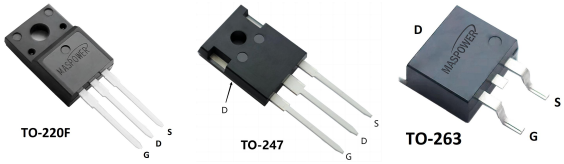
MS15N100HCT1(C0)(E0)

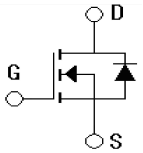
Features

- V_{DS}=1000V,I_D=15A
- Low Crss
- Low gate charge
- Improved dv/dt capability



Applications

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



Absolute Ratings (Tc=25℃)

Parameter	Symbol		Limit	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℃	15	A
		T_C=100℃	10	
Drain Current-pulse(1)	I_{DM}		60*	A
Single Pulsed Avalanche Energy(2)	E_{AS}		500	mJ
Maximum Power Dissipation (TO-220F)	P_D		70	W
			0.56	W/℃
Maximum Power Dissipation (TO-247,TO-263)	P_D		208	W
			1.67	W/℃
Operating and Storage Temperature Range	T_J,T_{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T_L		300	

*Pulse width Limited by safe operating area

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

Parameter	Symbol	Tests conditions		Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V		1000	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=V_{DSS},	Tc=25℃	-	-	1	μA
		V_{GS}=0V,	Tc=125℃	-	-	100	μA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V		-	-	±100	nA

Current						
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	3	4	5	V
Static Drain-Source On-Resistance(3)	$R_{DS(ON)}$	V_{GS}=10V,I_D=5A	-	0.52	0.65	Ω
Forward Transconductance(3)	g_{fs}	V_{DS}=40V,I_D=5A	-	0.82	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz(4)	-	1500	-	pF
Output capacitance	C_{oss}		-	110	-	pF
Reverse transfer capacitance	C_{rss}		-	10	-	pF

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DS}=500V,I_D=15A, V_{GS}=10V,R_G=25Ω	-	30	-	ns
Turn-On rise time	t_r		-	26	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	80	-	ns
Turn-Off rise time	t_f		-	22	-	ns
Total Gate Charge	Q_g	V_{DS}=500V,I_D=15A, V_{GS}=10V(4)	-	26	-	nC
Gate-Source charge	Q_{gs}		-	5	-	nC
Gate-Drain charge	Q_{gd}		-	15	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	V_{GS}=0V,I_S=5A	-	0.82	1.2	V
Diode Forward Current	I_S		-	-	15	A
Reverse recovery time	Trr	I_S=15A,di_F/dt=100A/μs VR=100V,VGS=0V	-	350	-	ns
Reverse recovery charge	Qrr		-	2634	-	nC
Reverse recovery current	Irr		-	14	-	A

Thermal Characteristics

Parameter	Symbol	Value		Unit
		TO-220F	TO-247/ TO-263	
Thermal Resistance,junction to Case	R_{th}(j-C)	1.78	0.6	℃/W
Thermal Resistance,junction to Ambient	R_{th}(j-A)	62.5	50	℃/W

Order information

Order codes	Package	Packaging
MS15N100HCT1	T0-220F	Tube
MS15N100HCC0	TO-247	Tube
MS15N100HCE0	TO-263	

Notes:

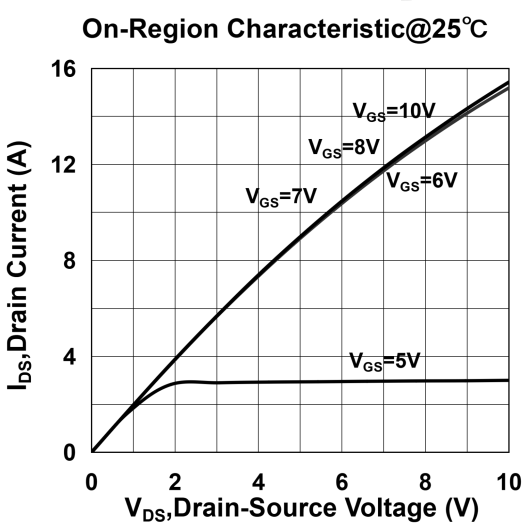
1：Pulse width limited by maximum junction temperature

