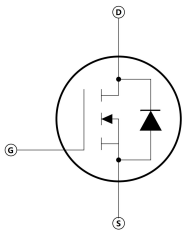
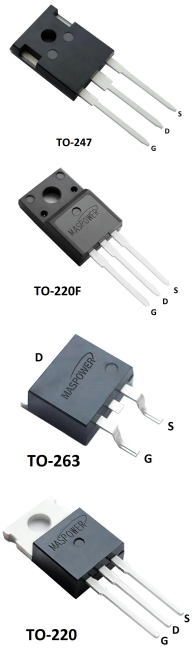
Features

- 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℃ unless otherwise specified)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V_{DSS}		1000	V
Drain Current -continuous	I_D	T_C=25℃	10	A
		T_C=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)	P_D		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	2.25	3.3	4.40	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=1A 25℃	-	1.45	1.95	Ω
Forward Transconductance	g_{fs}	V_{DS}=40V,I_D=4.5A(note 4)	-	9.5	-	S
Dynamic Characteristics						
Gate resistance	R_g	F=1.0MHz open drain	0.5	-	3	Ω
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
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=450V,I_D=9A, R_G=25Ω(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
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain -Source Diode	I_S		-	-	10	A

Forward Current						
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	36	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=1A	-	0.72	1.2	V
Reverse recovery time	t_{rr}	V_{GS}=0V,I_S=9A dI_F/dt=100A/us(note 4)	-	539	1200	ns
Reverse recovery charge	Q_{rr}		-	6.41	12	uC

Parameter	Symbol	Value		Unit
		TO-247/TO-263/ TO-220C	TO-220F	
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.67	1.84	℃/W
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	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%

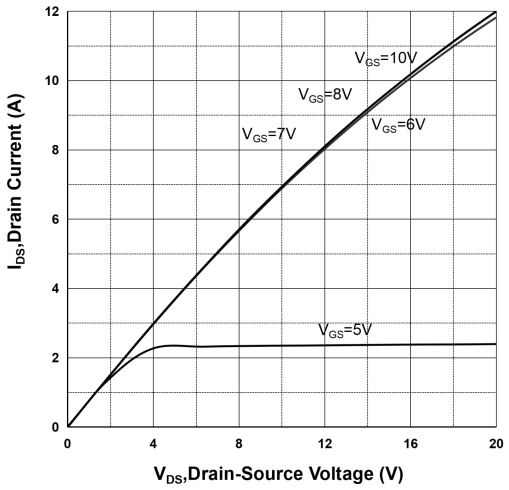
5:Essentially independent of operating temperature

Order information

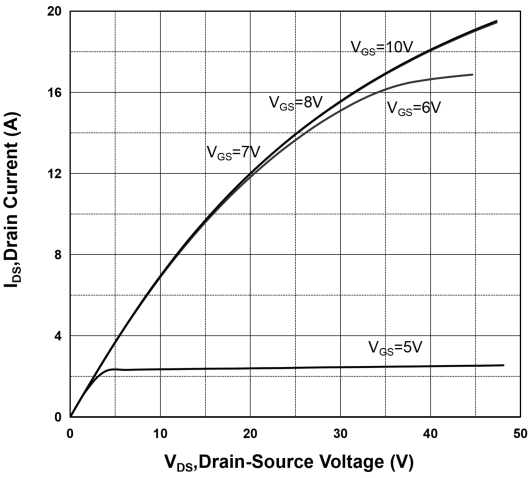
Order codes	Package	Packaging
MS10N100HGC0	TO-247	Tube
MS10N100HGT1	TO-220F	Tube
MS10N100HGE0	TO-263	Tube
MS10N100HGT0	TO-220	Tube

