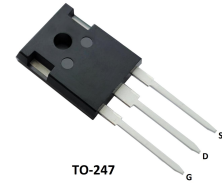
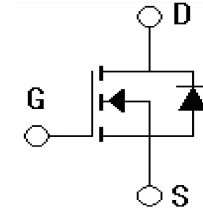


Features

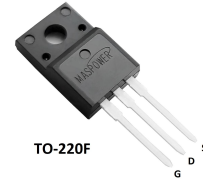
- $V_{DS}=1200V, I_D=10A$
 $R_{DS(on)} < 2\Omega @ V_{GS}=10V$
- High density cell design for ultra low $R_{DS(on)}$
- Low gate charge
- Improved dv/dt capability
- RoHS product

Applications

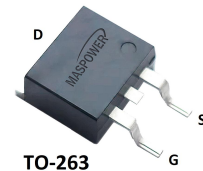
- High Voltage Switched-mode and resonant-mode power supplies
- High Voltage Pulse Power Applications
- High Voltage Discharge circuits in Lasers Pulsers, Spark Igniters, RF Generators
- High Voltage DC-DC converters
- High Voltage DC-AC inverters



TO-247



TO-220F



TO-263

Absolute Ratings ($T_c=25^\circ C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	1200	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current-continuous	I_D	10	A
Drain Current-pulse(note1)	I_{DM}	15	A
Single Pulsed Avalanche Energy (note2)	E_{AS}	30	mJ
Maximum Power Dissipation (TO-247/TO-263)	PD	357	W
Maximum Power Dissipation (TO-220F)	PD	67.9	
Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^\circ C$
Maximum lead temperature for soldering purposes	TL	300	$^\circ C$

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	1200	-	-	V

Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	-	5.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	2	-	Ω
Forward Transconductance	g_{fs}	$V_{DS}=20V, I_D=5A$ (note3)	-	13	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	1871	-	pF
Output capacitance	C_{oss}		-	153	-	pF
Reverse transfer capacitance	C_{rss}		-	9	-	pF

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =600V,I _D =5A, V _{GS} =10V (note3,4)	-	25	-	ns
Turn-On rise time	t _r		-	33	-	ns
Turn-Off delay time	t _{d(Off)}		-	150	-	ns
Turn-Off rise time	t _f		-	50	-	ns
Total Gate Charge	Q _g	V _{DS} =600V,I _D =5A, V _{GS} =10V (note3,4)	-	41	-	nC
Gate-Source charge	Q _{gs}		-	11	-	nC
Gate-Drain charge	Q _{gd}		-	13	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Curret	V _{SD}	V _{GS} =0V,I _S =10A	-	-	1.2	V
Diode Forward Current	I _S	TC=25℃	-	-	10	A
Reverse recovery time	T _{rr}	I _S =5A,dI/dT=100A/μS	-	530	-	nS
Reverse recovery charge	Q _{rr}	VR=100V,V _{GS} =0V (note4)	-	3.53	-	μC

Thermal Characteristic

Parameter	Symbol	Value			Unit
		TO-263	TO-247	TO-220F	
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.35	0.35	1.84	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	40	36	62.5	$^{\circ}\text{C}/\text{W}$

