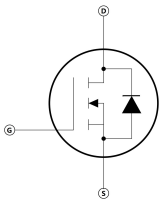
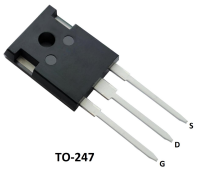
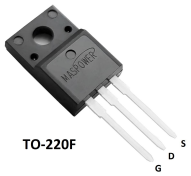
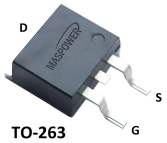
Features

- 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℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	1000	V
Drain Current -continuous	I_D T=25℃	10	A
	T=100℃	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	℃
Maximum Lead Temperature for Soldering Purposes	T_L	300	℃

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	I_D=250uA,V_{GS}=0V	1000	-	-	V
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	I_D=250uA,referenced to 25℃	-	0.98	-	V/℃
Zero Gate Voltage Drain Current		V_{DS}=900V,V_{GS}=0V,T_C=25℃	-	-	1	uA
		V_{DS}=720V,T_C=125℃	-	-	10	uA
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
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	3	-	5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=4.5A 25℃	-	1.35	1.6	Ω
Forward Transconductance	gfs	V_{DS}=40V,I_D=4.5A(note 4)	-	9.5	-	S
Dynamic Characteristics						
Gate resistance	Rg	F=1.0MHZ open drain	0.5	-	3	Ω
Input capacitance	Ciss	VDS=25V, VGS=0V, I=1.0MHZ	1200	2150	2830	pF
Output capacitance	Coss		100	189	246	pF
Reverse transfer capacitance	Crss		5	13	17	pF
Switching Characteristics						
Turn-On delay time	td(on)	VDD=450V,ID=9A,RG =25Ω(note 4,5)	-	53	121	ns
Turn-On rise time	tr		-	116	235	ns
Turn-Off delay time	td(off)		-	97	199	ns
Turn-Off Fall time	tf		-	69	171	ns
Total Gate Charge	Qg	V_{DS}=720V, I_D=9A, V_{GS}=10V(note4,5)	-	43	56	nC
Gate-Source charge	Qgs		-	15	40	nC
Gate-Drain charge	Qgd		-	21	50	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain -Source Diode Forward Current	Is		-	-	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	℃/W
Thermal Resistance, Junction to Ambient	Rth(j-A)	40	62.5	℃/W

Notes:

1:Pulse width limited by maximum junction temperature

2:L=20mH,I_{AS}=10A,V_{DD}=50V,R_G=25Ω,Starting T_J=25℃

3:I_{SD}≤10A,di/dt≤200A/us,V_{DD}≤BV_{DSS},Starting T_J=25℃

4:Pulse Test:Pulse Width≤200us,Duty Cycle≤2%

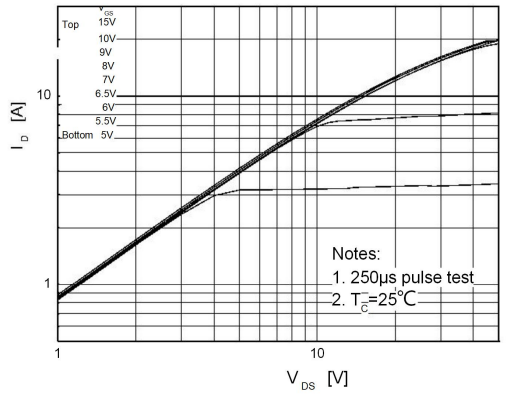
5:Essentially independent of operating temperature

Order information

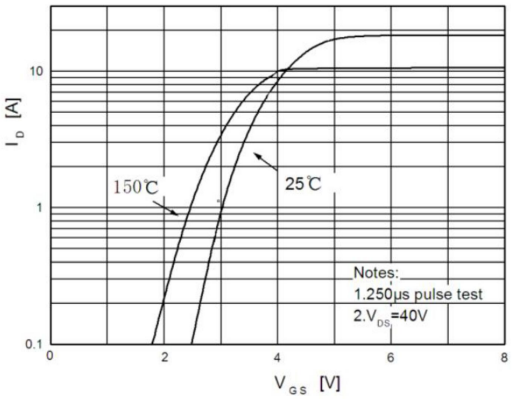
Order codes	Package	Packaging
MS10N100HGC0	TO-247	Tube
MS10N100HGT1	TO-220F	Tube
MS10N100HGE0	TO-263	Tube

