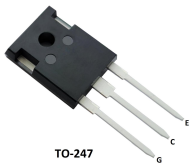
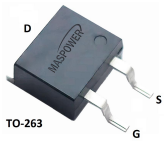
Features

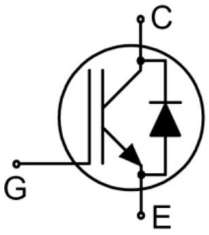
- Low gate charge
- FS Technology
- saturation voltage:
  VCE(sat), typ = 2.2V @
  IC = 15A and TC = 25° C
- RoHS product





Applications

- General purpose inverters
- Induction heating(IH)
- UPS



Absolute Ratings（Tc=25℃）

Parameter	Symbol		Value	Unit
Collector-Emitter Voltage	V_{CES}		1200	V
*Collector Current-continuous	Ic	T=25℃	30	A
		T=100℃	15	A
Collector Current-pulse(note 1)	I_{CM}		40	A
Diode Continuous forward current	I_F	T=100℃	15	A
Diode Maximum Forward Current (Note 1)	I_{FM}		40	A
Gate-Emitter Voltage	V_{GES}		±30	V
Power Dissipation(TO-247)	P_D	T_C=25℃	125	W
Power Dissipation(TO-263)	P_D	T_C=25℃	182	W
Operating Temperature Range	T_J		-55~+150	℃
Storage Temperature Range	T_{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T_L		300	℃

*Collector current limited by maximum Junction temperature

Electrical Characteristic(TC=25℃ unless otherwise noted)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						

Collector-Emitter Voltage	BV_{CES}	I_C=500μA,V_{GE}=0V	1200	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=1200V,V_{GE}=0V, T_C=25℃	-	-	0.2	mA
		T_C=100℃	-	-	2	mA
Gate-body leakage current,reverse	I_{GESR}	V_{CE}=0V,V_{GE}=-20V	-	-	-100	nA
On-Characteristics						
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	VCE=VGE, Ic=600uA	4.5	-	6.5	V
Short Collector Current [2]	I_{CSC}	V_{GE}=15V,V_{CE}=600V, Tsc<10μS,T_C=25℃	-	80	-	A
Collector-Emitter saturation Voltage	V_{CESAT}	V_{GE}=15V,I_C=15A, T_C=25℃	-	2.2	2.5	V
		T_C=125℃	-	2.4	-	V
		T_C=150℃	-	2.5	-	V
Dynamic Characteristics						
Input capacitance	C_{ies}	VCE=25V, VGE=0V, f=1.0MHZ,	-	1030	1800	pF
Output capacitance	C_{oes}		-	80	120	pF
Reverse transfer capacitance	C_{res}		-	50	100	pF
Total Gate Charge	Q_g	VCC=600V,IC=15A, VGE=15V [3,4]	-	70	-	nC
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{CE}=600V,Ic=15A, R_G=10Ω,Inductive load Tc=25℃	-	80	-	ns
Turn-On rise time	t_r		-	65	-	ns
Turn-off delay time	$t_{d(off)}$		-	180	-	ns
Turn-off Fall time	t_f		-	80	-	ns
Turn-on energy	E_{on}		-	2.2	-	mJ
Turn-off energy	E_{off}		-	1.1	-	mJ
Total switching Energy	E_{tot}		-	3.2	-	mJ
Anti-Parallel Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V_F	V_{GE}=0V,I_F=15A.	-	1.8	2.9	V
Diode Reverse recovery time	t_{rr}	V_{GE}=0V,V_R=800V, I_F=15A dI_F/dt=750A/us [4]	-	200	-	ns
Reverse recovery charge	Q_{rr}		-	1.1	-	μC

Thermal Characteristics

Symbol	Parameter	Max		Units
		TO-247	TO-263	
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to case	2	0.82	℃/W
$R_{th\ j\text{-}a}$	Thermal Resistance, Junction to Ambient	48	62.5	℃/W

Notes:

1：Pulse width limited by maximum junction temperature

2：Allowed number of short circuits: <1000; time between short circuits: >1s.

