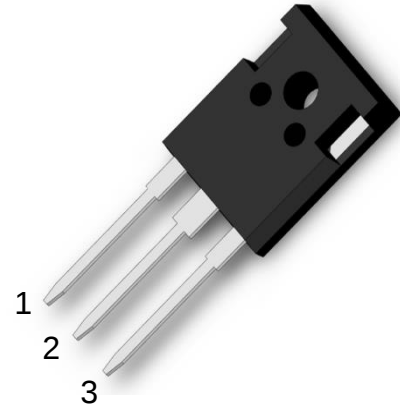


PRODUCT FEATURES

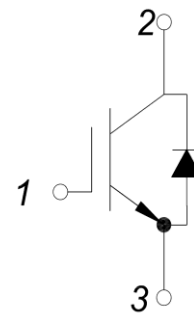
- ☐ 650V IGBT chip in trench FS-technology
- ☐ Low switching losses
- ☐ $V_{CE(sat)}$ with positive temperature coefficient
- ☐ Fast switching and short tail current
- ☐ Free wheeling diodes with fast and soft reverse recovery



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
MM75G3T65B	650V	75A	1.55V	175°C	MM75G3T65B	TO-247

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

Symbol	Parameter/Test Conditions		Values	Unit
V_{CES}	Collector Emitter Voltage	$T_J=25^{\circ}C$	650	V
V_{GES}	Gate Emitter Voltage		± 20	
I_C	DC Collector Current	$T_C=25^{\circ}C$	115	A
		$T_C=100^{\circ}C$	75	
I_{Cpuls}	Pulsed collector current, tp limited by T_{Jmax}		225	
P_{tot}	Power Dissipation Per IGBT		417	W
V_{RRM}	Repetitive Reverse Voltage	$T_J=25^{\circ}C$	650	V
$I_{F(AV)}$	Average Forward Current	$T_C=75^{\circ}C$	75	A
I_{Fpuls}	Diode pulsed current, tp limited by T_{Jmax}		225	
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

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MM75G3T65B

IGBT

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 =3.0mA	4.8	5.6	6.5	V
V _{CE(sat)}	Collector Emitter Saturation Voltage	I _C =75A, V _{GE} =15V, T _J =25℃		1.55	1.95	
		I _C =75A, V _{GE} =15V, T _J =125℃		1.8		
		I _C =75A, V _{GE} =15V, T _J =150℃		1.9		
I _{CES}	Collector Leakage Current	V _{CE} =650V, V _{GE} =0V, T _J =25℃			100	μA
		V _{CE} =650V, V _{GE} =0V, T _J =150℃			10	mA
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} =±20V, T _J =25℃	-200		200	nA
Q _g	Gate Charge	V _{CE} =400V, I _C =75A , V _{GE} =15V		360		nC
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz		4.4		nF
C _{res}	Reverse Transfer Capacitance			200		pF
t _{d(on)}	Turn on Delay Time	V _{CC} =400V, I _C =75A R _G =7.5Ω, V _{GE} =±15V, Inductive Load	T _J =25℃	24		ns
			T _J =125℃	26		ns
			T _J =150℃	26		ns
t _r	Rise Time		T _J =25℃	40		ns
			T _J =125℃	42		ns
			T _J =150℃	42		ns
t _{d(off)}	Turn off Delay Time		T _J =25℃	190		ns
			T _J =125℃	220		ns
			T _J =150℃	230		ns
t _f	Fall Time	T _J =25℃	60		ns	
		T _J =125℃	90		ns	
		T _J =150℃	100		ns	
E _{on}	Turn on Energy	V _{CC} =400V, I _C =75A R _G =7.5Ω, V _{GE} =±15V, Inductive Load	T _J =125℃	3		mJ
			T _J =150℃	3.25		mJ
E _{off}	Turn off Energy		T _J =125℃	2.52		mJ
			T _J =150℃	2.66		mJ
I _{SC}	Short Circuit Current	tpsc≤5μS , V _{GE} =15V T _J =150℃, V _{CC} =400V		395		A
R _{thJC}	Junction to Case Thermal Resistance （Per IGBT）				0.36	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 =75A , V _{GE} =0V, T _J =25℃		1.9	2.4	V
		I _F =75A , V _{GE} =0V, T _J =125℃		1.7		
		I _F =75A , V _{GE} =0V, T _J =150℃		1.65		
t _{rr}	Reverse Recovery Time	I _F =75A , V _R =400V dI _F /dt=-1800A/μs T _J =150℃		162		ns
I _{RRM}	Max. Reverse Recovery Current			62		A
Q _{RR}	Reverse Recovery Charge			5		μC
E _{rec}	Reverse Recovery Energy			1.25		mJ
R _{thJCD}	Junction to Case Thermal Resistance （Per Diode）				0.7	K /W

