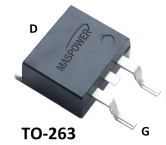
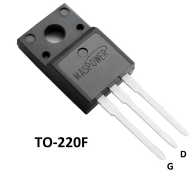
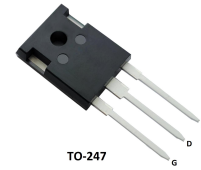
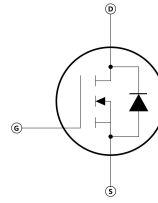


### Features

- Low gate charge
- Low Crss (typical 13pF )
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



### Applications

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- LED power supplies

### Absolute Ratings (Tc=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	1000	V
Drain Current -continuous	$I_D$ T=25°C T=100°C	10	A
		6.0*	A
Drain Current - pulse (note 1)	$I_{DM}$	36	A
Gate-Source Voltage	$V_{GSS}$	±30	V
Single Pulsed Avalanche Energy (note 2)	$E_{AS}$	858	mJ
Avalanche Current (note 1)	$I_{AR}$	10	A
Repetitive Avalanche Current (note 1)	$E_{AR}$	27.7	mJ
Peak Diode Recovery dv/dt (note 3)	dv/dt	4.1	V/ns
Power Dissipation(TO-247/TO-263)	PD	186.5	W
Power Dissipation(TO-220F)		67.9	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C
Maximum Lead Temperature for Soldering Purposes	$T_L$	300	°C

**Electrical Characteristics**( $T_{CASE}=25^{\circ}C$  unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
<b>Off-Characteristics</b>						
Drain-Source Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	1000	-	-	V
Breakdown Voltage Temperature Coefficient Zero Gate Voltage Drain Current	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	$I_D=250\mu A$ , referenced to $25^{\circ}C$	-	0.98	-	$V/^{\circ}C$
		$V_{DS}=900V, V_{GS}=0V, T_C=$ $25^{\circ}C$	-	-	1	$\mu A$
		$V_{DS}=720V, T_C=125^{\circ}C$	-	-	10	$\mu A$
Gate-body leakage current, forward	$I_{GSSF}$	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
Gate-body leakage current,reverse	$I_{GSSR}$	$V_{DS}=0V, V_{GS}=30V$	-	-	-100	nA
<b>On-Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	-	5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4.5A$ $25^{\circ}C$	-	1.35	1.6	$\Omega$
Forward Transconductance	gfs	$V_{DS}=40V, I_D=4.5A$ (note 4)	-	9.5	-	S
<b>Dynamic Characteristics</b>						
Gate resistance	$R_g$	F=1.0MHZ open drain	0.5	-	3	$\Omega$
Input capacitance	$C_{iss}$	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHZ$	1200	2150	2830	pF
Output capacitance	$C_{oss}$		100	189	246	pF
Reverse transfer capacitance	$C_{rss}$		5	13	17	pF
<b>Switching Characteristics</b>						
Turn-On delay time	$t_{d(on)}$	$V_{DD}=450V, I_D=9A, R_G$ $=25\Omega$ (note 4,5)	-	53	121	ns
Turn-On rise time	$t_r$		-	116	235	ns
Turn-Off delay time	$t_{d(off)}$		-	97	199	ns
Turn-Off Fall time	$t_f$		-	69	171	ns
Total Gate Charge	$Q_g$	$V_{DS}=720V,$ $I_D=9A,$ $V_{GS}=10V$ (note4,5)	-	43	56	nC
Gate-Source charge	$Q_{gs}$		-	15	40	nC
Gate-Drain charge	$Q_{gd}$		-	21	50	nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Maximum Continuous Drain -Source Diode Forward Current		$I_S$	-	-	10	A
Maximum Pulsed		ISM	-	-	36	A

Drain-Source Diode Forward Current						
Drain-Source Diode Forward Voltage	VSD	VGS=0V,IS=9A	-	-	1.4	V
Reverse recovery time	trr	VGS=0V,IS=9A dIF/dt=100A/us(note 4)	-	539	1200	ns
Reverse recovery charge	Qrr		-	6.41	12	uC

Parameter	Symbol	Value		Unit
		TO-247 /TO-263	TO-220F	
Thermal Resistance, Junction to Case	Rth(j-c)	0.67	1.84	°C/W
Thermal Resistance, Junction to Ambient	Rth(j-A)	40	62.5	°C/W