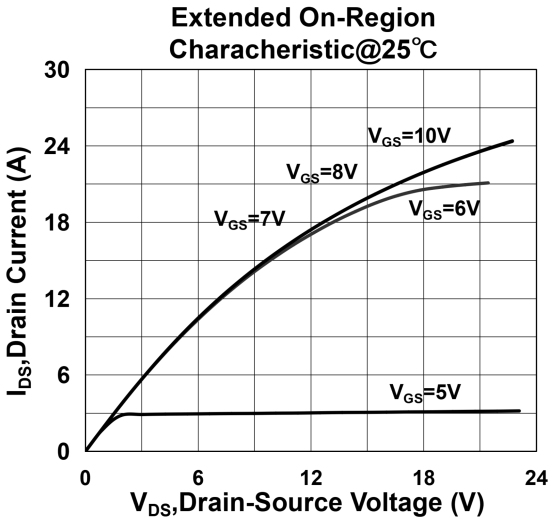
2：L=10mH, I_{AS}=10A, V_{DD}=50V, R_G=25Ω,Starting TJ=25℃

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

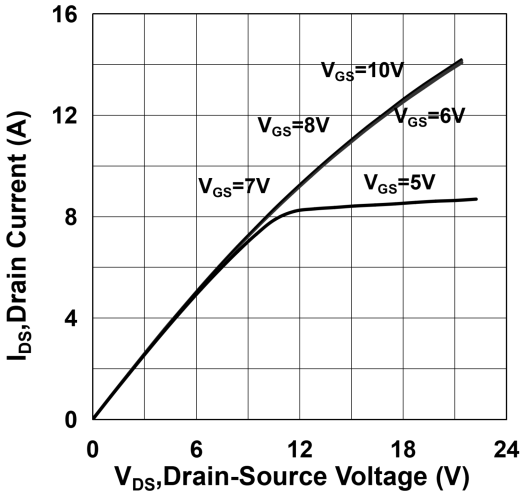
4：Essentially independent of operating temperature

