

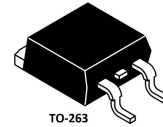
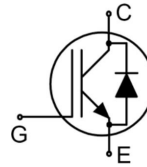
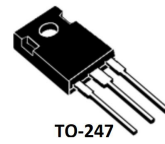
IGBT

Features

- Low gate charge
- Trench FS Technology,
- saturation voltage: $V_{CE(sat)}$,
typ = 1.6V, $I_C=20A$ and $T_C = 25^\circ C$
- RoHS product

Applications

- General purpose inverters
- UPS



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

Parameter	Symbol	Typ	Unit
Collector-Emmitter Voltage	V_{ces}	650	V
Collector Current-continuous	I_C $T=25^\circ C$ $T=100^\circ C$	40	A
		20	A
Collector Current-pulse	I_{CM}	80	A
Diode RMS forward current	I_F $T=25^\circ C$ $T=100^\circ C$	40	A
		20	A
Gate-Emmitter Voltage	V_{GES}	± 20	V
Turn-off safe area	-	180	A
Surge non repetitive forward current $t_p=10ms$ sinusoidal	I_{FSM}	80	A
Power Dissipation (TO-247/TO-263)	P_D $T_C=25^\circ C$	162	W
		(TO-220F)	46
Diode Forward Current	$T_C=100^\circ C$	20	A
Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$
Maximum Lead Temperature for Soldering Purposes	T_L	300	$^\circ C$

*Collector current limited by maximum Junction temperature

Thermal Characteristic

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Collector-Emmitter Voltage	BV_{CES}	$I_C=500\mu A, V_{GE}=0V$	650	-	-	V

