CTx30N06A

N-Channel MOSFET

Features:

- RoHS Compliant
- Low ON Resistance
- Low Input Capacitance
- Low Miller Charge
- Low Input/Output Leakage

Applications:

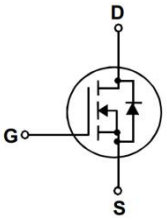
Lithium - Ion Secondary Batteries

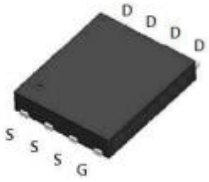
Load Switch

DC-DC converters and Off line UPS

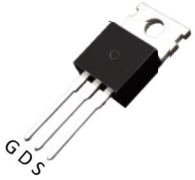
V_{DSS}(Min.)	60 V
$R_{DS(ON)}$(Typ.)	22mΩ
I_D	20 A

Schematic and Package Information:

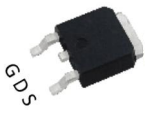




PDFN5*6
CTG30N06A



TO-220CB
CTP30N06A

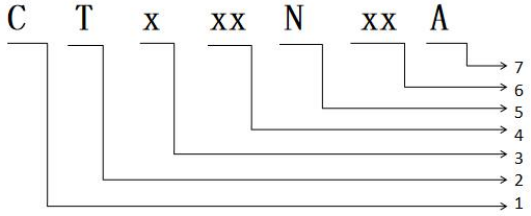


TO-252
CTD30N06A

PDFN3.3*3.3
CTK30N06A

Marking on the body:

MV/LV MOSFET tube naming rules



1：CYS for short
2：T：Trench S：SGT
3：Package
F：TO-220F P：TO-220 D：TO-252
U：TO-251 W：TO-247S/3P E：SOP-8
G：DFN5*6 K：DFN3.3*3.3
4：RDS(on) Typ
5：N: N channel P: P channel
6：Maximum breakdown voltage (10% of BVdss)
7：Series no.

Absolute Maximum Ratings T_C=25℃ unless otherwise specified

Parameter	Symbol	CTx30N06A				Units
		PDFN 5*6	TO-220CB	TO-252	PDFN 3.3*3.3	
Drain-to-Source Voltage	V_{DSS}	60				V
Gate-to-Source Voltage	V_{GS}	±20				V
Continuous Drain Current	I_D	20				A
Pulsed Drain Current, V_{GS}@10V (NOTE *1)	I_{DM}	46				A
Power Dissipation	P_D	41				W
Derating Factor above 25℃		10				
Single Pulse Avalanche Energy（L=0.5mH）	E_{AS}	26				mJ
Peak Diode Recovery dv/dt	dv/dt	5				V/ns
Maximum Temperature for Soldering	T_L	300				℃
Operating Junction and Storage Temperature Range (NOTE *2)	T_J and T_{STG}	150，-55 to175				

Thermal Resistance

Parameter	Symbol	Typ.				Units
		PDFN5*6	TO-220CB	TO-252	PDFN3.3*3.3	
Junction to Case	$R_{\theta JC}$	3.6				℃/W
Junction to Ambient	$R_{\theta JA}$	62				℃/W

Electrical Characteristics TJ=25℃ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Drain-to-Source Breakdown Voltage	BV_{DSS}	60	--	--	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	1.8	2.5	V	V_{DS}=V_{GS},I_D=250μA
StaticDrain-to-Source On-Resistance	$R_{DS(ON)}$	--	22	30	mΩ	V_{GS}=10V, I_D=10A
Drain-to-Source Leakage Current	I_{DSS}	--	--	1	uA	V_{DS}=60V,V_{GS}=0V T_J=25℃
		--	--	100		V_{DS}=60V,V_{GS}=0V T_J=125℃
Gate-to-Source Forward Leakage	I_{GSS}	--	--	+100	nA	V_{GS}=+20V
Gate-to-Source Reverse Leakage		--	--	-100		V_{GS}= -20V

