● General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● Features

■ Advance high cell density Trench technology

■Low $R_{DS(ON)}$ to minimize conductive loss

■Low Gate Charge for fast switching

■Low Thermal resistance

●Application

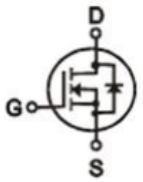
■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■POL application

■BLDC Motor driver

● Product Summary

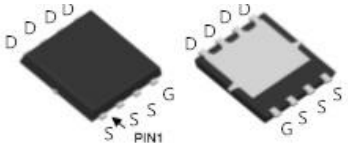


V_{DS} =30V

$R_{DS(ON)}$ =1.55mΩ

I_D =82A

RoHS



DFN3 x 3

●Ordering Information:

Part NO.	ZMS018N03MC
Marking	018N03
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

●Absolute Maximum Ratings (T_C=25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D @TC=25℃	82	A
	I_D @TC=75℃	62	A
	I_D @TC=100℃	52	A
Pulsed Drain Current ①	I_{DM}	234	A
Total Power Dissipation	P_D@TC=25℃	46	W
Total Power Dissipation	P_D@TA=25℃	2.3	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy (L=0.1mH, VGS=10V, Rg=25Ω,TJ=25	E_{AS}	200	mJ

Single Pulse Avalanche Energy (L=0.1mH,VGS=10V,Rg=25Ω,TJ=25	E_{AS}	180	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.7	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	53	°C/W
Soldering temperature, wave soldering 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 =250uA	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1.2		2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=24A		1.55	1.9	mΩ
		V_{GS}=4.5V, I_D=12A		2.0	2.6	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=10A		32		s
Source-drain voltage	V_{SD}	Is=24A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz V_{DS}=25V	-	2150	-	pF
Output capacitance	Coss		-	600	-	
Reverse transfer capacitance	Crss		-	51	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	Rg	f = 1MHz		2.3		Ω
Total gate charge	Q_g	V_{DD} = 25V I_D = 8A	-	39	-	nC
Gate - Source charge	Q_{gs}		-	8.3	-	

Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	4.4	-	
Turn-ON Delay time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V R_G =3.3Ω, I_D =20A		12		ns
Turn-ON Rise time	t_r			28		ns
Turn-Off Delay time	$t_{D(off)}$			24		ns
Turn-Off Fall time	t_f			13		ns
Reverse Recovery Time	t_{RR}	VDD = 20 V, dIS/dt = 100 A/s, IS = 30 A		22		ns
Charge Time	t_a			10		ns
Discharge Time	t_b			8		ns
Reverse Recovery Charge	Q_{RR}			23		ns

