

• General Description

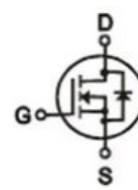
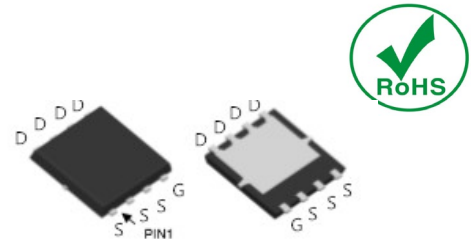
The ZM062N03M combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

• 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

 $V_{DS}=30V$
 $R_{DS(ON)}=6.5m\Omega$
 $I_D=40A$

DFN3 x 3
• Ordering Information:

Part NO.	ZM062N03M
Marking	ZM062N03
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@T_C=25^\circ C}$	40	A
	$I_{D@T_C=75^\circ C}$	30.4	A
	$I_{D@T_C=100^\circ C}$	25.2	A
	$I_{D@T_A=25^\circ C}$	12.9	A
	$I_{D@T_A=70^\circ C}$	10.4	A
Pulsed Drain Current ^①	I_{DM}	100	A
Total Power Dissipation ^②	$P_{D@T_C=25^\circ C}$	43	W
Total Power Dissipation	$P_{D@T_A=25^\circ C}$	2.3	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy	E_{AS}	210	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R _{thJC}	-	-	2.9	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	54	° 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 =250uA	30			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.5	1.8	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 =20A		6.5	8.5	mΩ
		V _{GS} =4.5V, I _D =10A		10	12	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =10A		9		s
Source-drain voltage	V _{SD}	I _S =20A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	1150	-	pF
Output capacitance	C _{oss}		-	235	-	
Reverse transfer capacitance	C _{rss}		-	120	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Resistance	R _g	f = 1MHz, V _{DS} =25V		1.8		Ω
Total gate charge	Q _g	V _{DD} =25V I _D = 5A V _{GS} = 10V	-	12	-	nC
Gate - Source charge	Q _{gs}		-	4	-	
Gate - Drain charge	Q _{gd}		-	6	-	
Turn-ON Delay time	t _{D(on)}	V _{GS} =10V, V _{DS} =15V		7.5		ns

Turn-ON Rise time	t_r	$R_G = 3.3\Omega, I_D = 15A$	12	ns
Turn-Off Delay time	$t_{D(off)}$		26	ns
Turn-Off Fall time	t_f		7.5	ns
Reverse Recovery Time	t_{RR}	$V_{DD} = 20V,$ $dI_S/dt = 100A/\mu s,$ $I_S = 15A$	9.7	ns
Charge Time	t_a		5.8	ns
Discharge Time	t_b		4.1	ns
Reverse Recovery Charge	Q_{RR}		2.9	nC

Note: ① Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate;