Electrical Characteristics

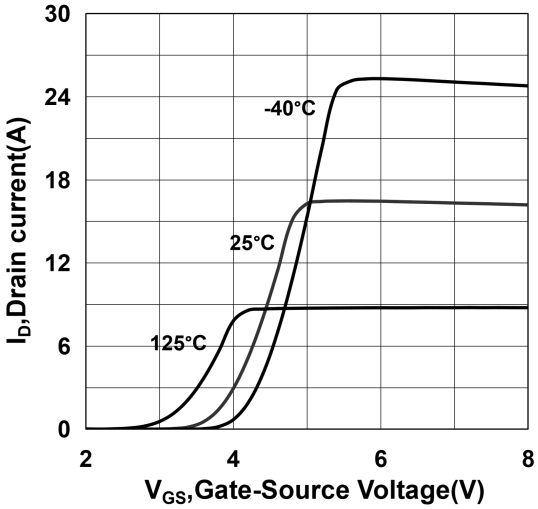




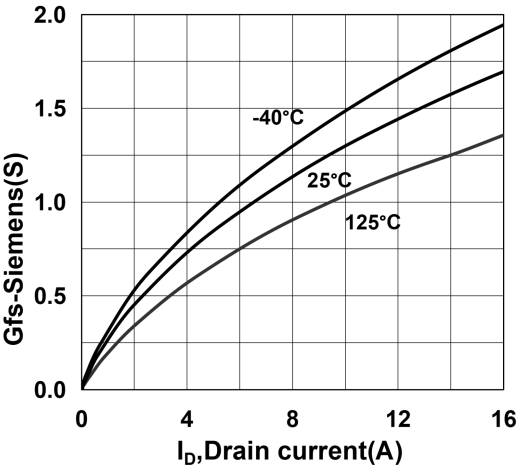
On-Region Characteristic@125℃



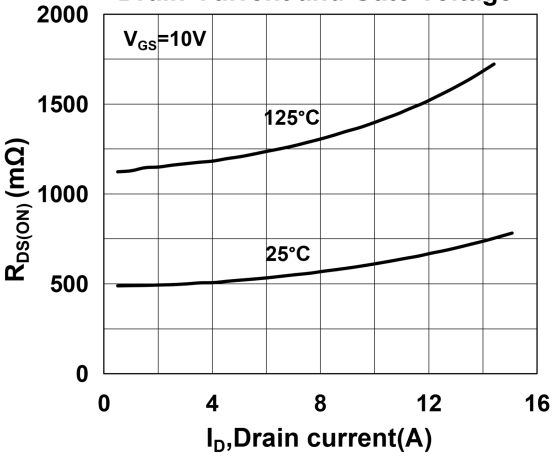
Transfer Characteristics



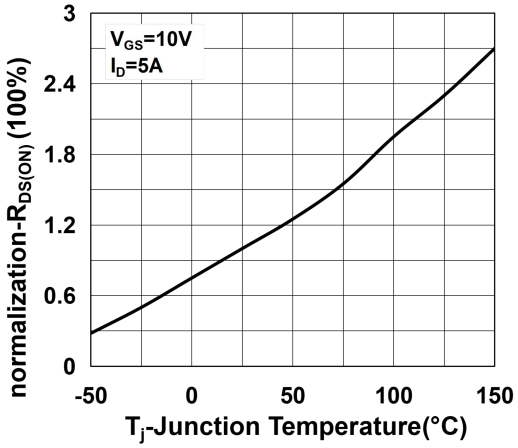
Transconductance



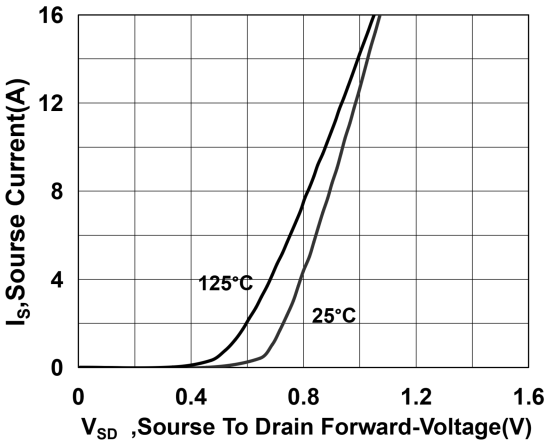
On-Resistance Variation vs Drain Current and Gate Voltage



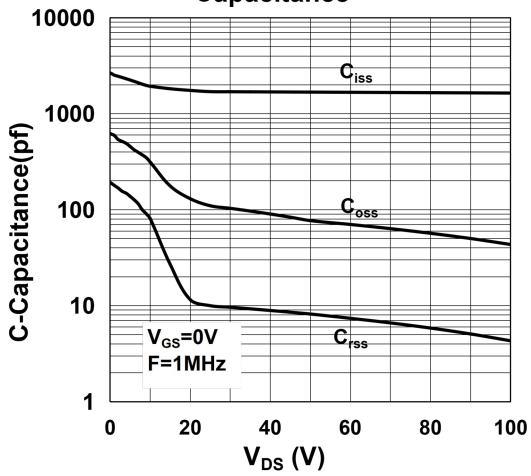
Normalization On-Resistance Variation vs Junction Temperature