Electrical Characteristics

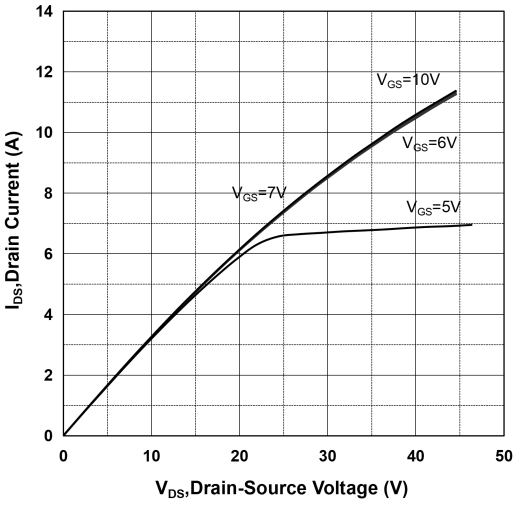
On-Region Characteristic@25℃



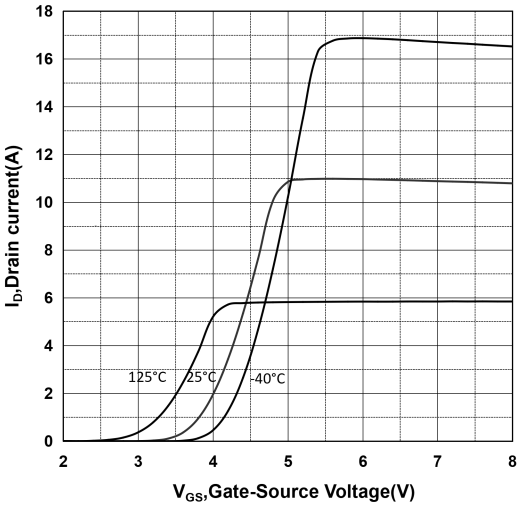
Extended On-Region Characheristic@25℃



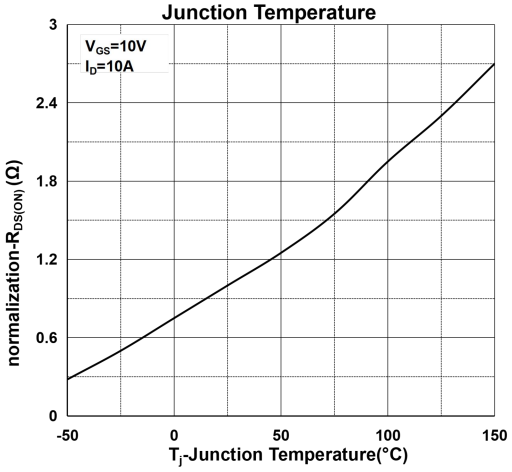
On-Region Characteristic@125℃



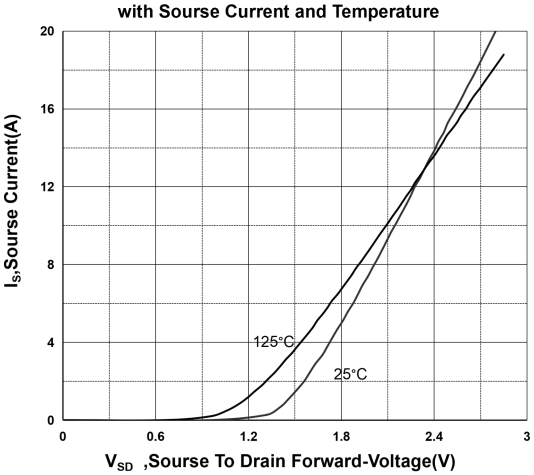
Transfer Characteristics



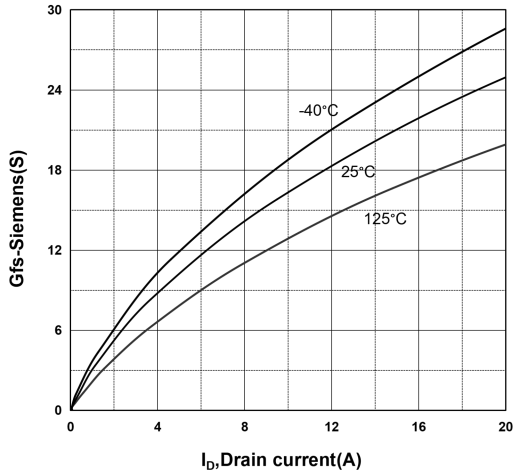
Normalization On-Resistance Variation vs Junction Temperature