**Notes:**

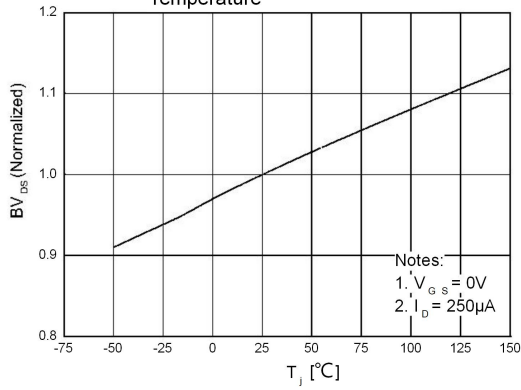
- 1:Pulse width limited by maximum junction temperature
- 2:L=20mH,I<sub>AS</sub>=10A,V<sub>DD</sub>=50V,R<sub>G</sub>=25Ω,Starting T<sub>J</sub>=25°C
- 3:I<sub>SD</sub>≤10A,di/dt≤200A/us,V<sub>DD</sub>≤BV<sub>DSS</sub>,Starting T<sub>J</sub>=25°C
- 4:Pulse Test:Pulse Width≤200us,Duty Cycle≤2%
- 5:Essentially independent of operating temperature

**Order information**

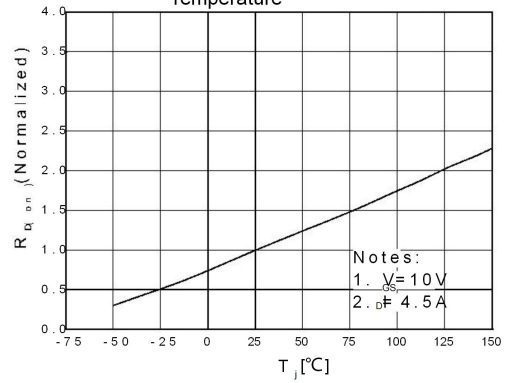
Order codes	Package	Packaging
MS10N100HGC0	TO-247	Tube
MS10N100HGT1	TO-220F	Tube
MS10N100HGEO	TO-263	Tube



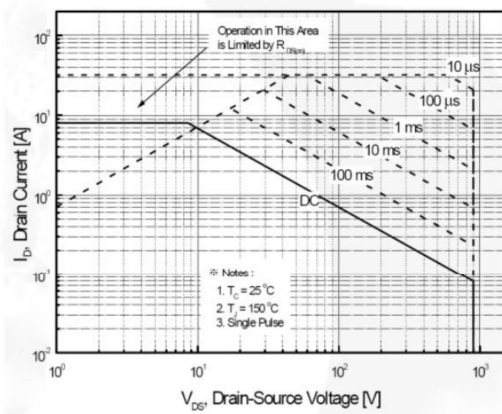
Breakdown Voltage Variation vs. Temperature