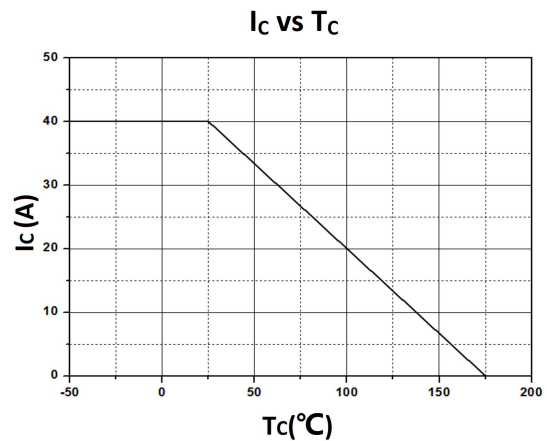
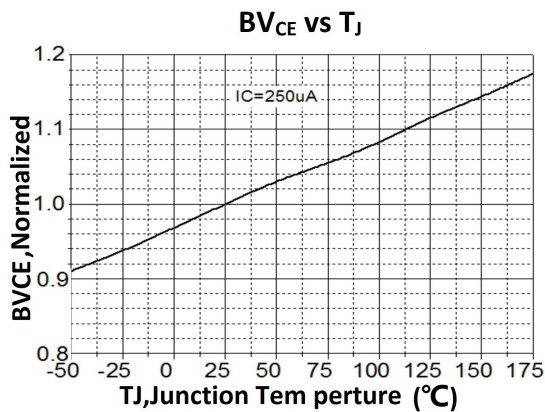
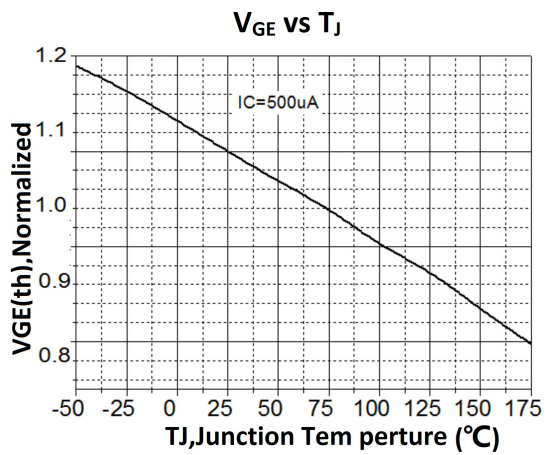
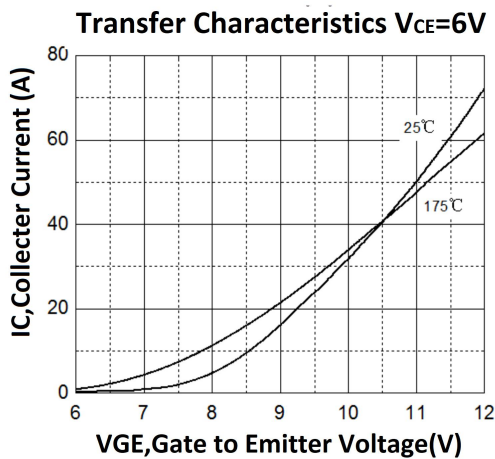
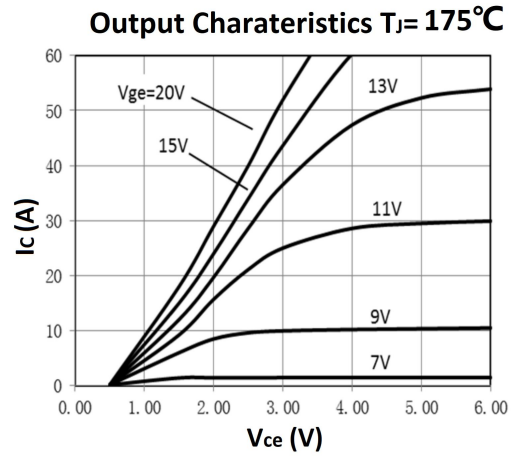
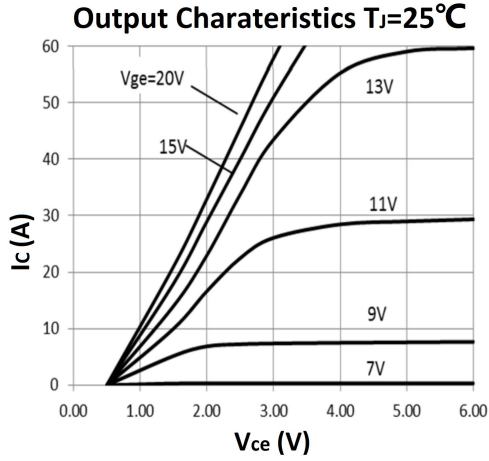
Breakdown Voltage Temperature Coefficient	$\Delta BV_{CES}/\Delta T_J$	$I_C=1\text{mA}$, reference to 25°C	-	0.5	-	$\text{V}/^\circ\text{C}$
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650\text{V}$, $V_{GE}=0\text{V}$, $T_C=25^\circ\text{C}$	-		10	μA
Gate-body leakage current	I_{GESF}	$V_{CE}=0\text{V}$, $V_{GE}=\pm 20\text{V}$	-	-	200	nA
On-Characteristics						
Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$, $I_C=250\mu\text{A}$	4.5	-	6.5	V
Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15\text{V}$, $I_C=20\text{A}$, $T_C=25^\circ\text{C}$	-	1.6	2.0	V
		$T_C=125^\circ\text{C}$		1.75	2.15	
		$T_C=175^\circ\text{C}$		1.9	2.3	
Short Collector current	$I_C(sc)$	$V_{GE}=15\text{V}$ $V_{CE}=360\text{V}$ $t_{sc}< 10\mu\text{s}$ $T_C=25^\circ\text{C}$		116.7		A