Electrical Characteristics

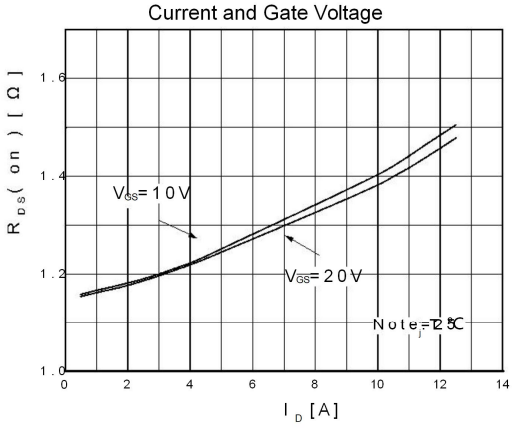
On-Region Characteristics



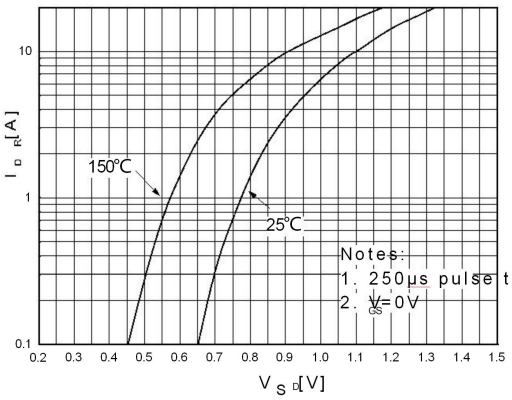
Transfer Characteristics



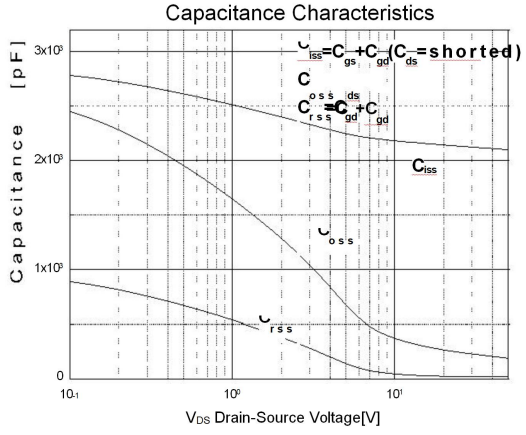
On-Resistance Variation vs.Drain Current and Gate Voltage



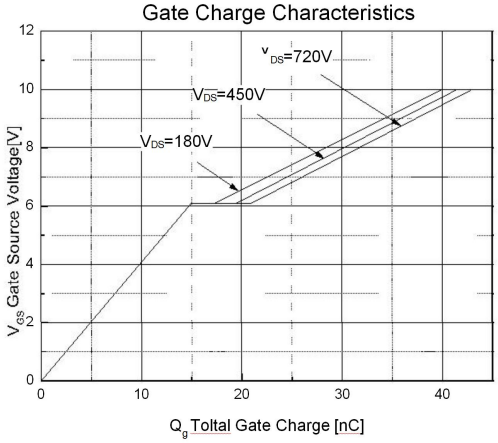
Body Diode Forward Voltage Variation vs.Source Current and Temperature



