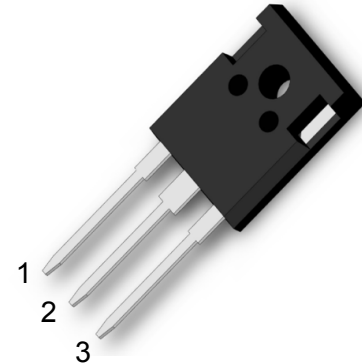


## PRODUCT FEATURES

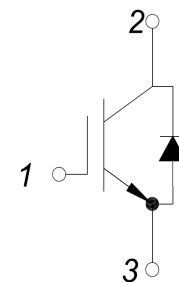
- IGBT chip in trench FS-technology
- Low switching losses
- $V_{CE(sat)}$  with positive temperature coefficient
- Fast switching and short tail current
- Free wheeling diodes with fast and soft reverse recovery



## APPLICATIONS

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

1.Gate  
2.Collector  
3.Emitter



Type	$V_{CES}$	$I_C$	$V_{CE(sat)}$ $T_J=25^\circ C$	$T_{Jmax}$	Marking	Package
MM25G3T120B	1200V	25A	1.8V	175°C	MM25G3T120B	TO-247

## ABSOLUTE MAXIMUM RATINGS( $T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter/Test Conditions	Values	Unit	
$V_{CES}$	Collector Emitter Voltage	$T_J=25^\circ C$	V	
$V_{GES}$	Gate Emitter Voltage			
$I_C$	DC Collector Current	$T_C=25^\circ C$	A	
		$T_C=110^\circ C$		
$I_{Cpuls}$	Pulsed collector current, tp limited by $T_{Jmax}$	80		
$P_{tot}$	Power Dissipation Per IGBT	306	W	
$V_{RRM}$	Repetitive Reverse Voltage	$T_J=25^\circ C$	V	
$I_{F(AV)}$	Average Forward Current	$T_C=100^\circ C$	A	
$I_{Fpuls}$	Diode pulsed current, tp limited by $T_{Jmax}$	40		
$T_{Jmax}$	Max. Junction Temperature	175	°C	
$T_{Jop}$	Operating Temperature	-40~175		
$T_{stg}$	Storage Temperature	-55~150		
Torque	to heatsink	Recommended (M3)	1.1	Nm
Weight			8	g

MacMic Science & Technology Co., Ltd.

Add: #18, Hua Shan Zhong Lu, New District, Changzhou City, Jiangsu Province, P. R. of China