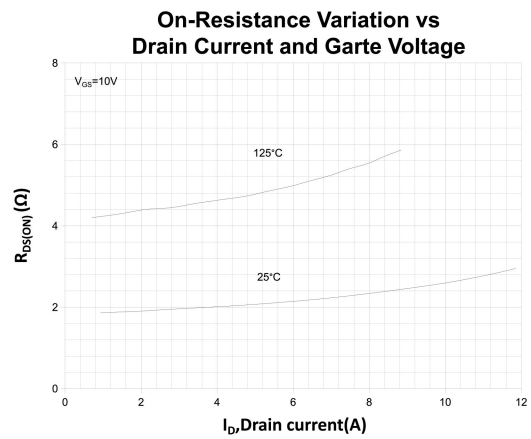
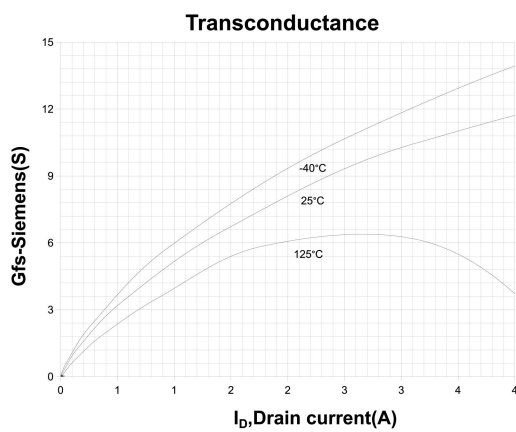
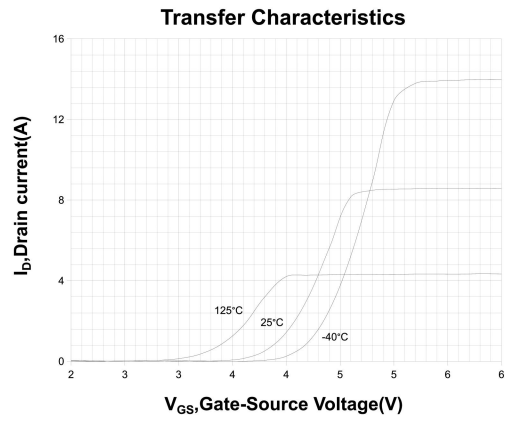
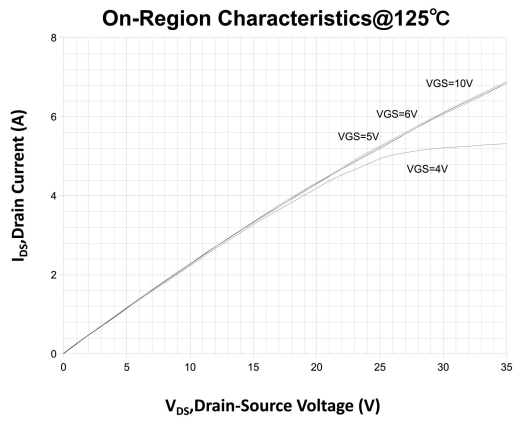
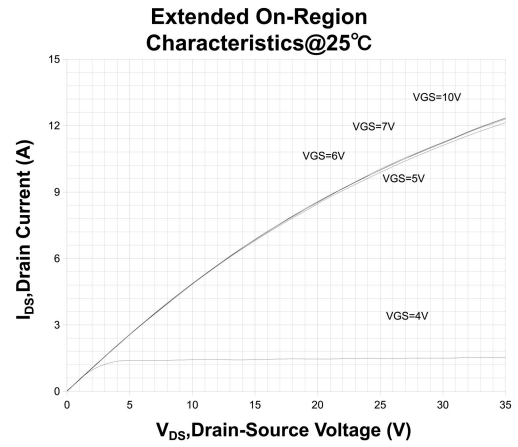
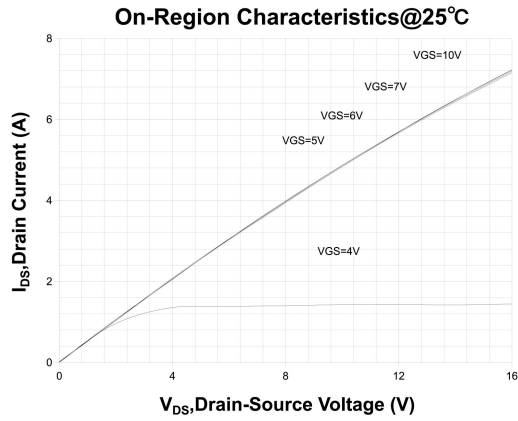
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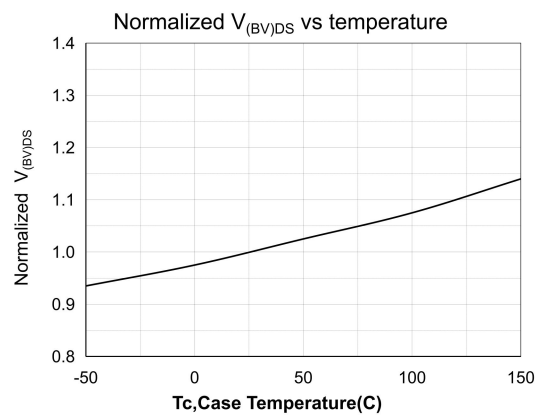
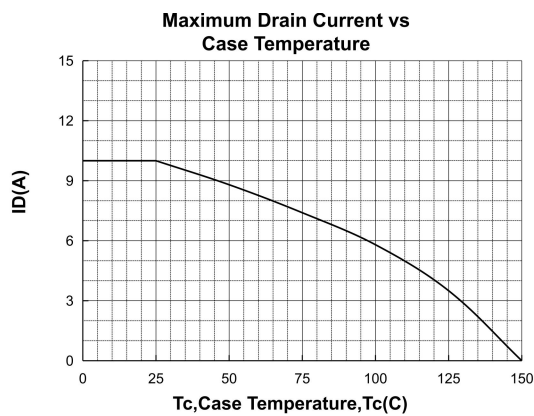
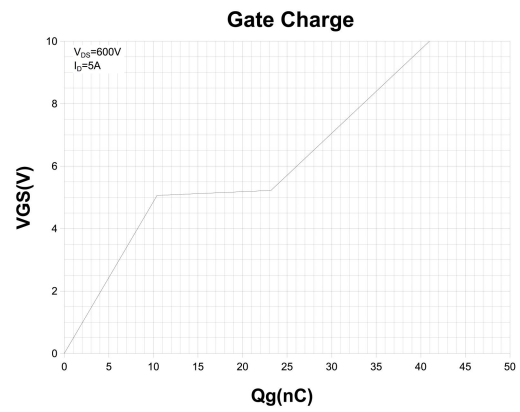
