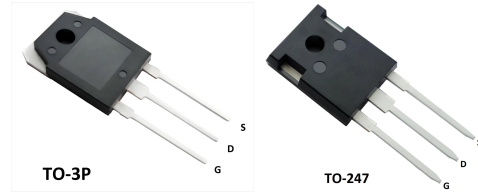


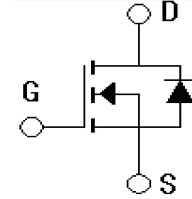
Features

- $V_{DS}=100V, I_D=200A$
 $R_{DS(on),max}=8.5m\Omega @ V_{GS}=10V$
- High density cell design for ultra low R_{dson}
- 100% avalanche tested
- Low gate charge



Applications

- High Efficiency Synchronous Rectification in SMPS
- Uninterruptible Power Supply
- High Speed Power Switching
- Hard Switched And High Frequency Circuits



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	100	V
Transient Gate-Source Voltage	V_{GSM}	± 30	V
Continuous Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current-continuous	I_D	$T_C=25^\circ C$	A
		$T_C=100^\circ C$	
Drain Current-pulse(note 1)	I_{DM}	800	A
Single Pulsed Avalanche Energy(note 2)	E_{AS}	576	mJ
Maximum Power Dissipation	P_D	$T_C=25^\circ C$	W
		$T_C=100^\circ C$	
Operating Temperature Range	T_J	$-55 \sim +150$	$^\circ C$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ C$

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	25	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$ (note 3)	-	6.8	8.5	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=20V, I_D=20A$ (note 3)	60	100	-	S
Gate Input Resistance	R_g		-	1	-	Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$ (note 4)	-	5.5	-	nF
Output capacitance	C_{oss}		-	660	-	pF
Reverse transfer capacitance	C_{rss}		-	100	-	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} =50V,I _D =100A, V _{GS} =10V,R _G =5Ω	-	41	-	ns
Turn-On rise time	t _r		-	65	-	ns
Turn-Off delay time	t _{d(Off)}		-	64	-	ns
Turn-Off rise time	t _f		-	48	-	ns
Total Gate Charge	Q _g	V _{DS} =50V,I _D =100A, V _{GS} =10V(note 4)	-	125	-	nC
Gate-Source charge	Q _{gs}		-	42	-	nC
Gate-Drain charge	Q _{gd}		-	41	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =10A (note 3)	-	0.82	1.2	V
Diode Forward Current	I _S		-	-	200	A
Reverse recovery time	t _{rr}	I _S =100A, di/dt=100A/μs V _R =50V,V _{GS} =0V	-	86	-	ns
Reverse recovery charge	Q _{rr}		-	220	-	nC
Reverse recovery Current	I _{rr}		-	8.7	-	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	$R_{th(j-C)}$	0.39	$^{\circ}C/W$
Thermal Resistance,junction to Ambient	$R_{th(j-A)}$	40	$^{\circ}C/W$