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=1.0\text{MHz}$, $T_C=25^\circ\text{C}$	-	1500	-	pF
Output capacitance	C_{oes}		-	128	-	pF
Reverse transfer capacitance	C_{res}		-	28.7	-	pF
Switching Characteristics						
Turn-On delay time	$t_d(on)$	$V_{CE}=400\text{V}$, $I_C=20\text{A}$, $R_G=10\Omega$, $V_{GE}=15\text{V}$, $T_C=25^\circ\text{C}$ Inductive Load	-	16	-	ns
Turn-On rise time	t_r		-	56	-	ns
Turn-off delay time	$t_d(off)$		-	52	-	ns
Turn-off Fall time	t_f		-	82	-	ns
Turn-on energy	E_{on}		-	0.79	-	mJ
Turn-off energy	E_{off}		-	0.3	-	mJ
Total switching Energy	E_{total}		-	1.09	-	mJ
Total Gate Charge	Q_g	$V_{CE}=400\text{V}$, $I_C=20\text{A}$, $R_G=10\Omega$, $V_{GE}=15\text{V}$	-	43.9	-	nC
Anti-Paraller Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V_F	$V_{GE}=0\text{V}$, $I_F=20\text{A}$, $T_C=25^\circ\text{C}$	-	1.4	-	V
		$V_{GE}=0\text{V}$, $I_F=20\text{A}$, $T_C=175^\circ\text{C}$	-	1.0	-	V
Diode Reverse recovery time	t_{rr}	$V_{GE}=0\text{V}$, $I_F=20\text{A}$, $di/dt=100\text{A}/\mu\text{s}$	-	254	-	ns
Reverse recovery	Q_{rr}		-	347	-	μC