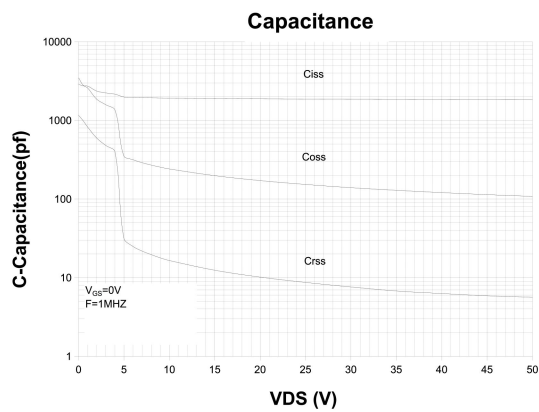
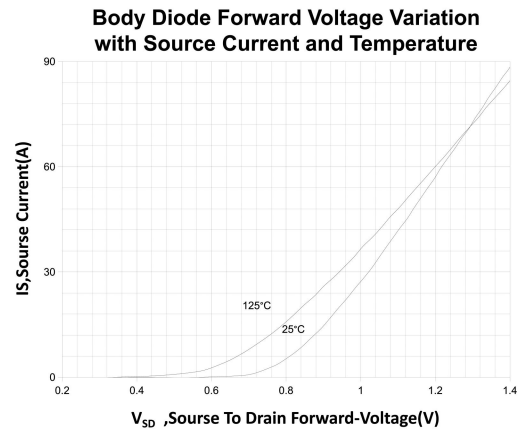
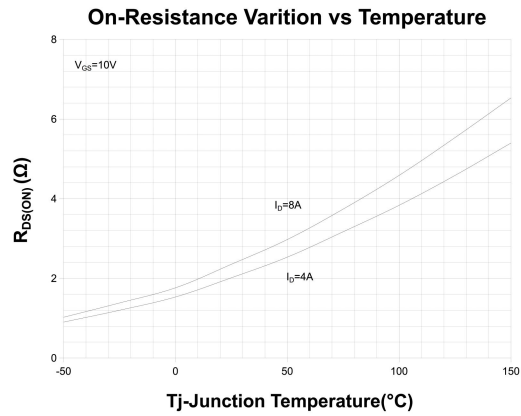
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. $L = 15 \text{ mH}$, $I_{AS} = 2 \text{ A}$, $V_{DD} = 50\text{V}$, $R_G = 25 \Omega$, Starting $T_J = 25^{\circ}\text{C}$
3. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
4. Essentially independent of operating temperature