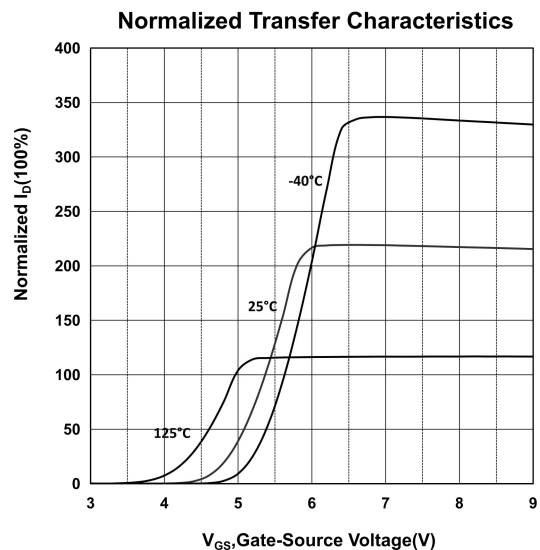
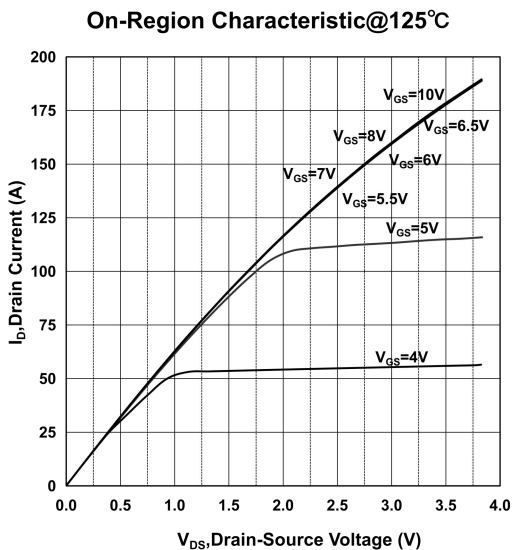
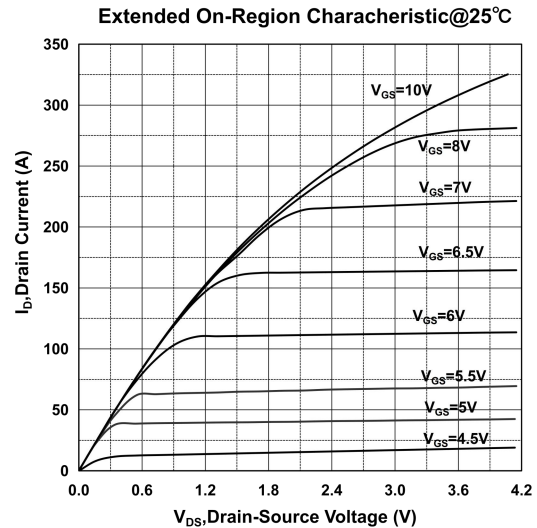
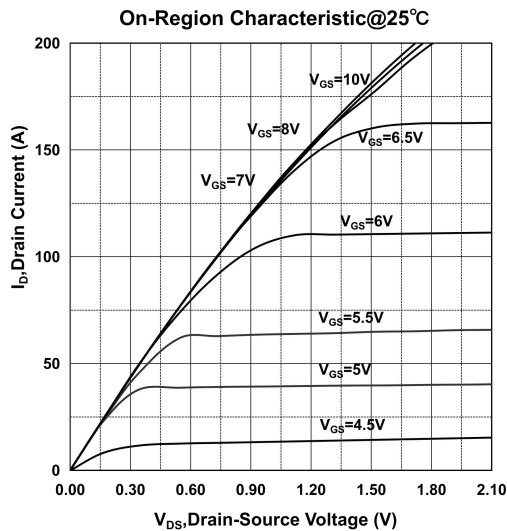
Notes:

1. Pulse width limited by maximum junction temperature
2. E_{AS} test condition: $L=1.0mL$, $V_{DS}=50V$, $I_{AS}=24A$, $R_g=25\Omega$, starting $T_C=25^\circ C$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
4. Essentially independent of operating temperature

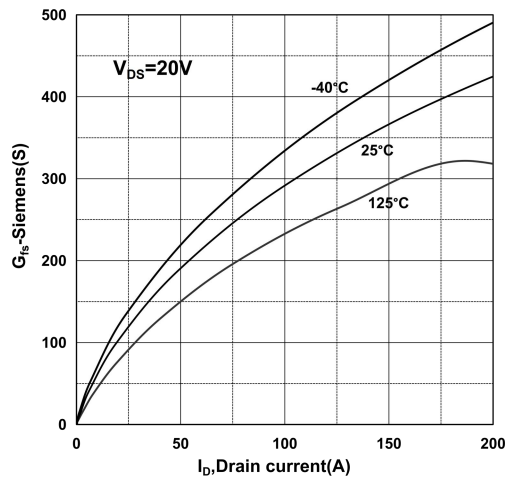
Ordering information

Marking	Silkscreen	Package
MS200N10HIB0	MS200N10HIB0	TO-3P
MS200N10HIC0	MS200N10HIC0	TO-247