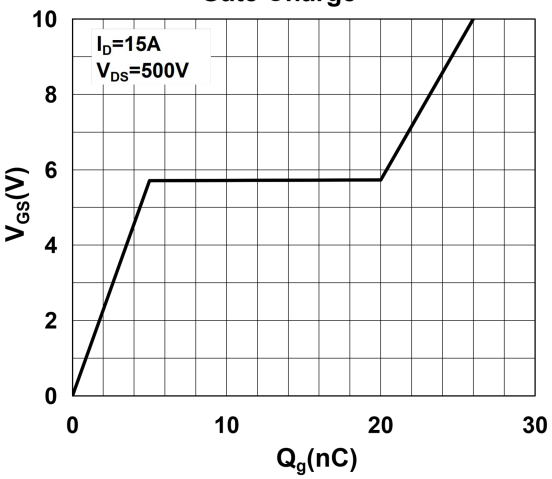
Body Diode Forward Voltage Variation with Sourse Current and Temperature



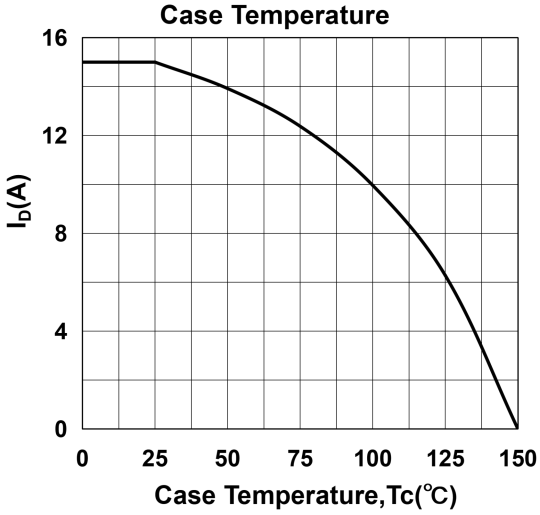
Capacitance



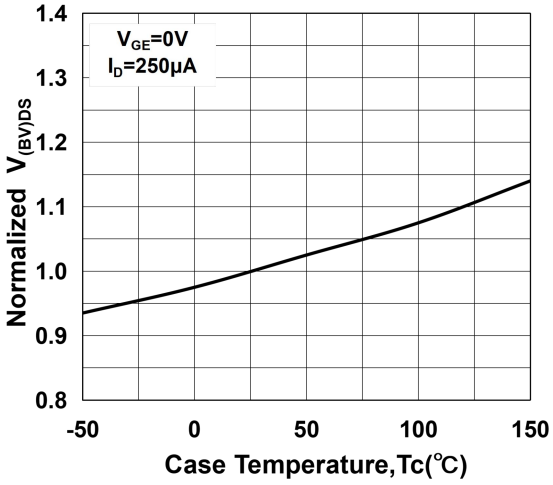
Gate Charge



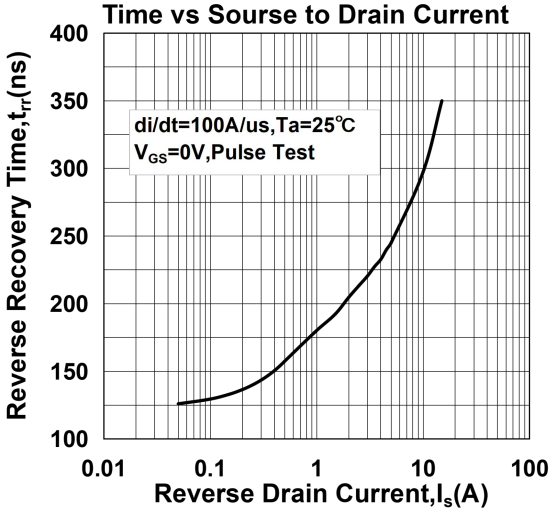
Maximum Drain Current vs Case Temperature