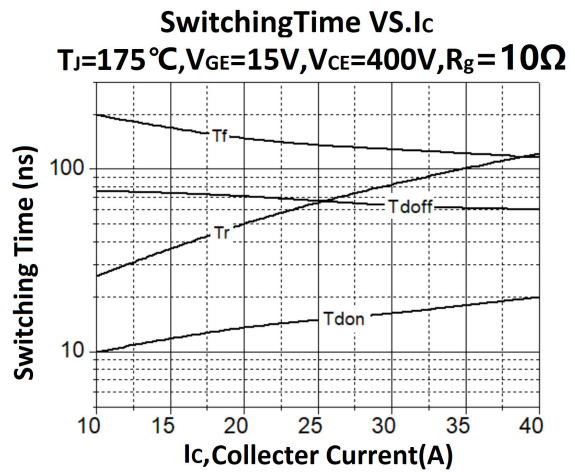
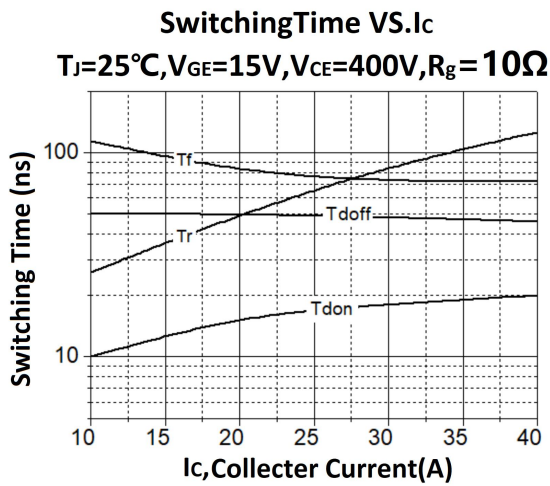
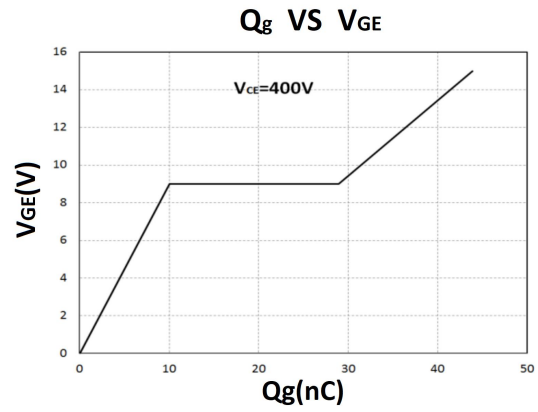
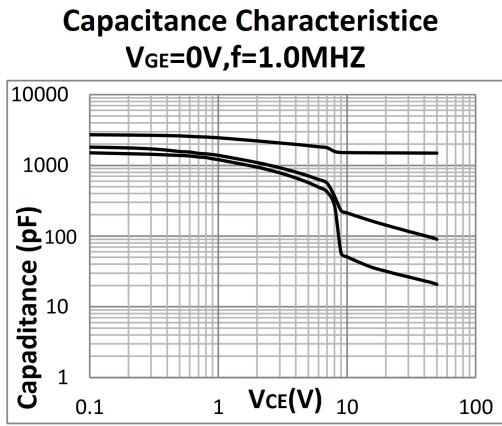
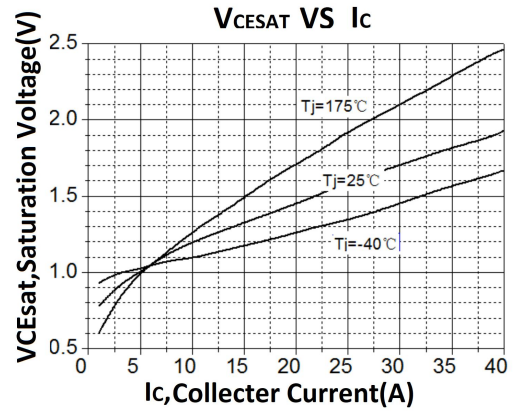
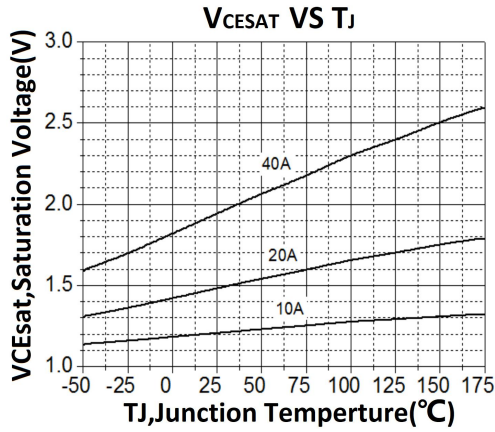
charge					
Diode Reverse recovery Current	Irrm		-	2.7	- A
Parameter	Symbol	Typ		Unit	
		TO-263/TO-247	TO-220F		
IGBT Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.77		°C/W	
FRD Thermal Resistance, Junction to Case	$R_{th(j-c)}$	2.05		°C/W	
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	33.8		°C/W	