Dynamic Characteristics Essentially independent of operating temperature

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Input Capacitance	C_{iss}	--	1378	--	pF	V_{GS}=0V,V_{DS}=15V f =1.0MHz
Output Capacitance	C_{oss}	--	86	--		
Reverse Transfer Capacitance	C_{rss}	--	64	--		
Total Gate Charge	Q_g	--	12.6	--	nC	I_D=15A,V_D=48V VGS = 10V
Gate-to-Source Charge	Q_{gs}	--	3.2	--		
Gate-to-Drain (“Miller”) Charge	Q_{gd}	--	6.3	--		
Turn-on Delay Time	$t_{d(ON)}$	--	8	--	ns	V_D=30V, I_D=15A, V_G=10V R_G=3Ω
Rise Time	t_{rise}	--	14.2	--		
Turn-Off Delay Time	$t_{d(OFF)}$	--	24.4	--		
Fall Time	T_{fall}	--	4.6	--		

Source-Drain Diode Characteristics Tc=25℃ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Continuous Drain-Source Diode Forward Current	I_S	--	--	20	A	T_C=25℃
Pulsed Drain-Source Diode Forward Current	I_{SM}	--	--	80		
Diode Forward Voltage	V_{SD}	--	--	1.2	V	I_{SD}=5A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	--	18.8	--	ns	I_F= I_S di/dt=100A/us
Reverse Recovery Charge	Q_{rr}	--	13.4	--	nC	

Notes:
1. T_J = +25℃ to +150℃.
2. Repetitive rating; pulse width limited by maximum junction temperature.
3. Pulse width < 300μs; duty cycle < 2%.