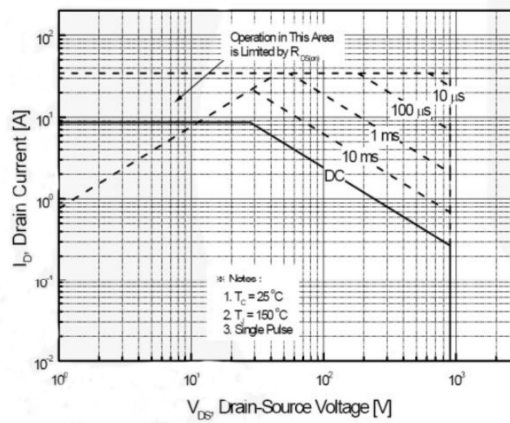
On-Resistance Variation vs. Temperature



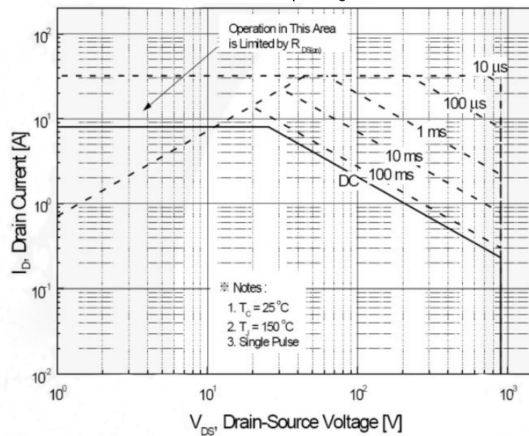
Maximum Safe Operating Area



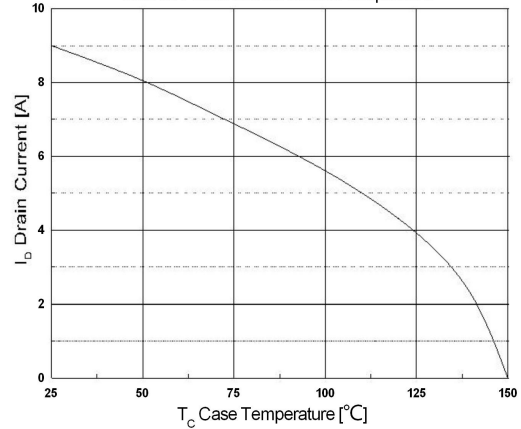
Maximum Safe Operating Area



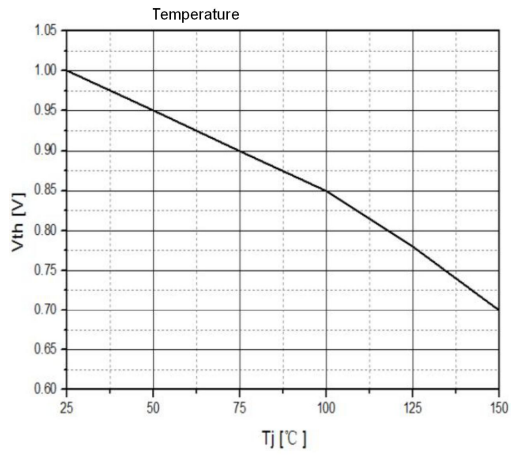
Maximum Safe Operating Area



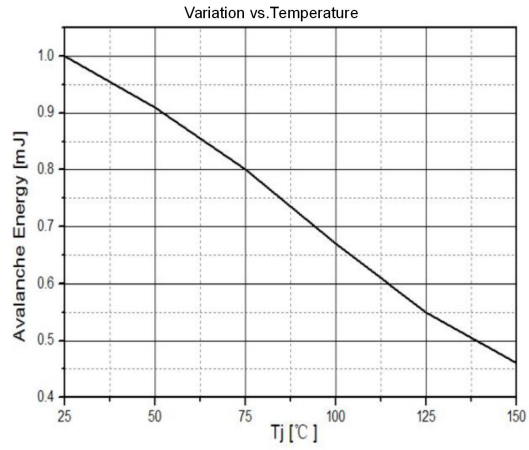
Maximum Drain Current vs. Case Temperature



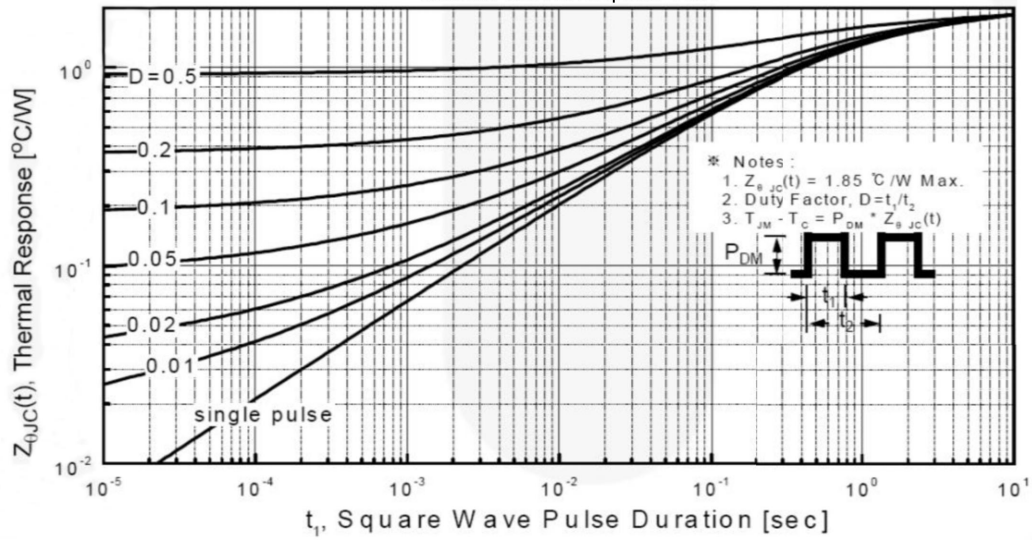
Gate Threshold Voltage Variation vs.