Fig.1 Power Dissipation

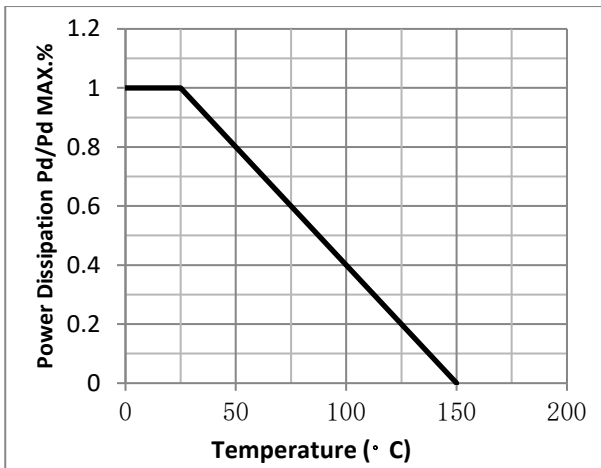


Fig.2 Typical output Characteristics

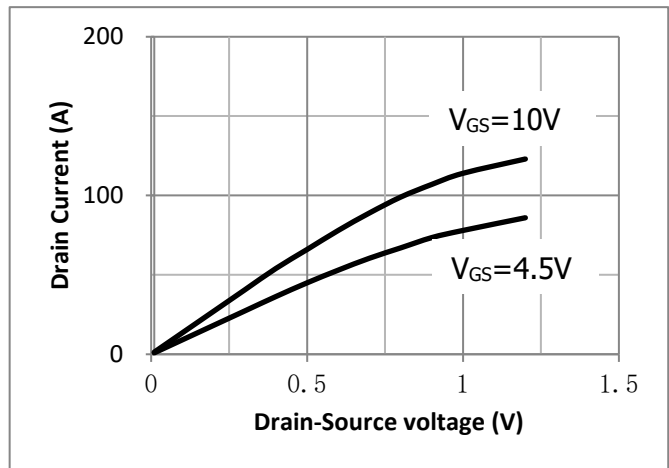


Fig.3 Threshold Voltage V.S Junction Temperature

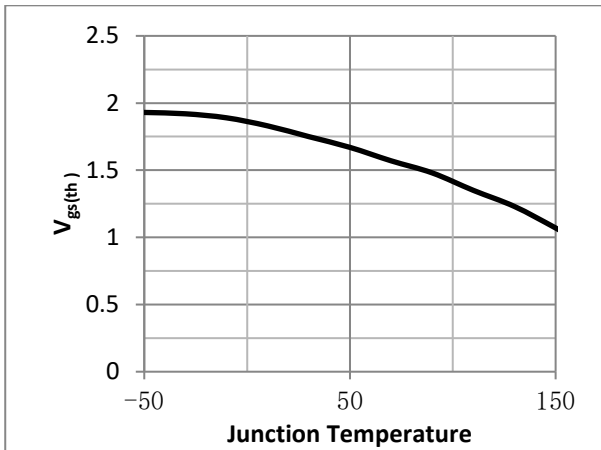


Fig.4 Resistance V.S Drain Current

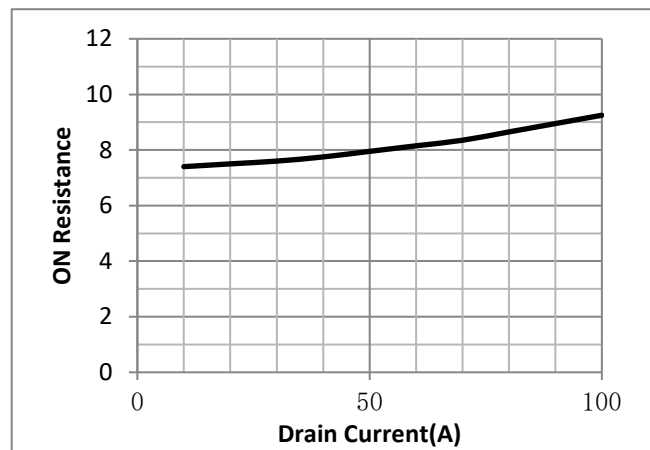


Fig.5 On-Resistance VS Gate Source Voltage

Fig.6 On-Resistance V.S Junction Temperature