Typical Characteristics

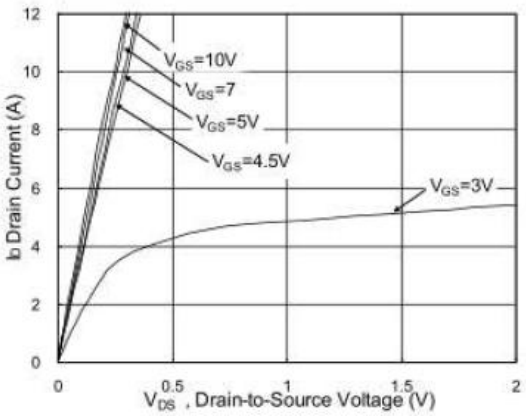


Fig.1 Typical Output Characteristics

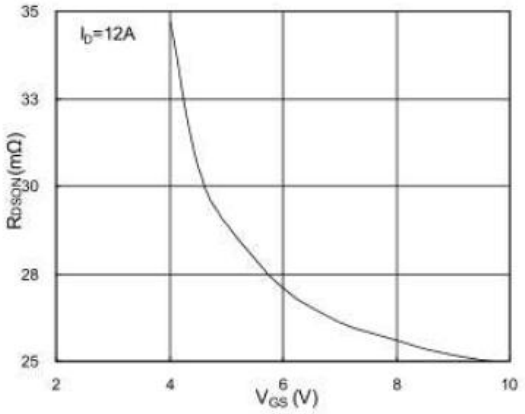


Fig.2 On-Resistance vs. G-S Voltage

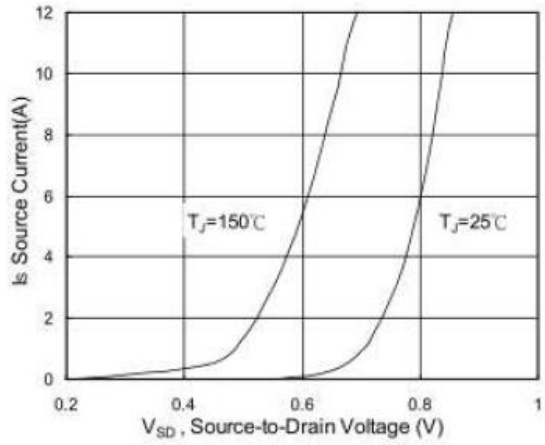


Fig.3 Forward Characteristics of Reverse Diode

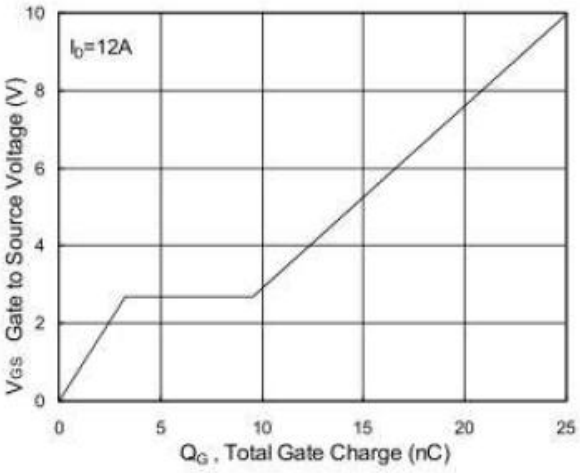


Fig.4 Gate-Charge Characteristics

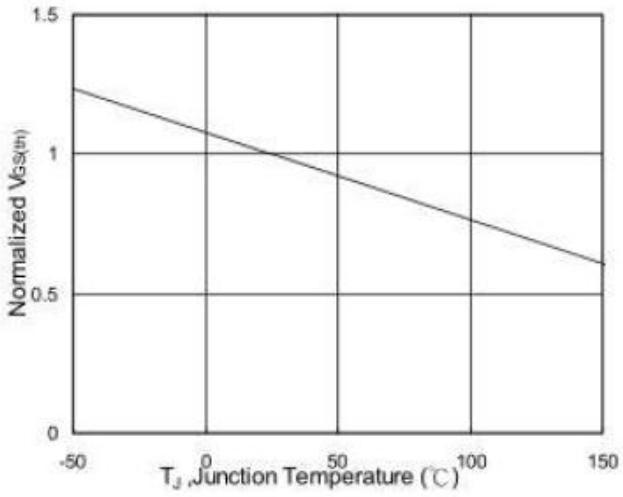