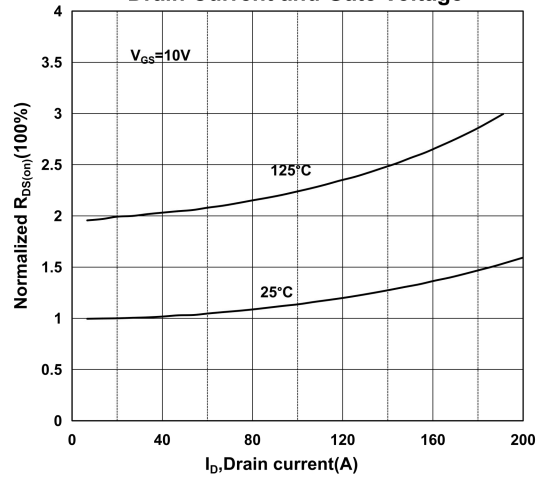
Electrical Characteristics



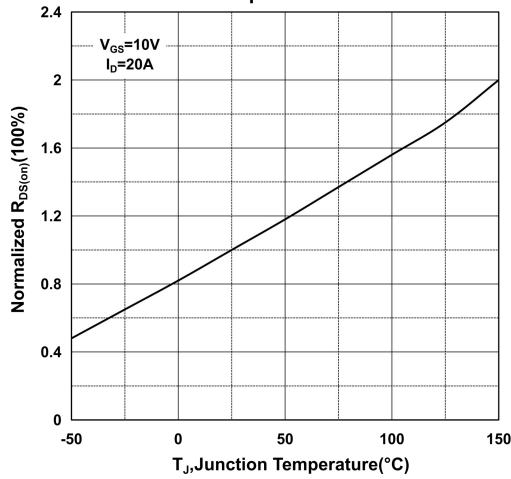
Transconductance



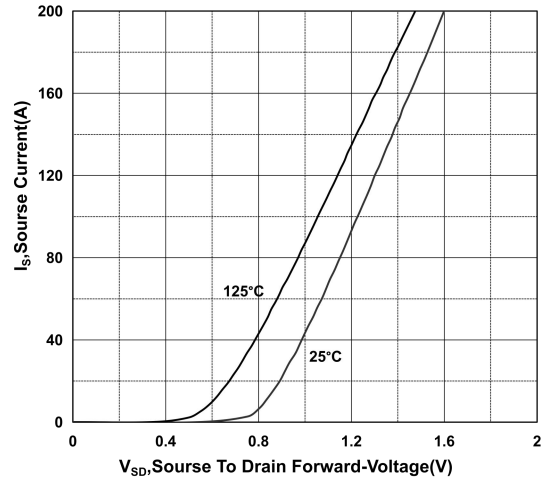
Normalized On-Resistance Variation vs Drain Current and Gate Voltage



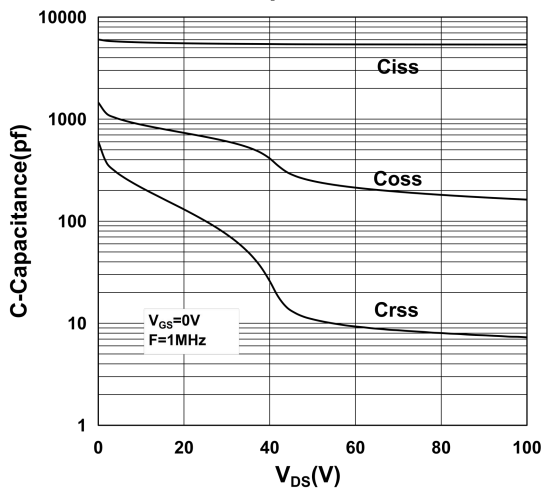
Normalized On-Resistance Variation vs Temperature