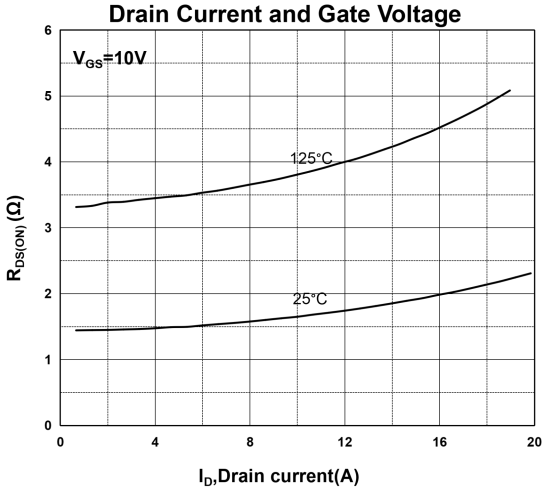
Body Diode Forward Voltage Variation with Sourse Current and Temperature



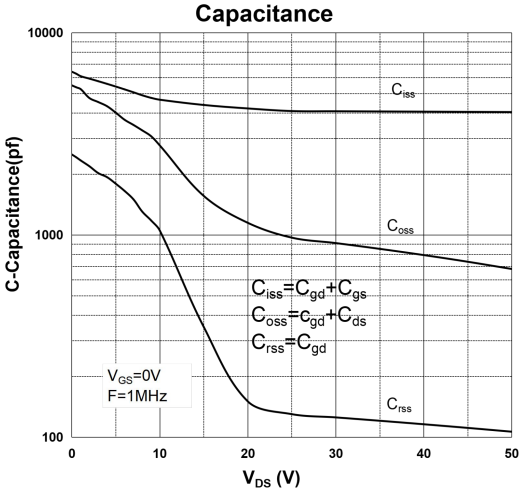
Transconductance



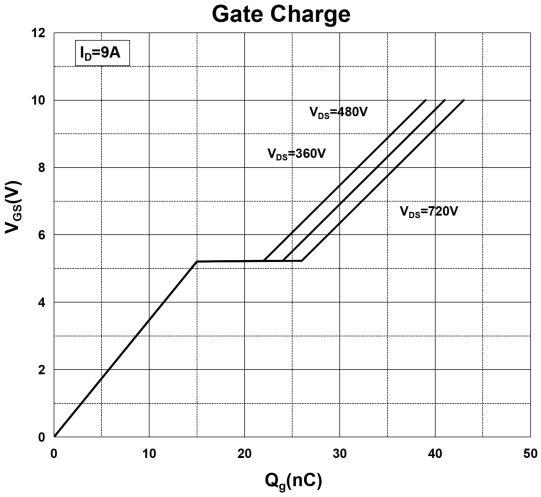
On-Resistance Variation vs Drain Current and Gate Voltage



