Features

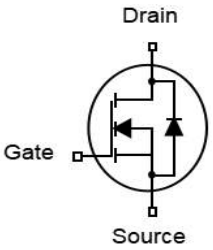
- N-Channel
- Low $R_{DS(ON)}$ & FOM
- Low Crss
- 100% Avalanche Tested
- Improved dv/dt Capability
- 100% EAS Tested

V_{DS}	30	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	1.5	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	2.3	mΩ
I_D	140	A

DFN5x6

RoHS

Part ID	Package Type	Marking	Packing
ZT016N03G	DFN5x6	ZT016N03G	5000pcs/Reel



Absolute Maximum Ratings T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		30	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 3)	T_C =25°C	520	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 2)	T_C =25°C	140	A
		T_C =100°C	87	A
P_D	Maximum Power Dissipation		55	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		2.3	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 1)		480	mJ

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.6	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	--	1.5	1.95	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=10A	--	2.3	3.2	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note 5)						
Ciss	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz	--	5680	--	pF
Coss	Output Capacitance		--	520	--	pF
Crss	ReverseTransferCapacitance		--	496	--	pF
Qg	Total Gate Charge	V_{DS}=15V,I_D=40A, V_{GS}=10V	--	109	--	nC
Qgs	Gate-SourceCharge		--	20	--	nC
Qgd	Gate-DrainCharge		--	24	--	nC
Switching Characteristics (Note 5)						
Td(on)	Turn-on Delay Time	V_{DS}=15V, I_D =30A, R_G=3.3Ω, V_{GS}=10V	--	11	--	ns
Tr	Turn-on Rise Time		--	10	--	ns
Td(off)	Turn-Off Delay Time		--	75	--	ns
Tf	Turn-Off Fall Time		--	27	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_S	Diode Forward Current (Note 3)		--	--	140	A
V_{SD}	Forward on voltage (Note 6)	I_S =20A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time (Note 4)	T_j=25℃,I_F =30A di/dt=100A/μs	--	--	22	ns
Qrr	Reverse Recovery Charge		--	--	13	nC

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J =25℃, V_{DD} =20V, V_G =10V, R_G =25Ω, L=0.5mH,
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics T_J = 25ºC, unless otherwise noted