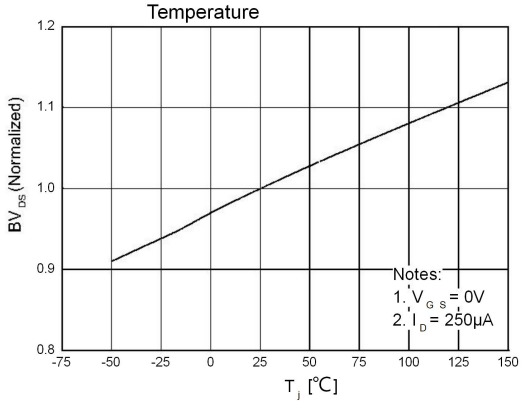
Capacitance Characteristics



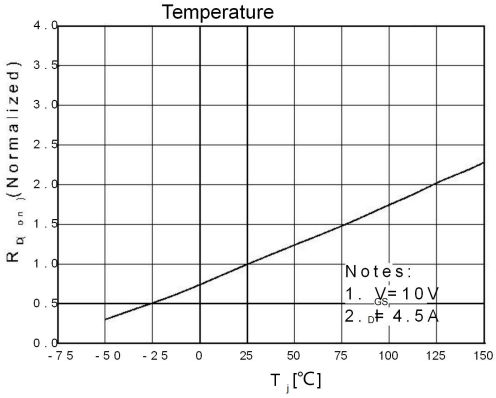
Gate Charge Characteristics



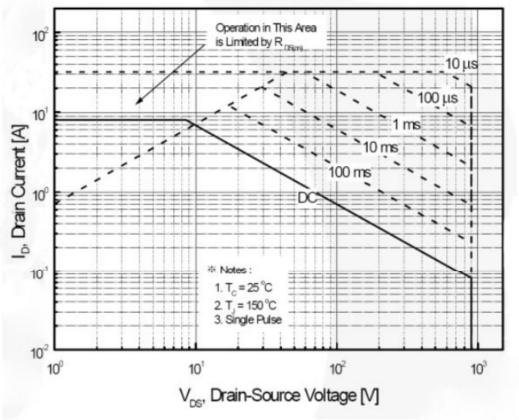
Breakdown Voltage Variation vs. Temperature