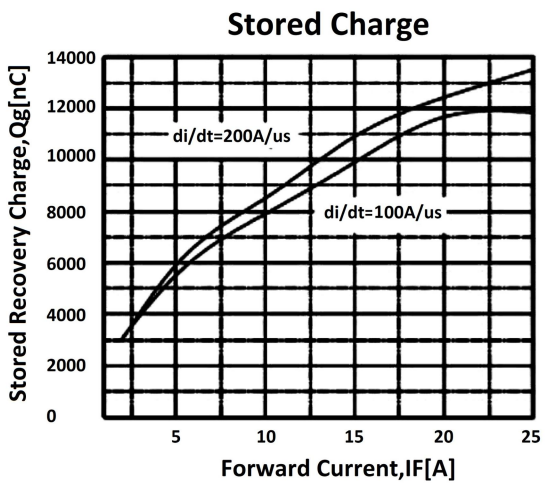
3：Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%

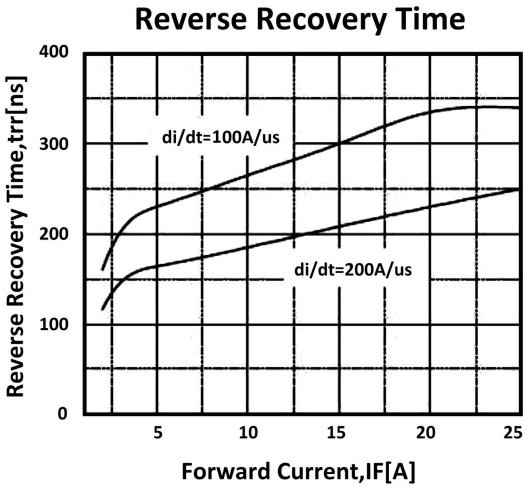
4：Essentially independent of operating temperature

Order Message

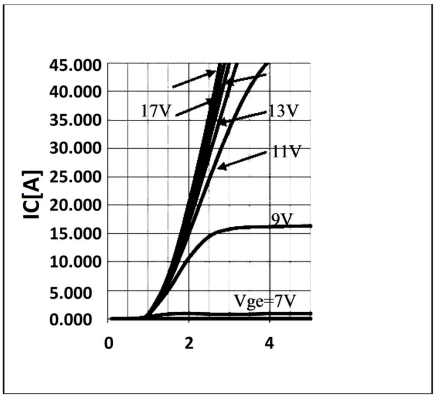
Marking	Package
MSG15T120FPC	TO-247
MSG15T120FPE	TO-263

Electrical Characteristics(curves)

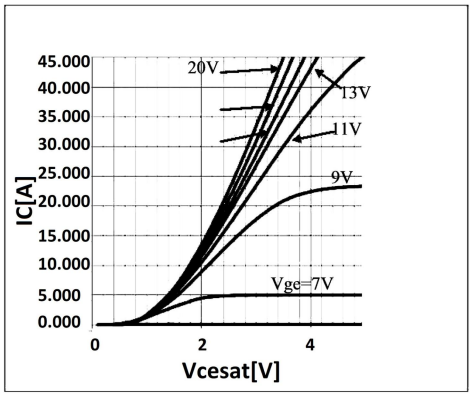




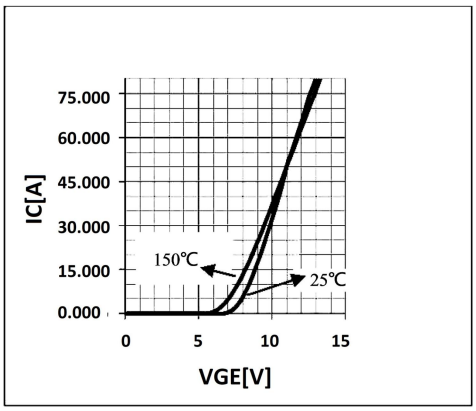
Typical Output Characteristics, Tj= 25 ℃