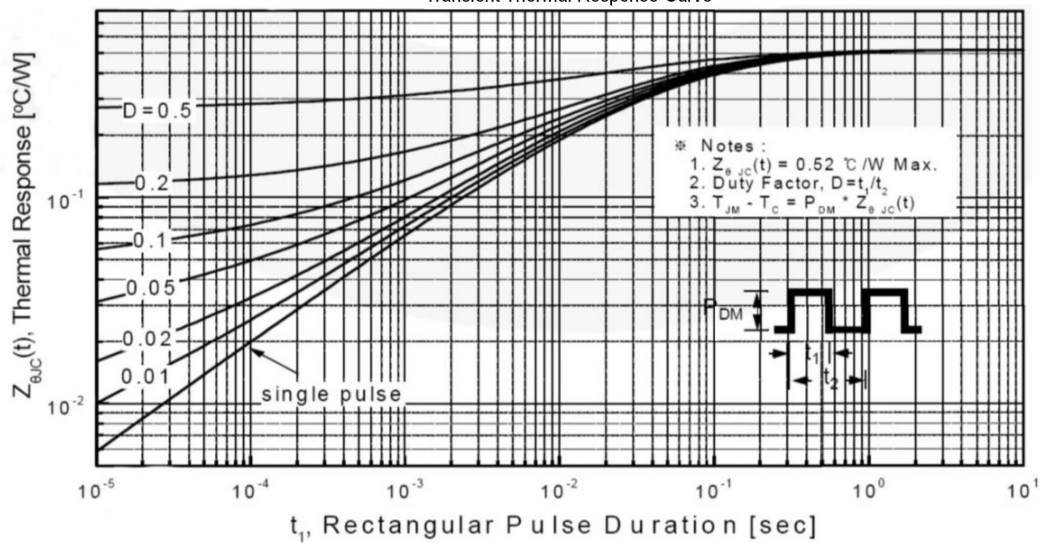
Single Pulsed Avalanche Energy

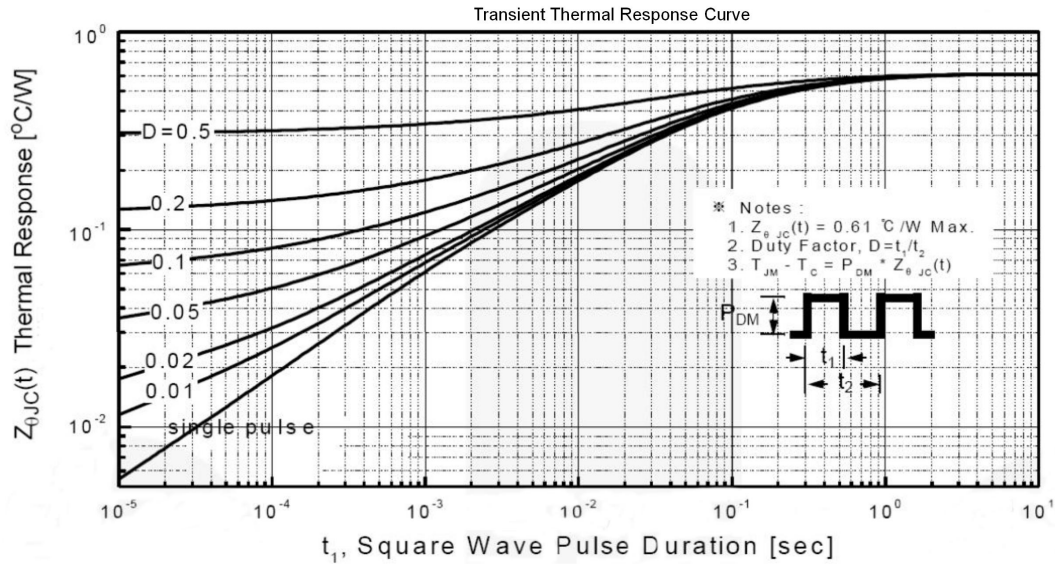


Transient Thermal Response Curve

