

• General Description

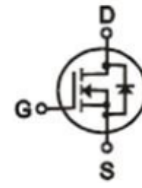
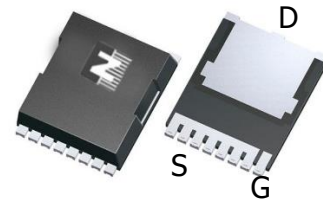
It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• Features

- Advance device constructure
- Low $R_{DS(ON)}$ to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

• Product Summary

 $V_{DS}=80V$
 $R_{DS(ON)} = 1.6m\Omega$
 $I_D=235A$

TOLL
• Ordering Information:

Part NO.	ZMS016N08HR
Marking	ZMS016N08H
Packing Information	REEL TAPE
Basic ordering unit (pcs)	1000

• Absolute Maximum Ratings ($T_c = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	240	A
	$I_{D@TC=75^\circ C}$	182	A
	$I_{D@TC=100^\circ C}$	151	A
Pulsed Drain Current ①	I_{DM}	720	A
Total Power Dissipation	$P_D@TC=25^\circ C$	290	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy @ $L=0.1mH$	E_{AS}	480	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	0.43	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	40	° C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	° C

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	80			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	2		4	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 80V, V_{GS} = 0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 30A$		1.6	2.1	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 40A$		28		s
Source-drain voltage	V_{SD}	$I_S = 100A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$f = 1MHz$ $V_{DS} = 25V$	-	9130	-	pF
Output capacitance	C_{oss}		-	6640	-	
Reverse transfer capacitance	C_{rss}		-	117	-	

•Gate Charge characteristics($T_a = 25^\circ C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Resistance	R_g	$f = 1MHz$		2.5		Ω
Total gate charge	Q_g	$V_{DD} = 30V$ $I_D = 30A$ $V_{GS} = 10V$	-	121	-	nC
Gate - Source charge	Q_{gs}		-	24	-	
Gate - Drain charge	Q_{gd}		-	23	-	
Turn-On Time	t_{on}	$V_{GS} = 10V, V_{DS} = 15V$ $R_G = 3.3\Omega,$ $I_D = 25A$		112		ns
Turn-ON Delay time	$t_{D(on)}$			41		
Turn-ON Rise time	t_r			65		ns
Turn-Off Delay time	$t_{D(off)}$			130		ns

Turn-Off Fall time	t_f	VDD = 20 V, dIS/dt = 100 A/s, IS = 30 A	34	ns
Reverse Recovery Time	t_{RR}		85	ns
Charge Time	t_a		34	ns
Discharge Time	t_b		28	ns
Reverse Recovery Charge	Q_{RR}		120	ns

Note: ① Pulse Test : Pulse width $\leq 10\mu s$, Duty cycle $\leq 1\%$;