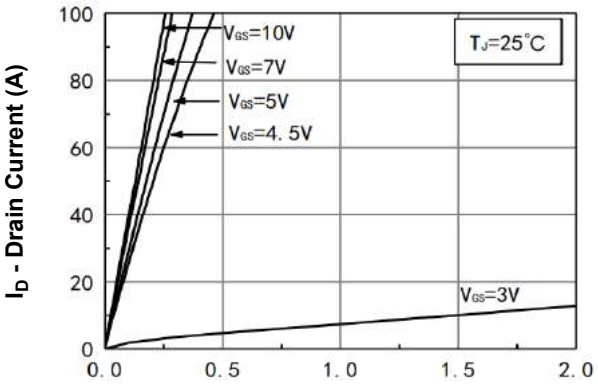


Figure 1. On-Region Characteristics

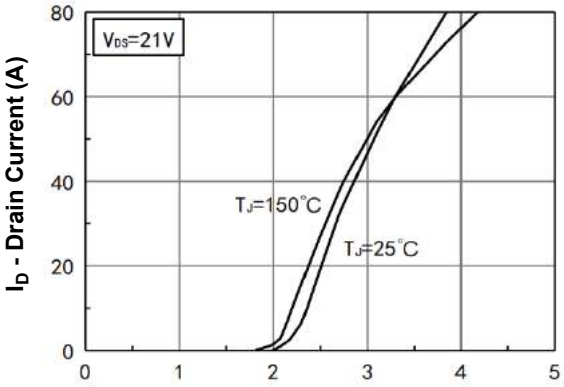


Figure 4. Transfer Characteristics

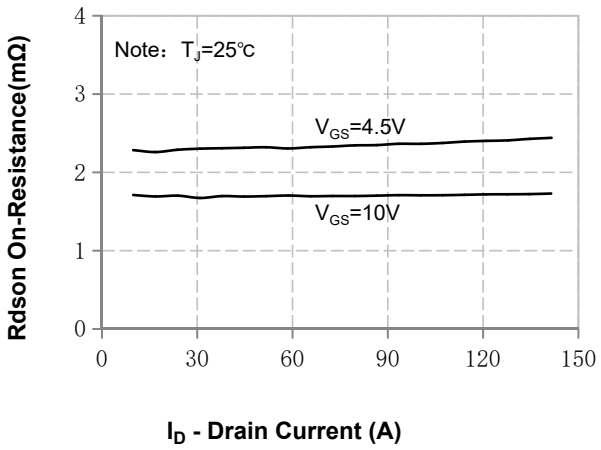


Figure 2. On-Resistance Variation vs Drain Current and Gate Voltage

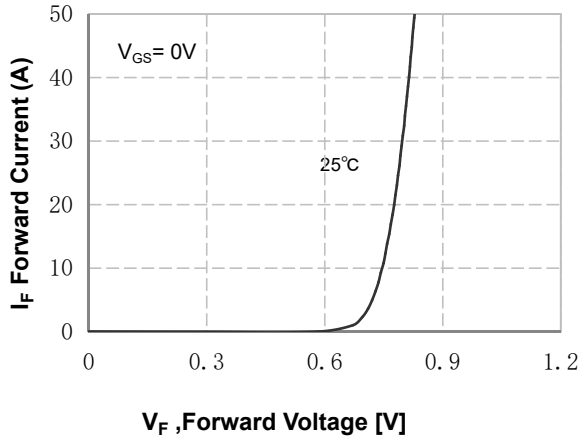


Figure 5. Body Diode Forward Voltage Variation vs Source Current

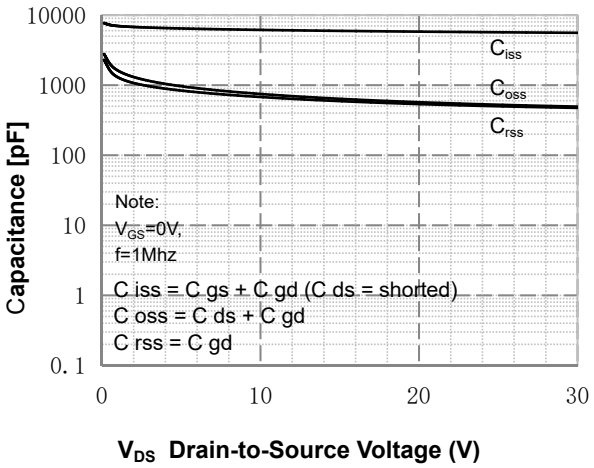


Figure 3. Capacitance Characteristics

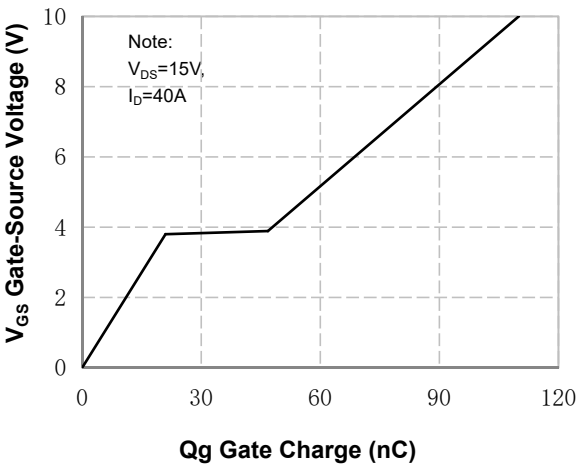