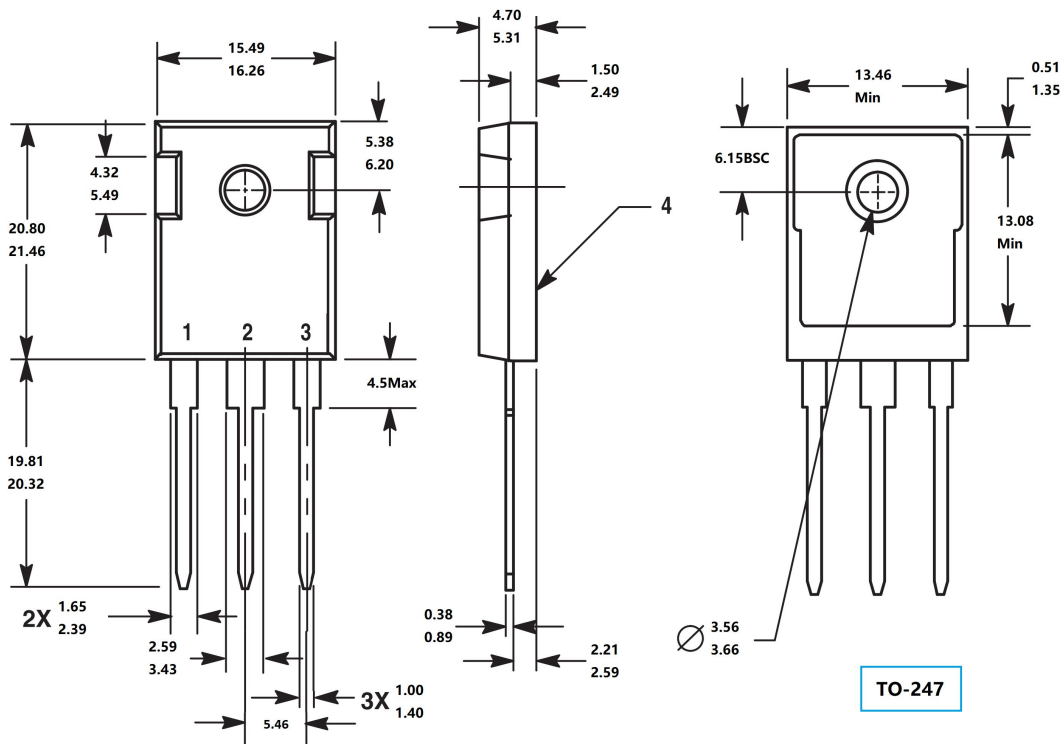


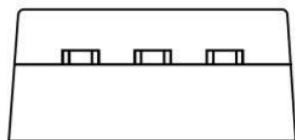
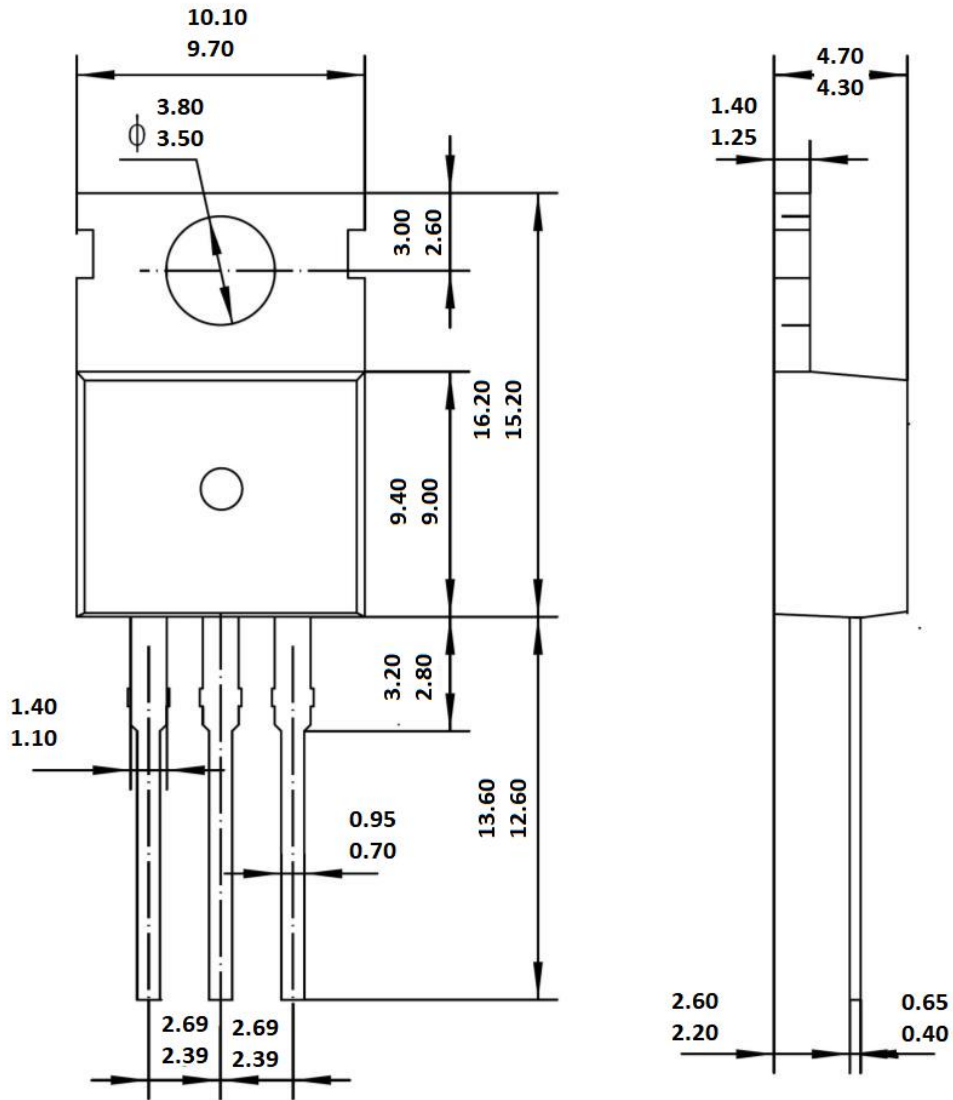
Transient Thermal Response Curve