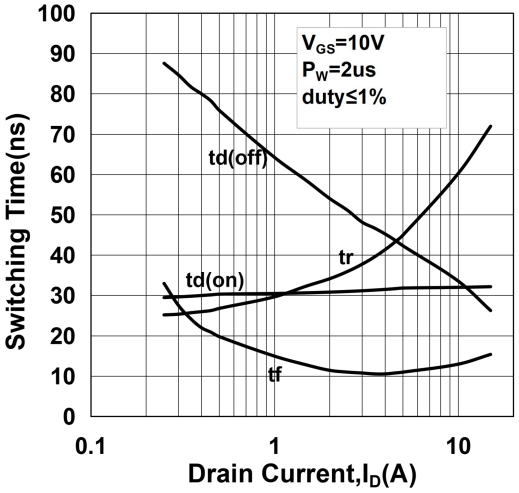
Normalized $V_{(BV)DS}$ vs temperature



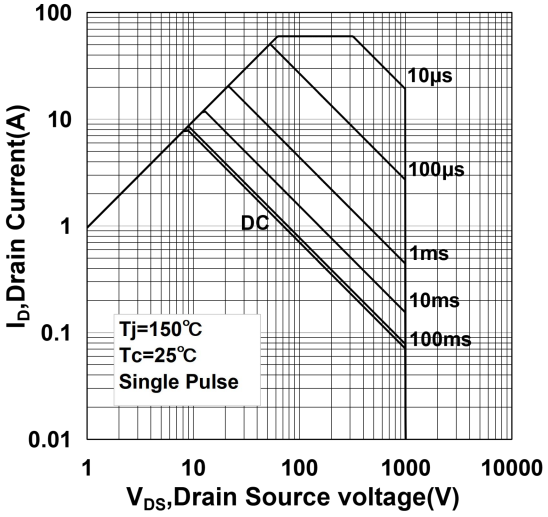
Body Diode Reverse Recovery Time vs Sourse to Drain Current