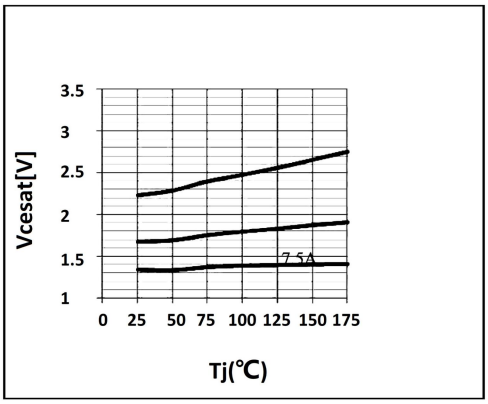
Typical Output Characteristics, Tj=150℃



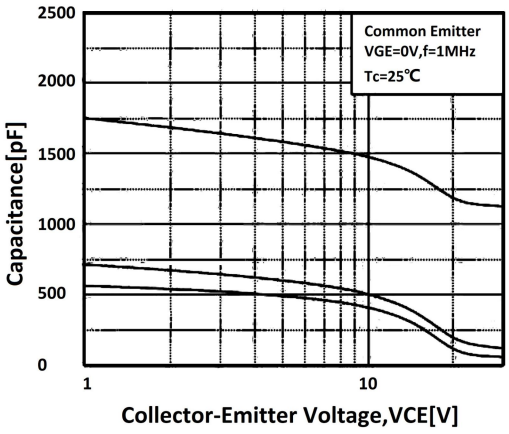
Typical Saturation Voltage Characteristics



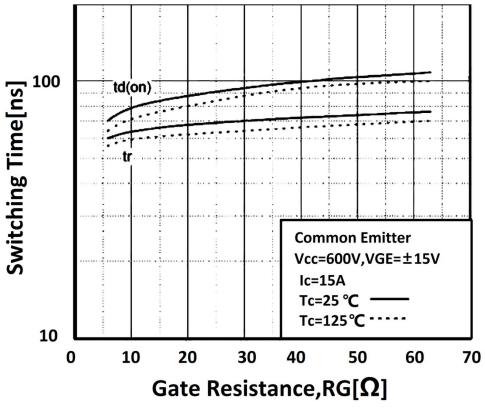
Saturation Voltage vs. Case Temperature at Vaiant Current Level



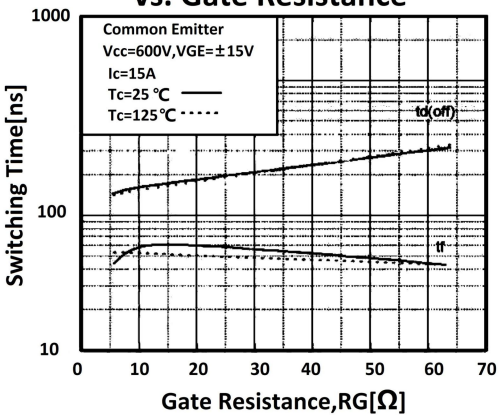
Capacitance Characteristics



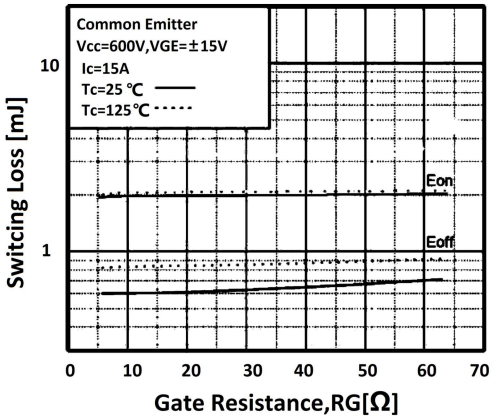
Turn-On Characteristics vs. Gate Resistance



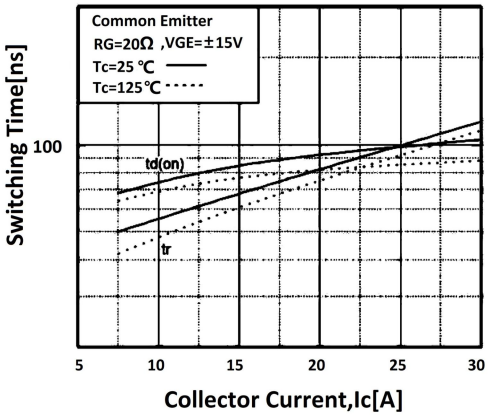
Turn- off Characteristics vs. Gate Resistance