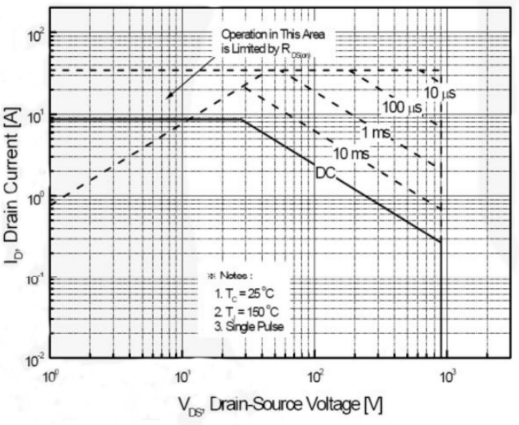
On-Resistance Variation vs. Temperature



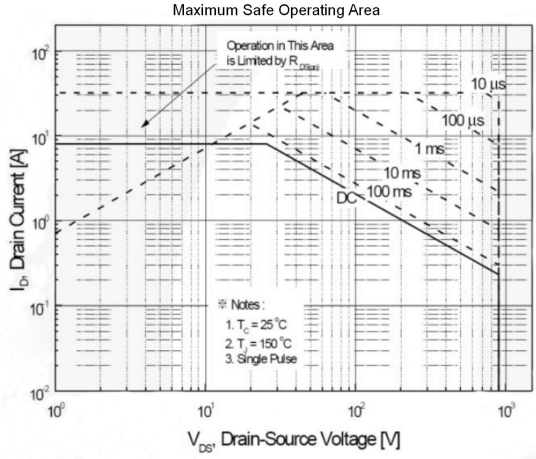
Maximum Safe Operating Area



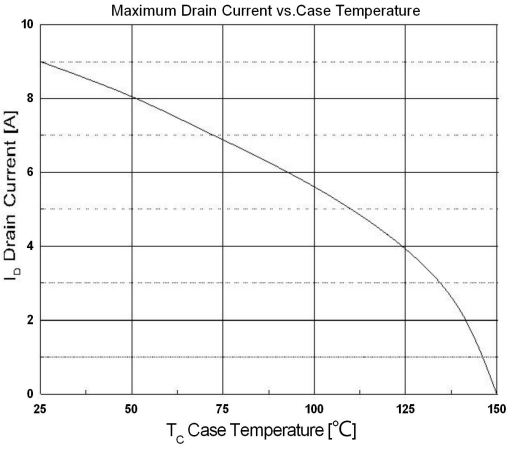
Maximum Safe Operating Area



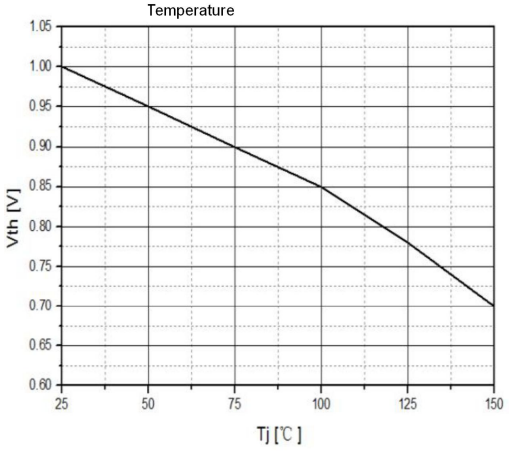
Maximum Safe Operating Area



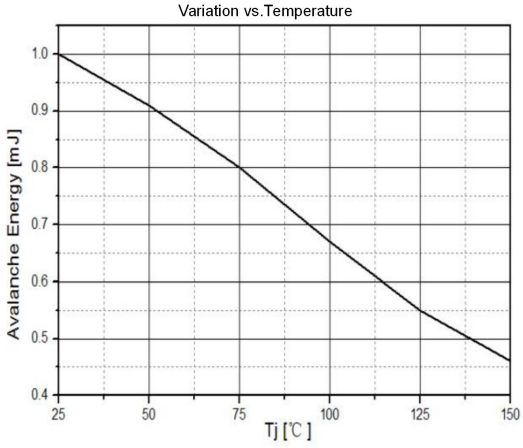
Maximum Drain Current vs.Case Temperature



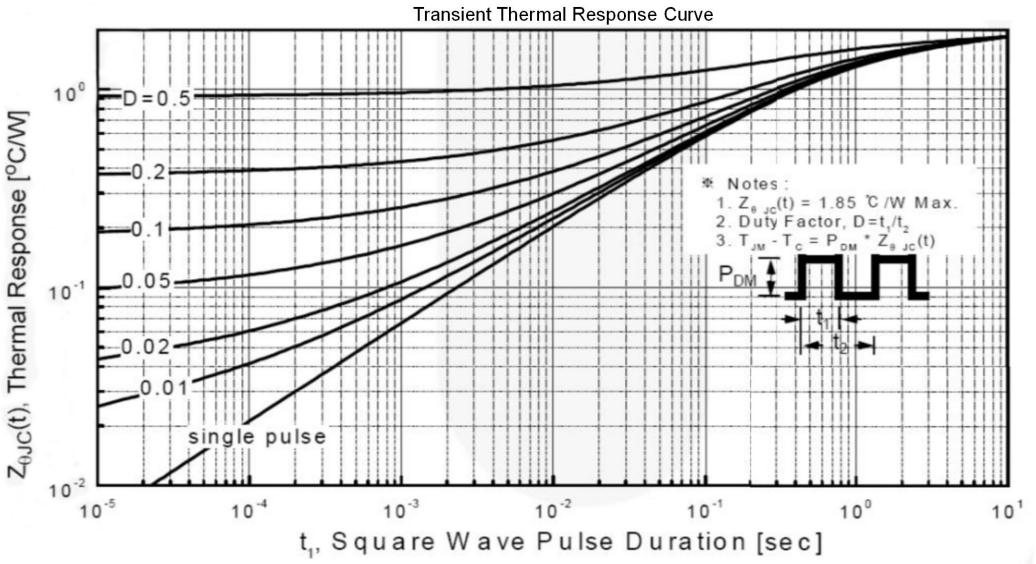
Gate Threshold Voltage Variation vs. Temperature