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Fig.1 Power Dissipation

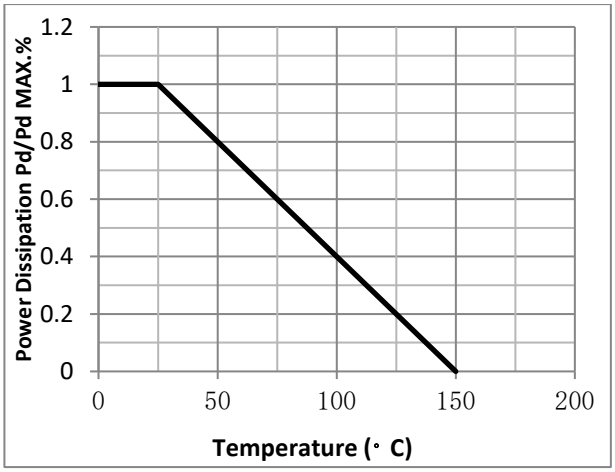


Fig.2 Typical output Characteristics

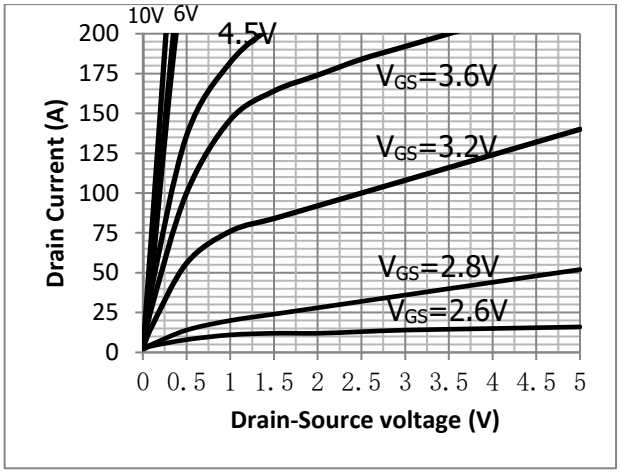


Fig.3 Threshold Voltage V.S Junction Temperature

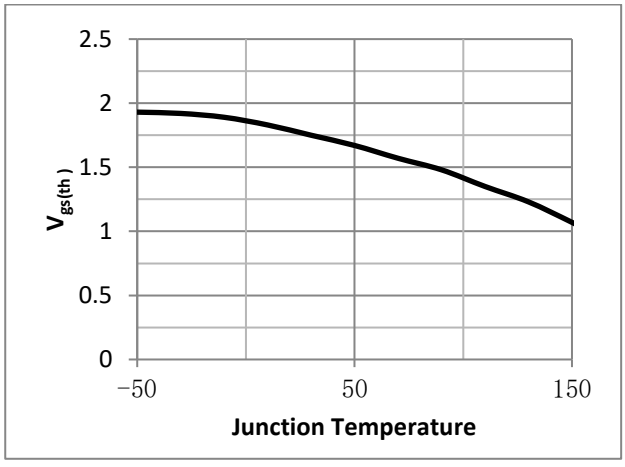


Fig.4 Resistance V.S Drain Current

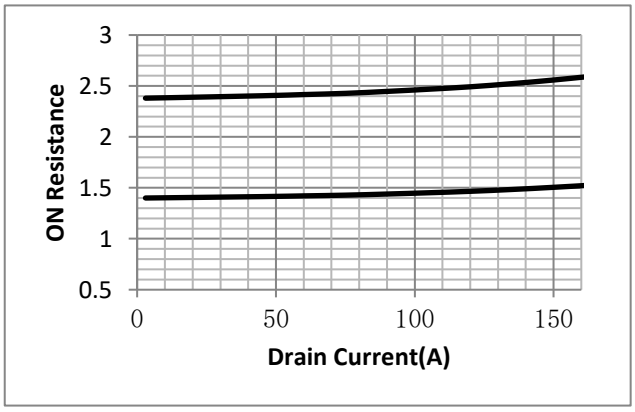


Fig.5 On-Resistance VS Gate Source Voltage