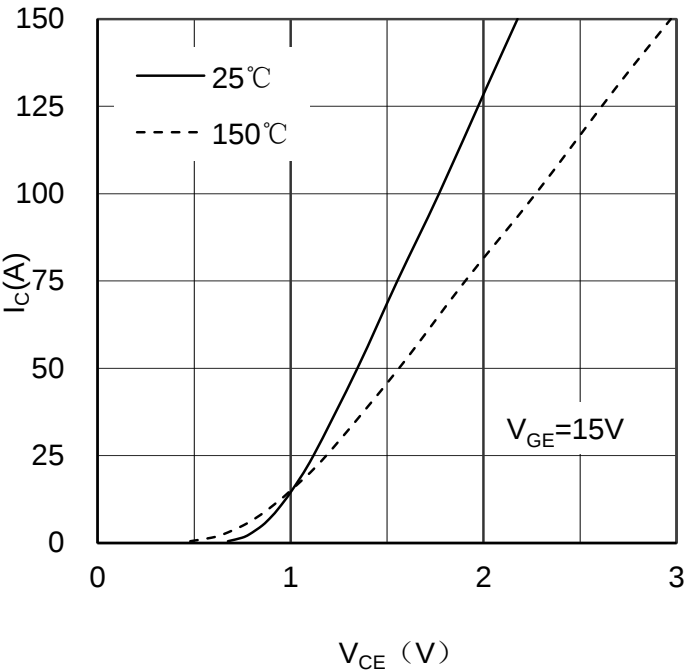


Figure 1. Typical Output Characteristics IGBT

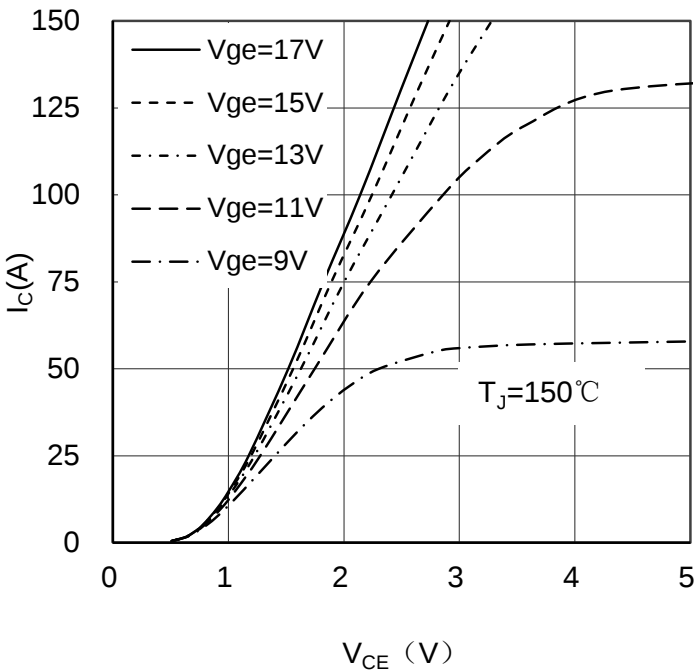


Figure 2. Typical Output Characteristics IGBT

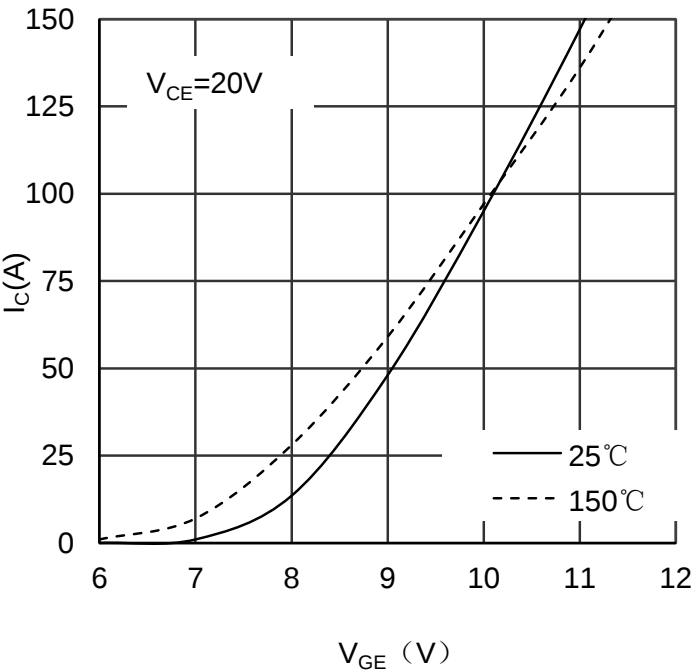