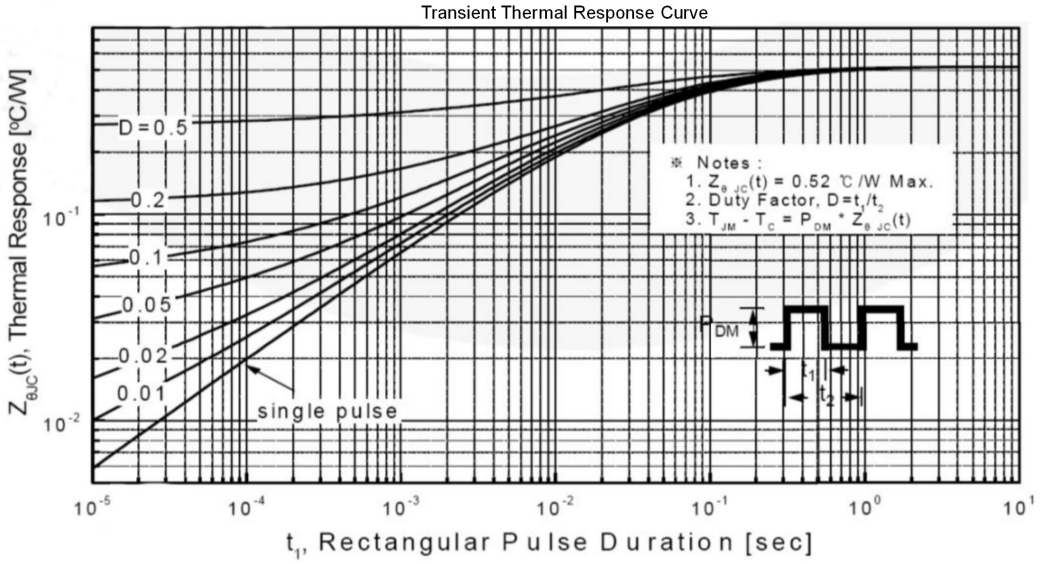
Single Pulsed Avalanche Energy Variation vs.Temperature

