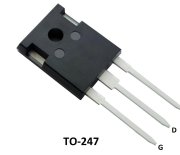
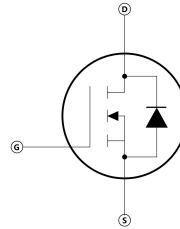


Features

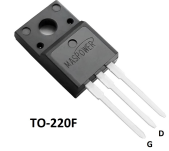
- Low gate charge
- Low Crss (typical 13pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Applications

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



TO-247



TO-220F



TO-263



TO-220

Absolute Ratings (Tc=25°C unless otherwise specified)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V _{DSS}		1000	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	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
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($T_{CASE}=25^{\circ}C$ 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	ΔBV _{DSS} / ΔT _J	I _D =250uA,referenced to 25°C	-	0.98	-	V/°C
Temperature Coefficient		V _{DS} =900V,V _{GS} =0V,T _C =25°C	-	-	1	uA
Zero Gate Voltage Drain Current		V _{DS} =720V,T _C =125°C	-	-	10	uA
Gate-body leakage current, forward	I _{GSSF}	V _{DS} =0V,V _{GS} =20V	-	-	100	nA
Gate-body leakage current,reverse	I _{GSSR}	V _{DS} =0V,V _{GS} =20V	-	-	-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°C	-	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						
Continuous Drain -Source Diode Forward Current	I _S		-	-	10	A
Pulsed Drain-Source	I _{SM}		-	-	36	A

Diode Forward Current						
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