Figure 3. Typical Transfer characteristics IGBT

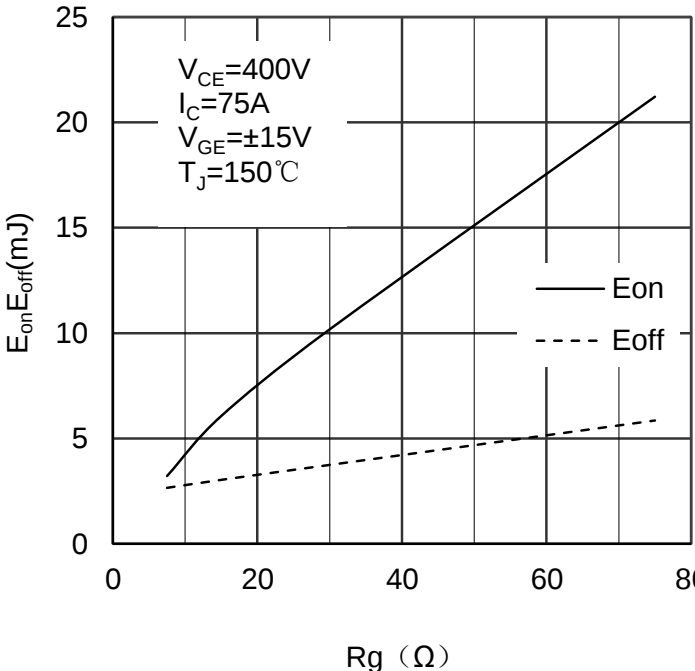


Figure 4. Switching Energy vs Gate Resistor IGBT

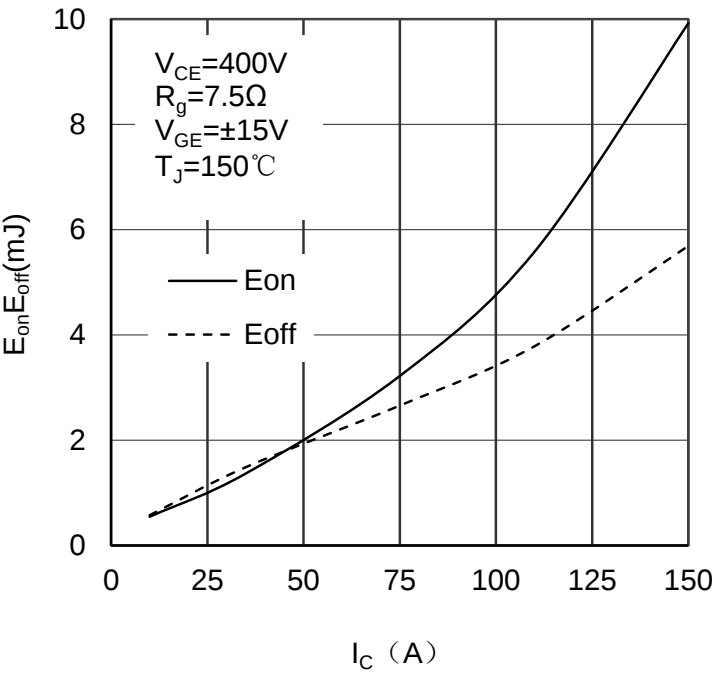