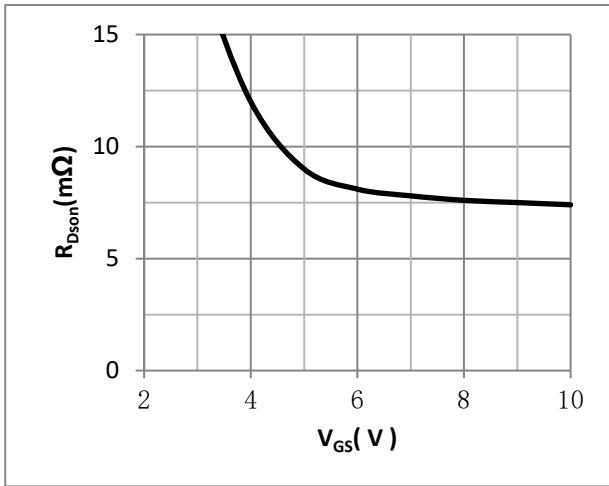


Fig.7 SOA Maximum Safe Operating Area

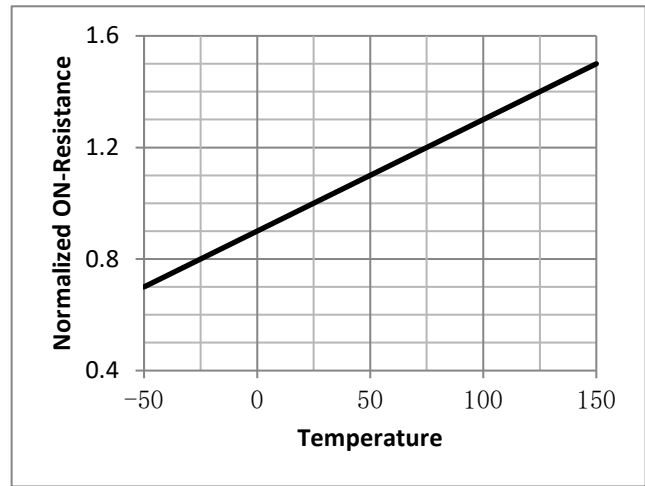


Figure 8. Diode Forward Voltage vs. Current

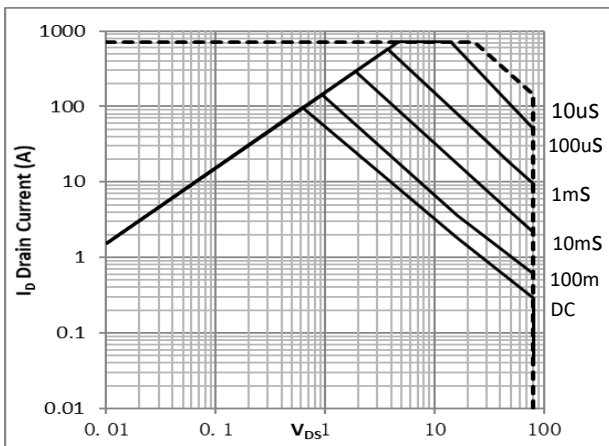


Figure 9. Transfer Characteristics

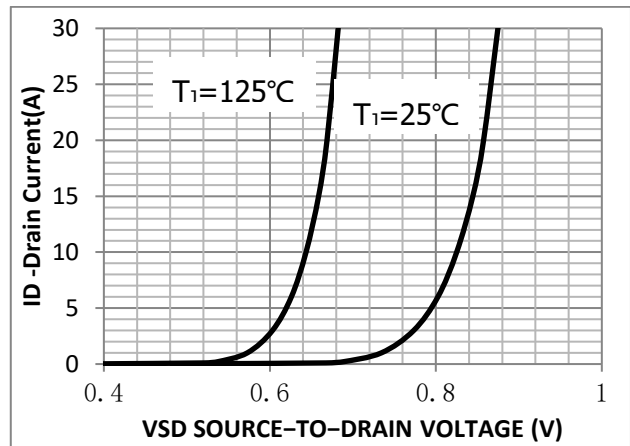


Fig.10 Typical output Characteristics

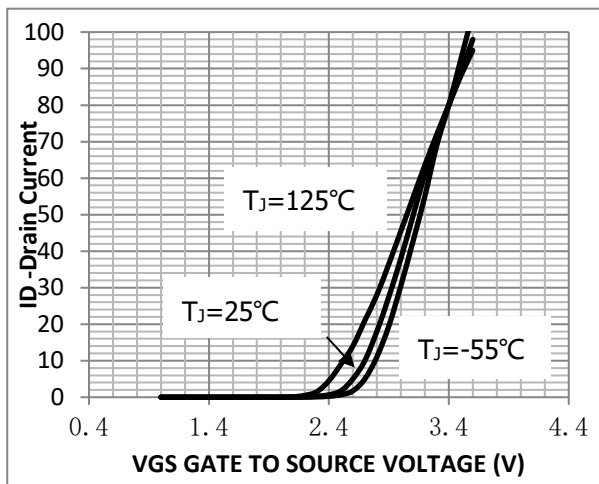


Fig.11 I_D V.S Junction Temperature