Thermal characteristics

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

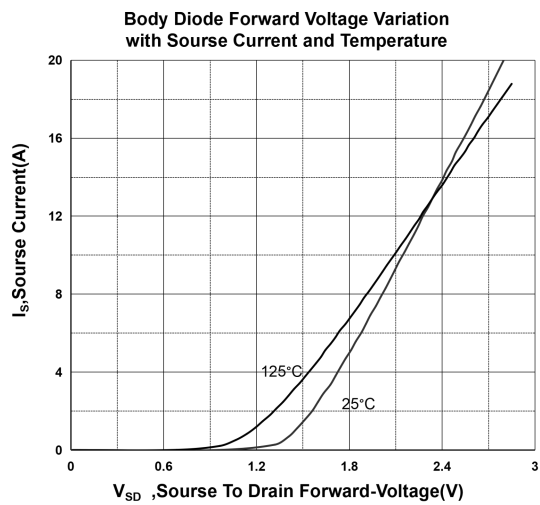
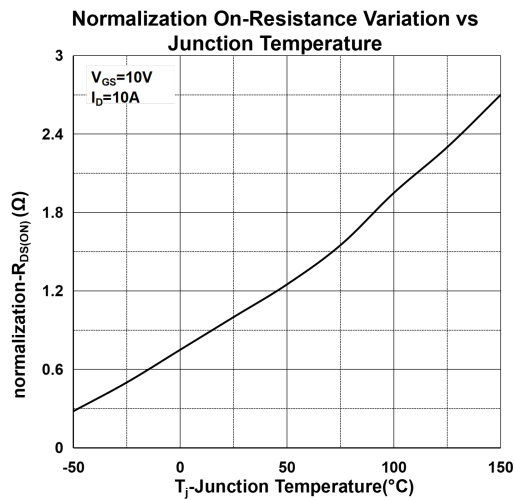
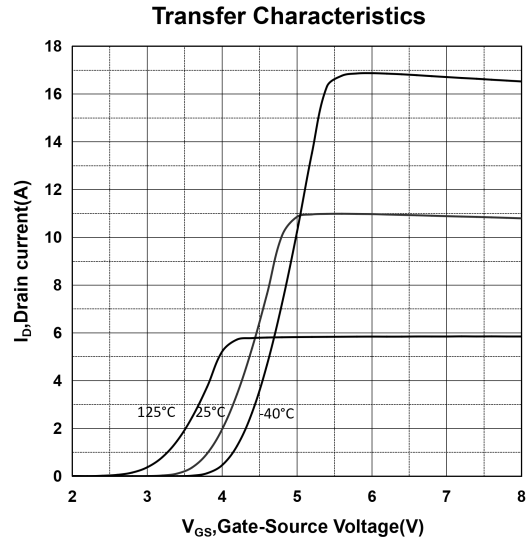
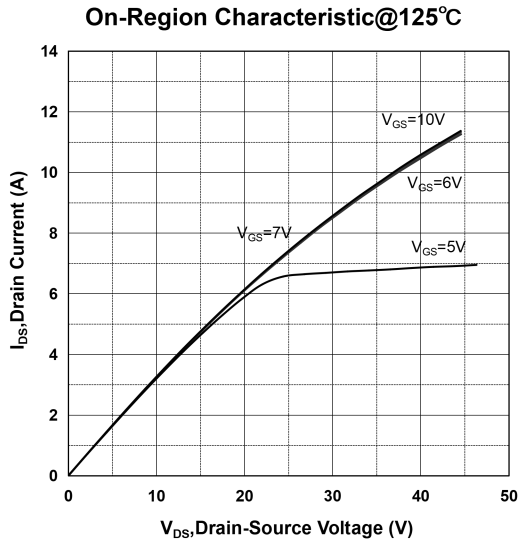
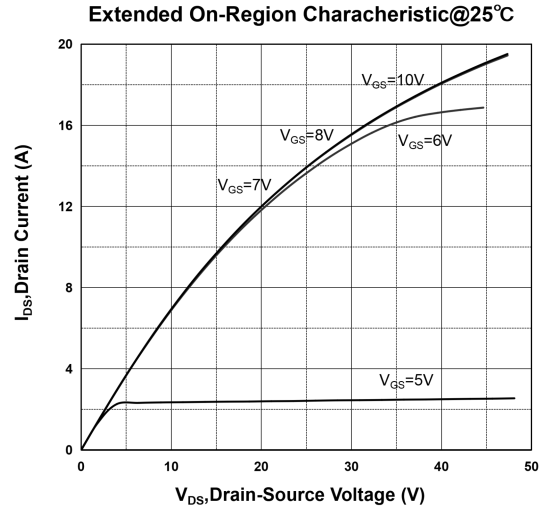
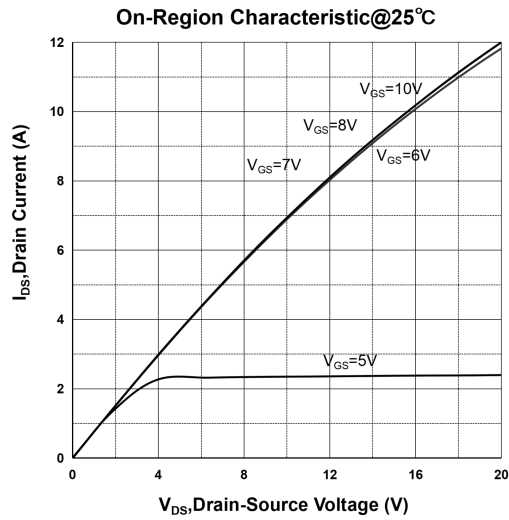
Notes:

- 1:Pulse width limited by maximum junction temperature
- 2:L=20mH, $I_{AS}=10A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$
- 3: $I_{SD}\leq 10A$, $di/dt\leq 200A/us$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ C$
- 4:Pulse Test:Pulse Width $\leq 200us$, Duty Cycle $\leq 2\%$
- 5:Essentially independent of operating temperature