Fig.5 Normalized VGS(th) vs. TJ

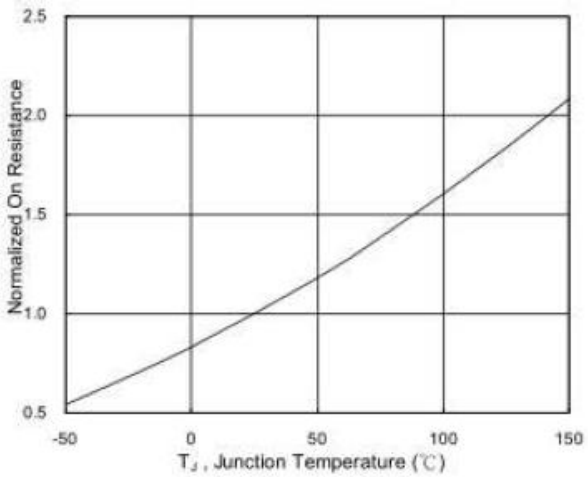


Fig.6 Normalized RDSON vs. TJ

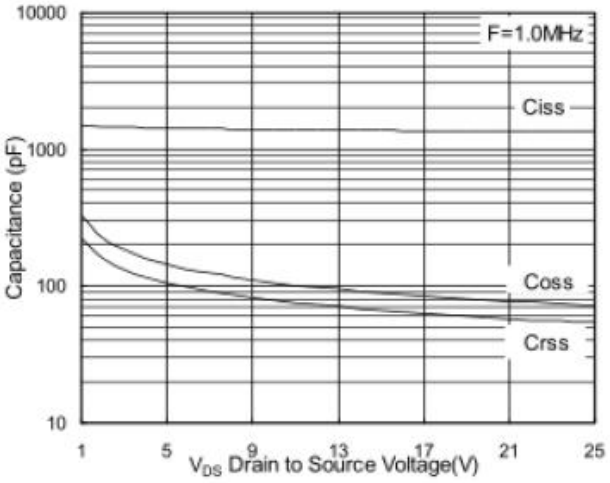


Fig.7 Capacitance

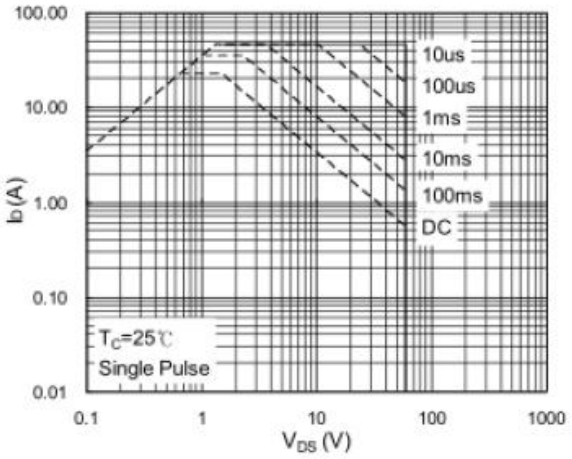


Fig.8 Safe Operating Area

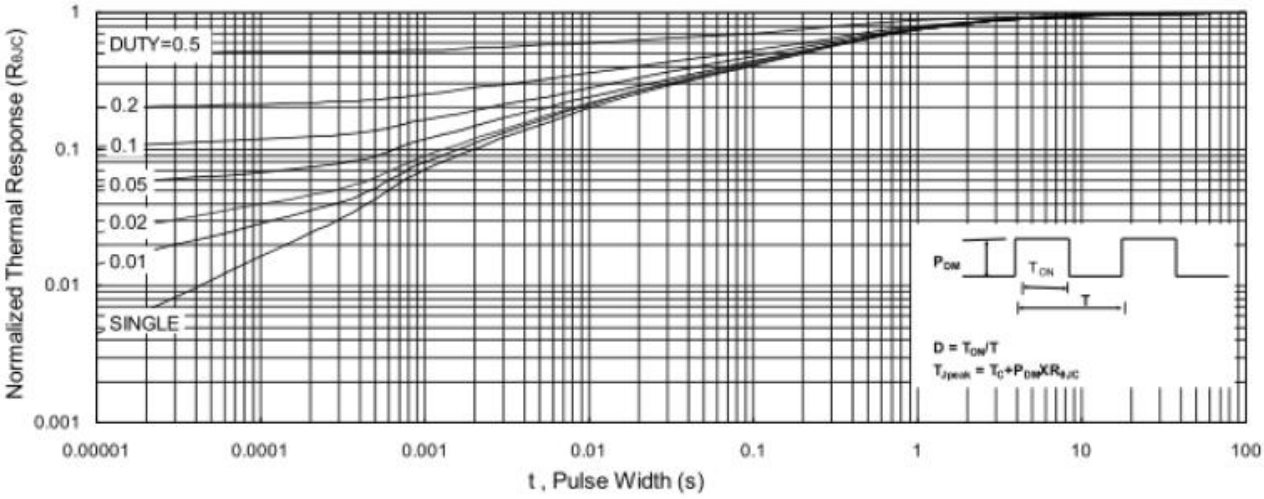
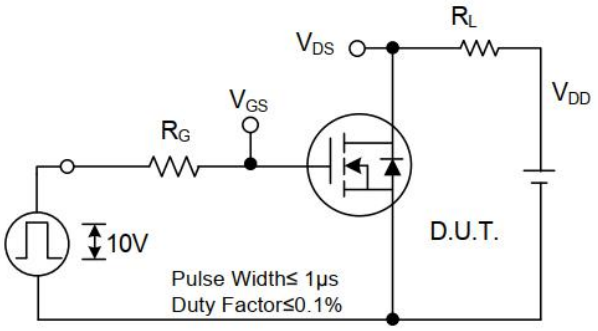
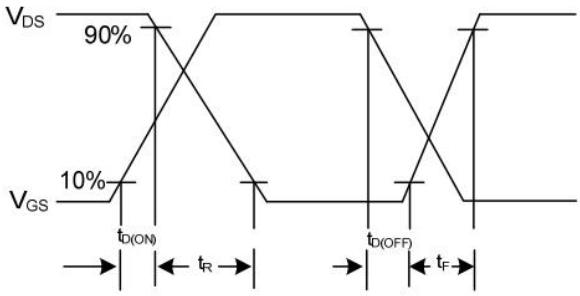