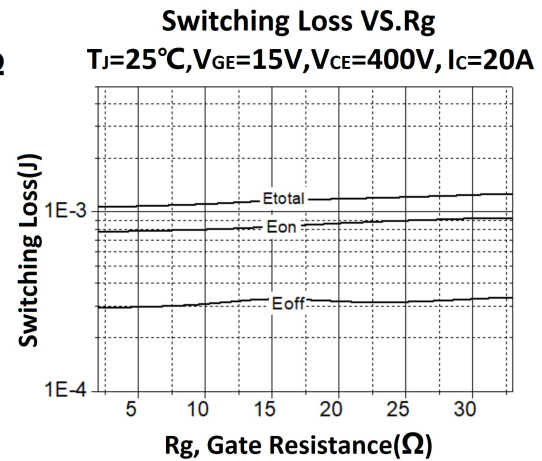
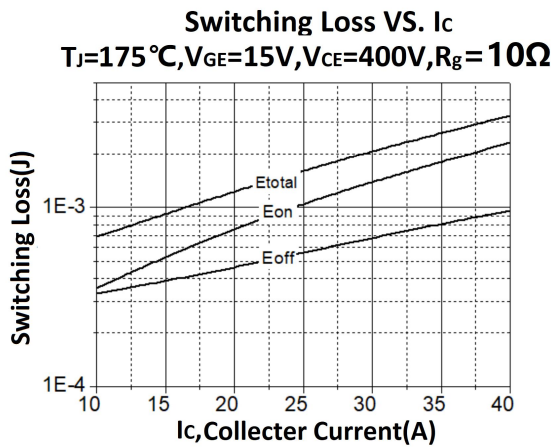
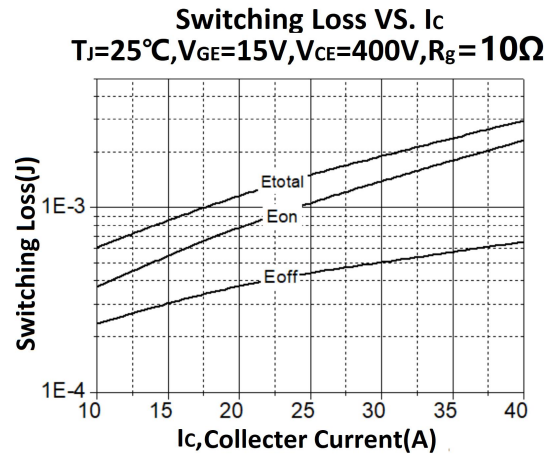
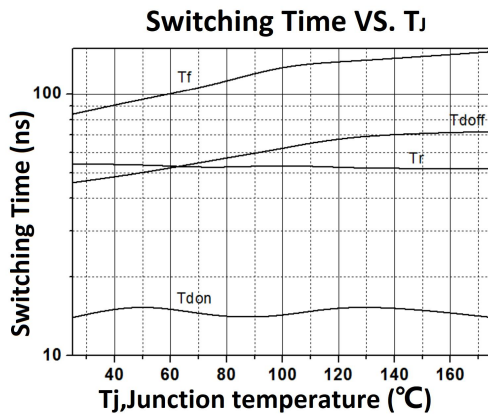
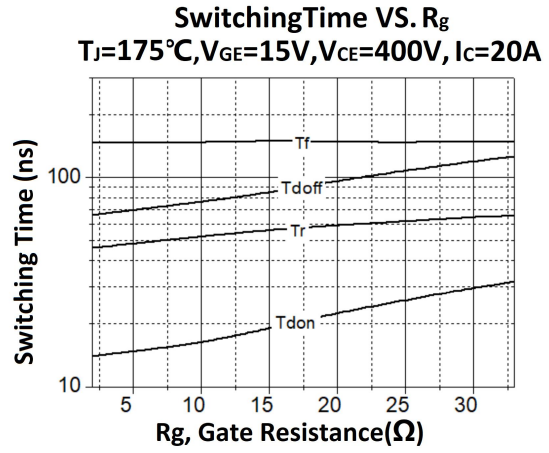
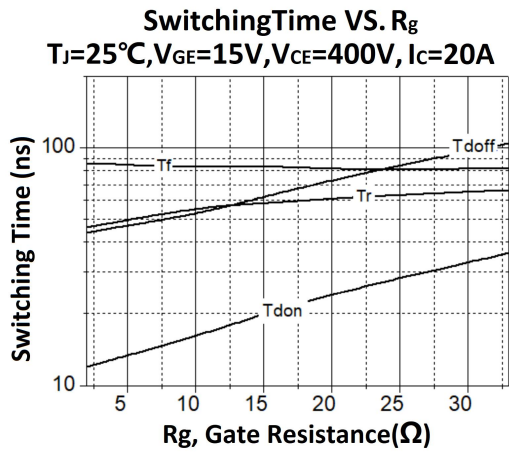
Order information