Fig.1 Gate-Charge Characteristics

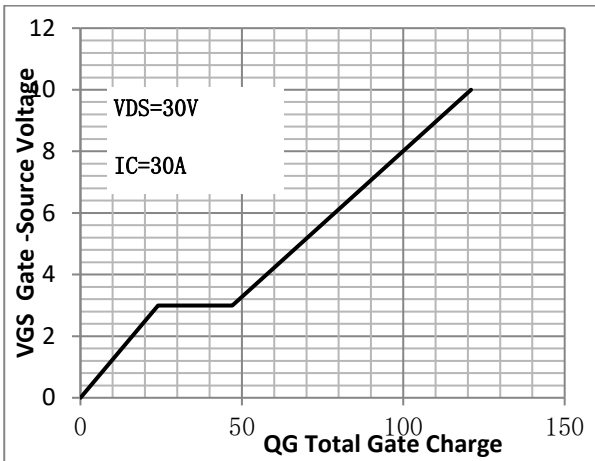


Fig.2 Capacitance Characteristics

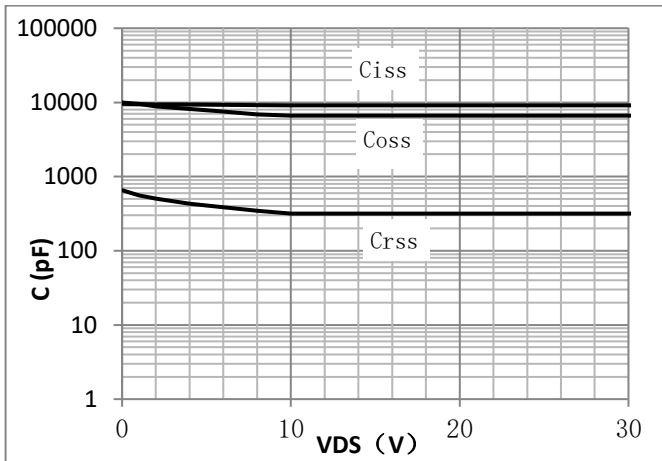


Fig.3 Power Dissipation

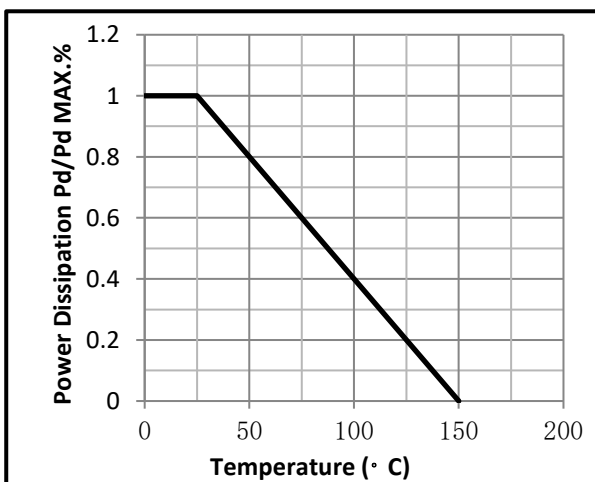


Fig.4 Typical output Characteristics

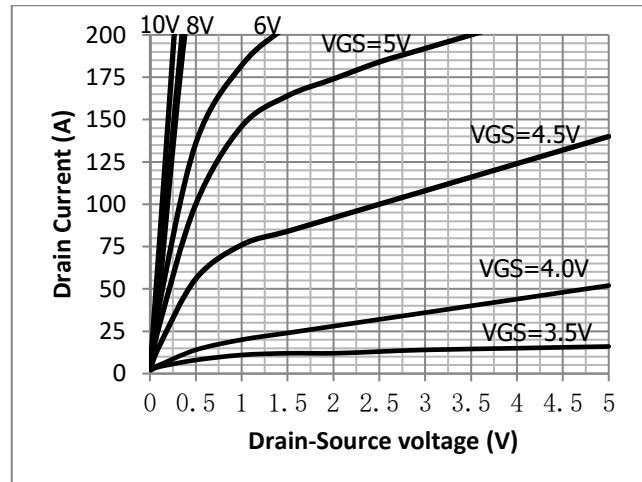


Fig.5 Threshold Voltage V.S Junction Temperature

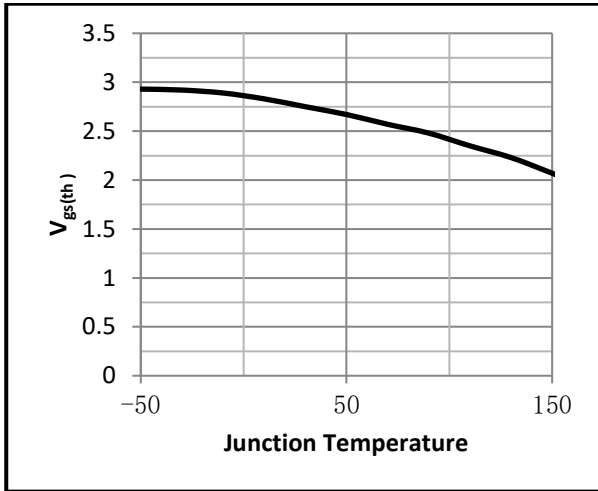