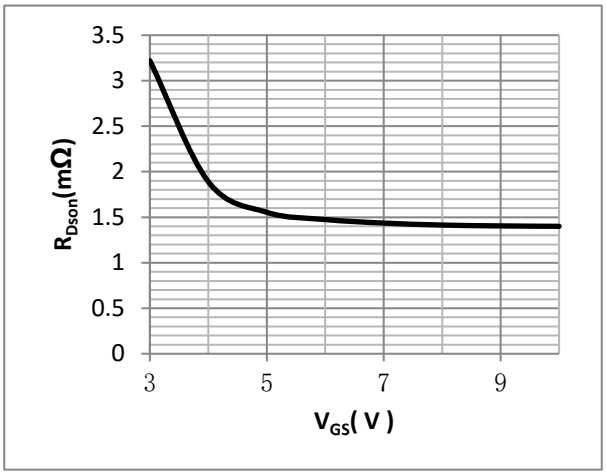


Fig.6 On-Resistance V.S Junction Temperature

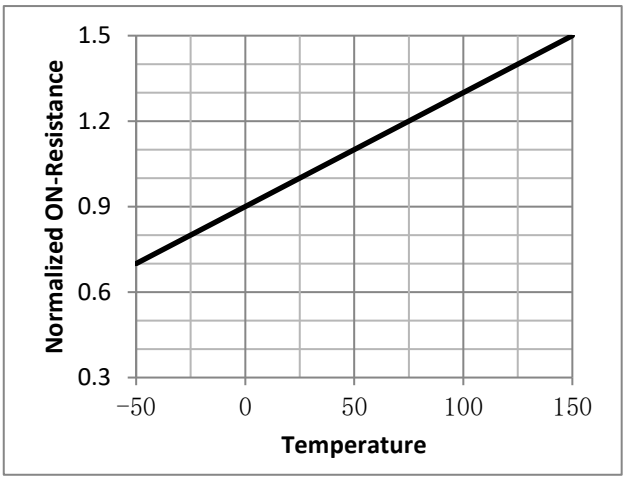


Fig.7 Gate Charge Characteristics

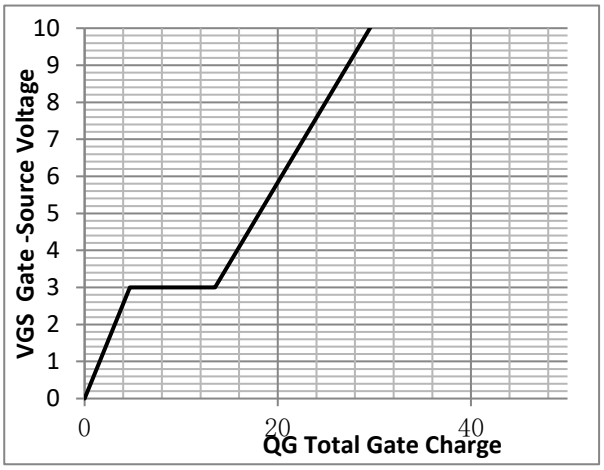


Fig.8 Capacitance vs Vds

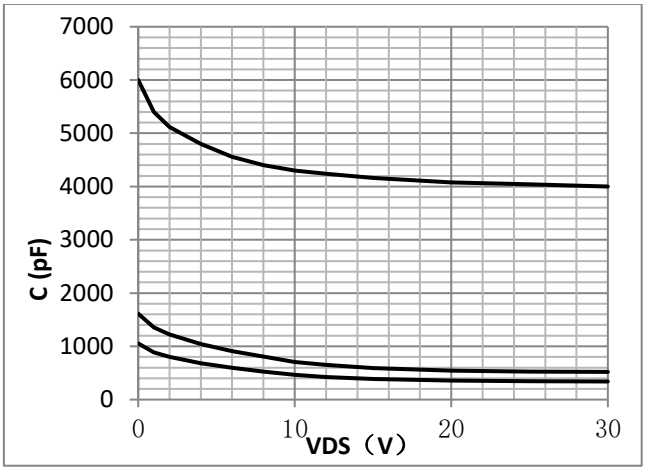


Fig.9 Diode Forward Voltage vs. Current

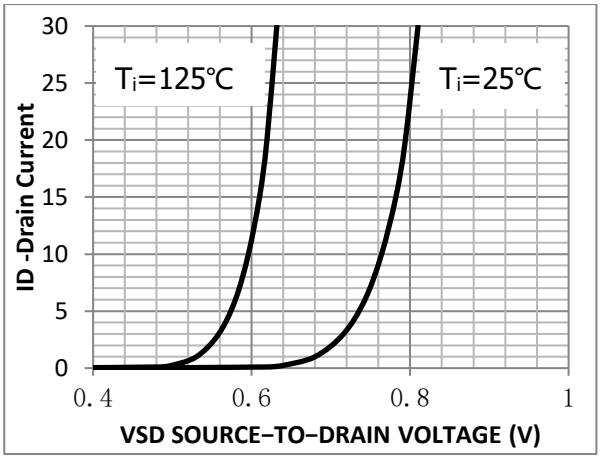


Fig.10 Capacitance Variation