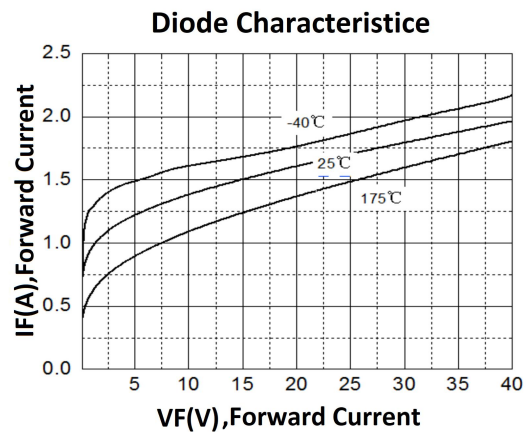
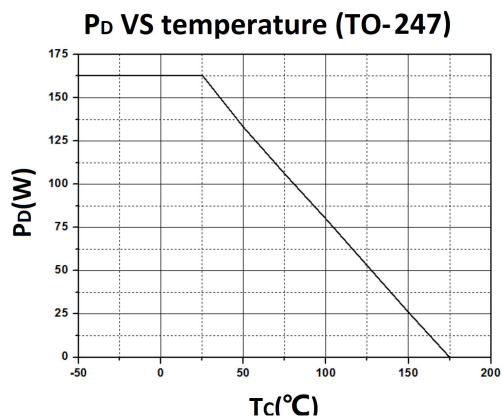
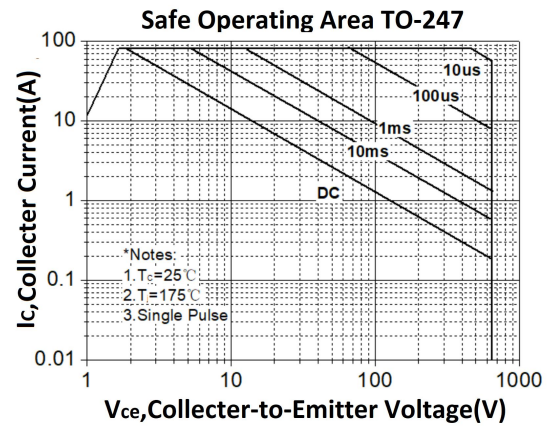
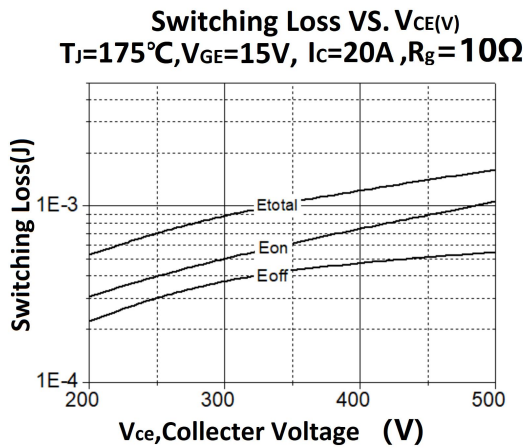
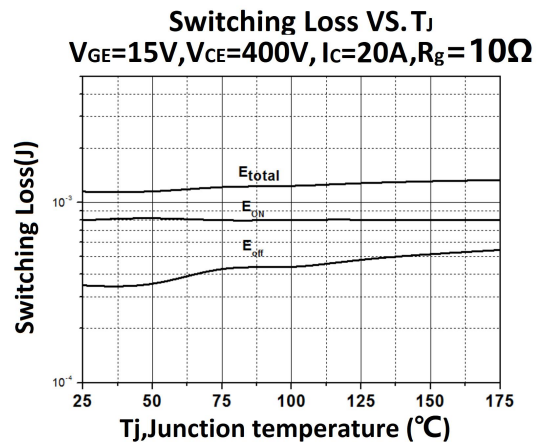
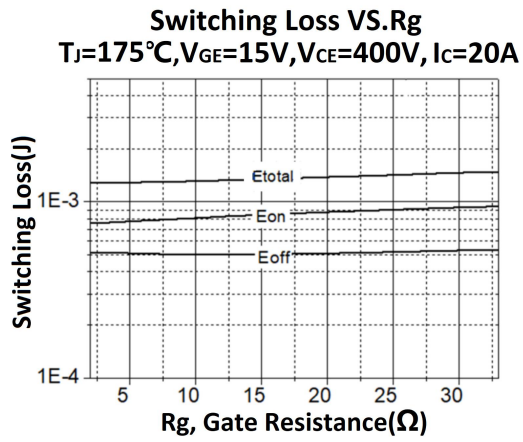
type	Package
SL20T65FL1	TO-247
SL20T65K1	TO-263
SL20T65F1	TO-220F