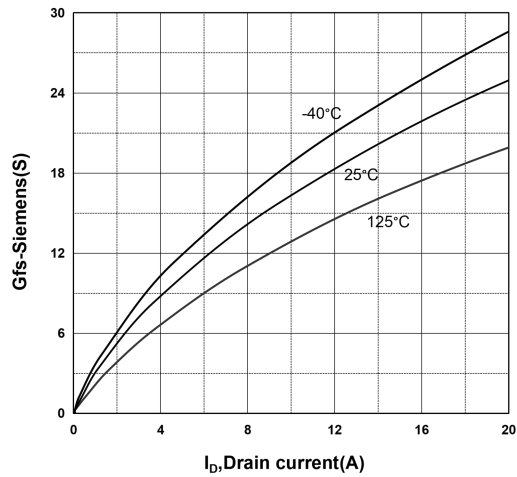
Order information

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

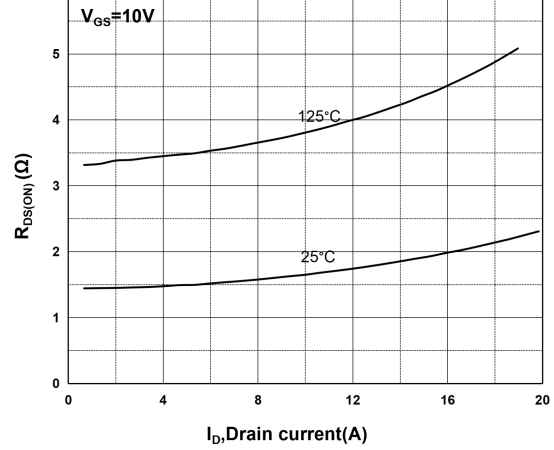
Electrical Characteristics



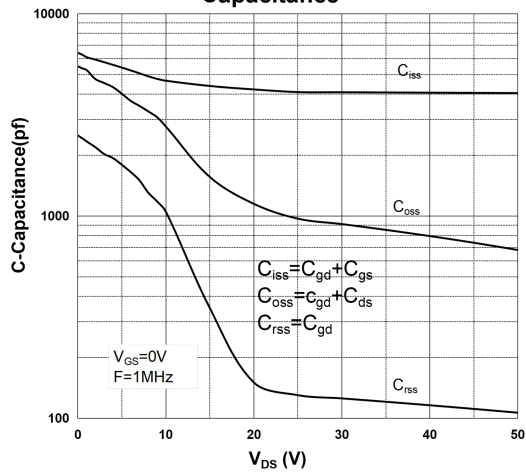
Transconductance



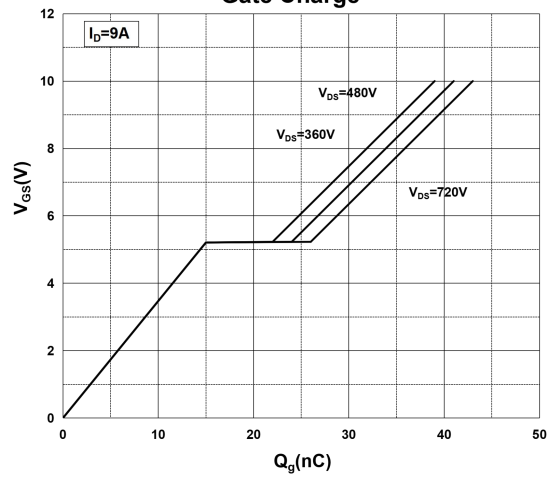
On-Resistance Variation vs Drain Current and Gate Voltage