Figure 5. Switching Energy vs Collector Current IGBT

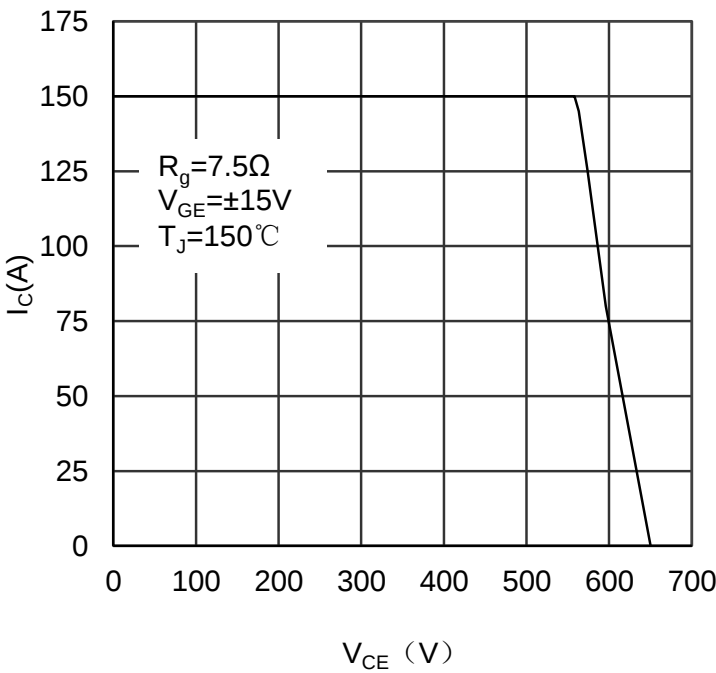


Figure 6. Reverse Biased Safe Operating Area IGBT

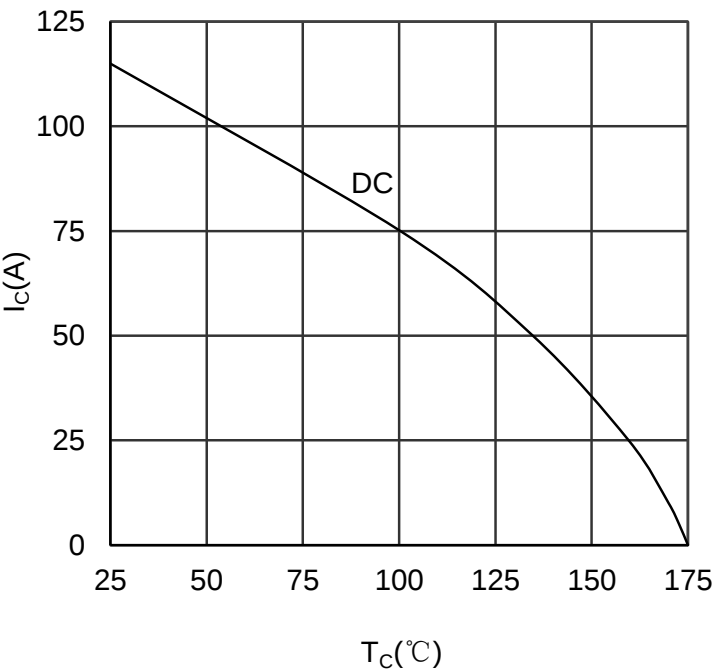