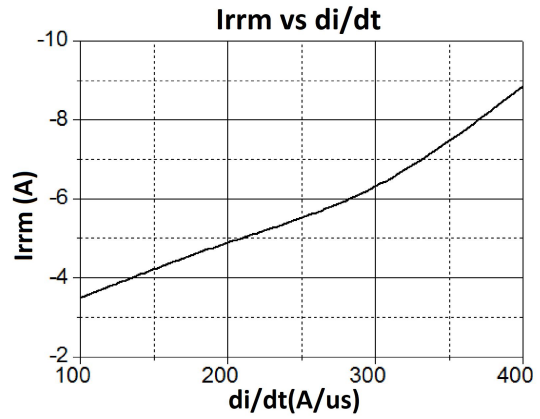
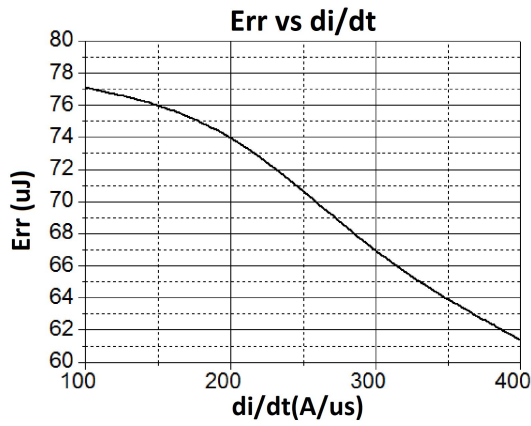
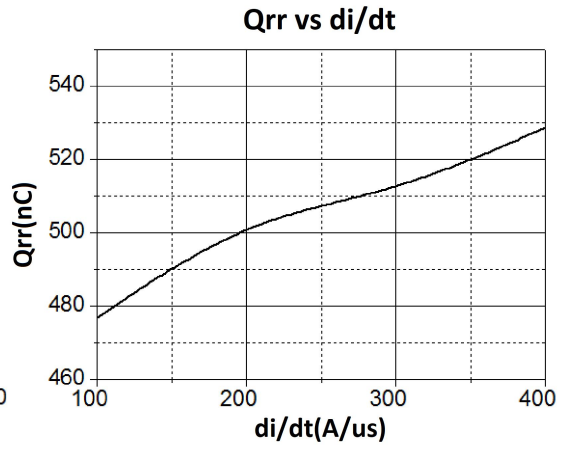
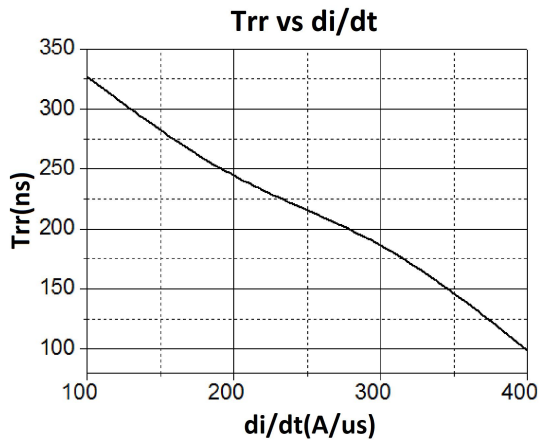
Electrical Characteristics (curves)



