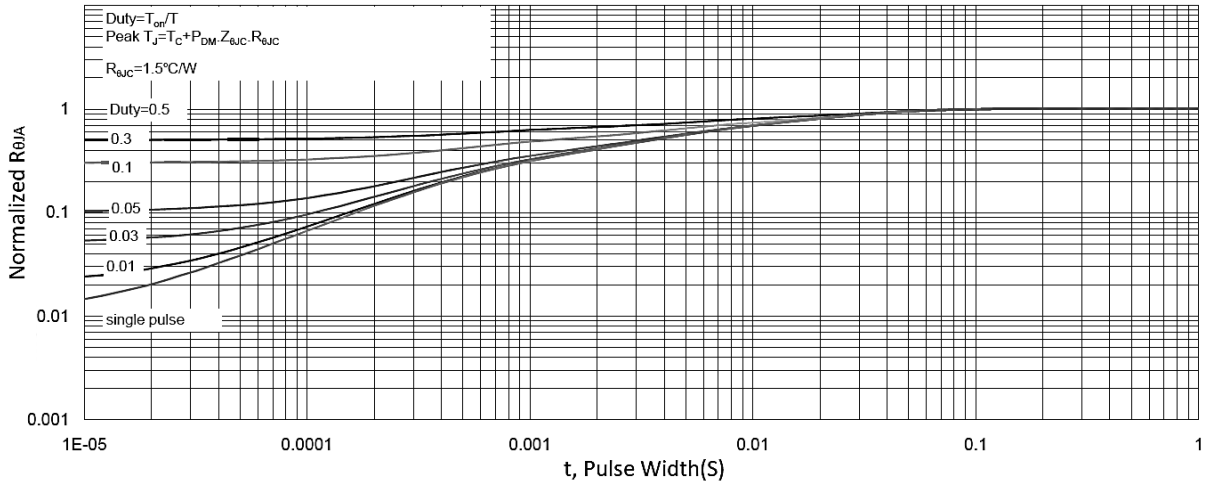


Figure 9. Normalized Maximum Transient Thermal Impedance

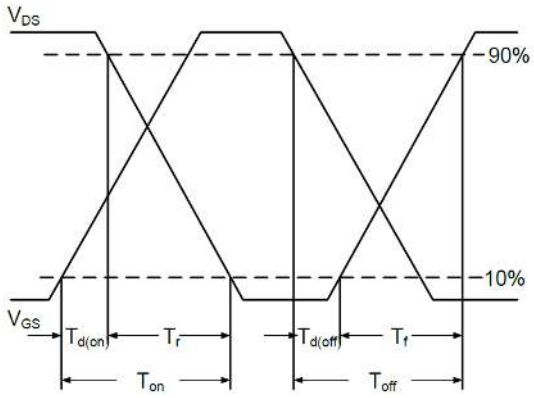


Figure 10. Switching Time Waveform

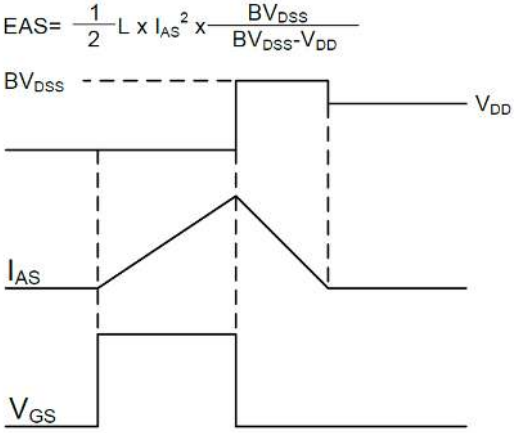
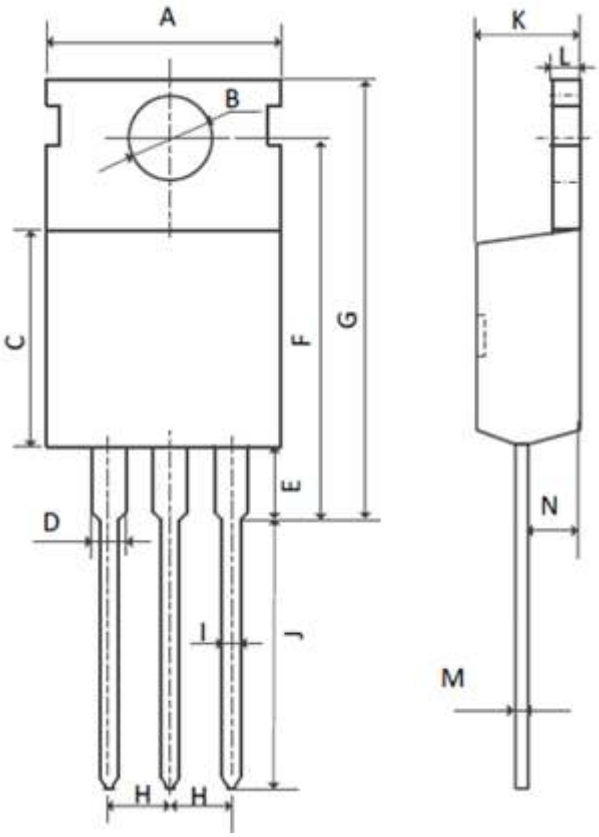


Figure 11. Unclamped Inductive Switching Waveform

Mechanical Dimensions for TO-220



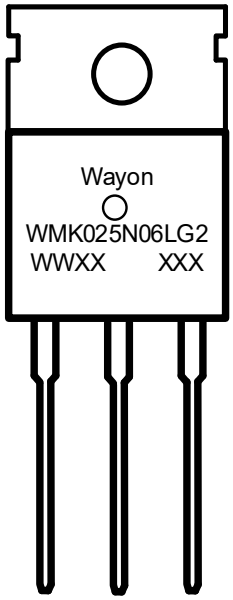
COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	9.70	10.30
B	3.40	3.80
C	8.80	9.40
D	1.17	1.47
E	2.60	3.50
F	15.10	16.70
G	19.55MAX	
H	2.54REF	
I	0.70	0.95
J	9.35	11.00
K	4.30	4.77
L	1.20	1.45
M	0.40	0.65
N	2.20	2.60

Ordering Information

Part	Package	Marking	Packing method
WMK025N06LG2	TO-220	WMK025N06LG2	Tube

Marking Information



WMK025N06LG2 = Device code

WWXX XXX= Date code

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