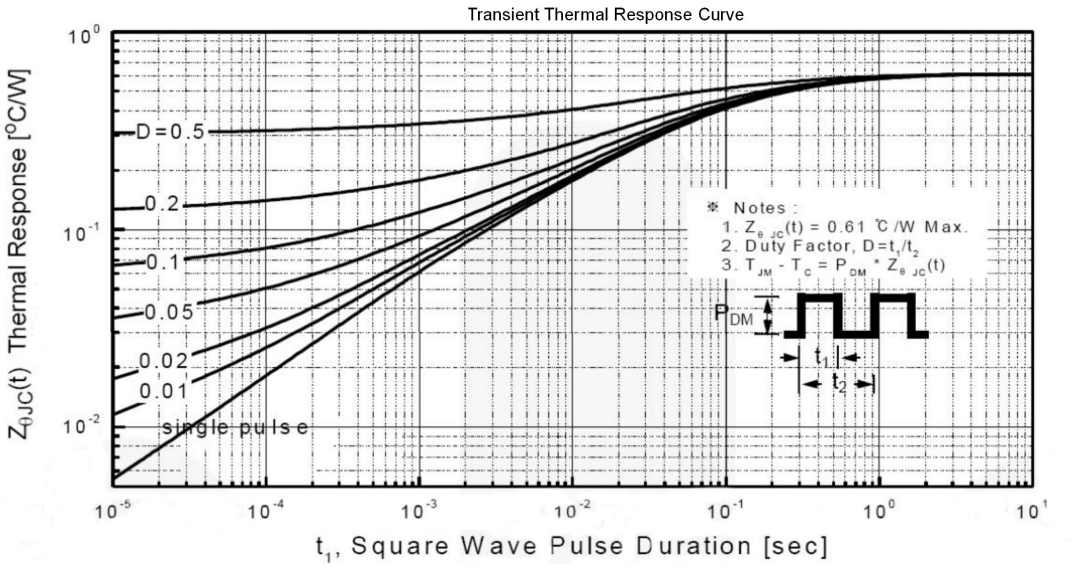


Transient Thermal Response Curve

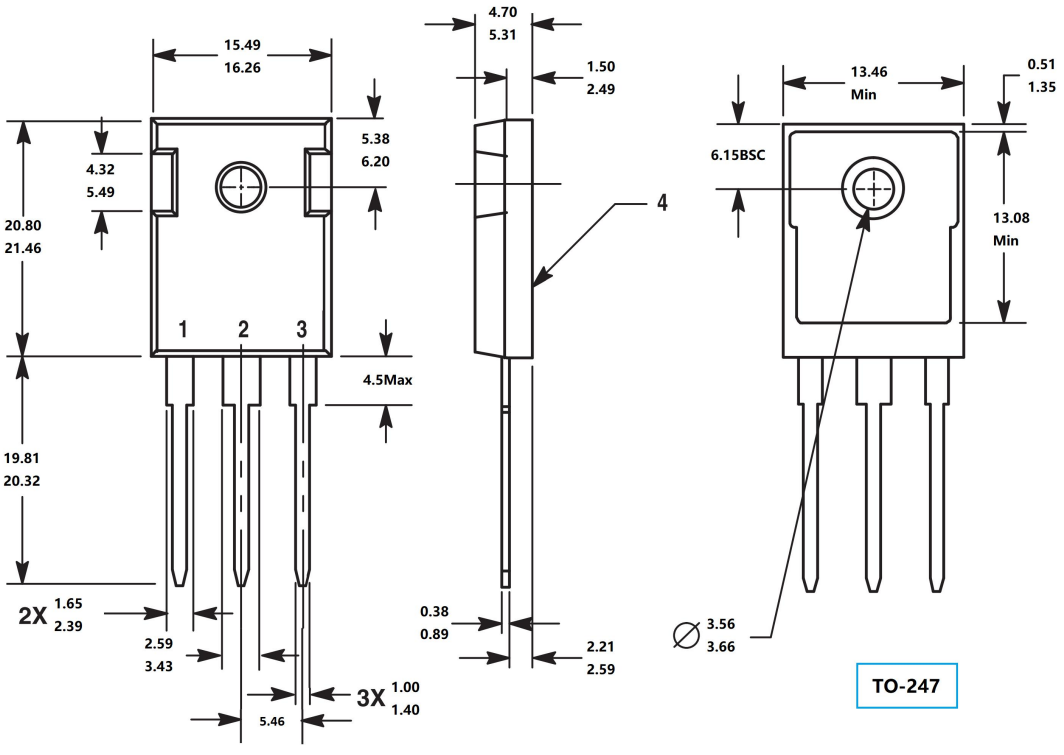


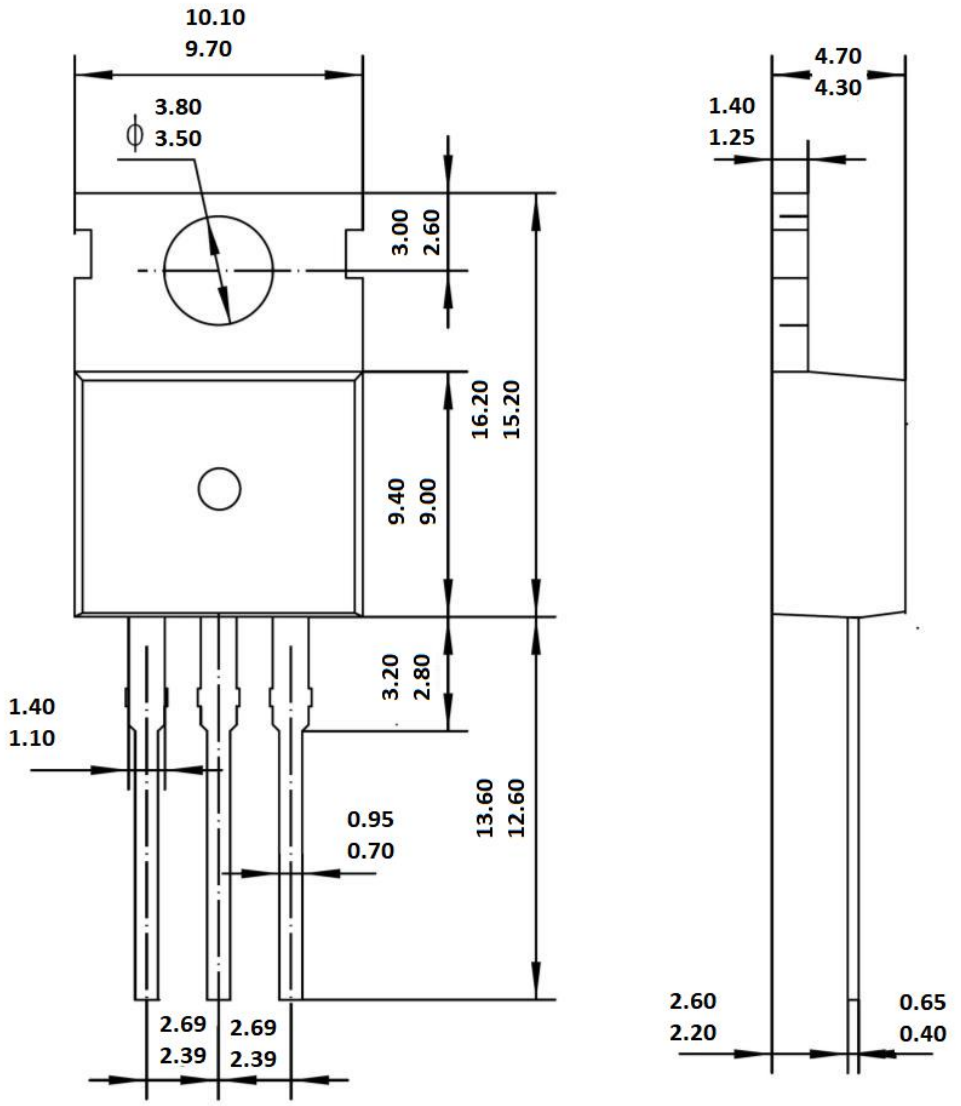