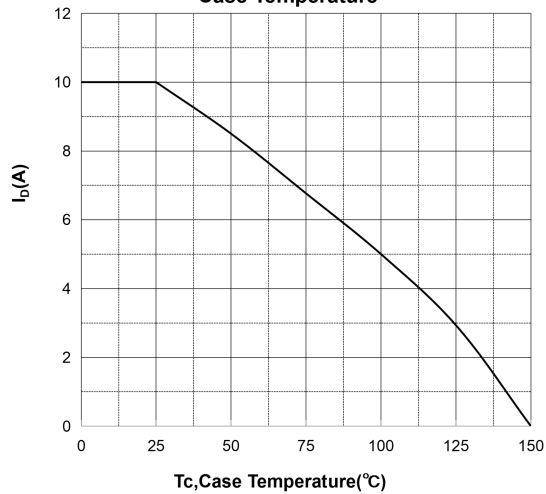
Capacitance



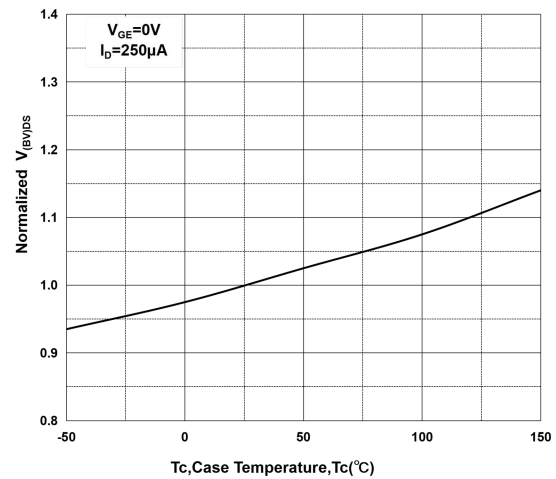
Gate Charge



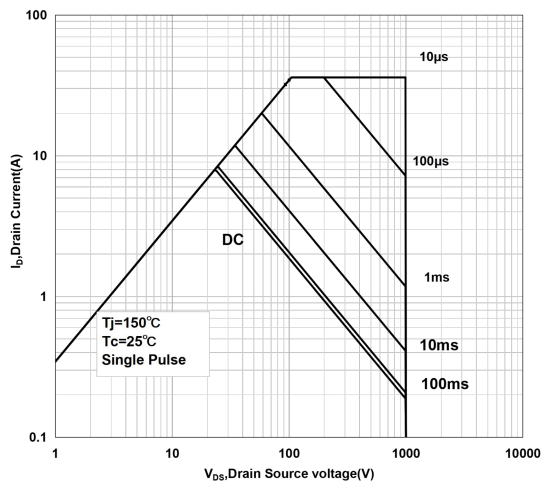
Maximum Drain Current vs Case Temperature



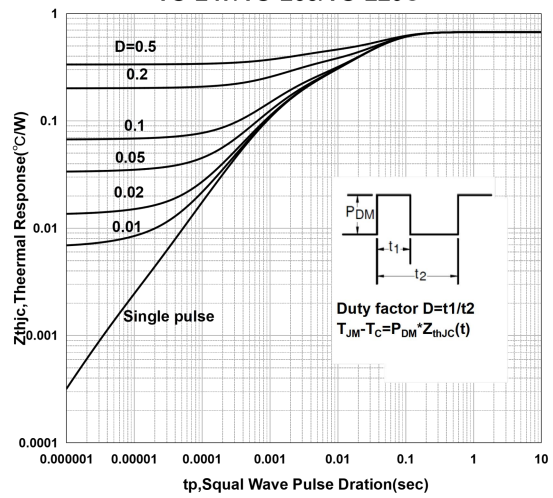
Normalized $V_{(BV)DS}$ vs temperature



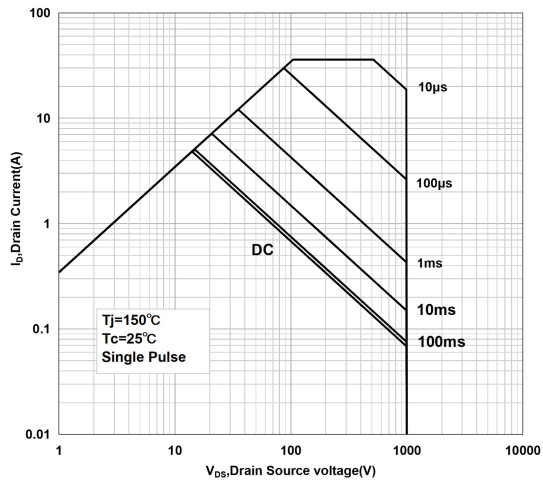
**Safe Operating Area for
TO-247/TO-263/TO-220C**



