# WFF8N60B

Silicon N-Channel MOSFET

Features

- 7.5A,600V,$R_{DS(on)}$(Max1.2Ω)@V_{GS}=10V

- Ultra-low Gate charge(Typical 28nC)

- Fast Switching Capability

- 100%Avalanche Tested

- Isolation Voltage (V_{ISO}=4000V AC)

- Maximum Junction Temperature Range(150℃)
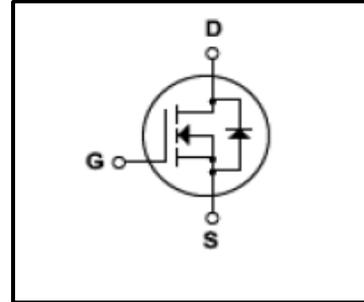
General Description

This Power MOSFET is produced using Winsemi's advanced planar stripe,VDMOS technology.this latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics .This devices is specially well suited for half bridge and full bridge resonant topology line a electronic lamp ballast, high efficiency switched mode power supplies, active power factor correction.

TO 220F
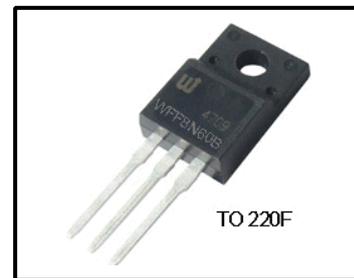
Absolute Maximum Ratings

Symbol	Parameter		Value	Units
V_{DSS}	Drain Source Voltage		600	V
I_D	Continuous Drain Current(@Tc=25℃)		7.5*	A
	Continuous Drain Current(@Tc=100℃)		4.3*	A
I_{DM}	Drain Current Pulsed	(Note1)	30*	A
V_{GS}	Gate to Source Voltage		±30	V
E_{AS}	Single Pulsed Avalanche Energy	(Note2)	240	mJ
E_{AR}	Repetitive Avalanche Energy	(Note1)	15	mJ
dv/dt	Peak Diode Recovery dv /dt	(Note3)	4.5	V/ ns
P_D	Total Power Dissipation(@Tc=25℃)		45	W
	Derating Factor above 25℃		0.35	W/℃
T_J,T_{stg}	Junction and Storage Temperature		-55~150	℃
T_L	Channel Temperature		300	℃

*Drain current limited by junction temperature

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	2.8	℃/W
R_{QJA}	Thermal Resistance , Junction-to -Ambient	-	-	62.5	℃/W

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Electrical Characteristics(Tc=25℃)

Characteristics		Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current		I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	-	±100	nA
Gate-source breakdown voltage		$V_{(BR)GSS}$	I_G=±10 µA,V_{DS}=0V	±30	-	-	V
Drain cut -off current		I_{DSS}	V_{DS}=600V,V_{GS}=0V	-	-	10	µA
			V_{DS}=480V,Tc=125℃	-	-	100	µA
Drain -source breakdown voltage		$V_{(BR)DSS}$	I_D=250 µA,V_{GS}=0V	600	-	-	V
Gate threshold voltage		$V_{GS(th)}$	V_{DS}=10V,I_D=250 µA	2	-	4	V
Drain -source ON resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=3.75A	-	0.8	1.2	Ω
Forward Transconductance		gfs	V_{DS}=50V,I_D=3.75A	-	8.7	-	S
Input capacitance		C_{iss}	V_{DS}=25V,	-	1120	1350	pF
Reverse transfer capacitance		C_{rss}	V_{GS}=0V,	-	23	30	
Output capacitance		C_{oss}	f=1MHz	-	115	150	
Switching time	Turn-on Rise time	tr	V_{DD}=200V,	-	80	170	ns
	Turn-on delay time	ton	I_D=7.5A	-	30	70	
	Turn-off Fall time	tf	R_G=25Ω	-	60	110	
	Turn-off delay time	toff	(Note4,5)	-	125	260	
Total gate charge(gate-source plus gate-drain)		Qg	V_{DD}=480V, V_{GS}=10V,	-	28	36	nC
Gate-source charge		Qgs	I_D=7.5A	-	7	-	
Gate-drain("miller") Charge		Qgd	(Note4,5)	-	14.5	-	