# MM25G3T120B

## IGBT

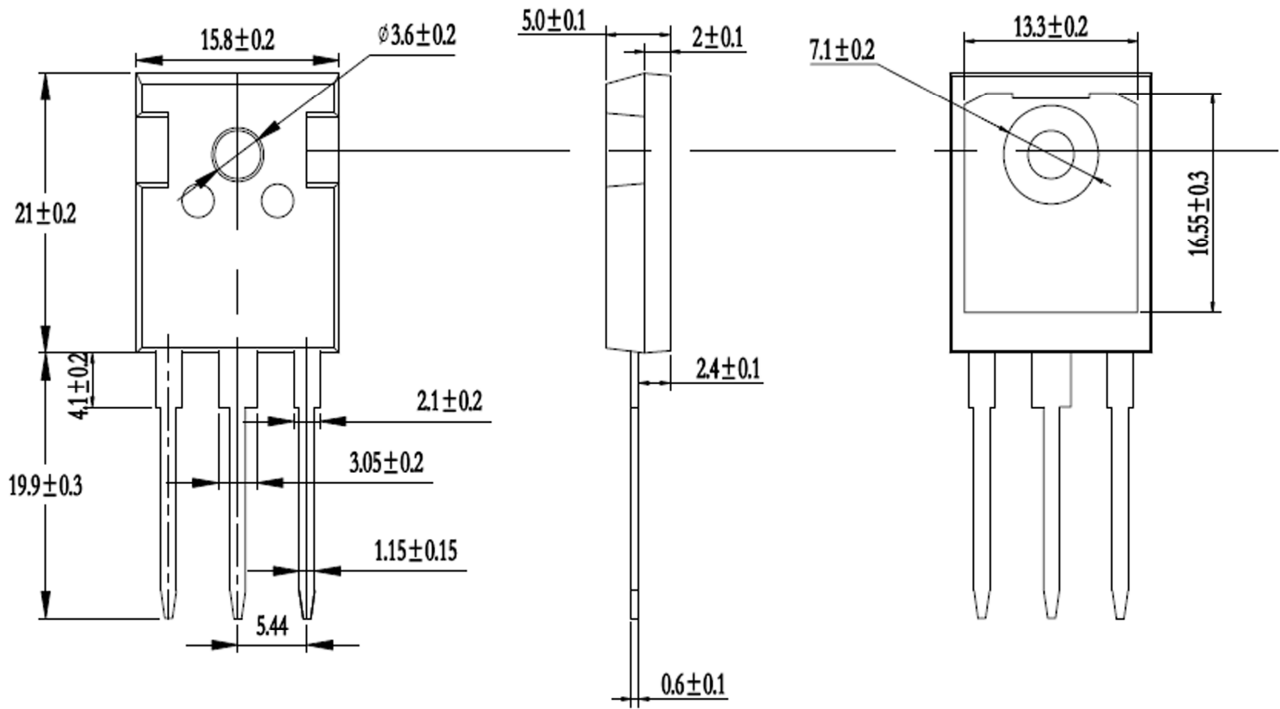
### ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit	
$V_{GE(th)}$	Gate Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_C=1\text{mA}$	5.0	5.8	6.5	V	
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=25^\circ\text{C}$		1.8	2.2		
		$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=125^\circ\text{C}$		2.05			
		$I_C=25\text{A}, V_{GE}=15\text{V}, T_J=150^\circ\text{C}$		2.1			
$I_{CES}$	Collector Leakage Current	$V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$			100	$\mu\text{A}$	
		$V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=150^\circ\text{C}$			10	$\text{mA}$	
$I_{GES}$	Gate Leakage Current	$V_{CE}=0\text{V}, V_{GE}=\pm 15\text{V}, T_J=25^\circ\text{C}$	-400		400	$\text{nA}$	
$Q_g$	Gate Charge	$V_{CE}=600\text{V}, I_C=25\text{A}, V_{GE}=15\text{V}$		152		$\text{nC}$	
$C_{ies}$	Input Capacitance	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$		2.1		$\text{nF}$	
$C_{res}$	Reverse Transfer Capacitance				80	$\text{pF}$	
$t_{d(on)}$	Turn on Delay Time	$V_{CC}=600\text{V}, I_C=25\text{A}$ $R_G=15\Omega,$ $V_{GE}=\pm 15\text{V},$ Inductive Load	$T_J=25^\circ\text{C}$		30	$\text{ns}$	
			$T_J=125^\circ\text{C}$		35	$\text{ns}$	
			$T_J=150^\circ\text{C}$		40	$\text{ns}$	
$t_r$	Rise Time		$T_J=25^\circ\text{C}$		35	$\text{ns}$	
			$T_J=125^\circ\text{C}$		40	$\text{ns}$	
			$T_J=150^\circ\text{C}$		40	$\text{ns}$	
$t_{d(off)}$	Turn off Delay Time	$T_J=25^\circ\text{C}$		170	$\text{ns}$		
		$T_J=125^\circ\text{C}$		190	$\text{ns}$		
		$T_J=150^\circ\text{C}$		210	$\text{ns}$		
$t_f$	Fall Time	$T_J=25^\circ\text{C}$		100	$\text{ns}$		
		$T_J=125^\circ\text{C}$		150	$\text{ns}$		
		$T_J=150^\circ\text{C}$		180	$\text{ns}$		
$E_{on}$	Turn on Energy	$V_{CC}=600\text{V}, I_C=25\text{A}$ $R_G=15\Omega,$ $V_{GE}=\pm 15\text{V},$ Inductive Load	$T_J=125^\circ\text{C}$		3.3	$\text{mJ}$	
			$T_J=150^\circ\text{C}$		3.7	$\text{mJ}$	
$E_{off}$	Turn off Energy		$T_J=125^\circ\text{C}$		1.8	$\text{mJ}$	
			$T_J=150^\circ\text{C}$		2.0	$\text{mJ}$	
$I_{SC}$	Short Circuit Current		$tpsc \leq 10\mu\text{s}, V_{GE}=15\text{V}$ $T_J=125^\circ\text{C}, V_{CC}=600\text{V}$		100		A
$R_{thJC}$	Junction to Case Thermal Resistance (Per IGBT)				0.49	$\text{K/W}$	

## Anti-Parallel Diode

### ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
$V_F$	Forward Voltage	$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$		1.75	2.15	V
		$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=125^\circ\text{C}$		1.6		
		$I_F=20\text{A}, V_{GE}=0\text{V}, T_J=150^\circ\text{C}$		1.55		
$t_{rr}$	Reverse Recovery Time	$I_F=20\text{A}, V_R=600\text{V}$ $dI_F/dt=-400\text{A}/\mu\text{s}$ $T_J=150^\circ\text{C}$		450		$\text{ns}$
$I_{RRM}$	Max. Reverse Recovery Current			21		A
$Q_{RR}$	Reverse Recovery Charge			3.9		$\mu\text{C}$
$E_{rec}$	Reverse Recovery Energy			1.15		$\text{mJ}$
$R_{thJCD}$	Junction to Case Thermal Resistance (Per Diode)				1.5	$\text{K/W}$



Dimensions in (mm)  
Figure 1. Package Outline