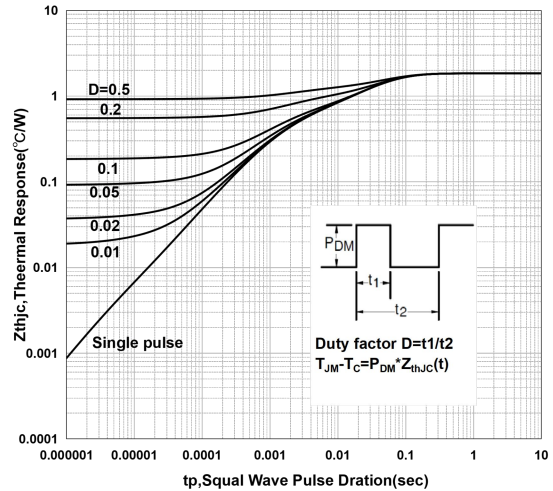
**Transient response Curve for
TO-247/TO-263/TO-220C**

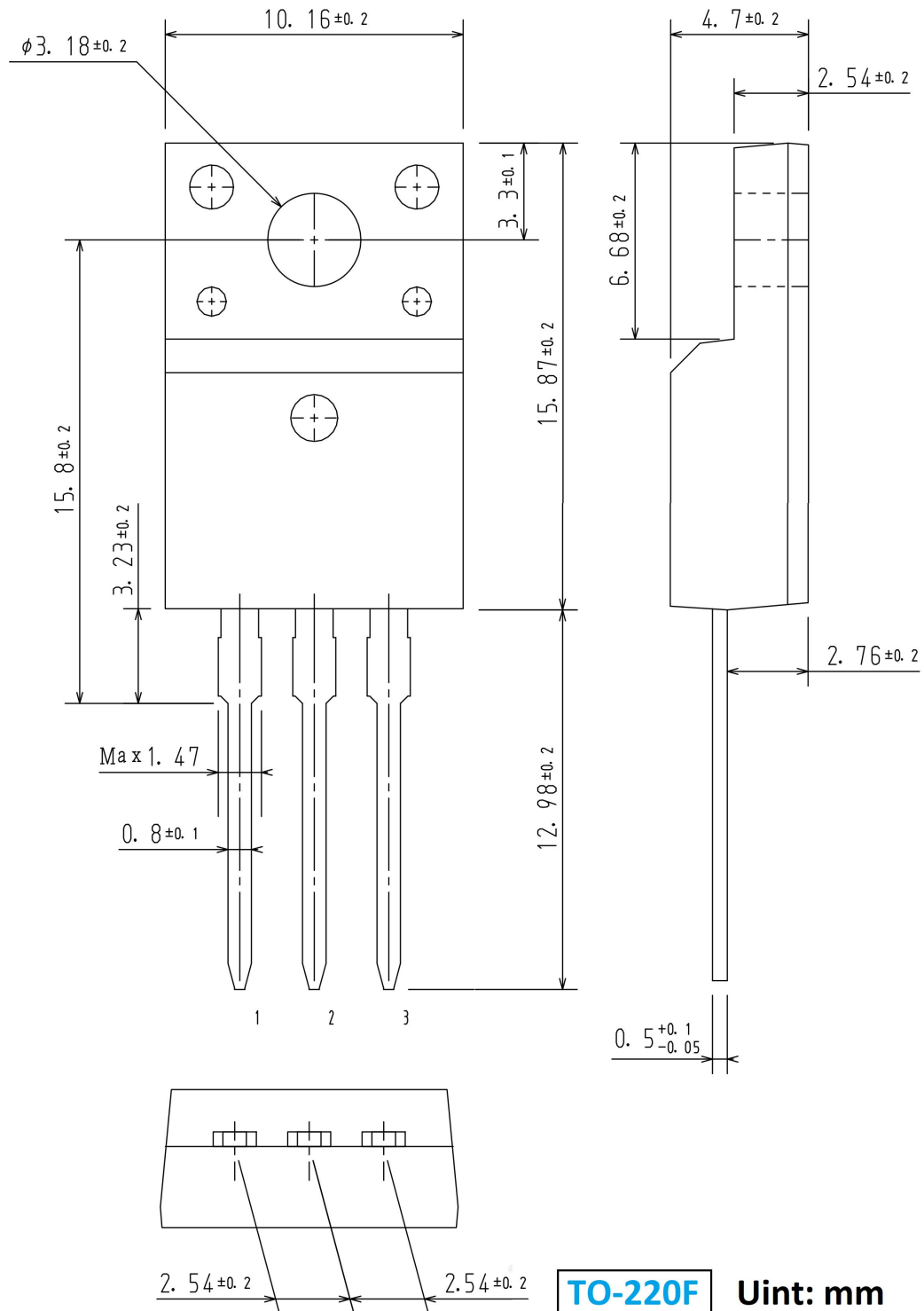