Source-Drain Ratings and Characteristics(Ta=25℃)

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I_{DR}	-	-	-	7.5	A
Pulse drain reverse current	I_{DRP}	-	-	-	28	A
Forward voltage(diode)	V_{DSF}	I_{DR}=7.5A,V_{GS}=0V	-	-	1.4	V
Reverse recovery time	trr	I_{DR}=7.5A,V_{GS}=0V,	-	320	-	ns
Reverse recovery charge	Qrr	dI_{DR} / dt =100 A / µs	-	2.4	-	µC

Note 1.Repeativity rating :pulse width limited by junction temperature

2.L=18.5mH I_{AS}=7.5A,V_{DD}=50V,R_G=0Ω,Starting T_J=25℃

3.I_{SD}≤7.5A,di/dt≤200A/us,V_{DD}<BV$_{DSS}$,STARTING T_J=25℃

4.Pulse Test:Pulse Width≤300us,Duty Cycle≤2%

5. Essentially independent of operating temperature.

This transistor is an electrostatic sensitive device

Please handle with caution

Steady, keep you advance
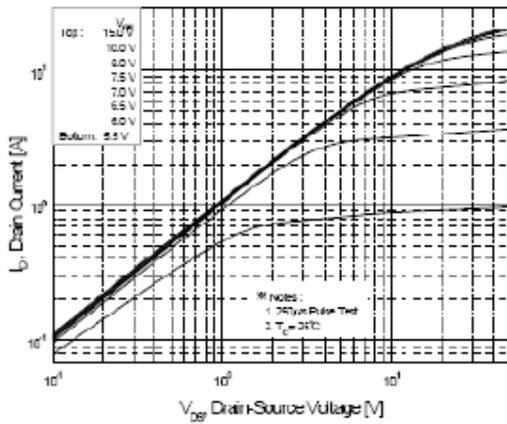
Fig.1 On State Characteristics
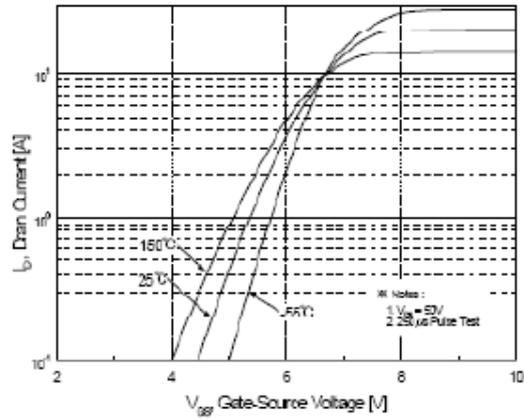
Fig.2 Transfer Current Characteristics
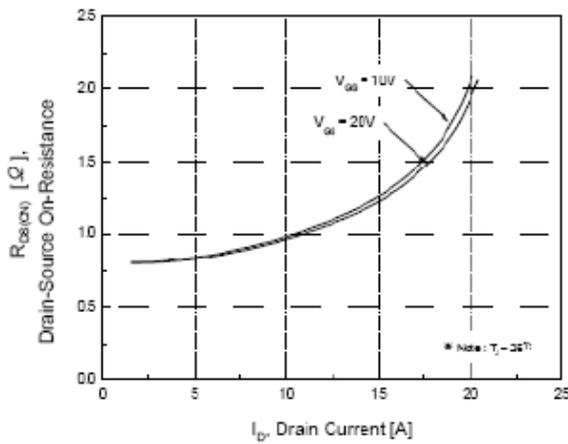
Fig.3 On-Resistance Variation vs
Drain Current
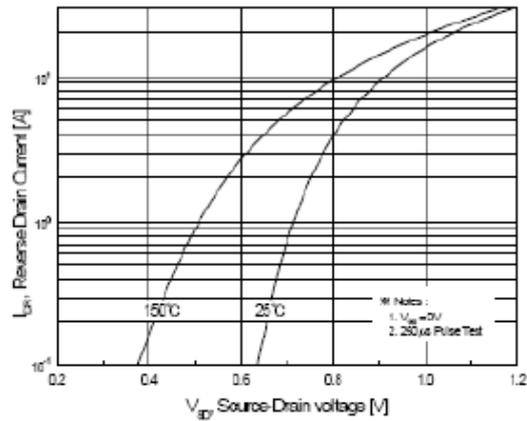
Fig.4 Body Diode Forward Voltage
Variation with Source Current
and Temperature
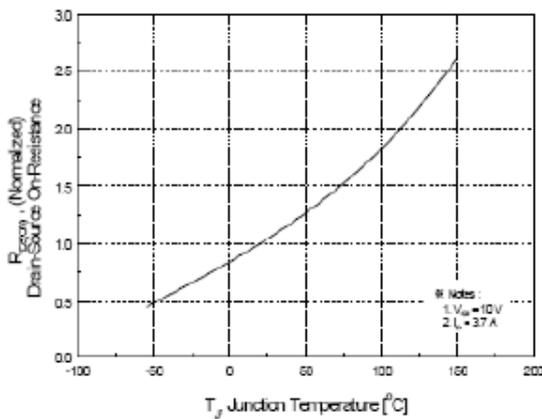
Fig.5 On-Resistance Variation vs
Junction Temperature
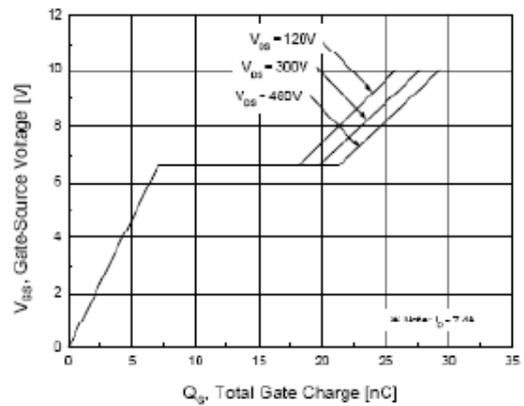
Fig.6 Gate Charge Characteristics