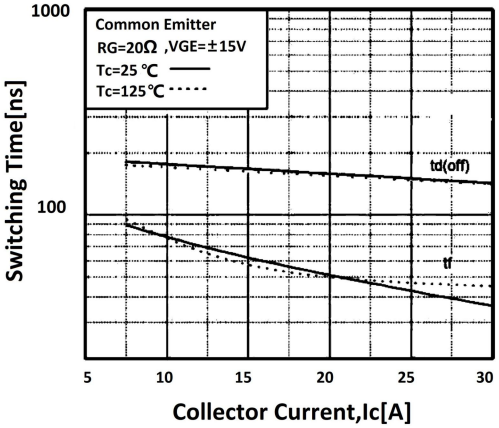
Switching Loss vs. Gate Resistance



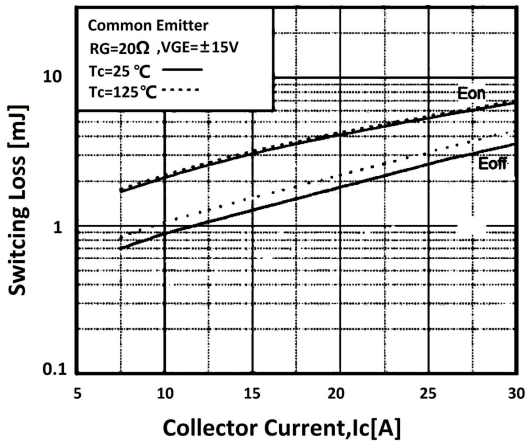
Turn- On Characteristics vs. Collector Current



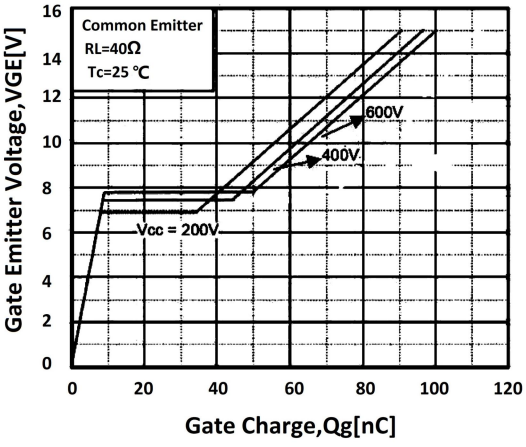
Turn- off Characteristics vs. Collector Current