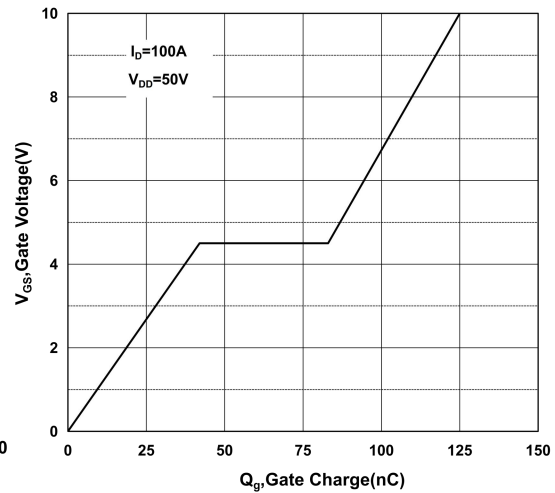
Body Diode Forward Voltage Variation with Source Current and Temperature



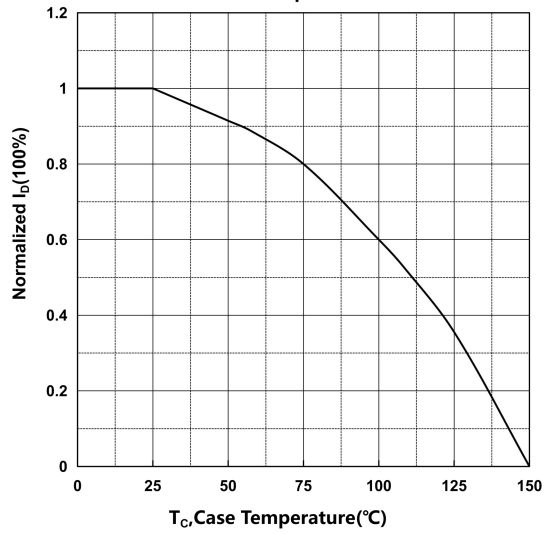
Capacitance



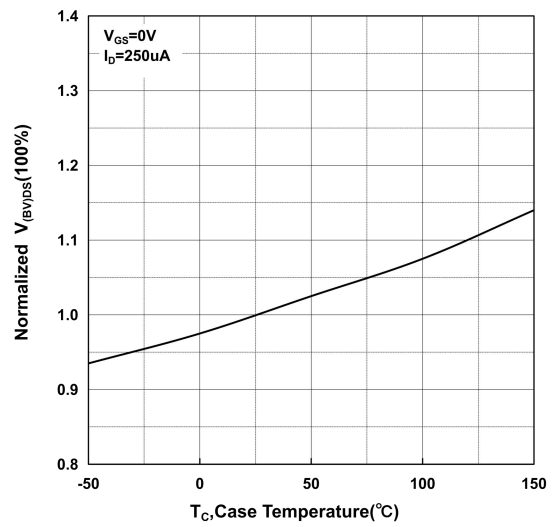
Gate Charge



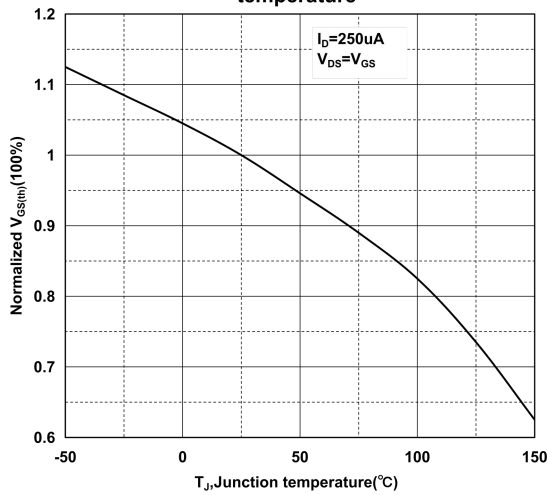
Normalized Maximum Drain Current vs Case Temperature



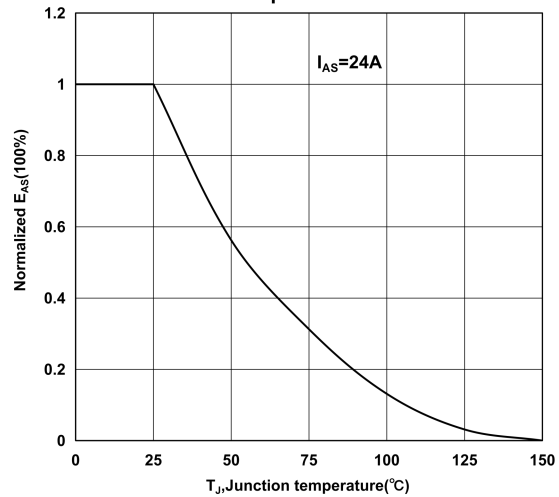
Normalized $V_{(BV)DS}$ vs temperature



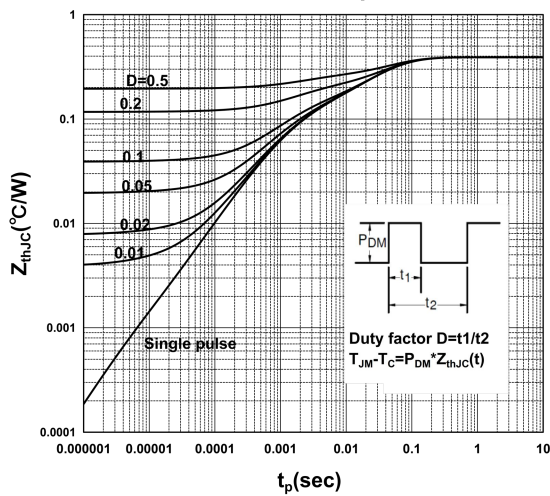
Normalized gate threshold voltage vs temperature



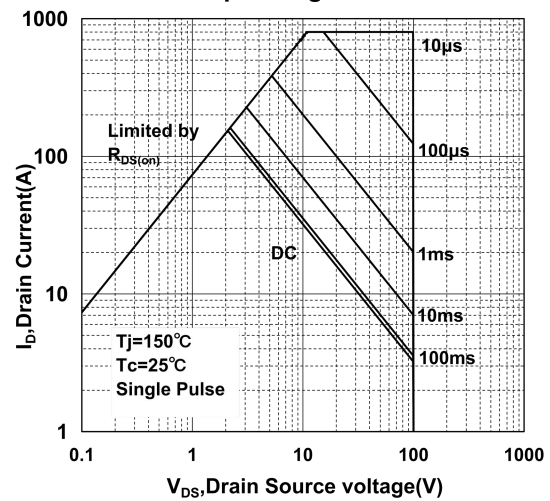
Normalized Maximum avalanche energy vs temperature



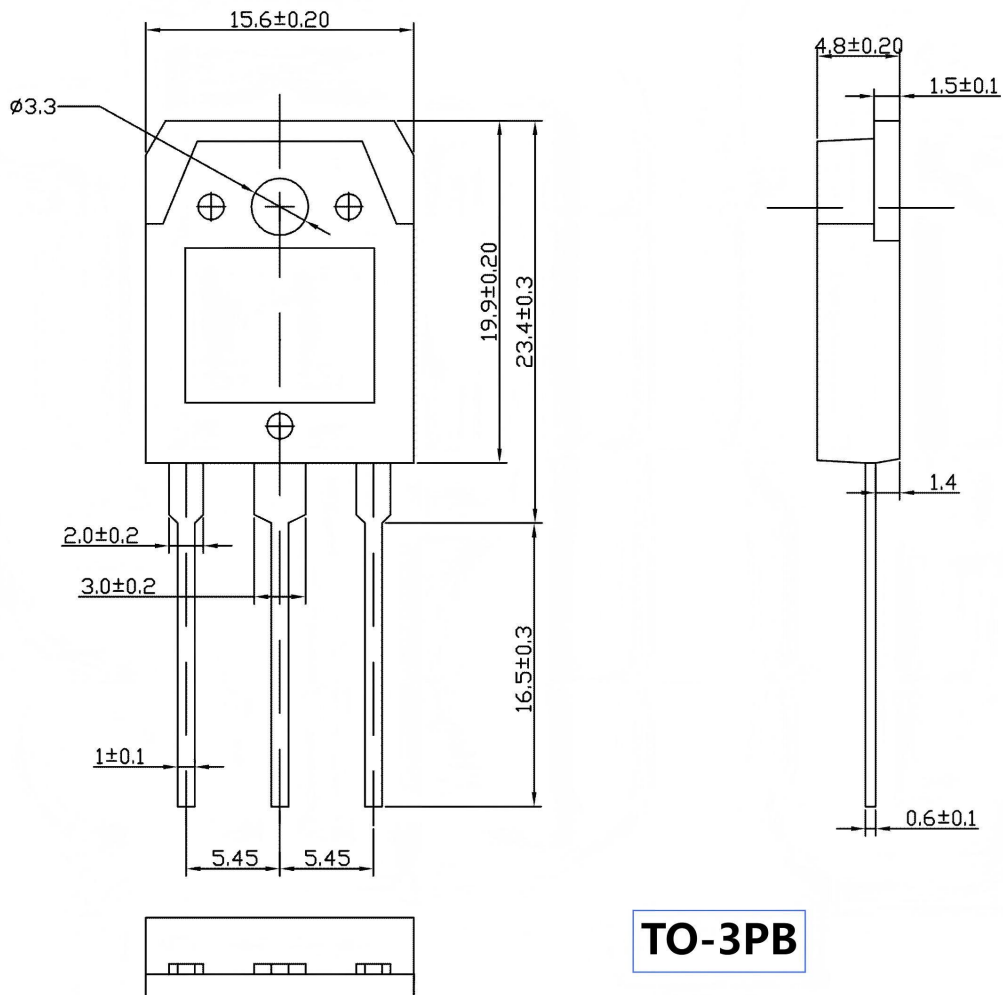
Transient Thermal Response Curve



Safe Operating Area

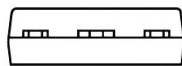
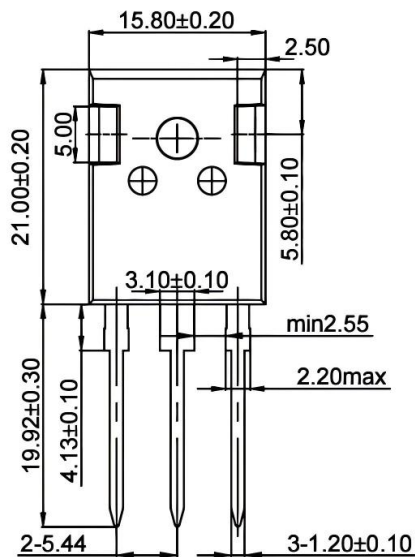


Package Mechanical DATA

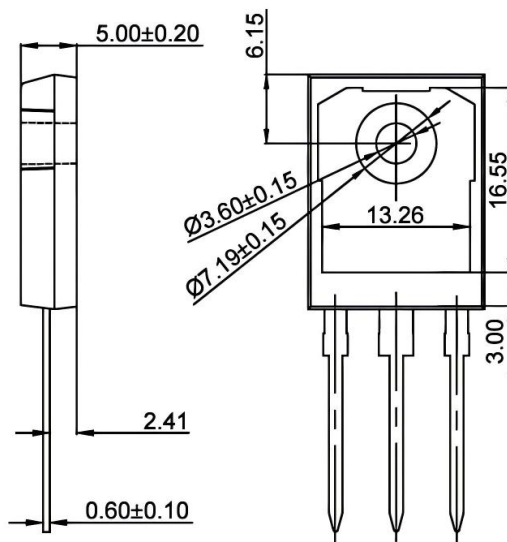


Technical Requirements:

1. The unmarked surfaces are required to have a surface roughness (Ra) of 0.2 μm after forming.
2. Unspecified tolerance requirements: $\pm 0.15\text{ mm}$.
3. The resin body must not have any harmful defects such as defects, shrinkage cavities, cracks, or bubbles.



NOTES: 1. surface roughness $Ra = 1.14 \pm 0.20 \mu m$
 2. Unmarked tolerance ± 0.15
 3. unit: mm



TO-247