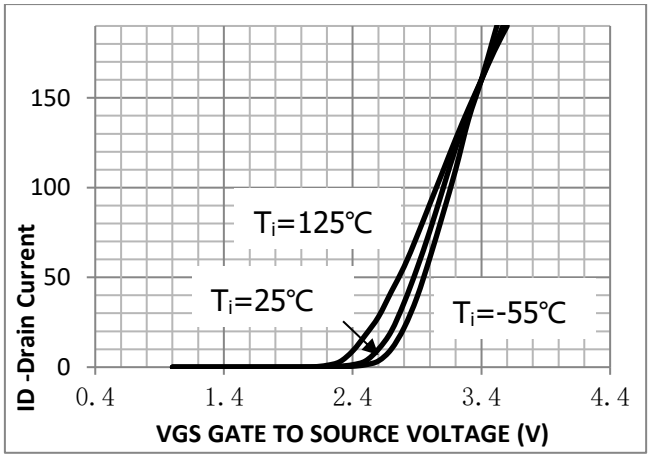


Fig.11 SOA Maximum Safe Operating Area

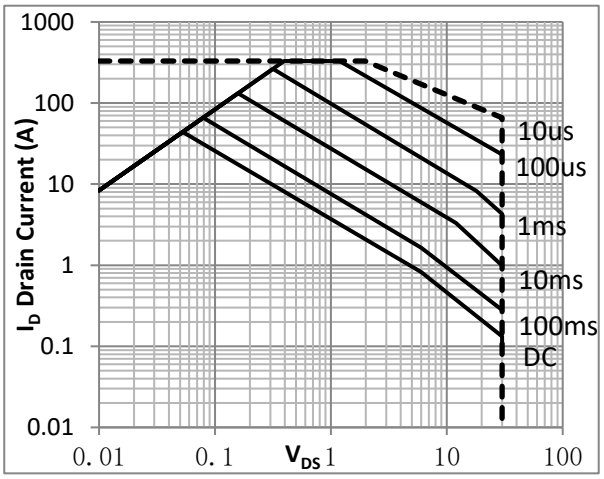


Fig.12 ID-Junction Temperature

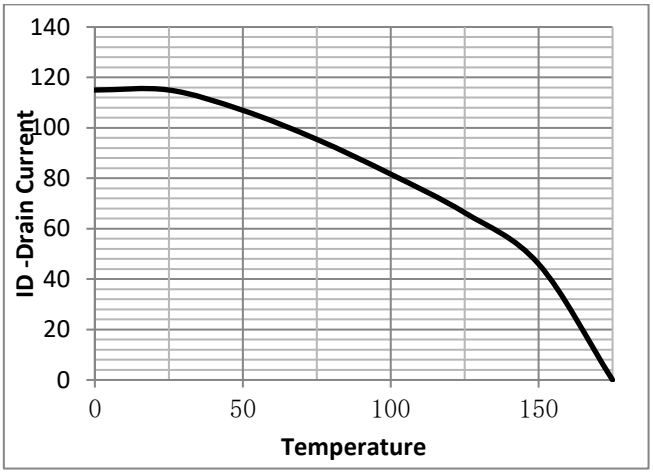


Fig.13 Switching Time Measurement Circuit

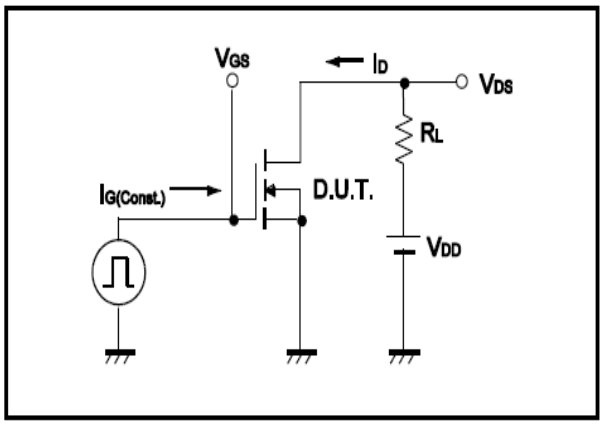


Fig.14 Gate Charge Waveform

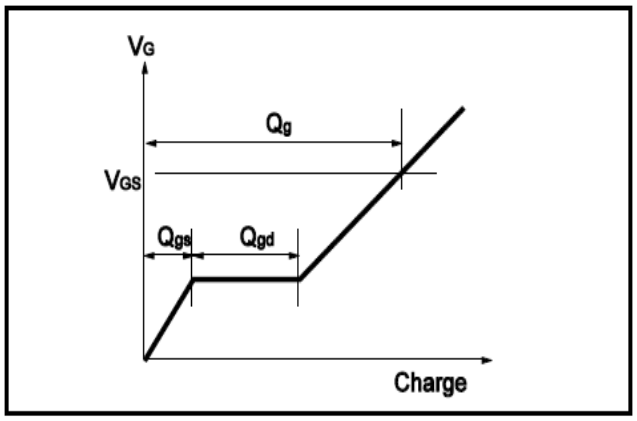


Fig.15 Resistive Switching Test Circuit

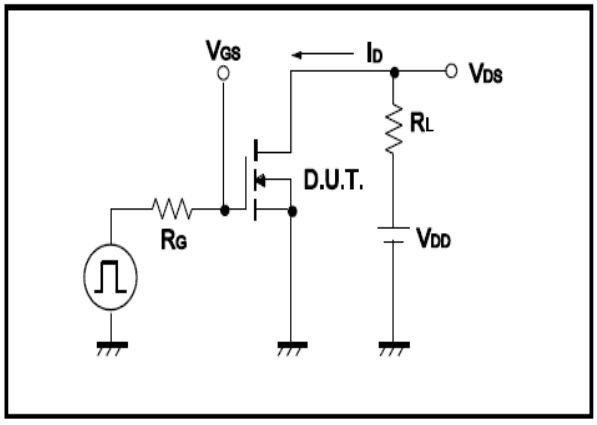