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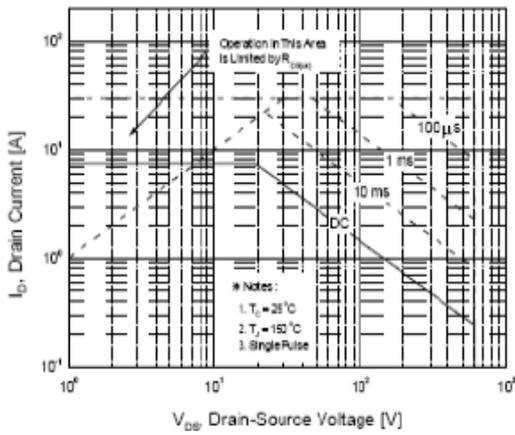
Fig.7 Maximum Safe Operation Area
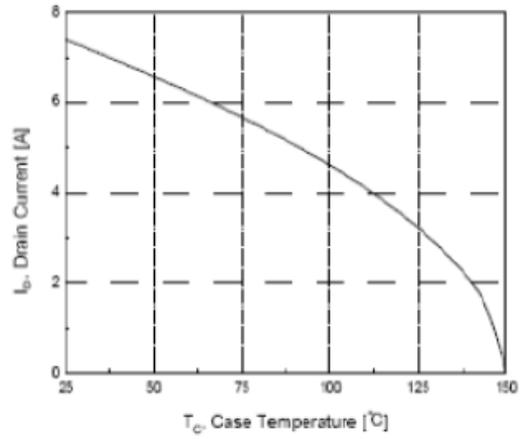
Fig.8 Maximum Drain Current vs
Case Temperature
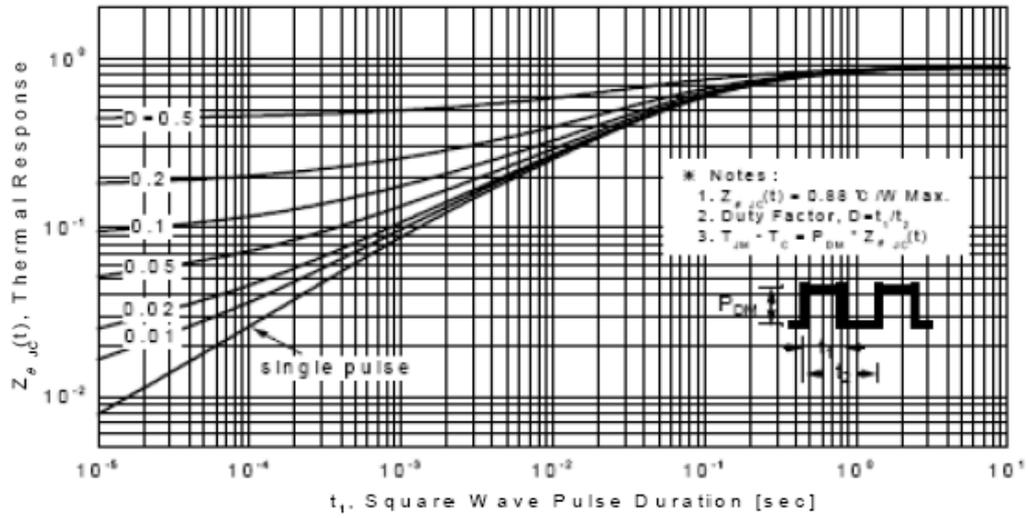
Fig.9 Transient Thermal Response Curve