Figure 7. Collector Current vs Case temperature IGBT

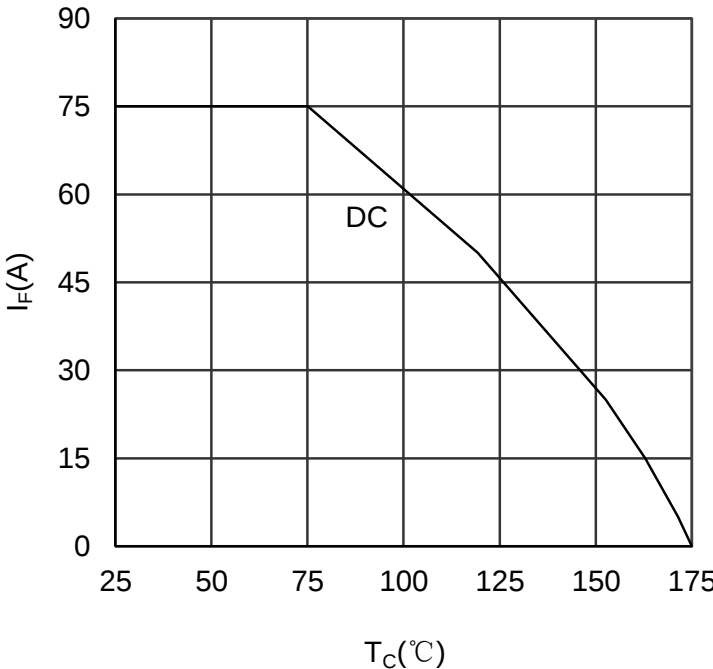


Figure 8. Forward current vs Case temperature Diode

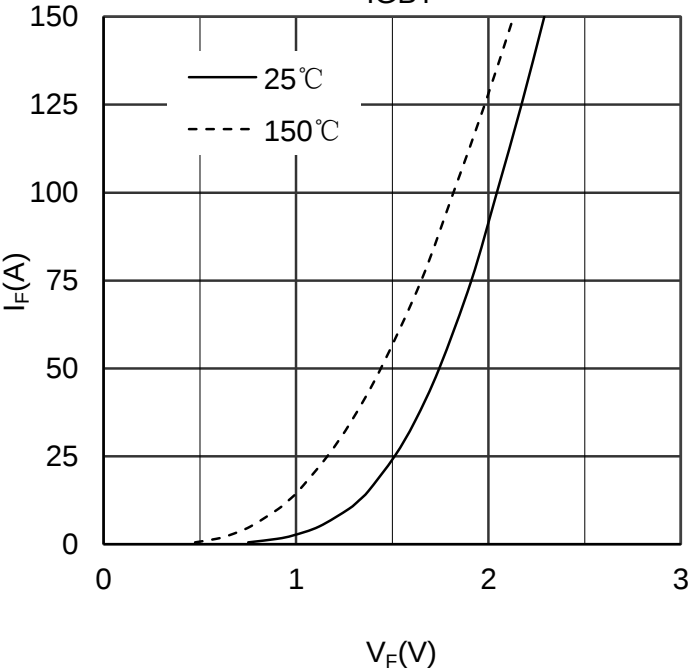