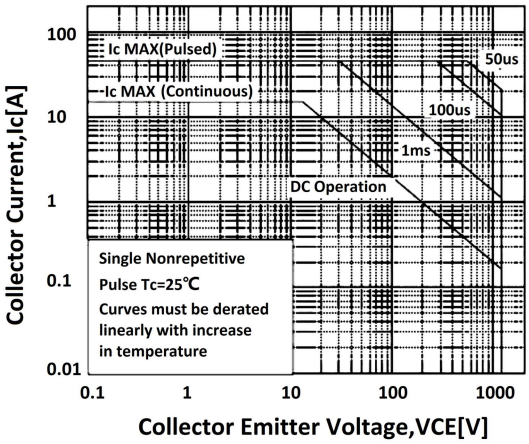
Switching Loss vs. Collector Current



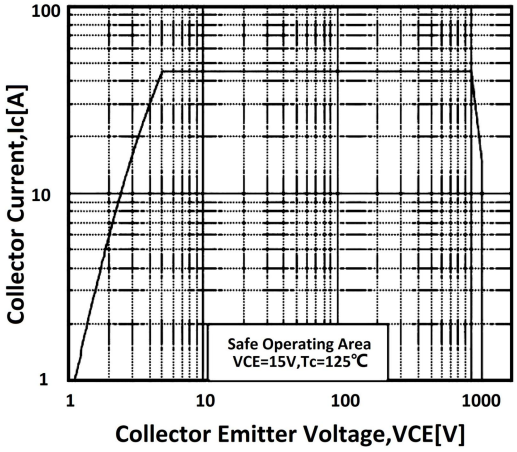
Gate Charge Characteristics



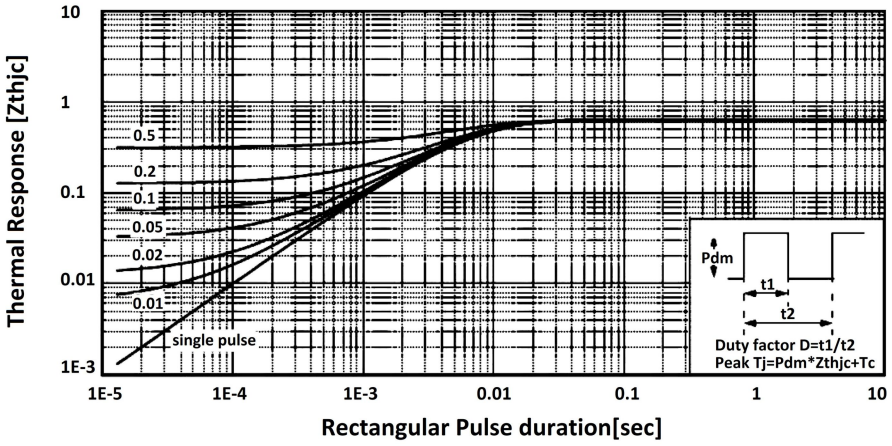
SOA Characteristics



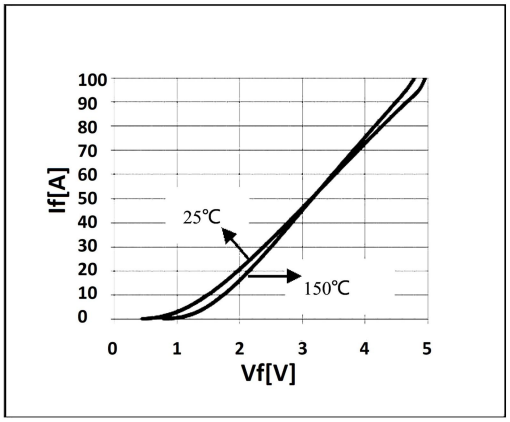
Turn-Off SOA



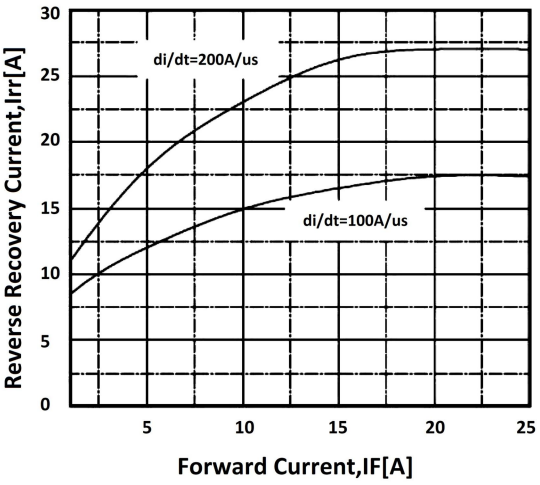
Transient Thermal Impedance



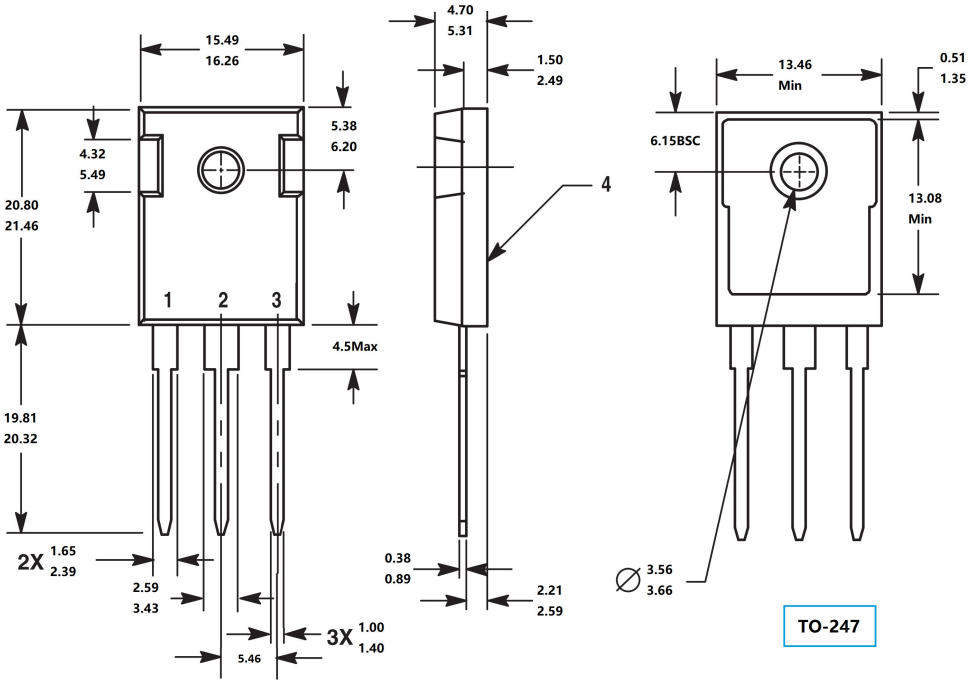
Forward Characteristics