Figure 6. Gate Charge Characteristics

Typical Characteristics T_J = 25ºC, unless otherwise noted

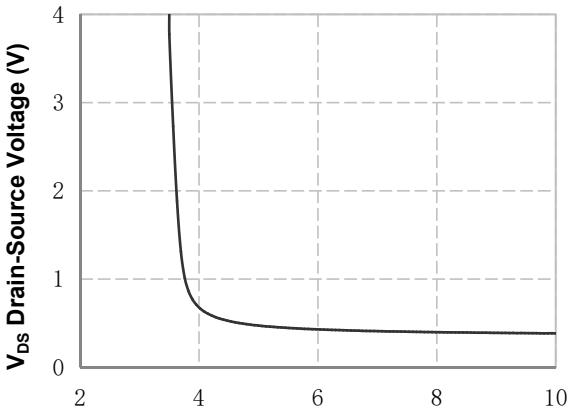


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

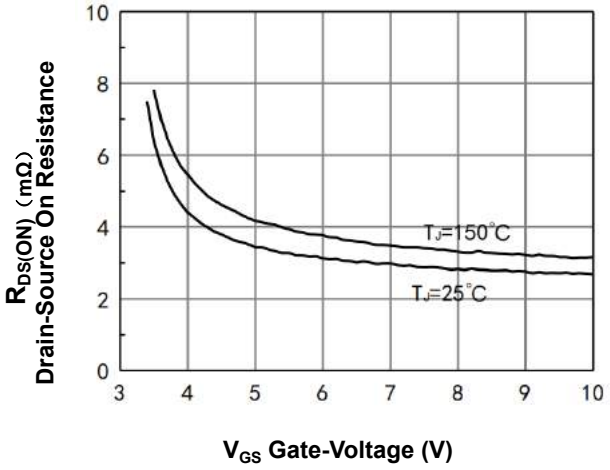


Figure 9. On-Resistance vs Gate Voltage

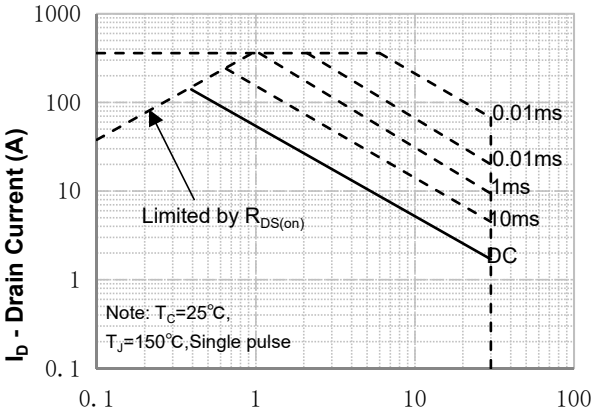


Figure 8. Maximum Safe Operating Area

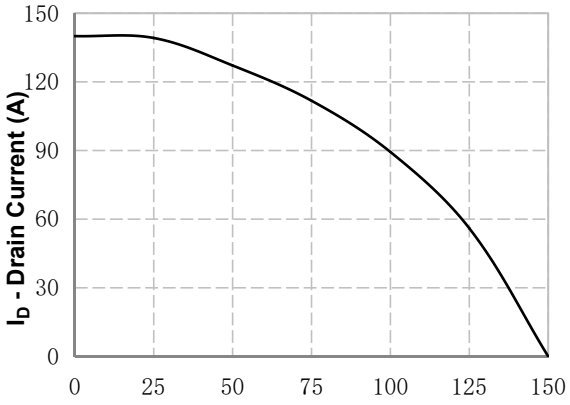


Figure 10. Maximum Continuous Drain Current vs Case Temperature

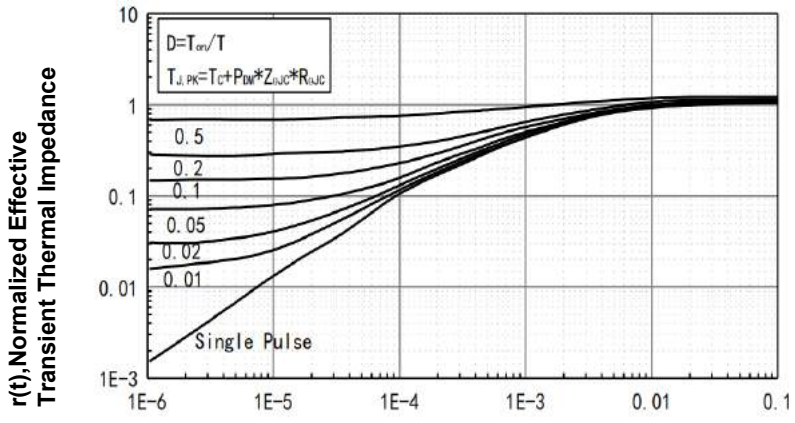