Figure 9. Diode Forward Characteristics Diode

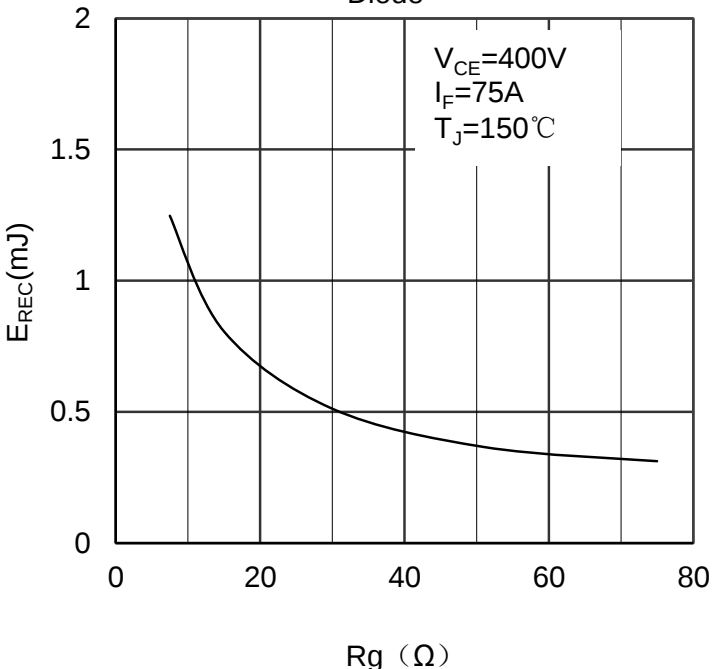


Figure 10. Switching Energy vs Gate Resistor Diode

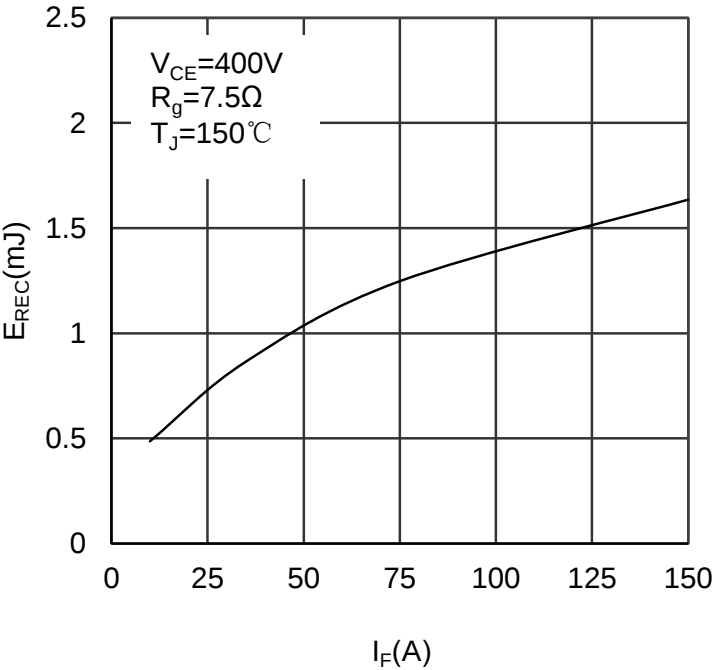


Figure 11. Switching Energy vs Forward Current Diode