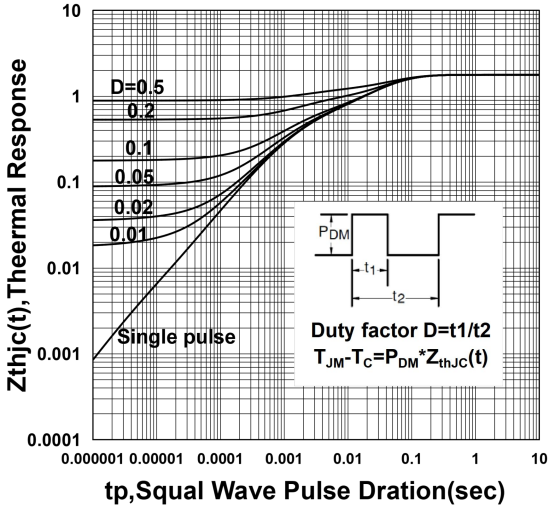
Switching Characteristics



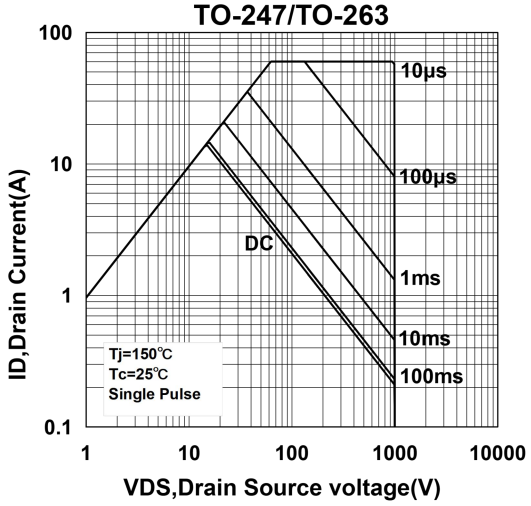
Safe Operating Area for TO-220F



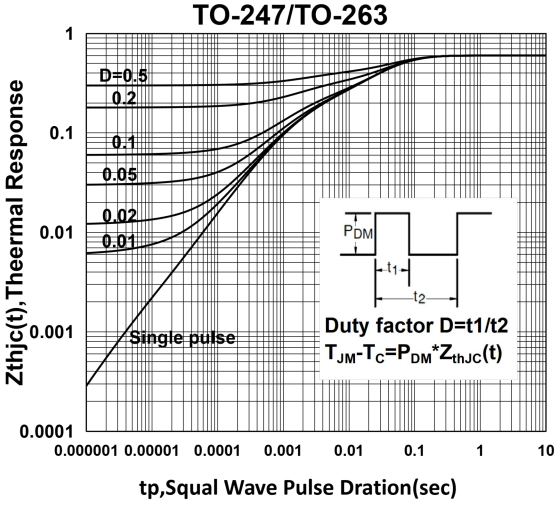
Transient response Curve for TO-220F



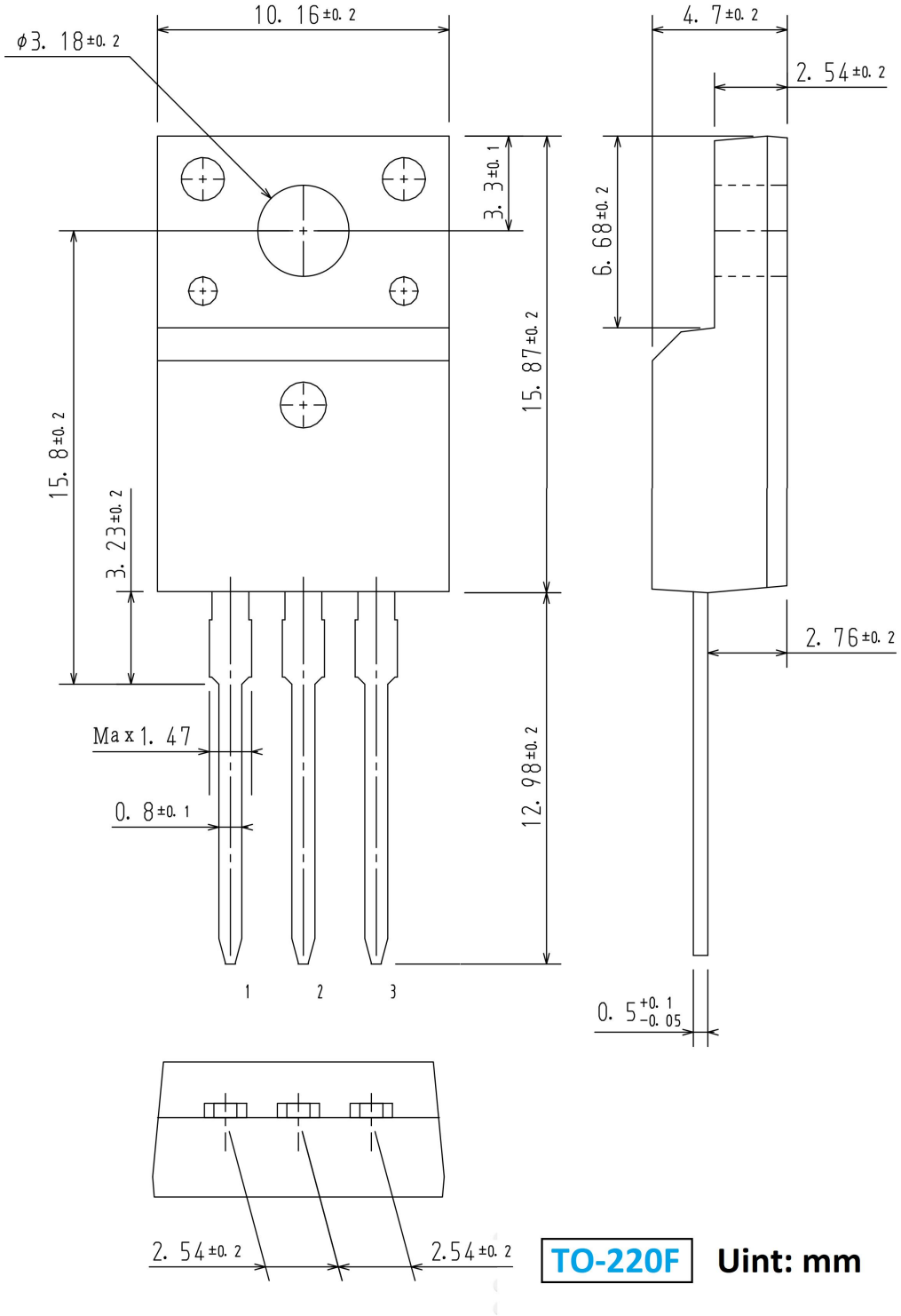
Safe Operating Area for TO-247/TO-263