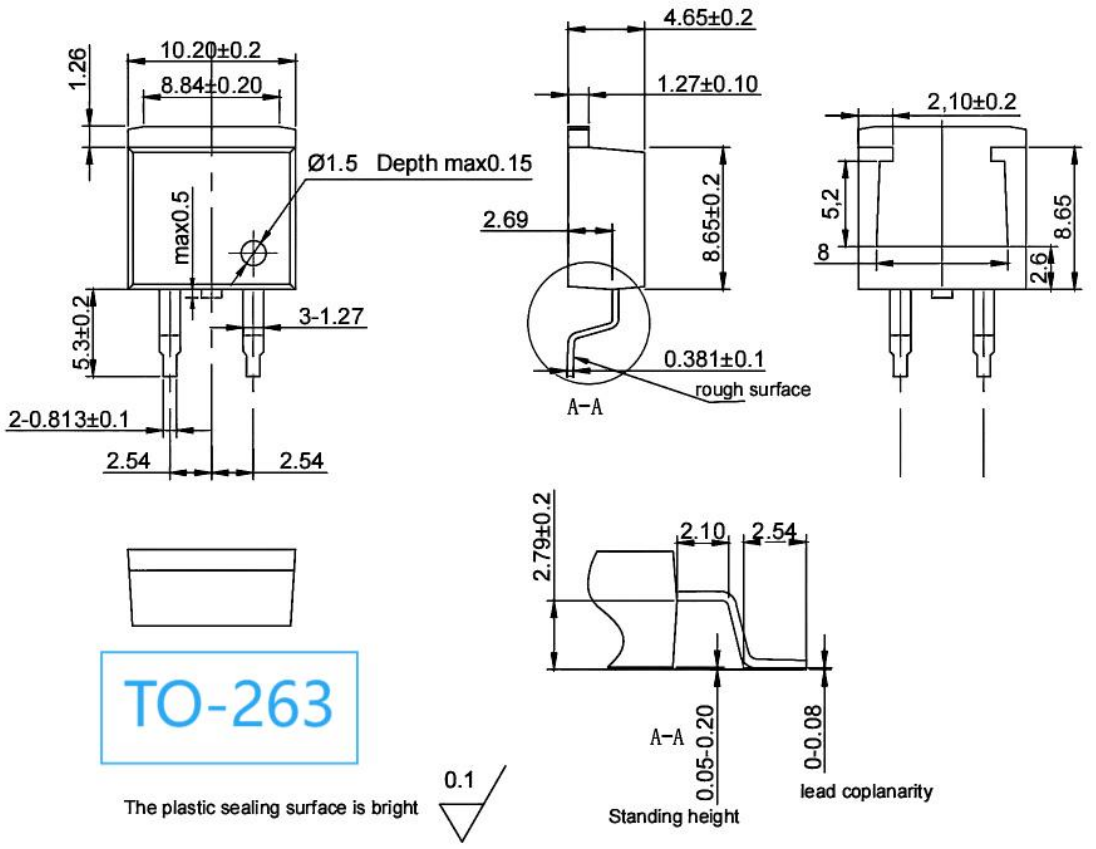


Reverse Recovery Current



Package Mechanical DATA





Notes:
1. unmarked tolerance±0.15mm;unmarked R<0.15mm
2. The resin body is not allowed to have defects, shrinkage holes, cracks, bubbles and other harmful defects
3. The drawing indicates that the leg has reinforcement
4. The top pinhole is not allowed to protrude the surface of the plastic sealing body
5. Unit：mm