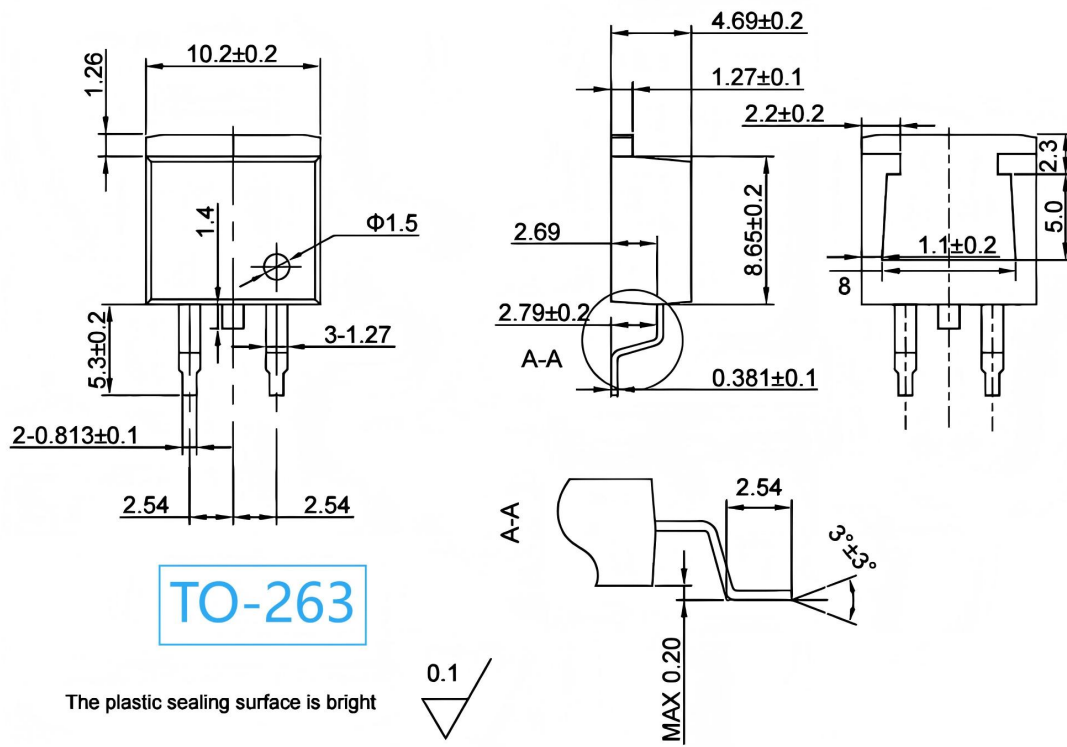
**Safe Operating Area for
TO-220F**

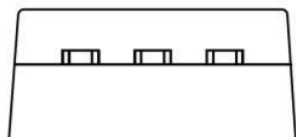