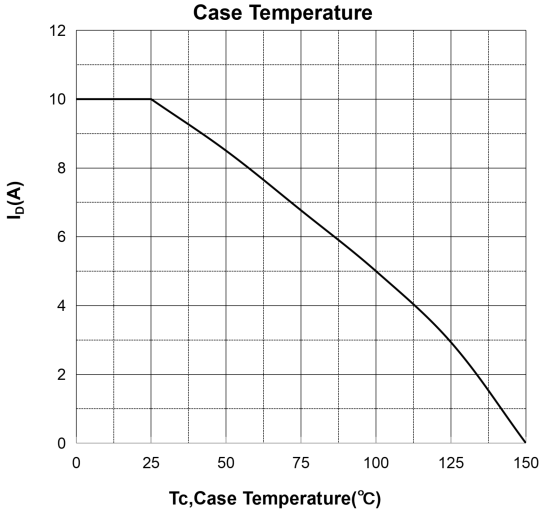
Capacitance



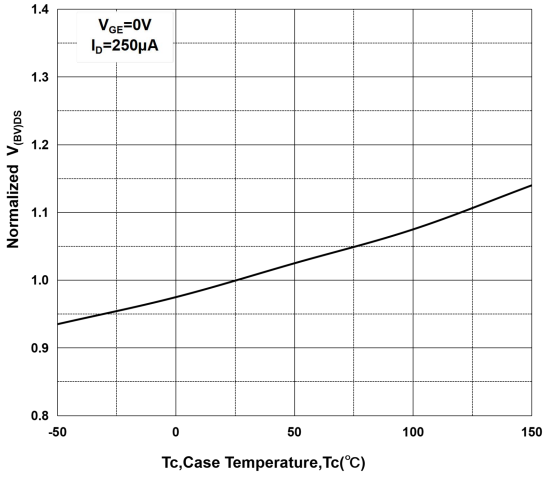
Gate Charge



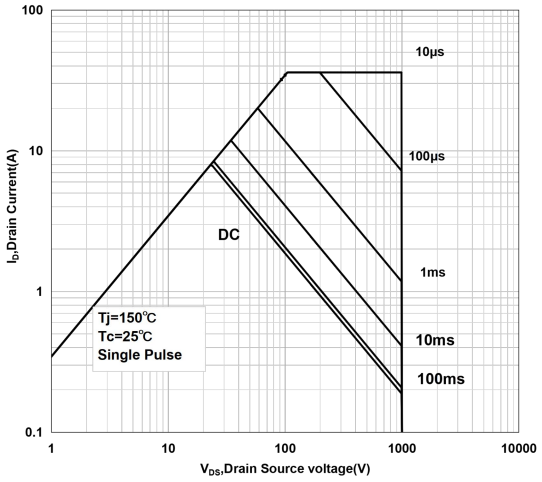
Maximum Drain Current vs Case Temperature



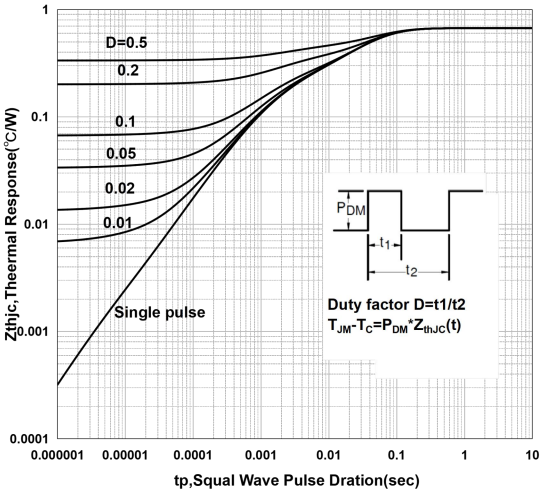
Normalized $V_{(BV)DS}$ vs temperature



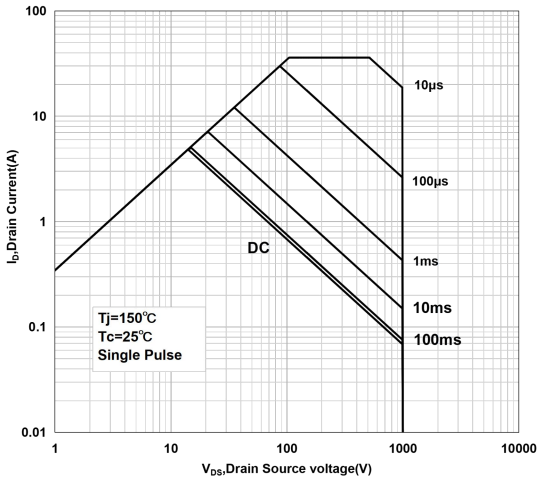
Safe Operating Area for TO-247/TO-263/TO-220C



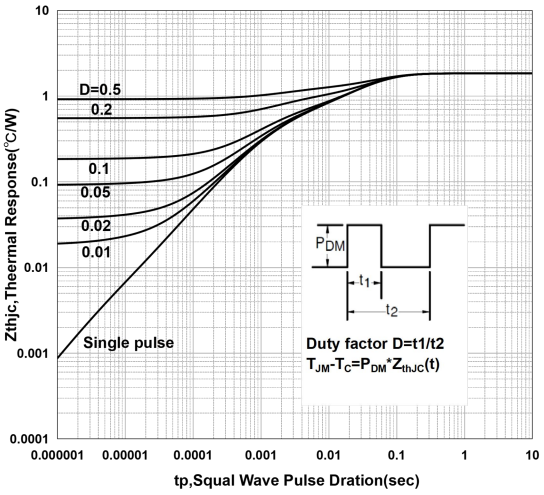
Transient response Curve for TO-247/TO-263/TO-220C