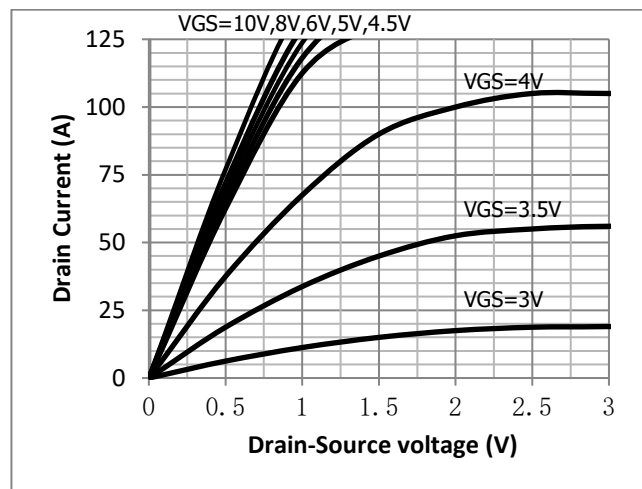


Fig.12 Switching Time Measurement Circuit

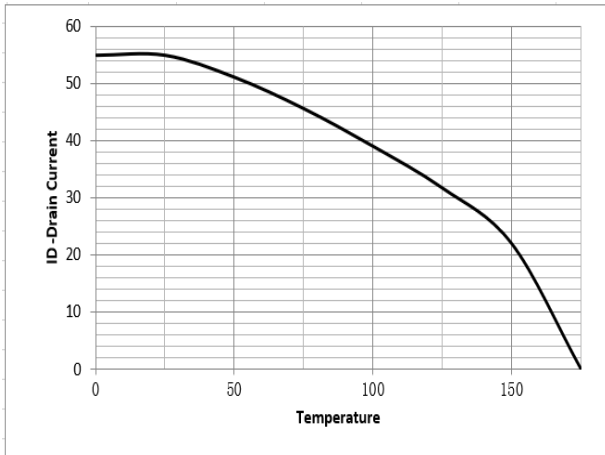


Fig.13 Gate Charge Waveform

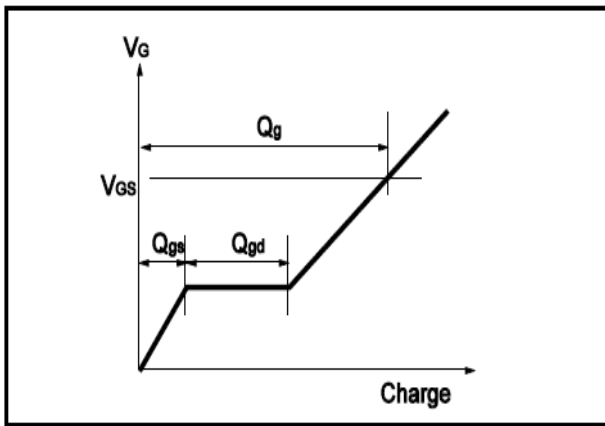


Fig.15 Resistive Switching Test Circuit

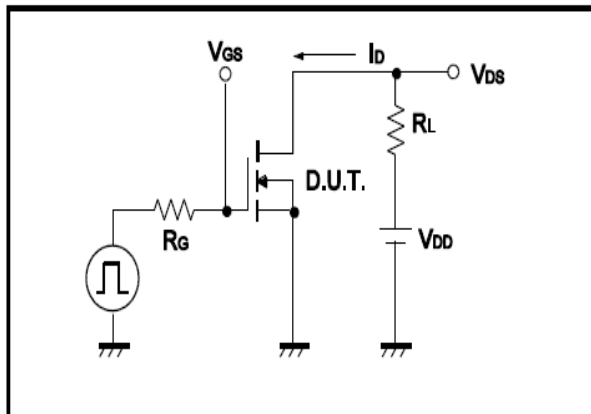


Fig.17 Avalanche Measurement Circuit

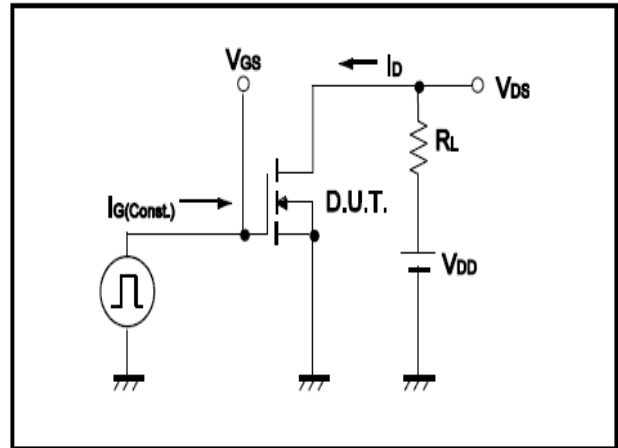
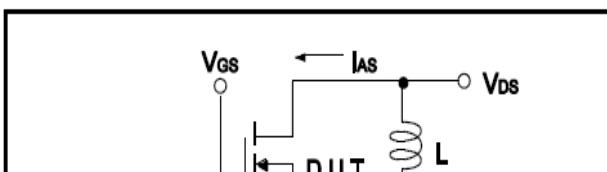