Figure 11. Transient Thermal Response Curve

Figure A：Gate Charge Test Circuit and Waveform

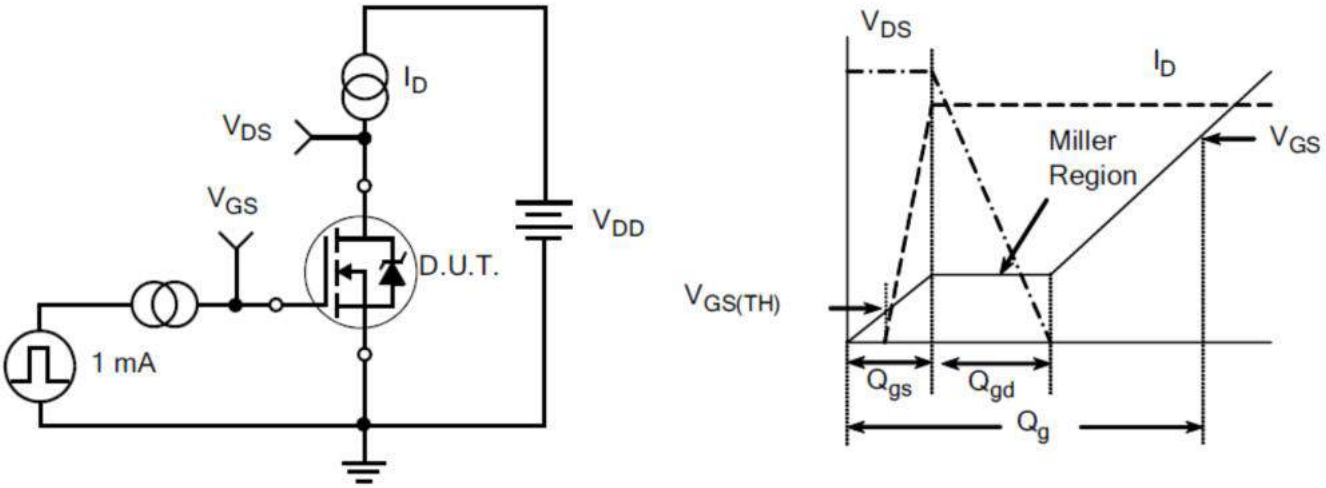


Figure B：Resistive Switching Test Circuit and Waveform

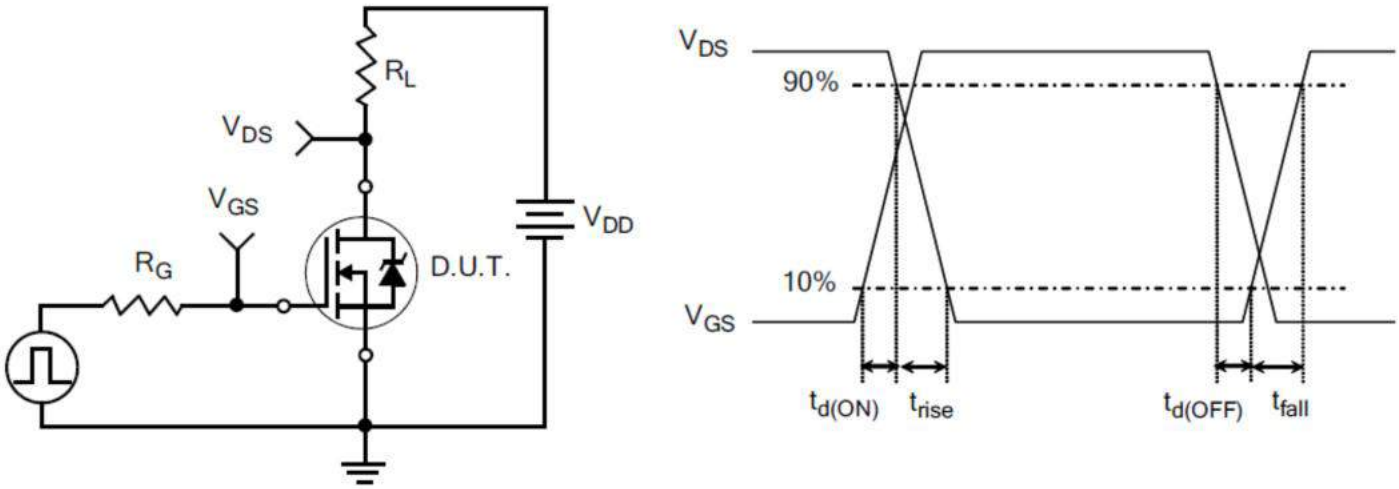
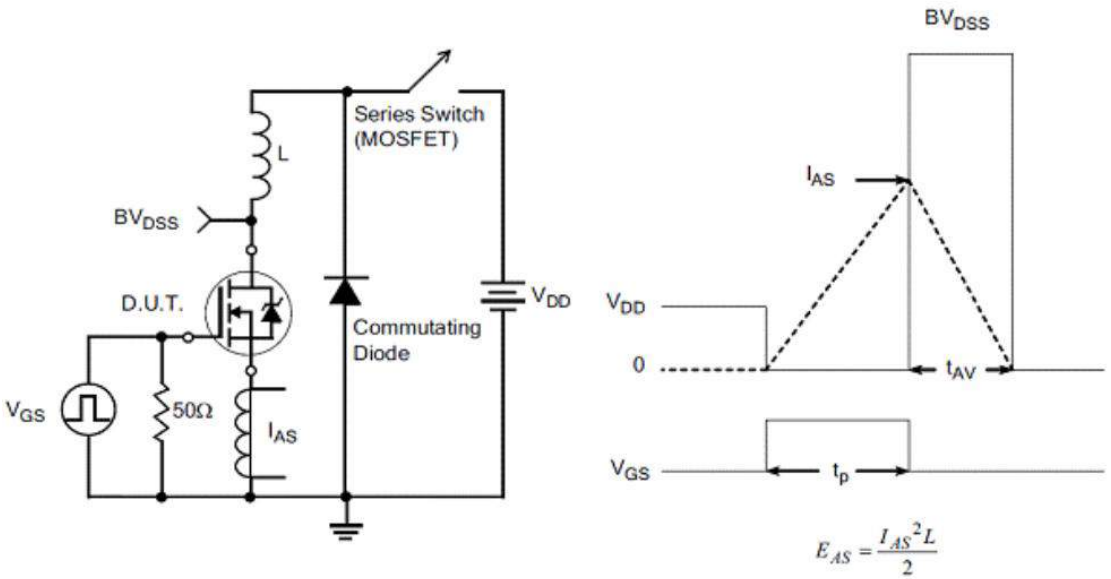
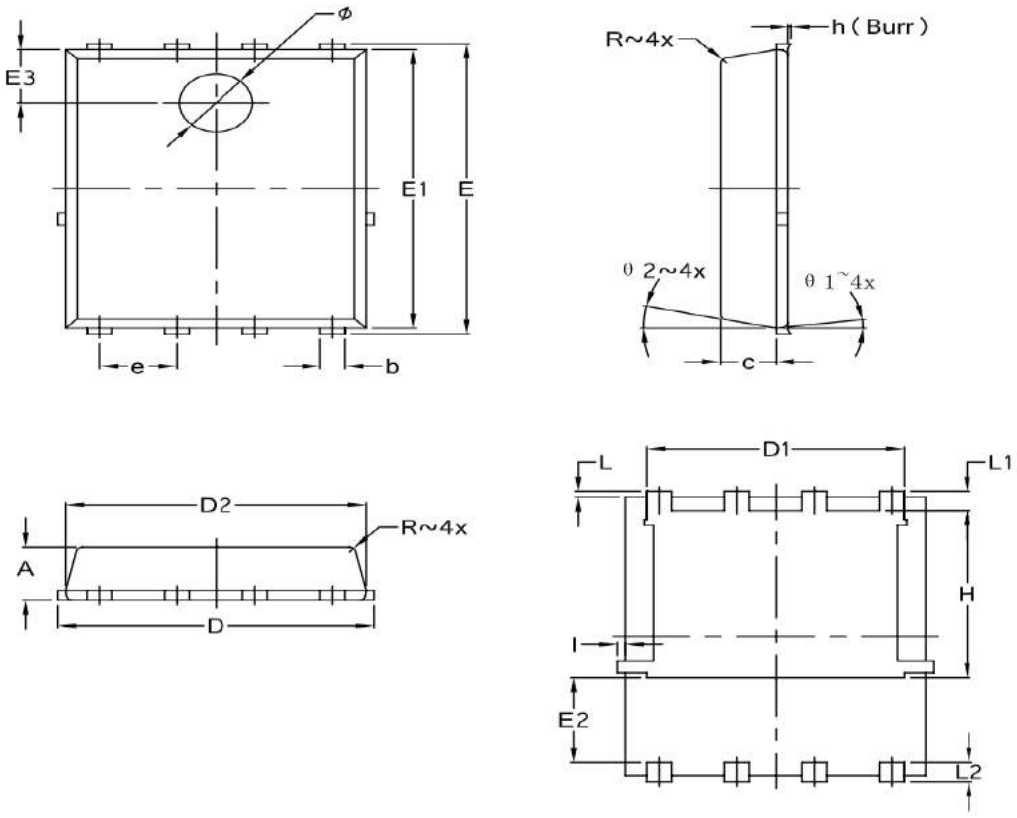


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



DFN5x6-8L Package Information



SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.35	0.46	0.0138	0.0181
c	0.84	0.95	0.0331	0.0374
D	4.83	5.37	0.1902	0.2114
D1	4.14	4.28	0.1630	0.1685
D2	4.83	4.97	0.1902	0.1957
E	6.03	6.13	0.2374	0.2413
E1	5.68	5.82	0.2236	0.2291
E2	1.65	—	0.0650	—
E3	1.03	1.17	0.0406	0.0461
e	1.27 BSC		0.0500 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.40	0.48	0.0157	0.0189
L2	0.40	0.48	0.0157	0.0189
H	3.315	3.475	0.1305	0.1368
I	—	0.16	—	0.0063
ϕ	1.13	1.27	0.0445	0.0500
R	0.10		0.0039	
θ1	7° REF		7° REF	
θ2	12° REF		12° REF	
h	0.08 MAX		0.0031	

Customer Service

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