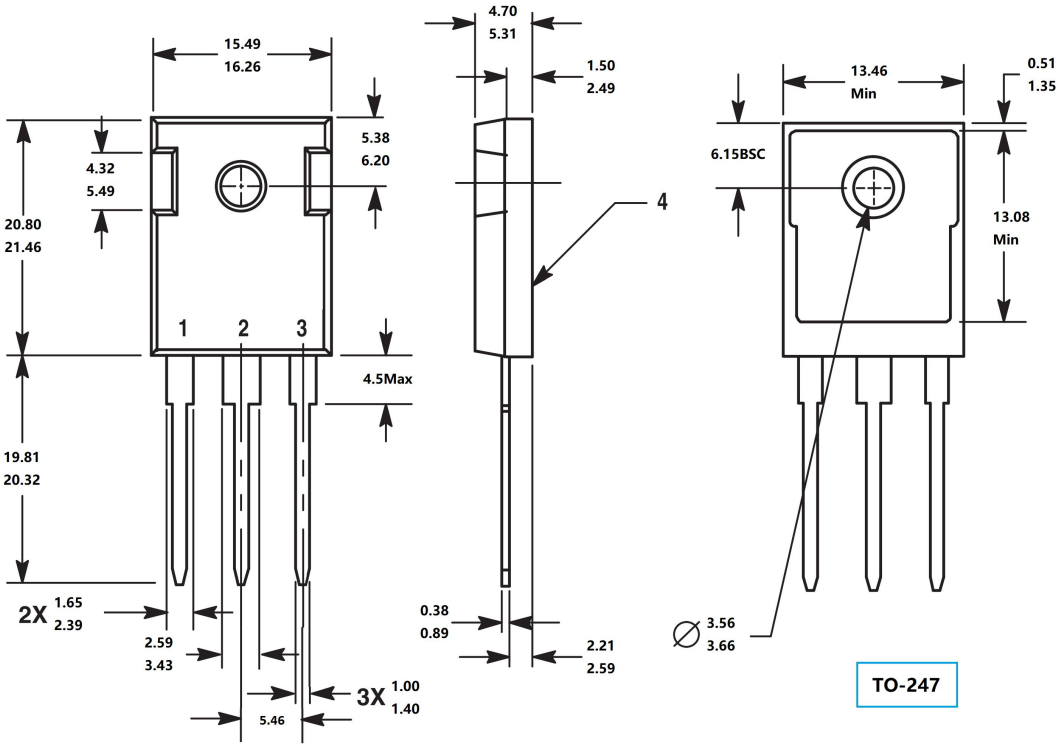
Safe Operating Area for TO-220F

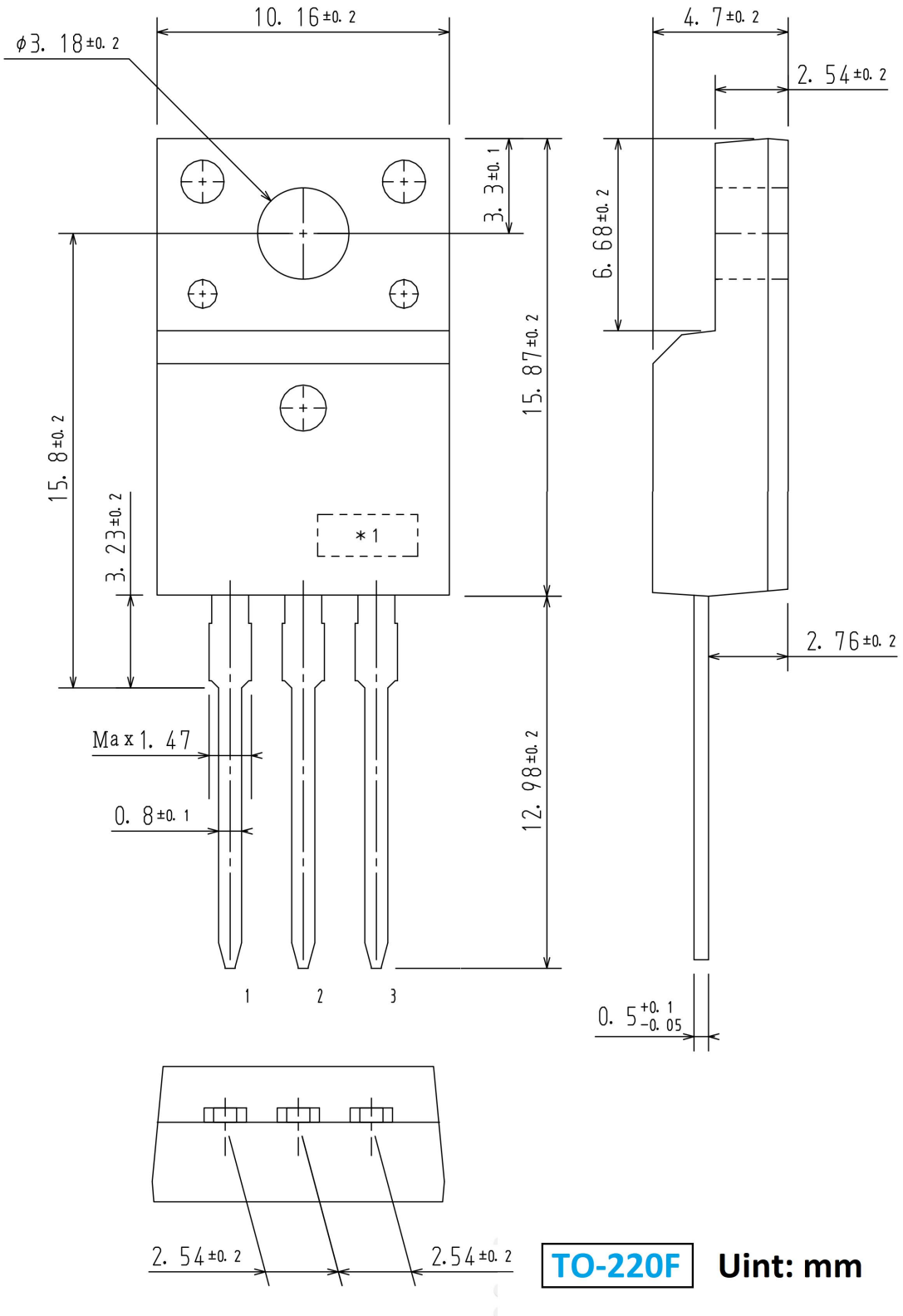