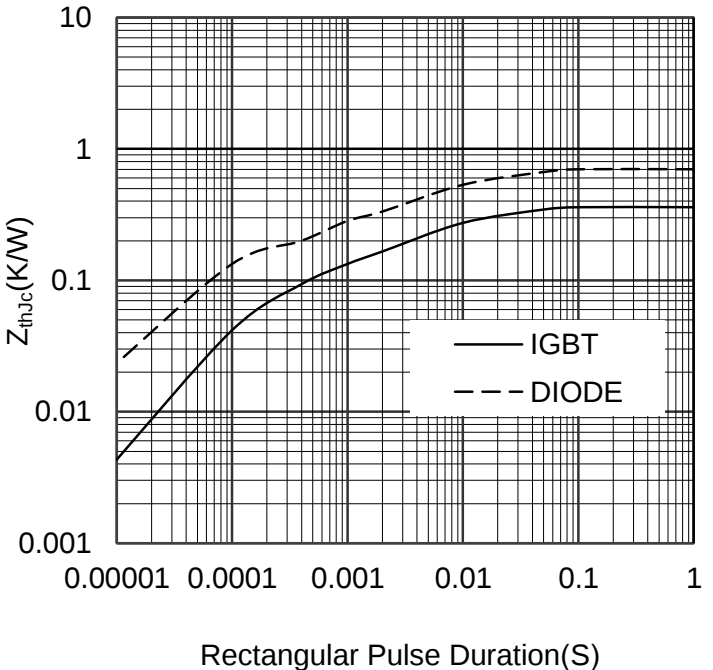
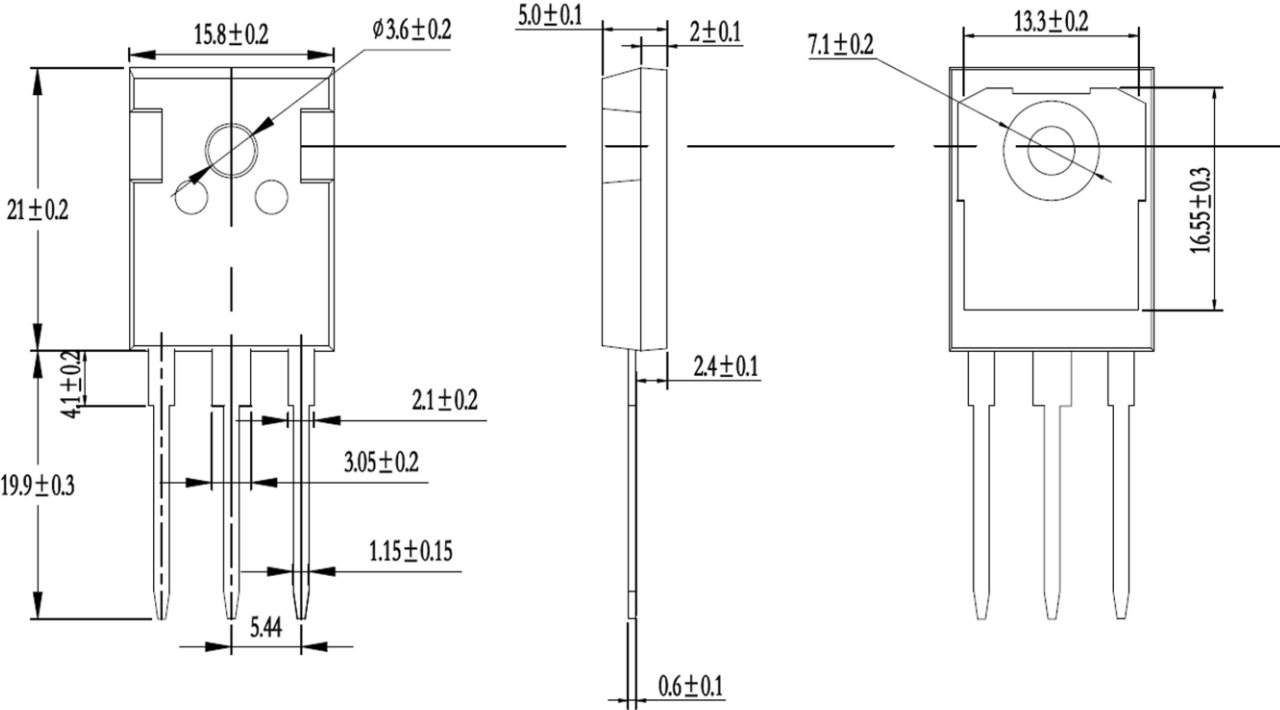


Figure 12. Transient Thermal Impedance of Diode and IGBT



Dimensions in (mm)
Figure 13. Package Outline