Fig.16 Resistive Switching Test Waveform

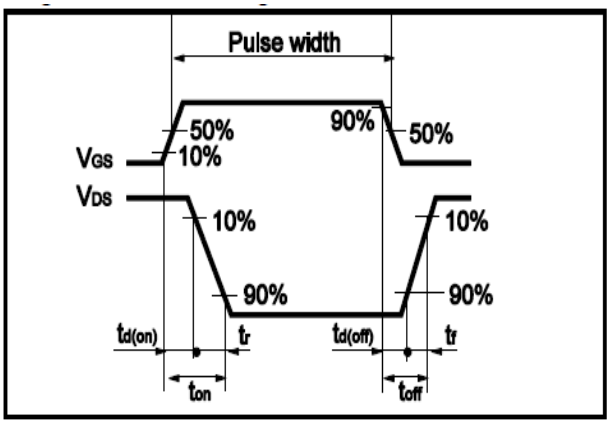


Fig.17 Avalanche Measurement Circuit

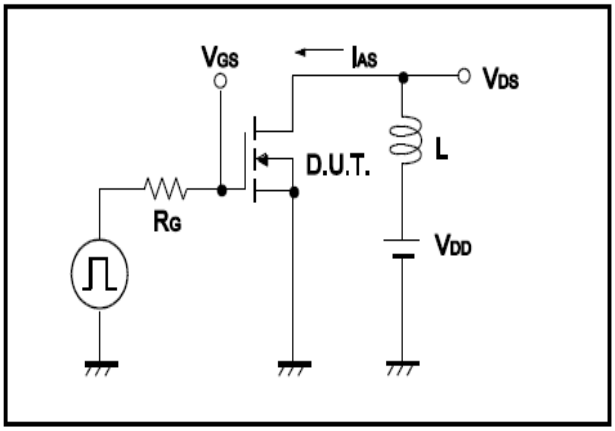
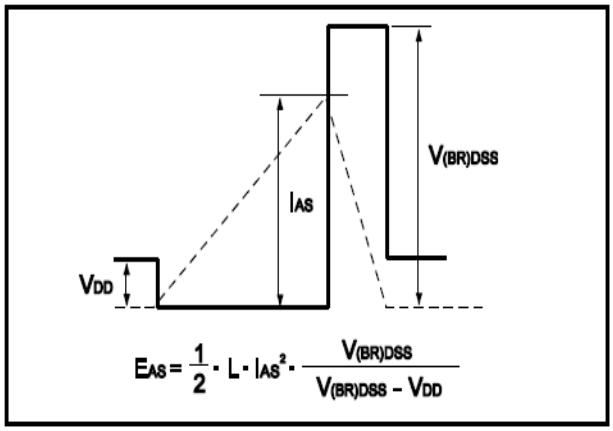
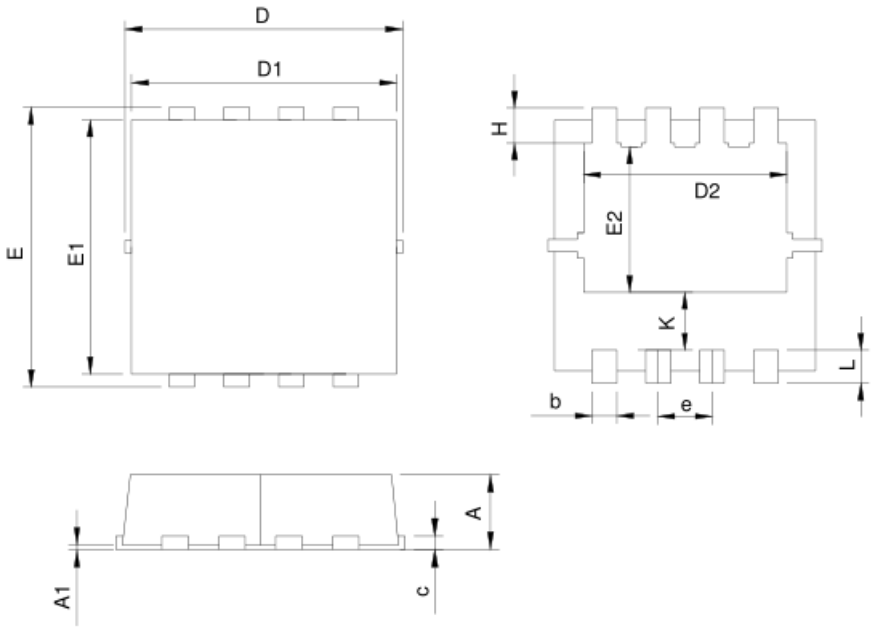


Fig.18 Avalanche Waveform



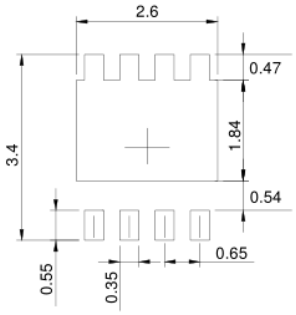
●Dimensions(DFN3×3)

Unit：mm



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm