

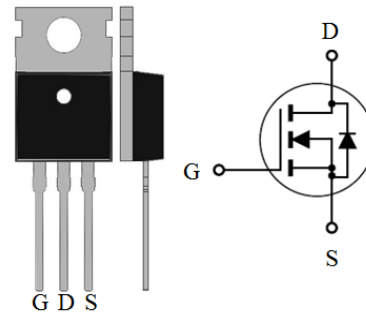
**100V N-Channel MOSFET**
**Applications:**

- Uninterruptible Power Supply
- High Speed Power Switching
- High Efficiency Synchronous Rectification in SMPS

$V_{DS}$	$R_{DS(ON)}(MAX)$	$I_D$
100V	6m $\Omega$	155A

**Features:**

- Lead Free
- Low  $R_{DS(ON)}$  to Minimize Conductive Loss
- Low Gate Charge for Fast Switching Application
- Optimized  $V_{(BR)DSS}$  Ruggedness



TO220 Pin Definition and Inner Circuit

**Ordering Information**

Park Number	Package	Brand
MXP1006AT	TO220	MXP

**Absolute Maximum Ratings**
 $T_c=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Value	Unit
$V_{DSS}$	Drain-to-Source Voltage	100	V
$I_D$	Continuous Drain Current	Silicon Limited	155
		Package Limited	80
$I_{DM}$	Pulsed Drain Current @ $V_{GS}=10\text{V}$	622	
$P_D$	Power Dissipation	333	W
$V_{GS}$	Gate-to-Source Voltage	+/-20	V
$T_J$ and $T_{stg}$	Operating Junction and Storage Temperature Range	-55 to 175	$^{\circ}\text{C}$

**Avalanche Characteristics**
 $T_c=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Value	Unit
$E_{AS}^{\textcircled{1}}$	Single Pulse Avalanche Energy ( $V_{DS}=50\text{V}$ , $V_{GS}=10\text{V}$ , $R_g=25\Omega$ , $L=1\text{mH}$ )	200	mJ
$I_{AS}$	Single Pulse Avalanche Current	Figure 9	A

**Thermal Resistance**

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.45	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62	$^{\circ}\text{C}/\text{W}$

 $\textcircled{1}$  : Guarantee number.

**100V N-Channel MOSFET**
**OFF Characteristics**
 $T_J=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	-	-	1	$\mu A$	$V_{DS}=80V, V_{GS}=0V$
		-	-	100		$V_{DS}=80V, V_{GS}=0V, T_J=125^{\circ}\text{C}$
$I_{GSS}$	Gate-to-Source Forward Leakage	-	-	100	$nA$	$V_{GS}=+20V$
	Gate-to-Source Reverse Leakage	-	-	100		$V_{GS}=-20V$

**ON Characteristics**
 $T_J=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	-	4.9	6.0	$m\Omega$	$V_{GS}=10V, I_D=80A$
$V_{GS(th)}$	Gate Threshold Voltage	2	-	4	V	$V_{GS}=V_{DS}, I_D=250\mu A$

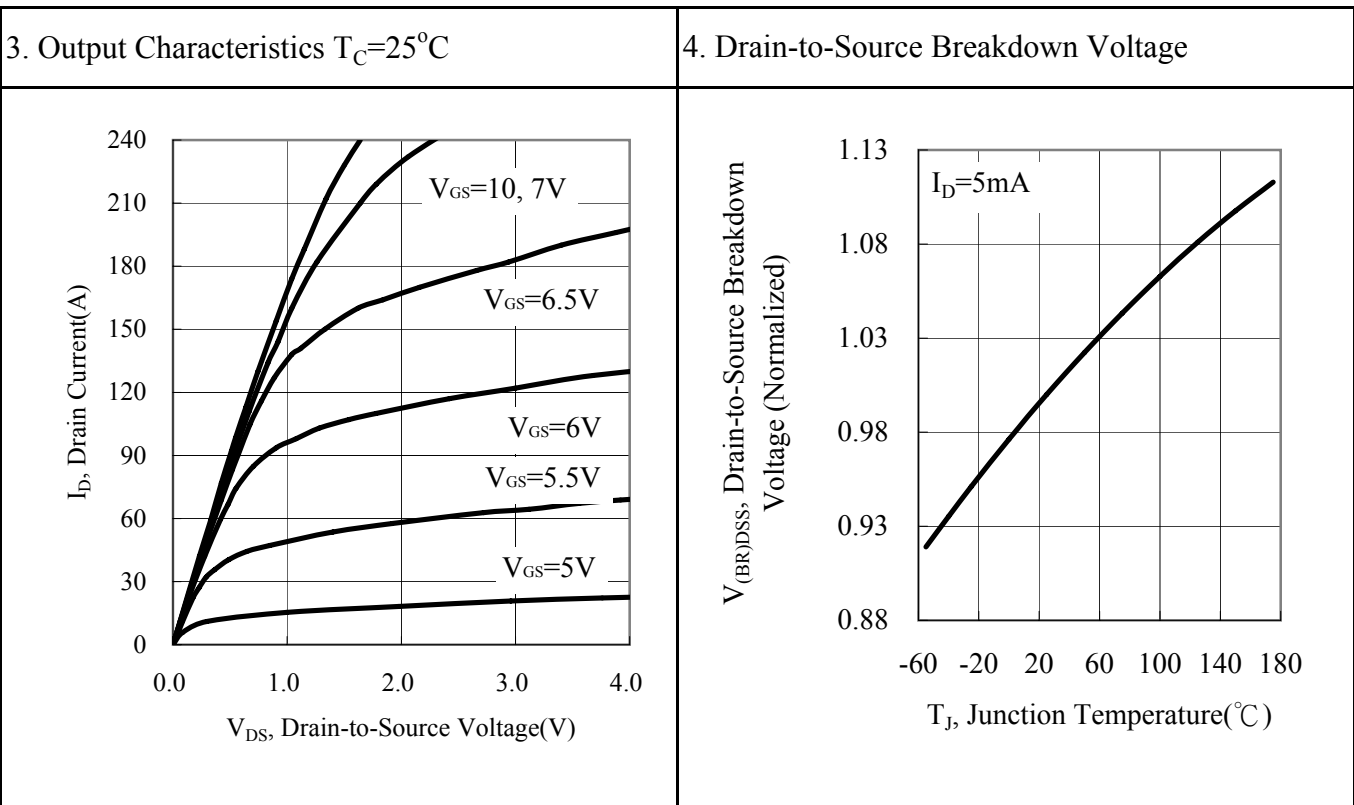
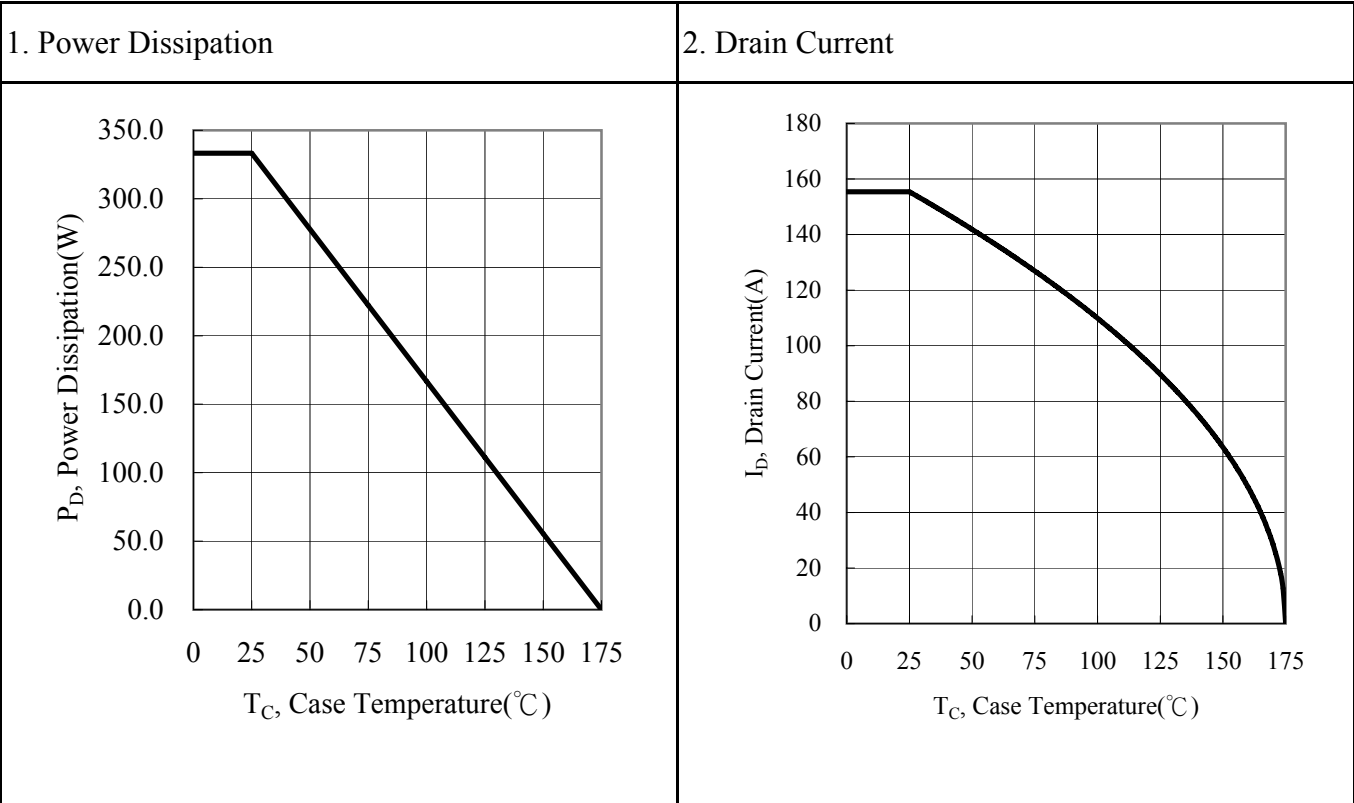
**Dynamic Characteristics**
 $T_J=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$C_{iss}$	Input Capacitance	-	10479	-	$pF$	$V_{GS}=0V, V_{DS}=50V,$ $f=1.0MHz$
$C_{oss}$	Output Capacitance	-	425	-		
$C_{rss}$	Reverse Transfer Capacitance	-	262	-		
$Q_g$	Total Gate Charge	-	175	-	$nC$	$V_{DD}=50V, I_D=80A, V_{GS}=10V$
$Q_{gs}$	Gate-to-Source Charge	-	56	-		
$Q_{gd}$	Gate-to-Drain ("Miller") Charge	-	50	-		
$T_d(on)$	Turn-on Delay Time	-	74	-	$ns$	$V_{DD}=50V, I_D=40A, V_{GS}=10V$ $R_G=10\Omega, R_L=1.25\Omega$
$T_r$	Rise Time	-	155	-		
$T_d(off)$	Turn-off Delay Time	-	193	-		
$T_f$	Fall Time	-	74	-		

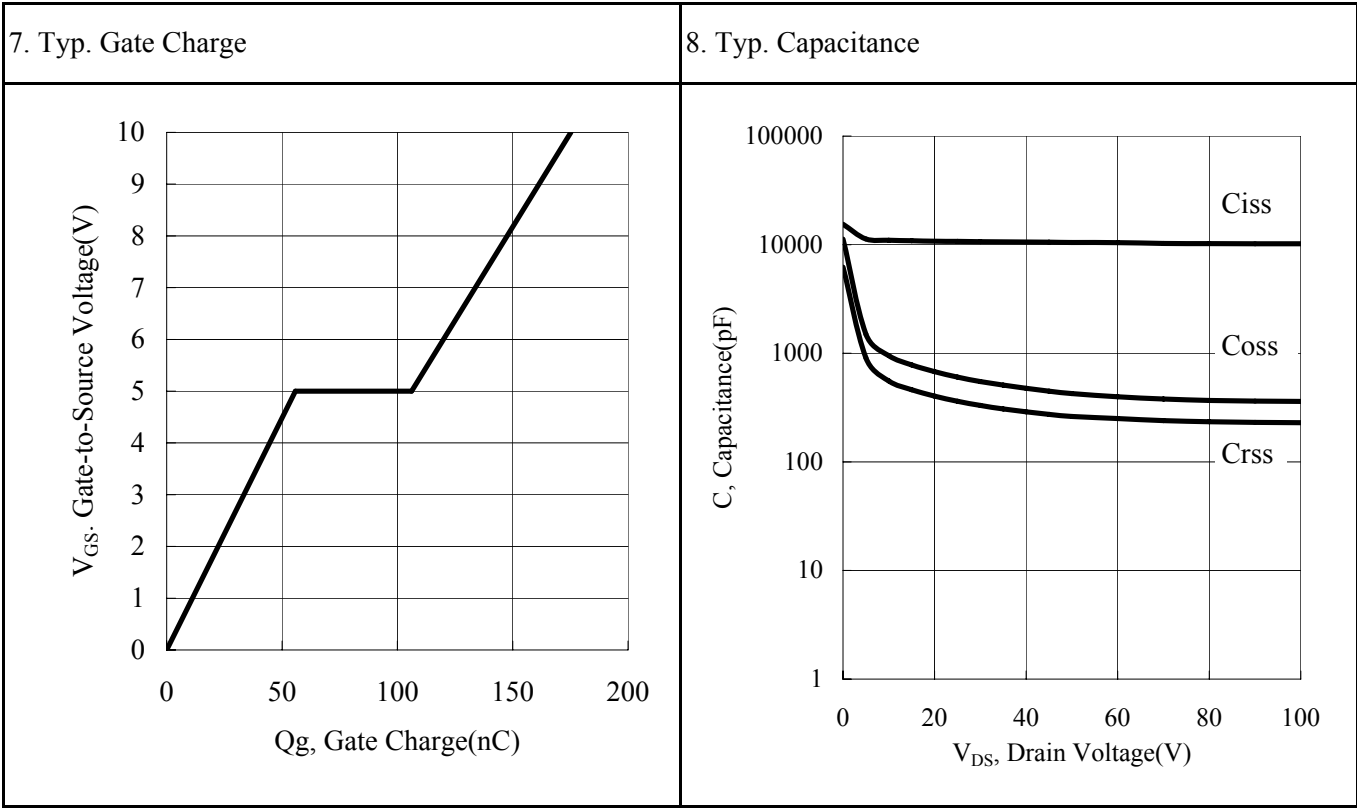
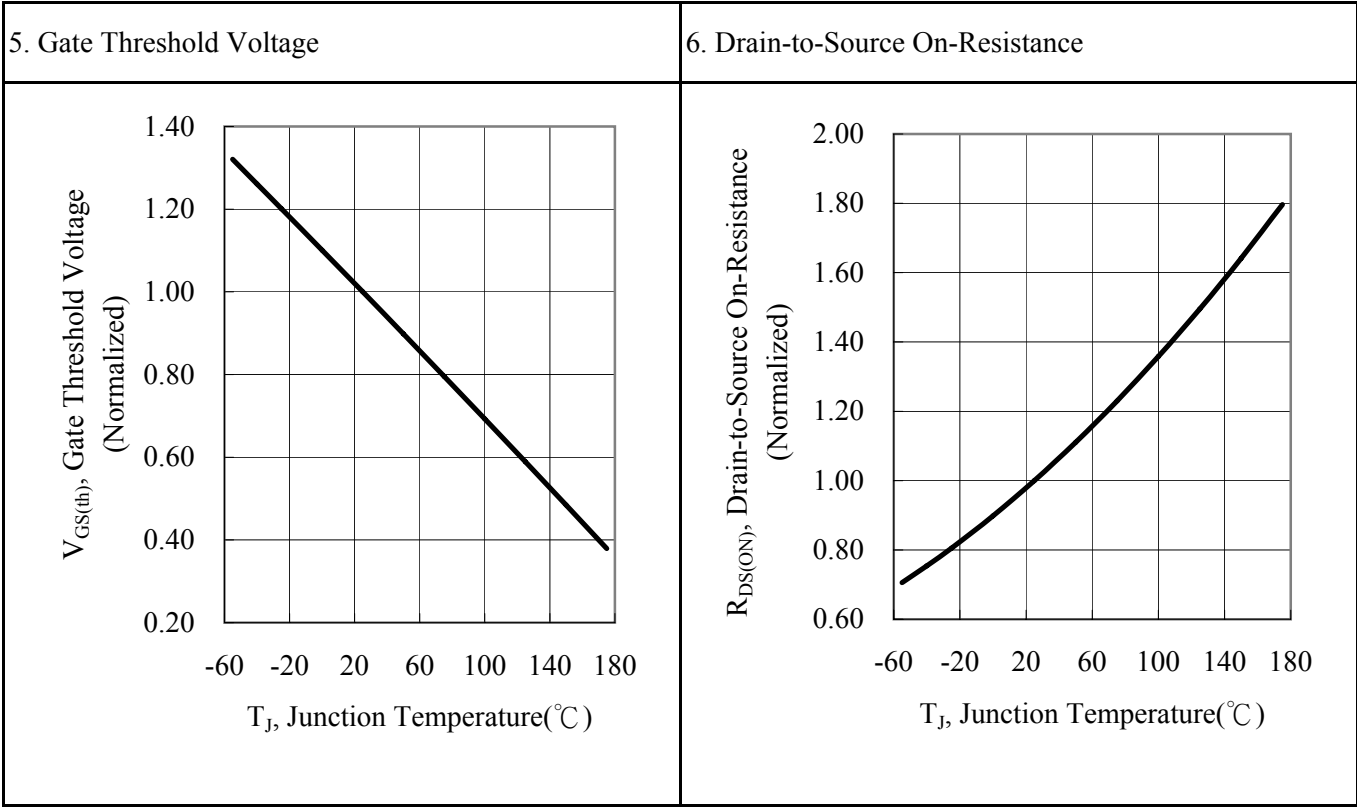
**Source-Drain Diode Characteristics**
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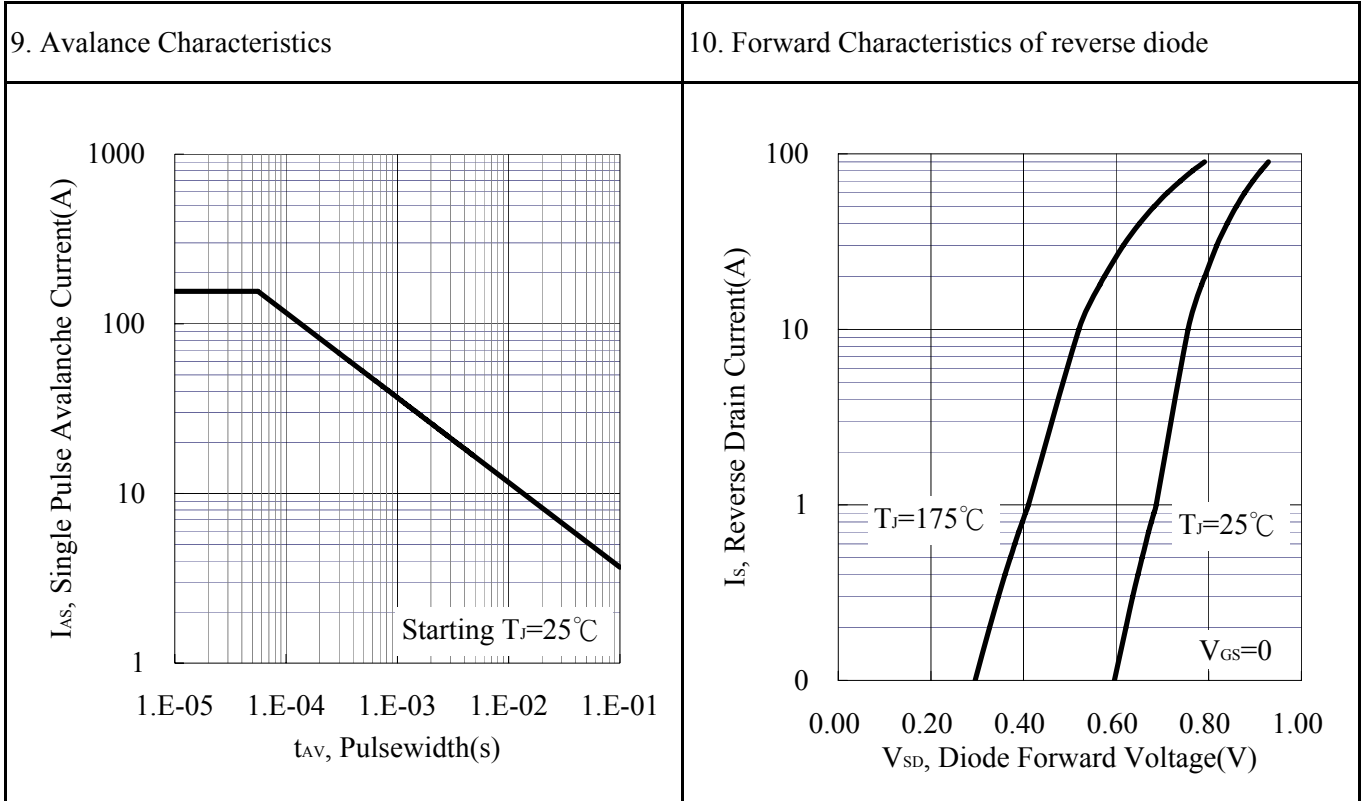
Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$V_{SD}$	Diode Forward Voltage	-	-	1.2	V	$I_S=80A, V_{GS}=0V$
$T_{rr}$	Reverse Recovery Time	-	71.4	-	$ns$	$I_S=80A, di/dt=100A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	-	157.6	-	$nC$	