Fig.6 Resistance V.S Drain Current

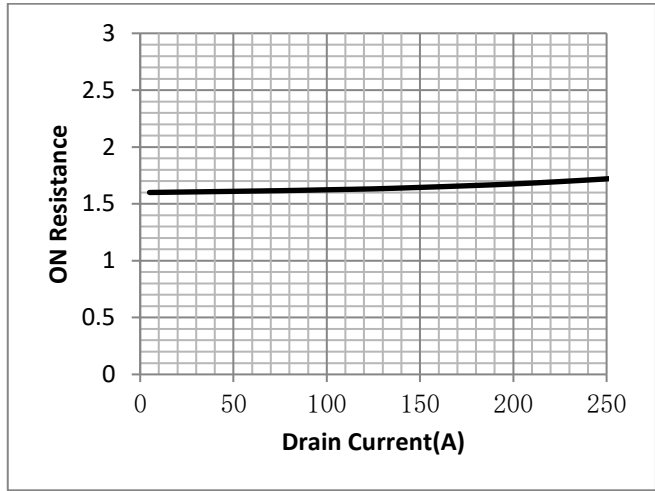


Fig.7 On-Resistance VS Gate Source Voltage

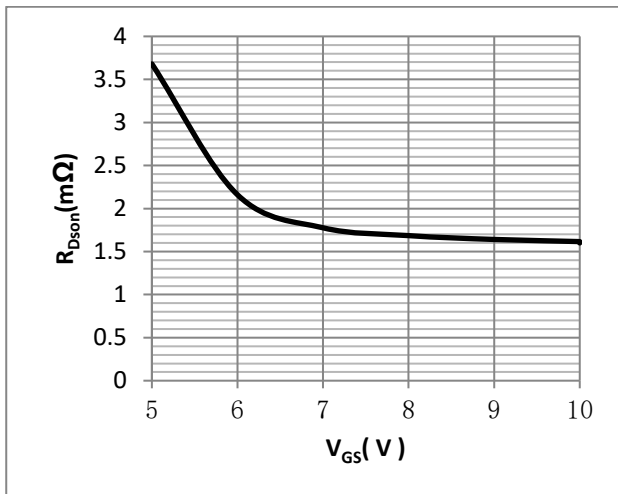


Fig.8 On-Resistance V.S Junction Temperature

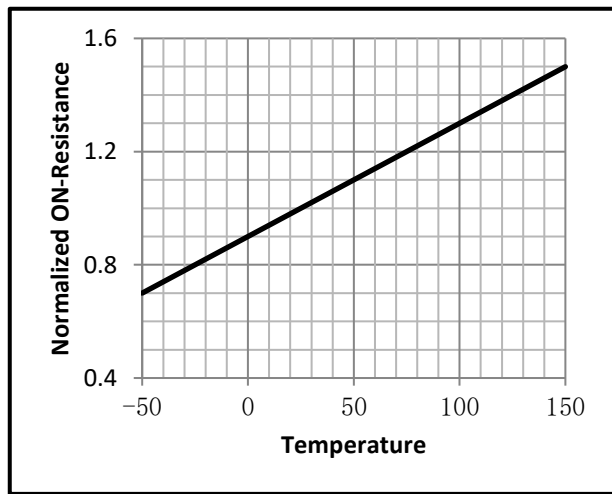


Fig.9 SOA Maximum Safe Operating Area

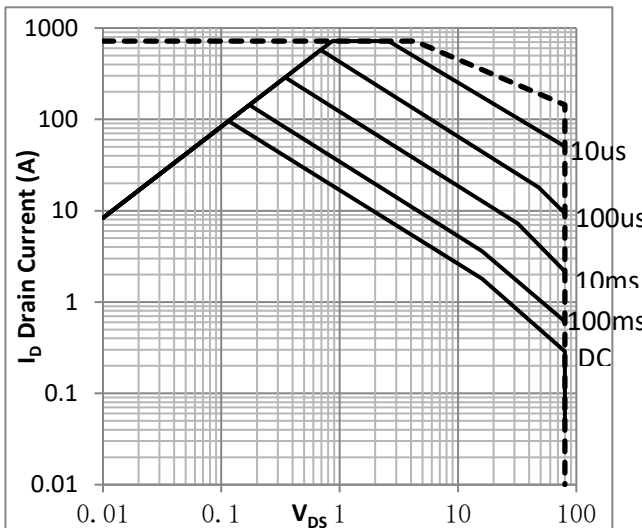


Fig.10 ID-Junction Temperature

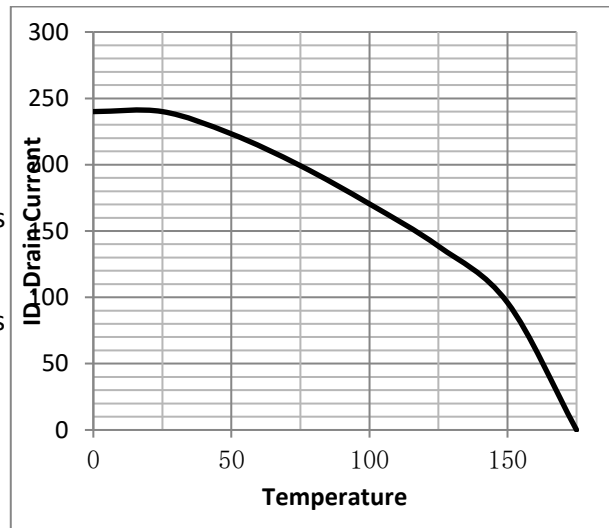