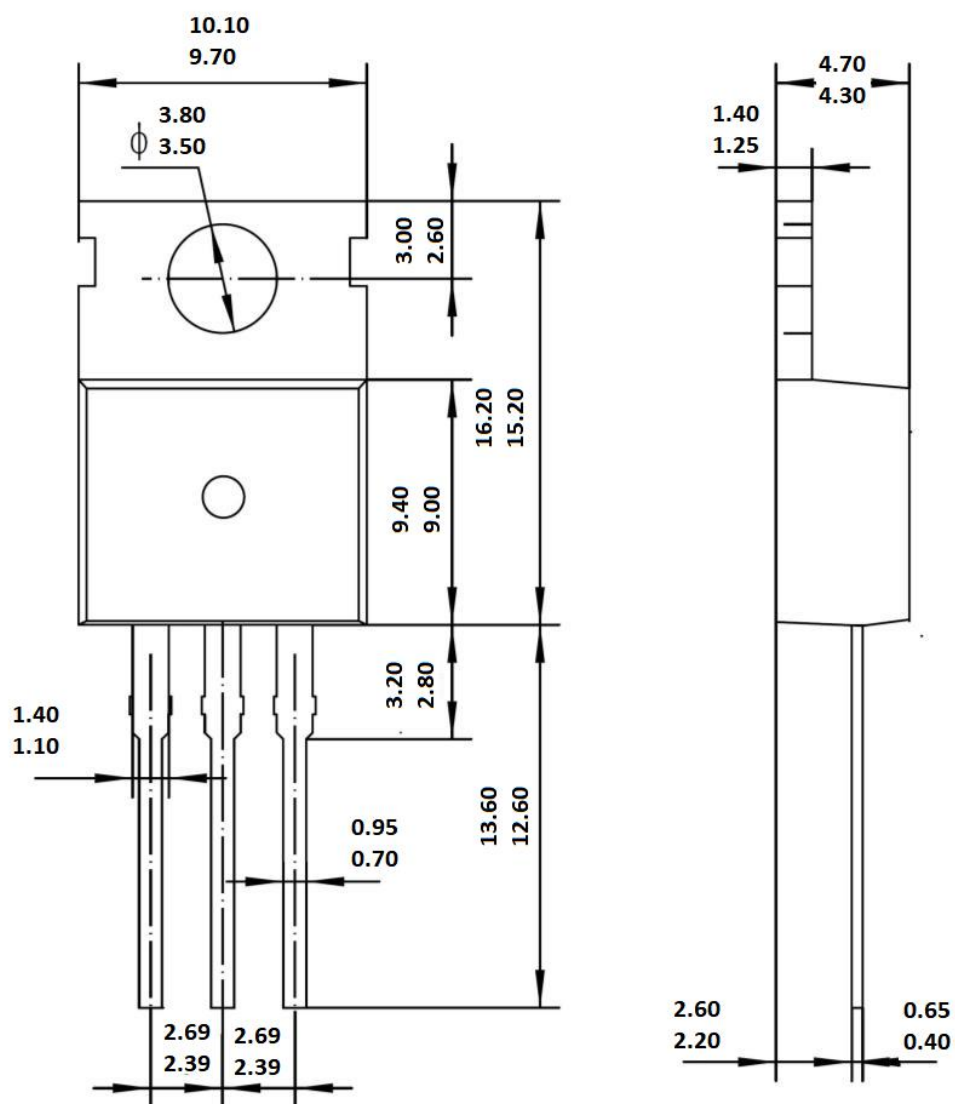


**Transient response Curve for
TO-220F**









TO-220

Unit: mm