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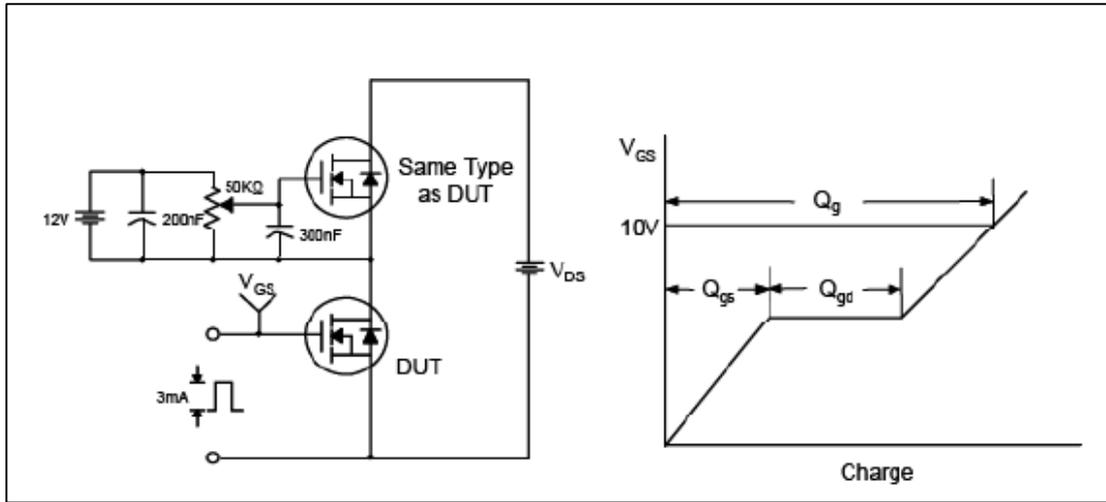
Fig.10 Gate Test Circuit & Waveform
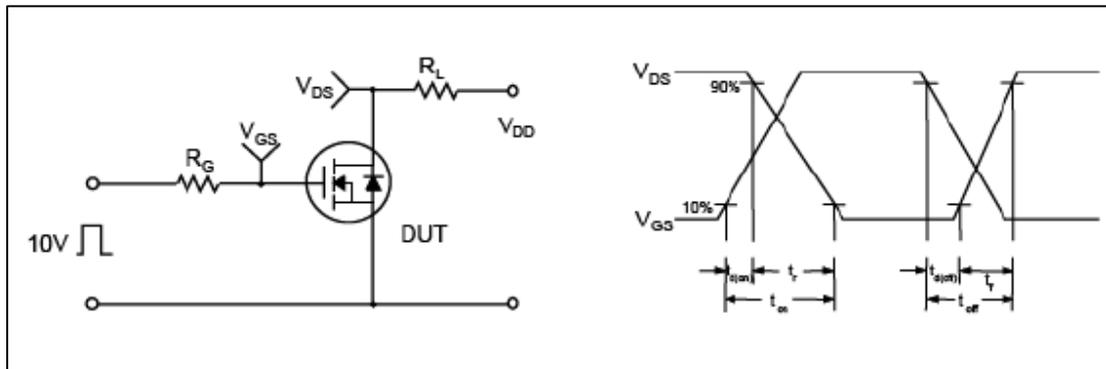
Fig.11 Resistive Switching Test Circuit & Waveform