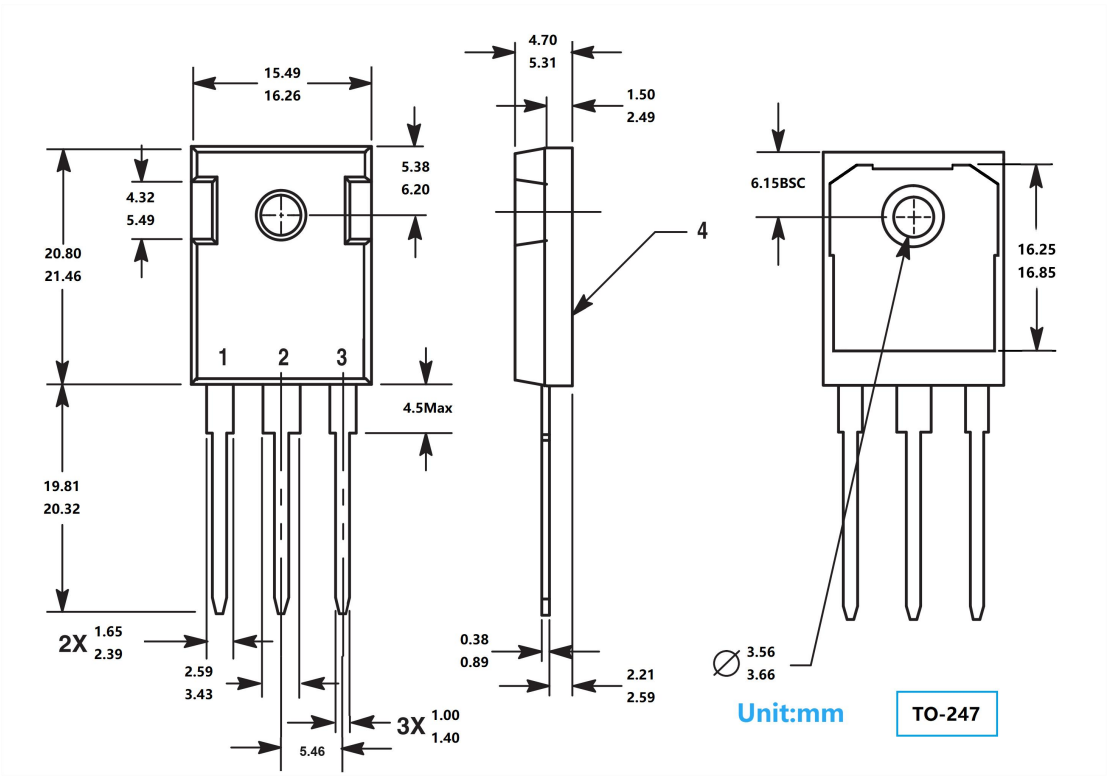


Transient response Curve for TO-247/TO-263



Package Mechanical Data

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5.38
6.20
4.32
5.49
20.80
21.46
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2
3
4.5Max
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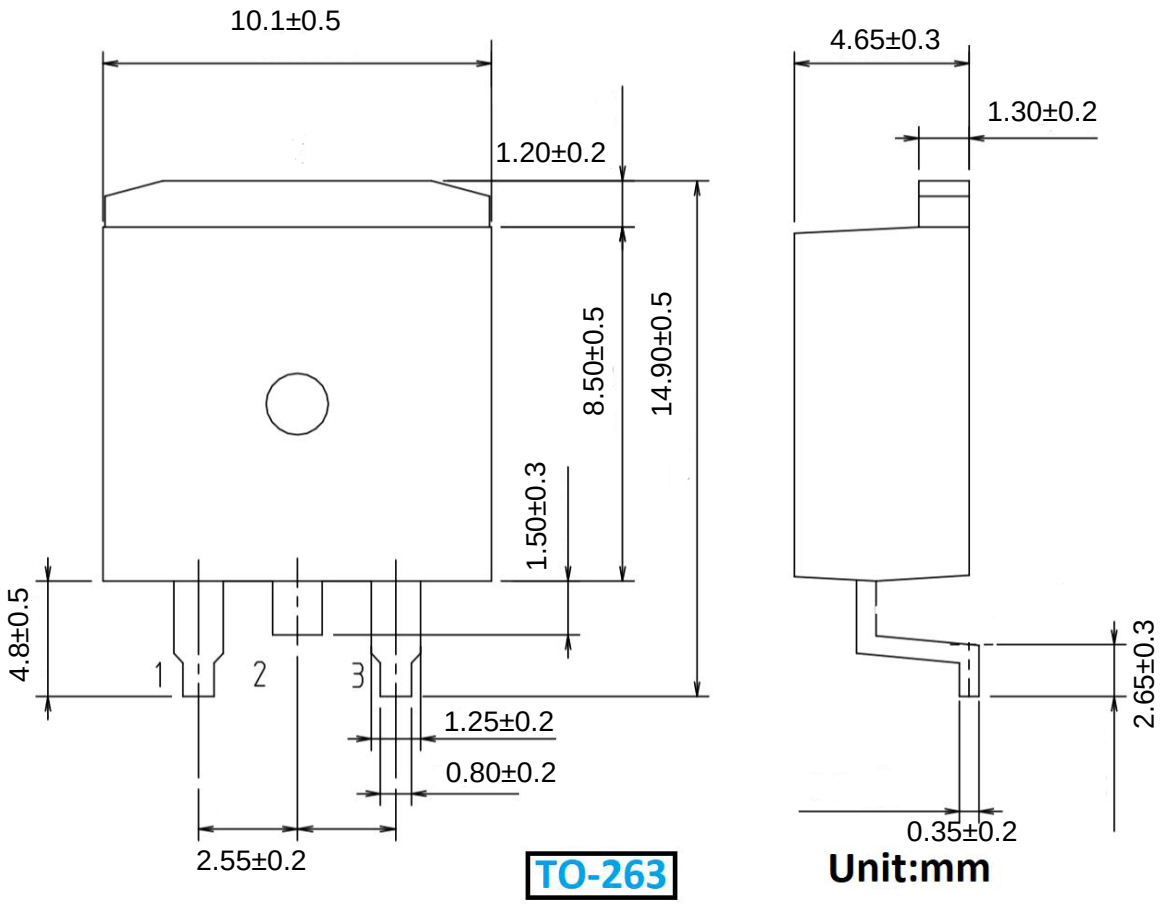
20.32
2X 1.65
2.39
2.59
3.43
3X 1.00
1.40
5.46
4.70
5.31
1.50
2.49
4
0.38
0.89
2.21
2.59
6.15BSC
16.25
16.85
3.56
3.66
Unit:mm
TO-247


10.1±0.5
1.20±0.2
8.50±0.5
14.90±0.5
1.50±0.3
4.8±0.5
1
2
3
1.25±0.2
0.80±0.2
2.55±0.2
TO-263
4.65±0.3
1.30±0.2
2.65±0.3
0.35±0.2
Unit:mm