Fig.9 Normalized Maximum Transient Thermal Impedance

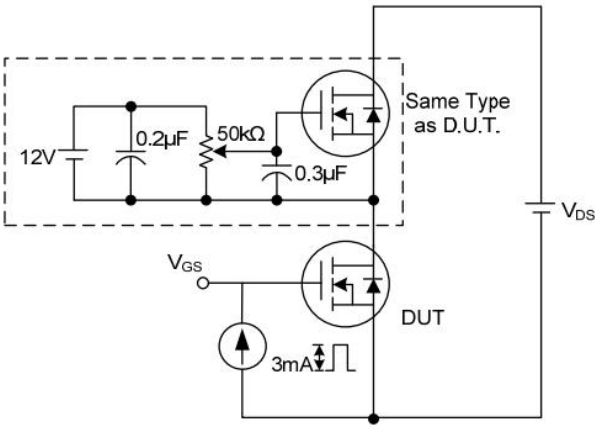
Test Circuits and Waveform



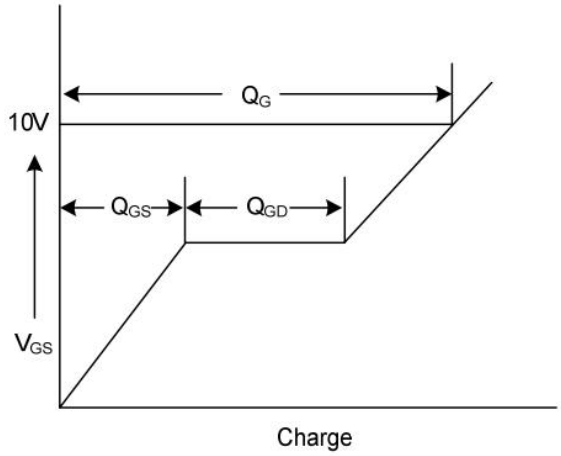
Switching Test Circuit



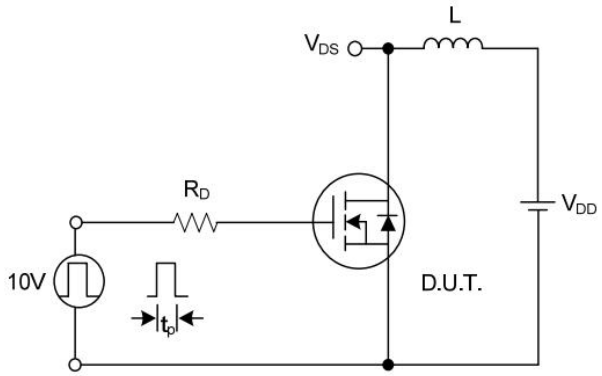
Switching Waveforms



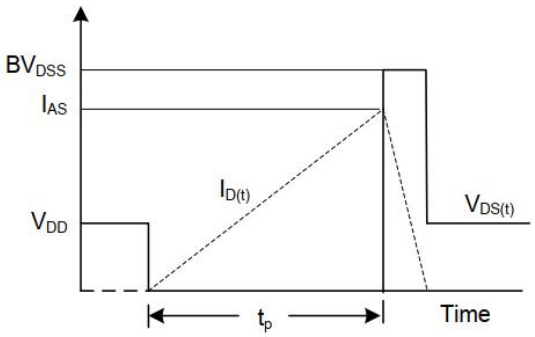
Gate Charge Test Circuit



Gate Charge Waveform



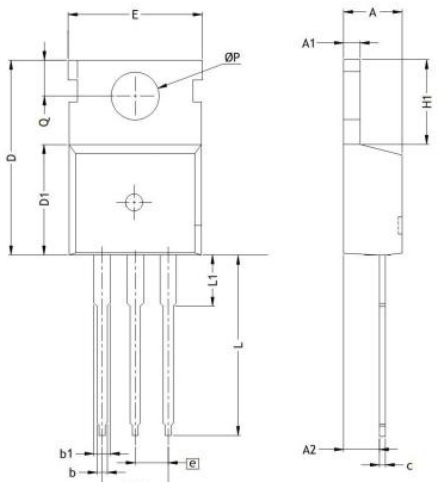
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