Fig.14 Avalanche Waveform

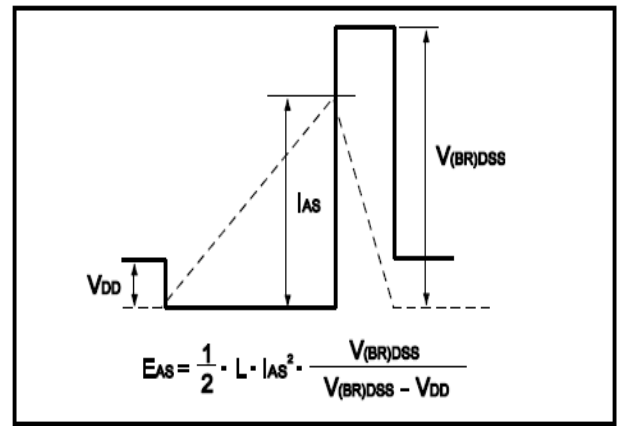
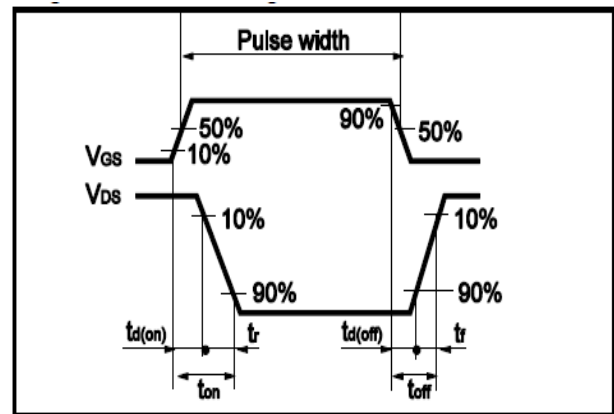


Fig.16 Resistive Switching Test Waveform

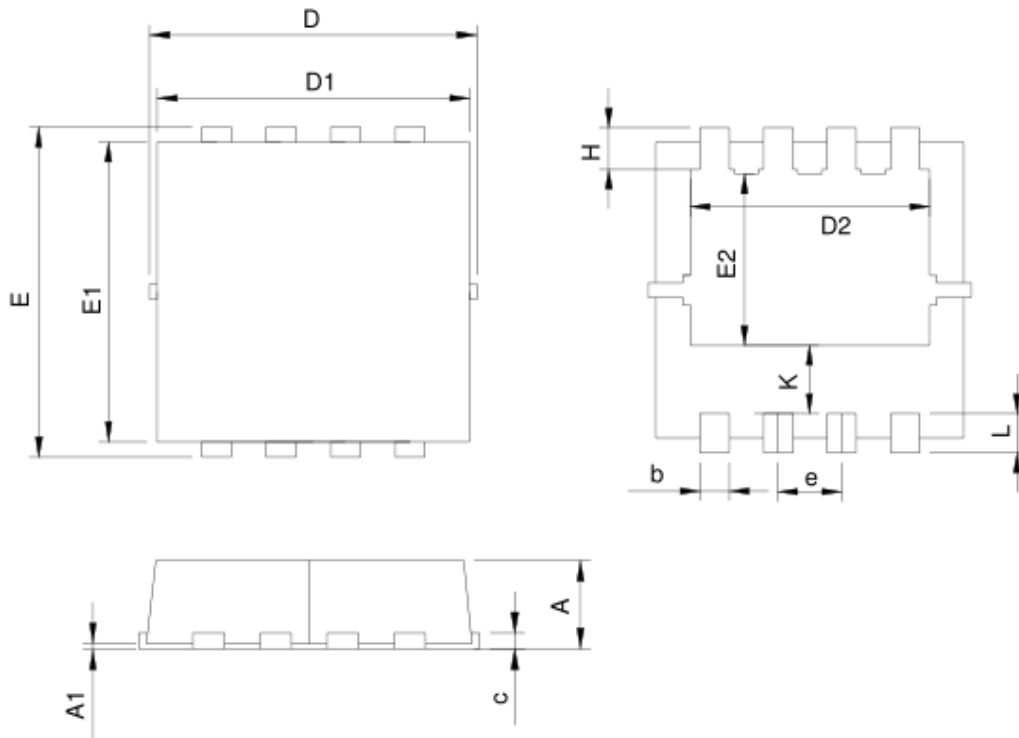




•**Dimensions(DFN3×3)**

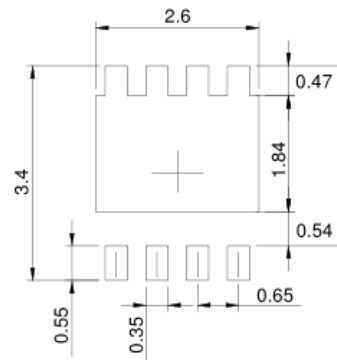


Unit: mm



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