Order information

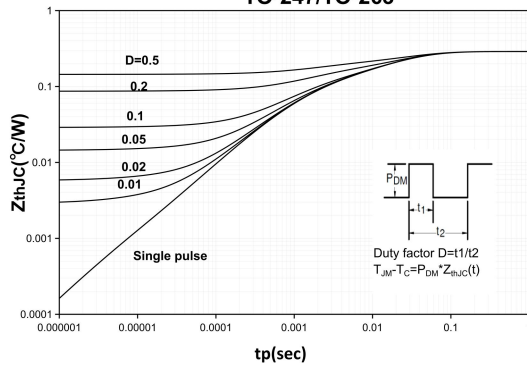
Order codes	Package	Packaging
MS10N120HGC0	TO-247	Tube
MS10N120HGT1	TO-220F	Tube
MS10N120HGE0	TO-263	Tube

Electrical Characteristics

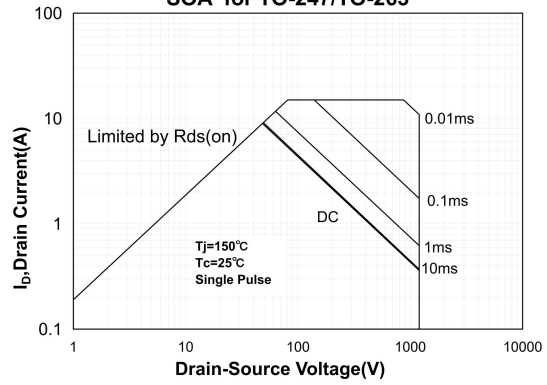




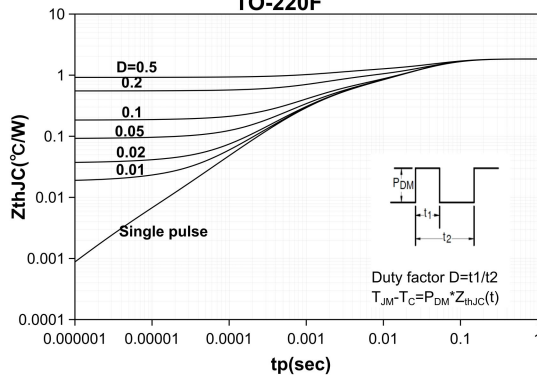
Transient Thermal Response Curve for TO-247/TO-263



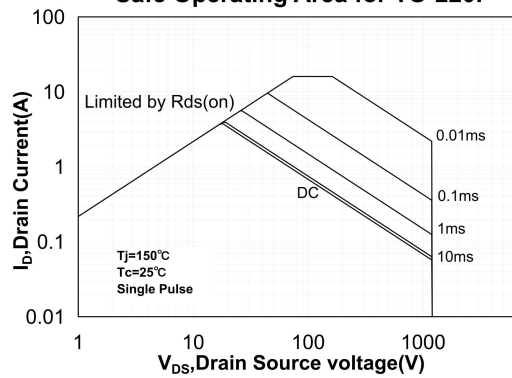
SOA for TO-247/TO-263



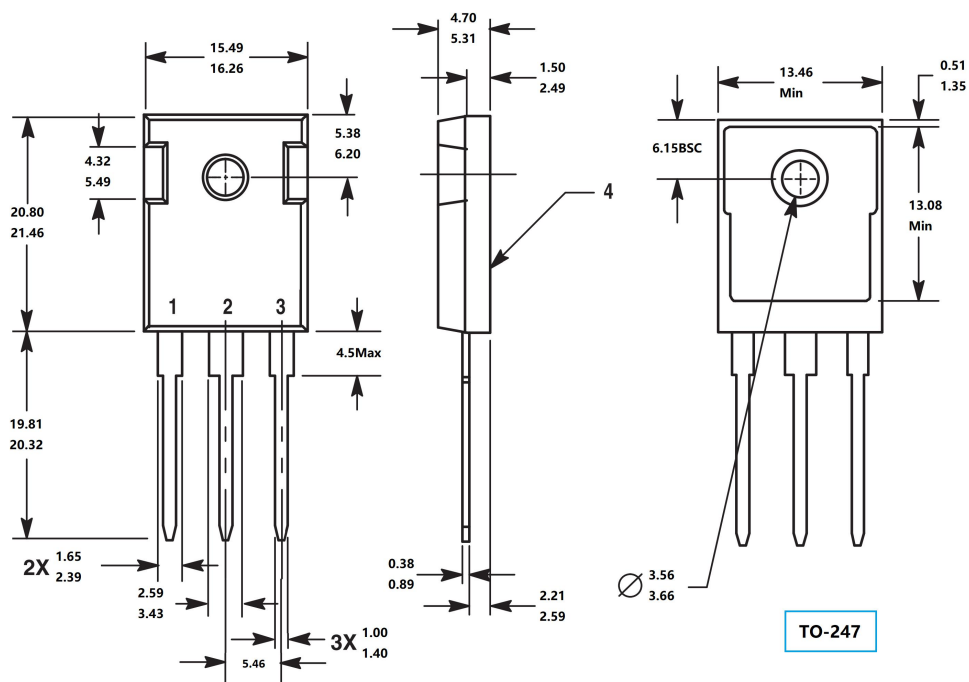
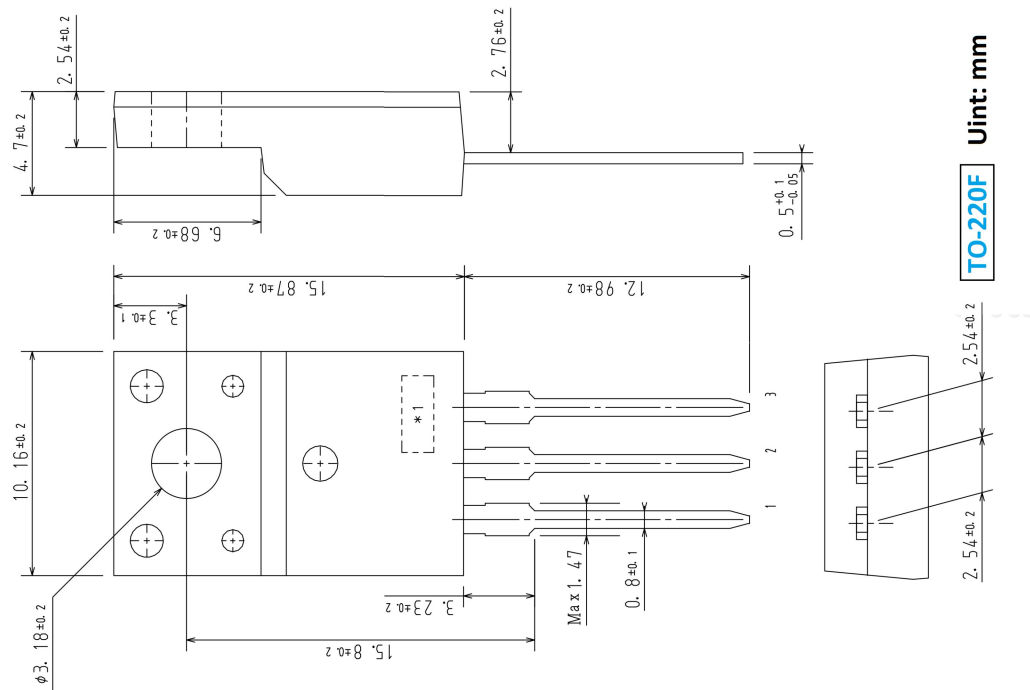
Transient Thermal Response Curve for TO-220F