Figure.11 Diode Forward Voltage vs. Current

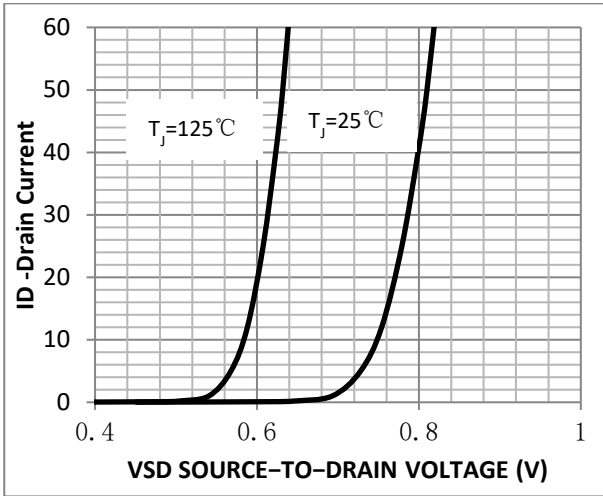


Figure.12 Transfer Characteristics

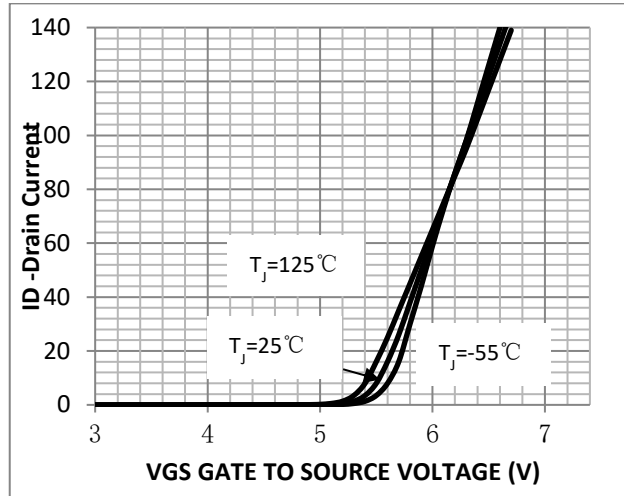


Fig.13 Switching Time Measurement Circuit

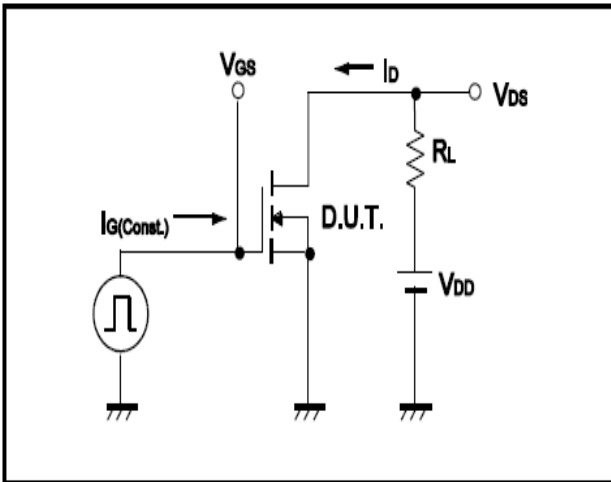


Fig.14 Gate Charge Waveform

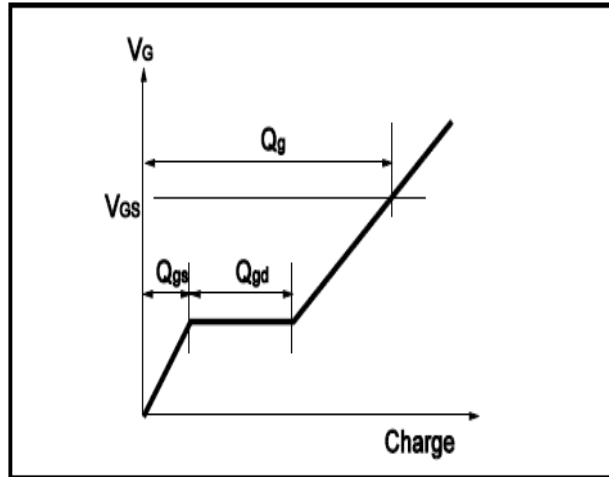


Fig.15 Switching Time Measurement Circuit