### Package Mechanical DATA

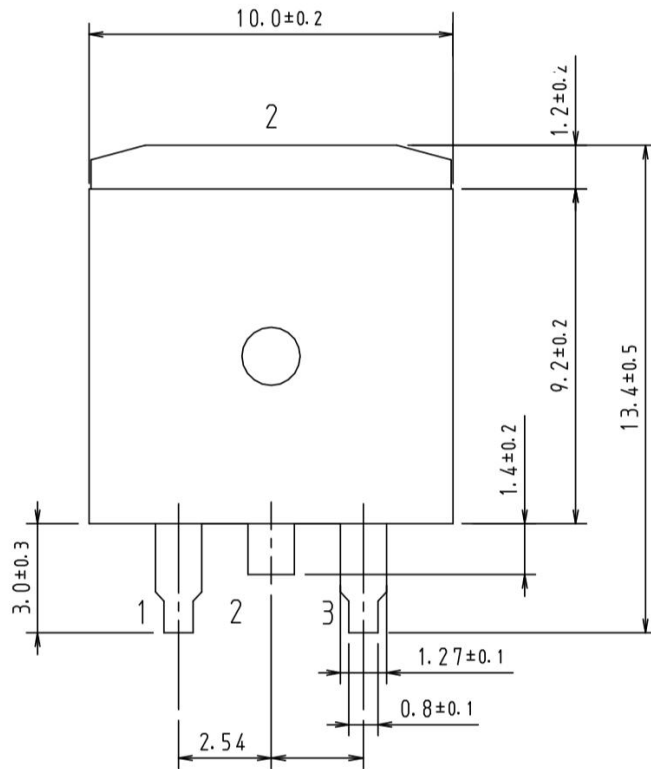




**TO-220**

**Unit: mm**





**TO-263**

**Unit:mm**

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