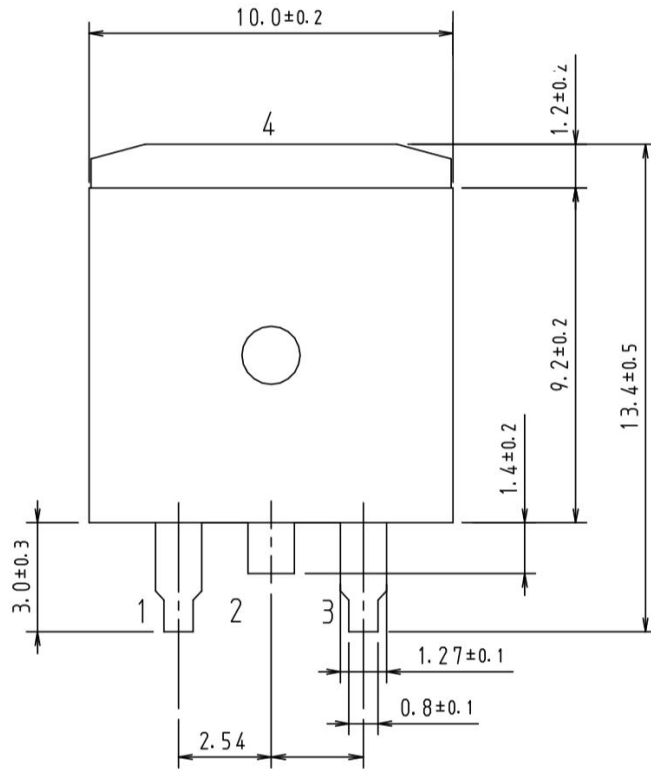


Safe Operating Area for TO-220F

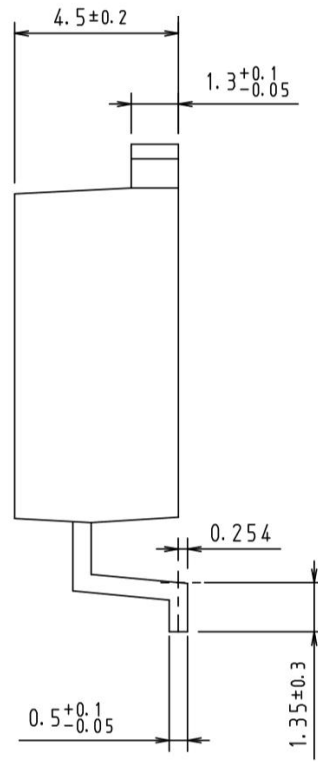


Package Mechanical DATA





TO-263



Unit:mm