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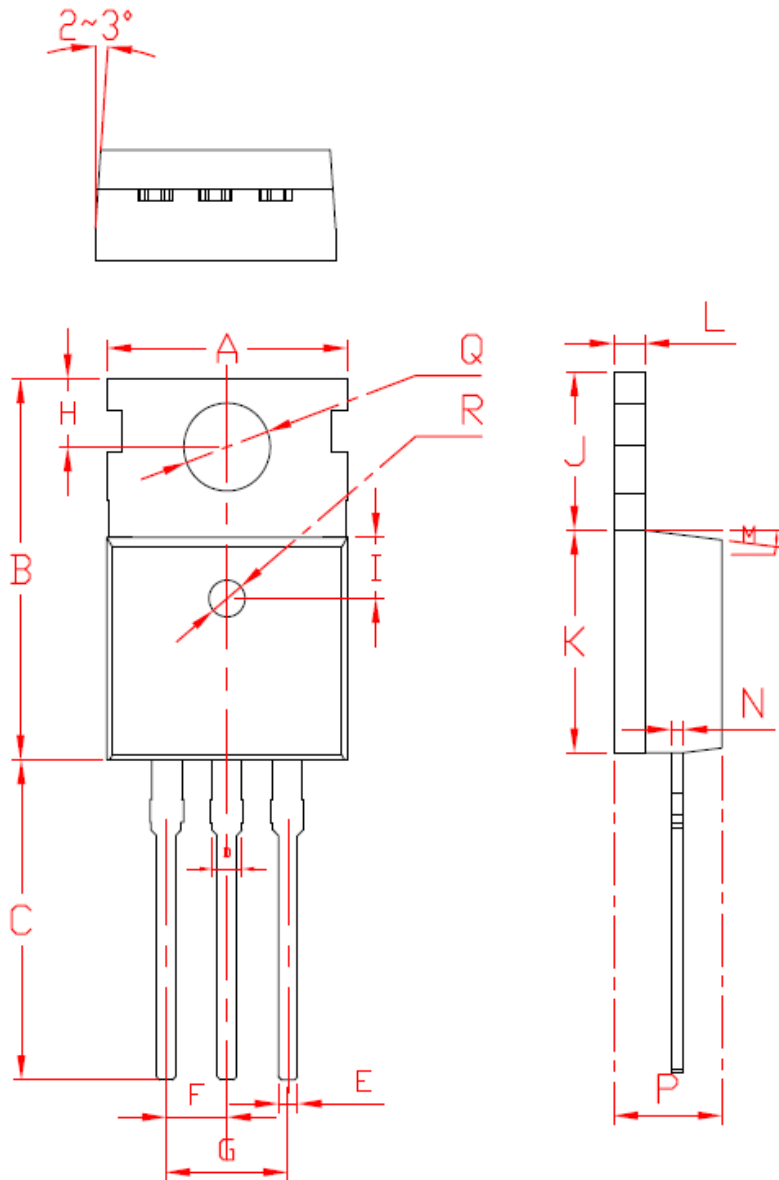
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**TO220**

## 1. Outline Dimension



Symbol	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Min	9.8	15.4	12.75					2.73		6.4	9	1.29		0.48	2.35	4.4	3.5	1.4
Non	10	15.6	13.1	1.31	0.8	2.54	5.08	2.8	2.5	6.5	9.1	1.3	1.27	0.5	2.4	4.5	3.6	1.5
Max	10.2	15.8	13.17					2.87		6.6	9.2	1.32		0.56	2.5	4.7	3.63	1.6

UNIT : mm

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