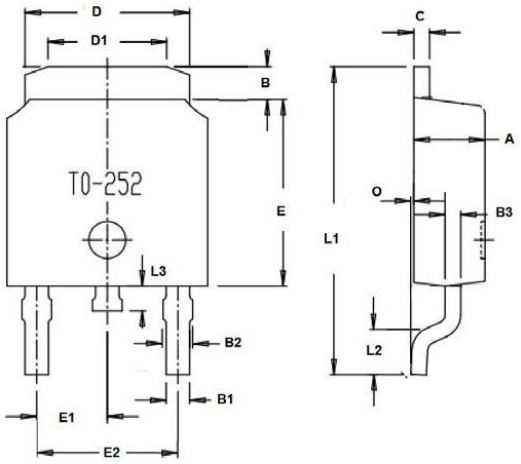
PACKAGE MECHANICAL DATA（Unit：mm）：

TO-220CB



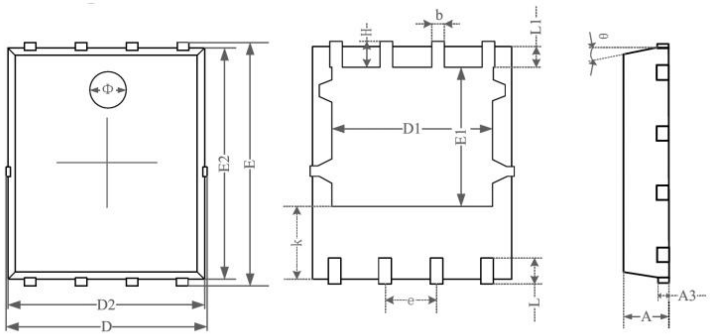
DIM	Min.	Max.
A	4.25	4.65
A1	1.25	1.35
A2	2.35	2.55
b	0.7	0.9
b1	1.15	1.75
c	0.45	0.6
D	14.35	15.95
D1	8.8	9.5
E	9.9	10.3
e	Typ 2.54	
e1	Typ 5.08	
H1	6.3	6.5
L	12.85	13.5
L1	2.85	3.25
Q	2.7	2.9
ΦP	3.5	3.9
All Dimensions in millimeter		

TO-252



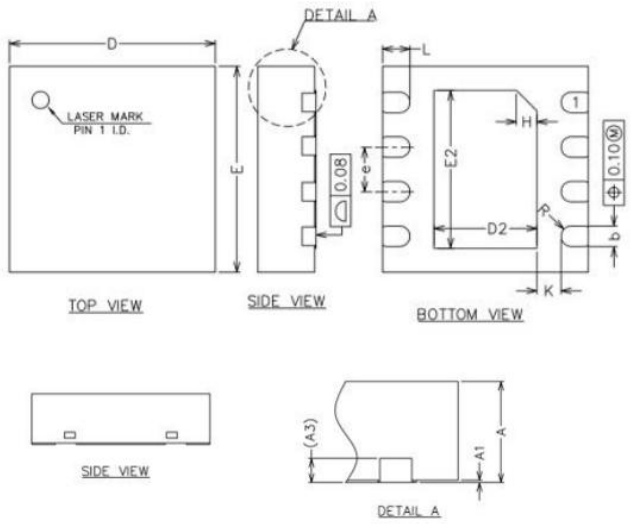
DIM	Min.	Max.
A	2.1	2.5
B	0.95	1.55
C	0.4	0.6
D	6.4	6.7
D1	5.1	5.8
E	5.8	6.4
E1	Typ 2.3	
E2	Typ 4.6	
B1	0.6	0.8
B2	0.75	0.95
O	--	0.15
L1	9.0	11.0
L2	1.3	1.7
L3	0.7	0.95
All Dimensions in millimeter		

DFN5*6



DIM	Min.	Max.
A	0.8	1.0
A3	Typ 0.15	
D	4.9	5.1
E	6.0	6.1
D1	3.9	4.1
E1	3.3	3.5
D2	4.8	5.0
E2	5.7	5.8
K	1.2	1.4
b	0.3	0.4
e	Typ 1.27	
L	0.5	0.7
L1	0.4	0.6
H	0.5	0.7
θ	10°	12°
ϕ	1.1	1.3
All Dimensions in millimeter		

DFN3.3*3.3



DIM	Min.	Max.
A	0.8	0.9
A1	0.01	0.05
A3	Typ 0.20	
b	0.25	0.35
D	2.9	3.1
E	2.9	3.1
D2	1.4	1.6
E2	2.2	2.4
e	0.55	0.75
H	Typ 0.30	
K	0.25	0.45
L	0.35	0.45
R	0.13	---
All Dimensions in millimeter		

Statement:

- We reserve the right to change the manual without prior notice! Customers should obtain the latest version of the information before placing an order, and verify that the relevant information is complete and up-to-date.
- Any semiconductor product has the possibility of failure or failure under specific conditions. The buyer has the responsibility to comply with safety standards and take safety measures when using Silan product for system design and complete machine manufacturing, so as to avoid the occurrence of personal injury or property loss caused by potential failure risk!
- Product promotion will never end, our company will wholeheartedly provide customers with more excellent products!