Transient Thermal Response Curve

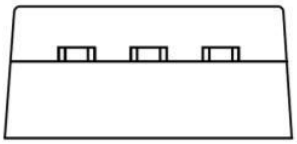




Package Mechanical DATA

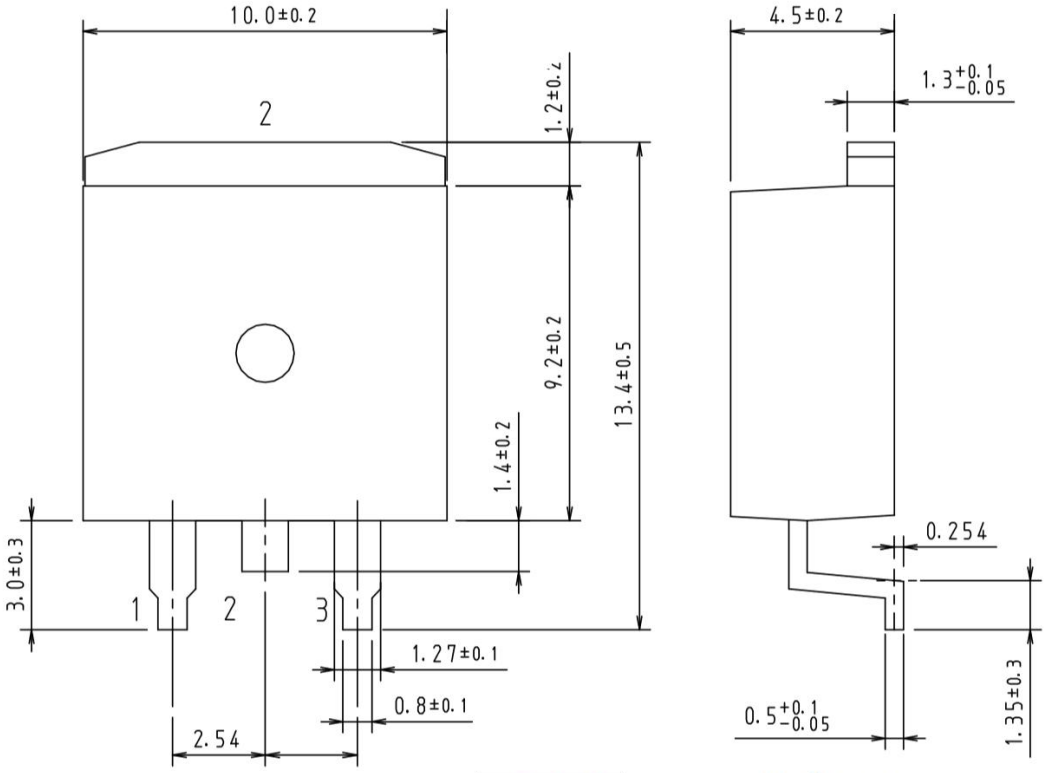






TO-220

Unit: mm



TO-263

Unit:mm