$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$
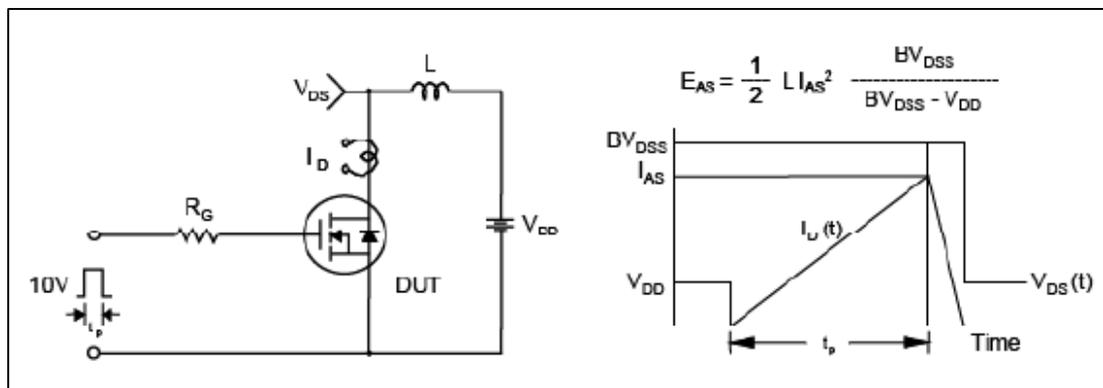
Fig.12 Unclamped Inductive Switching Test Circuit & Waveform