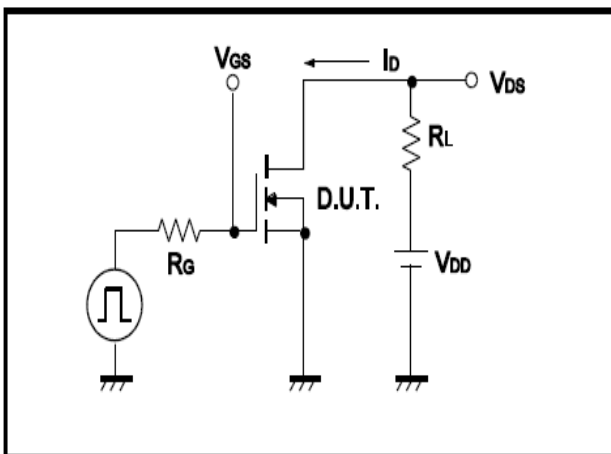
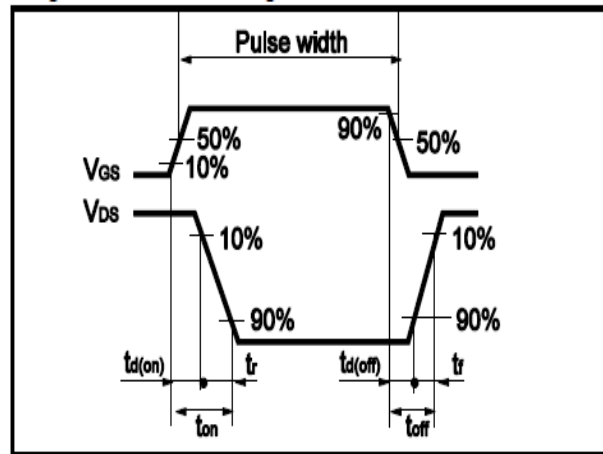
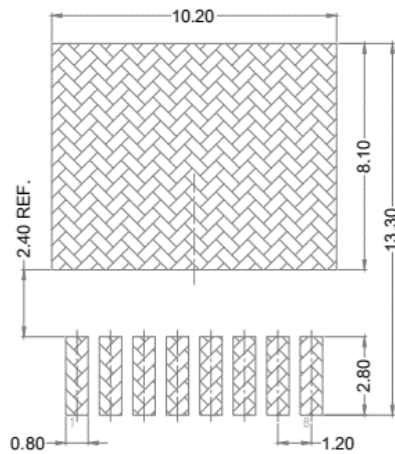
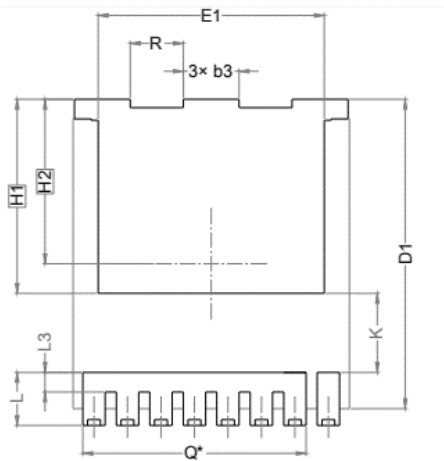
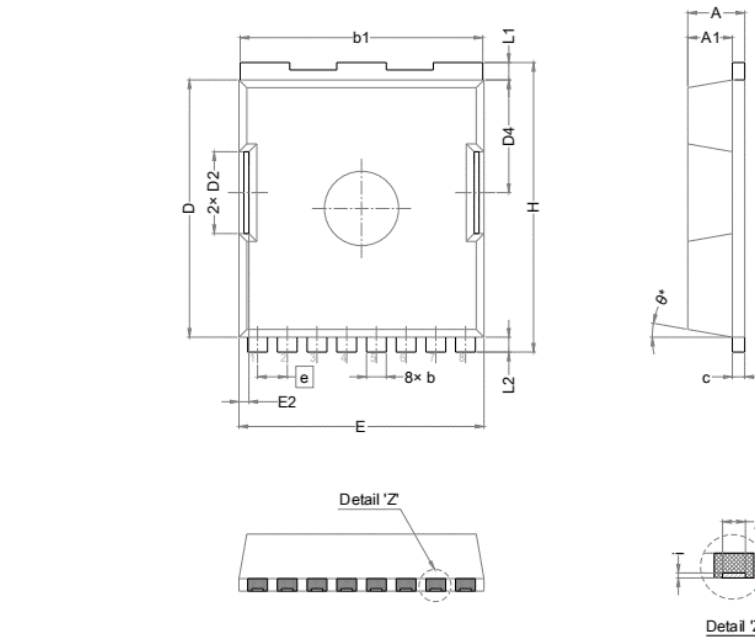


Fig.16 Gate Charge Waveform



•Dimensions (TOLL)

Unit: mm



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
A1	1.70	1.80	1.90
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b3	1.90	2.00	2.10
c	0.40	0.50	0.60
D	10.28	10.38	10.48
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D4	4.45	4.55	4.65
E	9.80	9.90	10.00
E1	8.00	8.10	8.20
E2	0.30	0.40	0.50
e	1.20 BSC		
H	11.58	11.68	11.78
H1	6.95 BSC		
H2	5.89 BSC		
i	0.10 REF.		
j	0.46 REF.		
K	2.80 REF.		
L	1.60	1.90	2.10
L1	0.60	0.70	0.80
L2	0.50	0.60	0.70
L3	0.60	0.70	0.80
N	8		
Q	6.80 REF.		
R	1.80	1.90	2.00
θ	10° REF.		