Transient response Curve for TO-220F

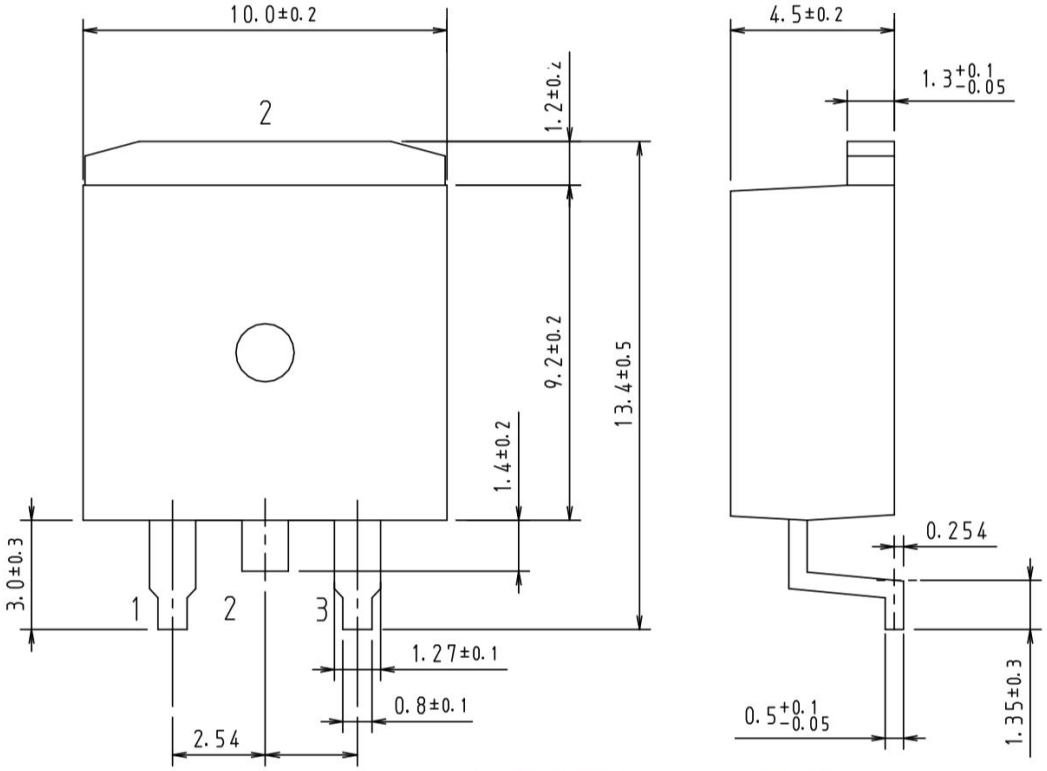


Package Mechanical DATA



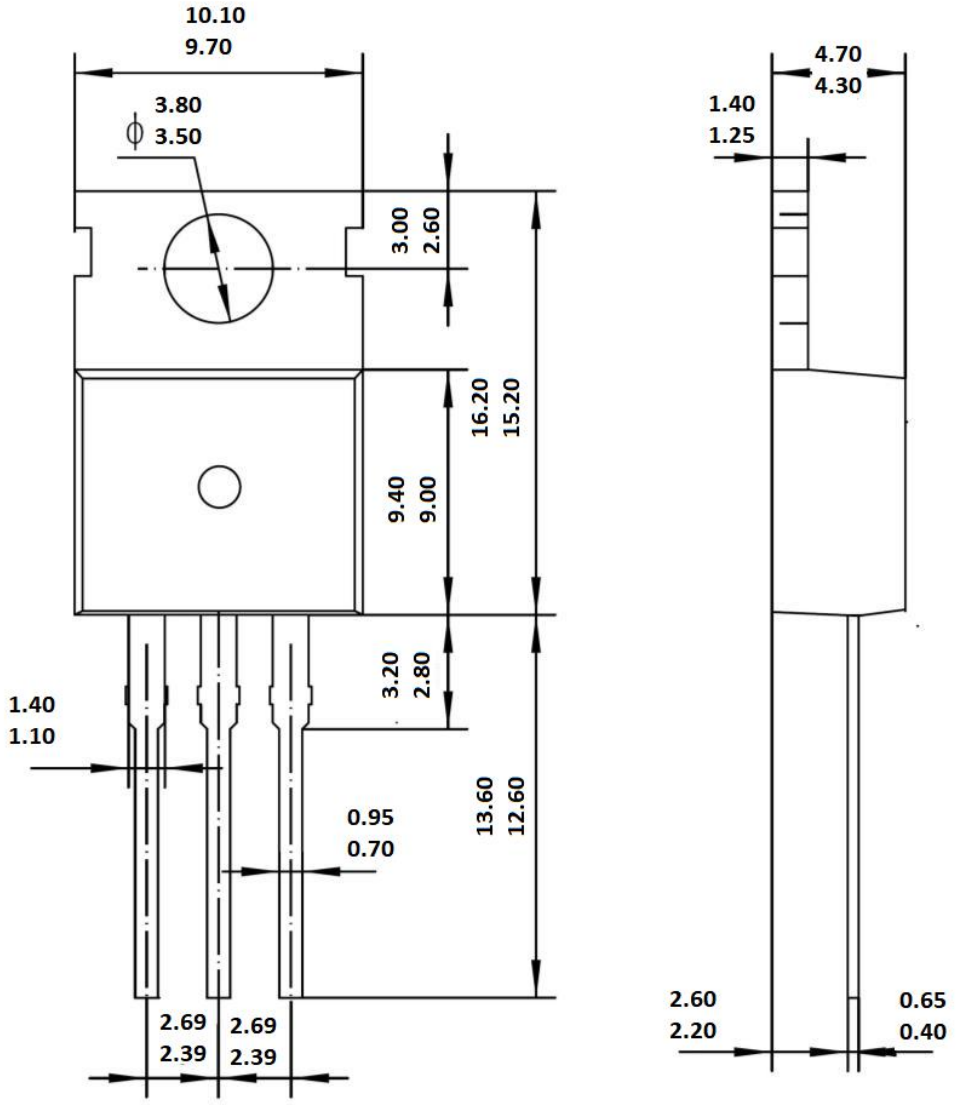


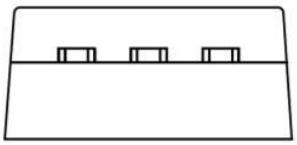
TO-220F **Uint: mm**



TO-263

Unit:mm





TO-220

Unit: mm