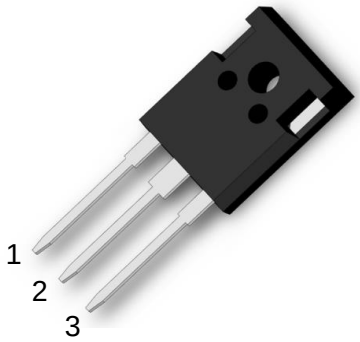
MM25G3U120BX

1200V 25A IGBT

August 2018 Preliminary RoHS Compliant

PRODUCT FEATURES

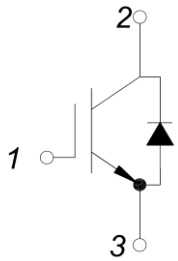
- ☐ IGBT chip in trench FS-technology
- ☐ Low switching losses
- ☐ $V_{CE(sat)}$ with positive temperature coefficient
- ☐ Fast switching and short tail current
- ☐ Free wheeling diodes with fast and soft reverse recovery



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°C	T_{Jmax}	Marking	Package
MM25G3U120BX	1200V	25A	2.0V	175°C	MM25G3U120BX	TO-247

ABSOLUTE MAXIMUM RATINGS(T_C =25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{CES}	Collector Emitter Voltage	T_J=25℃	1200	V
V_{GES}	Gate Emitter Voltage		±20	
I_C	DC Collector Current	T_C=25℃	40	A
		T_C=110℃	25	
I_{Cpuls}	Pulsed collector current,tp limited by T_{Jmax}		80	
P_{tot}	Power Dissipation Per IGBT		326	W
V_{RRM}	Repetitive Reverse Voltage	T_J=25℃	1200	V
$I_{F(AV)}$	Average Forward Current	T_C=100℃	20	A
I_{Fpuls}	Diode pulsed current,tp limited by T_{Jmax}		40	
T_{Jmax}	Max. Junction Temperature		175	℃
T_{Jop}	Operating Temperature		-40~175	
T_{stg}	Storage Temperature		-55~150	
Torque	to heatsink	Recommended（M3）	1.1	Nm
Weight			8	g

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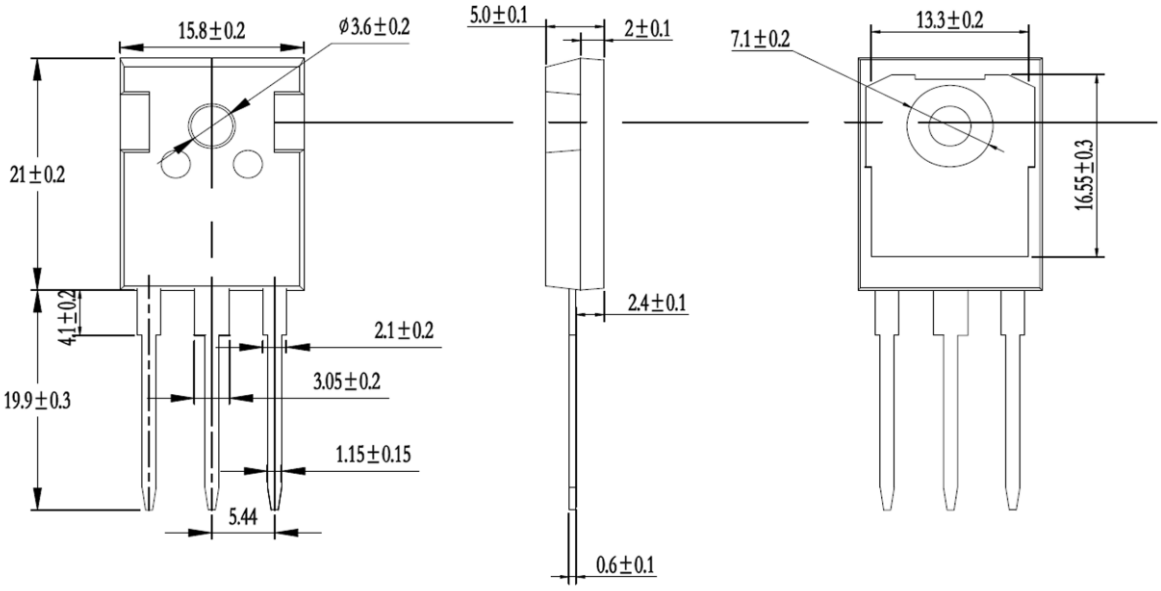
ELECTRICAL CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	Unit
$V_{GE(th)}$	Gate Emitter Threshold Voltage	$V_{CE}=V_{GE}$, I_C=1mA		5.4	6.0	6.5	V
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	I_C=25A, V_{GE}=15V, T_J=25℃			2	2.5	
		I_C=25A, V_{GE}=15V, T_J=125℃			2.3		
		I_C=25A, V_{GE}=15V, T_J=150℃			2.4		
I_{CES}	Collector Leakage Current	V_{CE}=1200V, V_{GE}=0V, T_J=25℃				100	μA
		V_{CE}=1200V, V_{GE}=0V, T_J=150℃				10	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V,V_{GE}=±15V, T_J=25℃		-400		400	nA
Q_g	Gate Charge	V_{CE}=600V, I_C=25A , V_{GE}=15V			150		nC
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz			1.8		nF
C_{res}	Reverse Transfer Capacitance				75		pF
$t_{d(on)}$	Turn on Delay Time	V_{CC}=600V,I_C=25A R_G =30Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		35		ns
			T_J=125℃		40		ns
			T_J=150℃		45		ns
t_r	Rise Time		T_J=25℃		35		ns
			T_J=125℃		40		ns
			T_J=150℃		40		ns
$t_{d(off)}$	Turn off Delay Time	V_{CC}=600V,I_C=25A R_G =30Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		210		ns
			T_J=125℃		250		ns
			T_J=150℃		270		ns
t_f	Fall Time		T_J=25℃		90		ns
			T_J=125℃		140		ns
			T_J=150℃		160		ns
E_{on}	Turn on Energy	V_{CC}=600V,I_C=25A R_G =30Ω, V_{GE}=±15V, Inductive Load	T_J=125℃		2		mJ
			T_J=150℃		2.2		mJ
E_{off}	Turn off Energy		T_J=125℃		2.2		mJ
			T_J=150℃		2.3		mJ
I_{SC}	Short Circuit Current	tpsc≤10μS , V_{GE}=15V T_J=125℃,V_{CC}=600V			100		A
R_{thJC}	Junction to Case Thermal Resistance （Per IGBT）					0.46	K /W

Anti-Parallel Diode

ELECTRICAL CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=20A , V_{GE}=0V, T_J=25℃		1.75	2.15	V
		I_F=20A , V_{GE}=0V, T_J=125℃		1.6		
		I_F=20A , V_{GE}=0V, T_J=150℃		1.55		
t_{rr}	Reverse Recovery Time	I_F=20A , V_R=600V dI_F/dt=-500A/μs T_J =150℃		450		ns
I_{RRM}	Max. Reverse Recovery Current			21		A
Q_{RR}	Reverse Recovery Charge			4.6		μC
E_{rec}	Reverse Recovery Energy			1.35		mJ
R_{thJCD}	Junction to Case Thermal Resistance （Per Diode）				1.0	K /W



Dimensions in (mm)

Figure 13. Package Outline