Steady, keep you advance
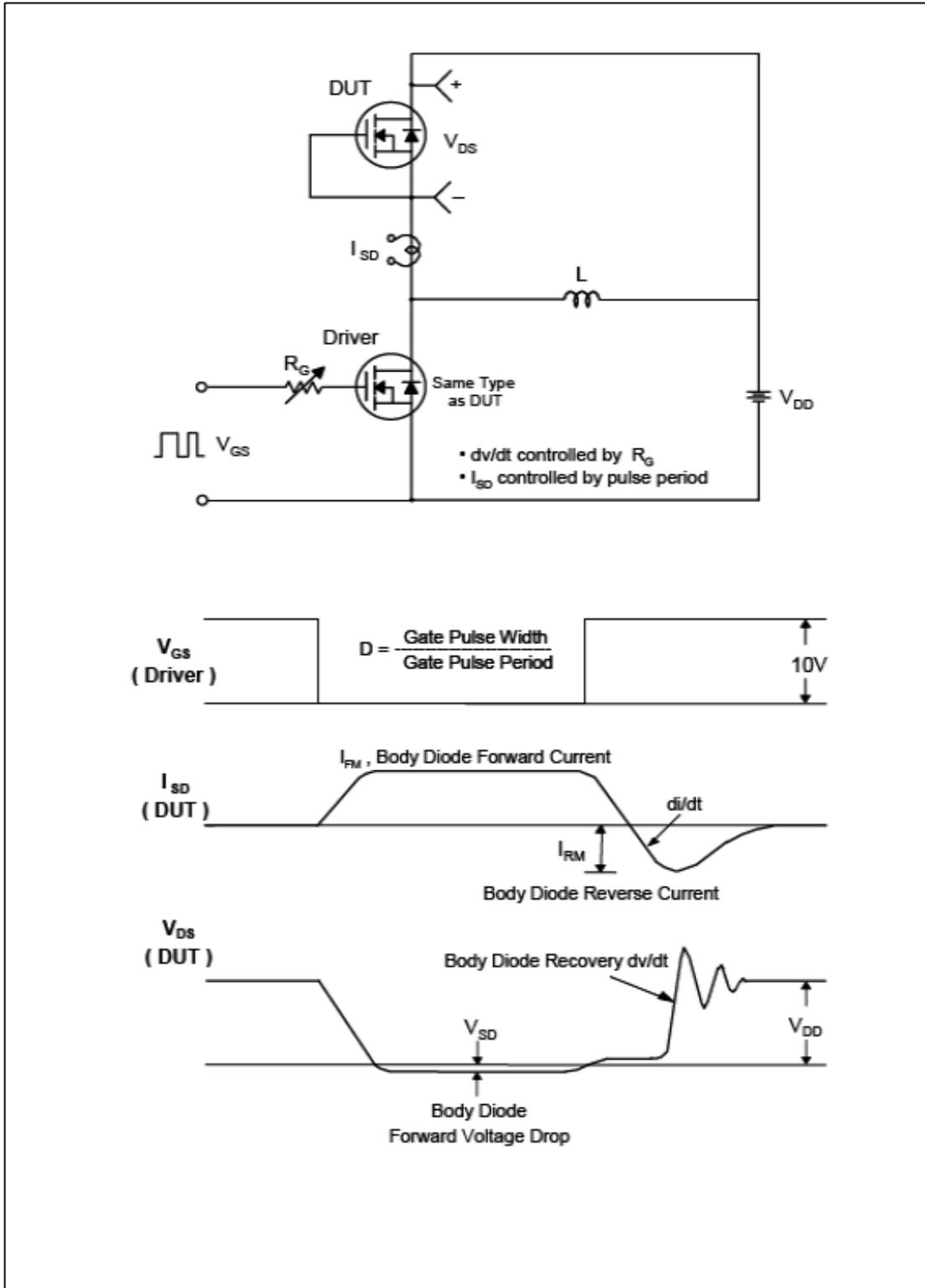
Fig.13 Peak Diode Recovery dv/dt Test Circuit & Waveform

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TO-220F   Package Dimension

Unit:mm

3.30 ±0.10

10.16 ±0.20

(7.00)

ø3.18 ±0.10

15.80 ±0.20

MAX1.47

9.75 ±0.30

0.80 ±0.10

(30°)

0.35 ±0.10   #1

2.54TYP
[2.54 ±0.20]

2.54TYP
[2.54 ±0.20]

9.40 ±0.20

4.70 ±0.20

2.54 ±0.20

(0.70)

6.68 ±0.20

15.87 ±0.20

(1.00x45°)

0.50 $^{+0.10}_{-0.05}$

2.76 ±0.20

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