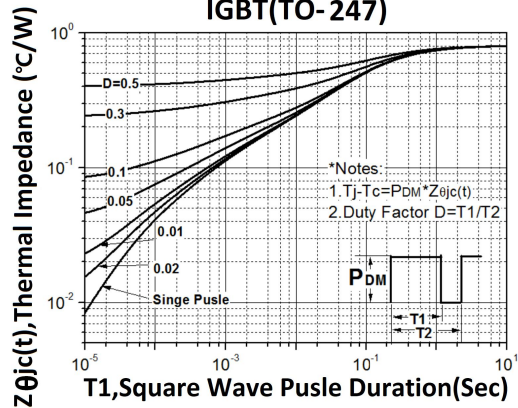




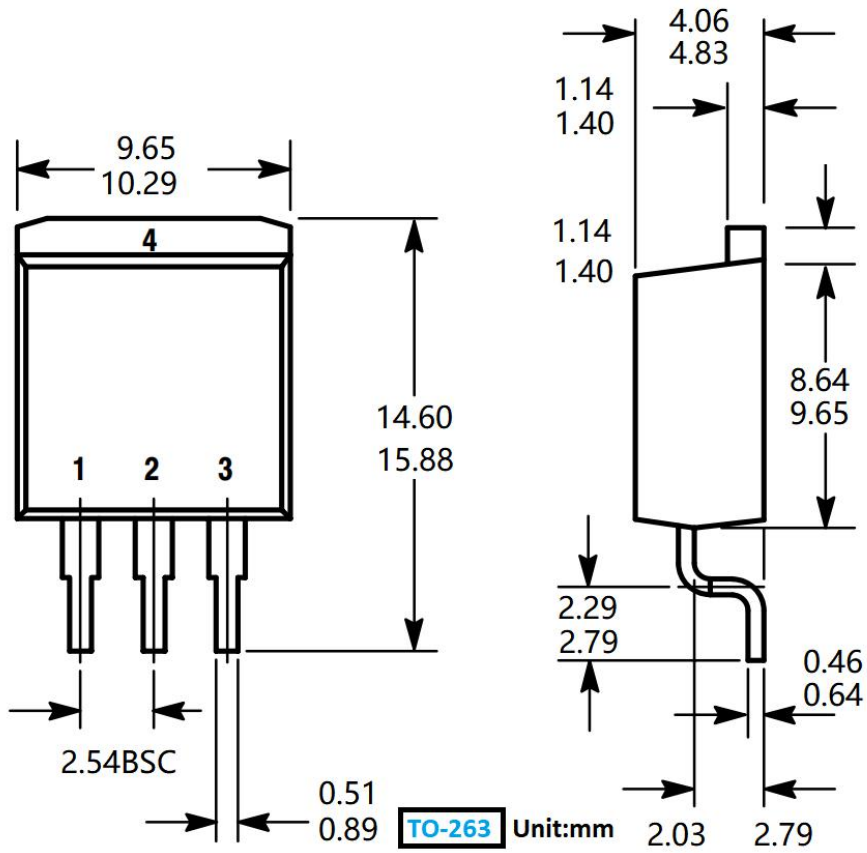
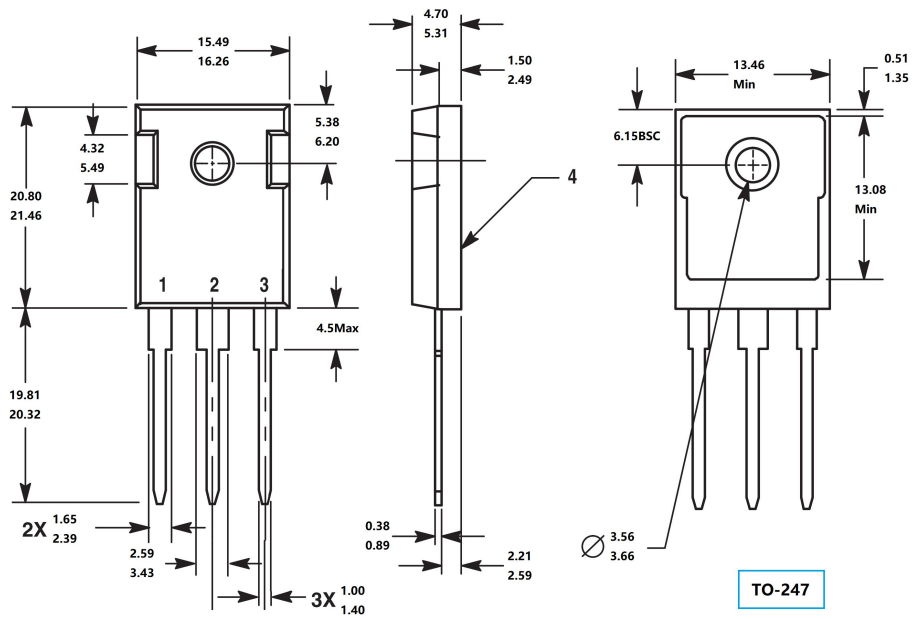


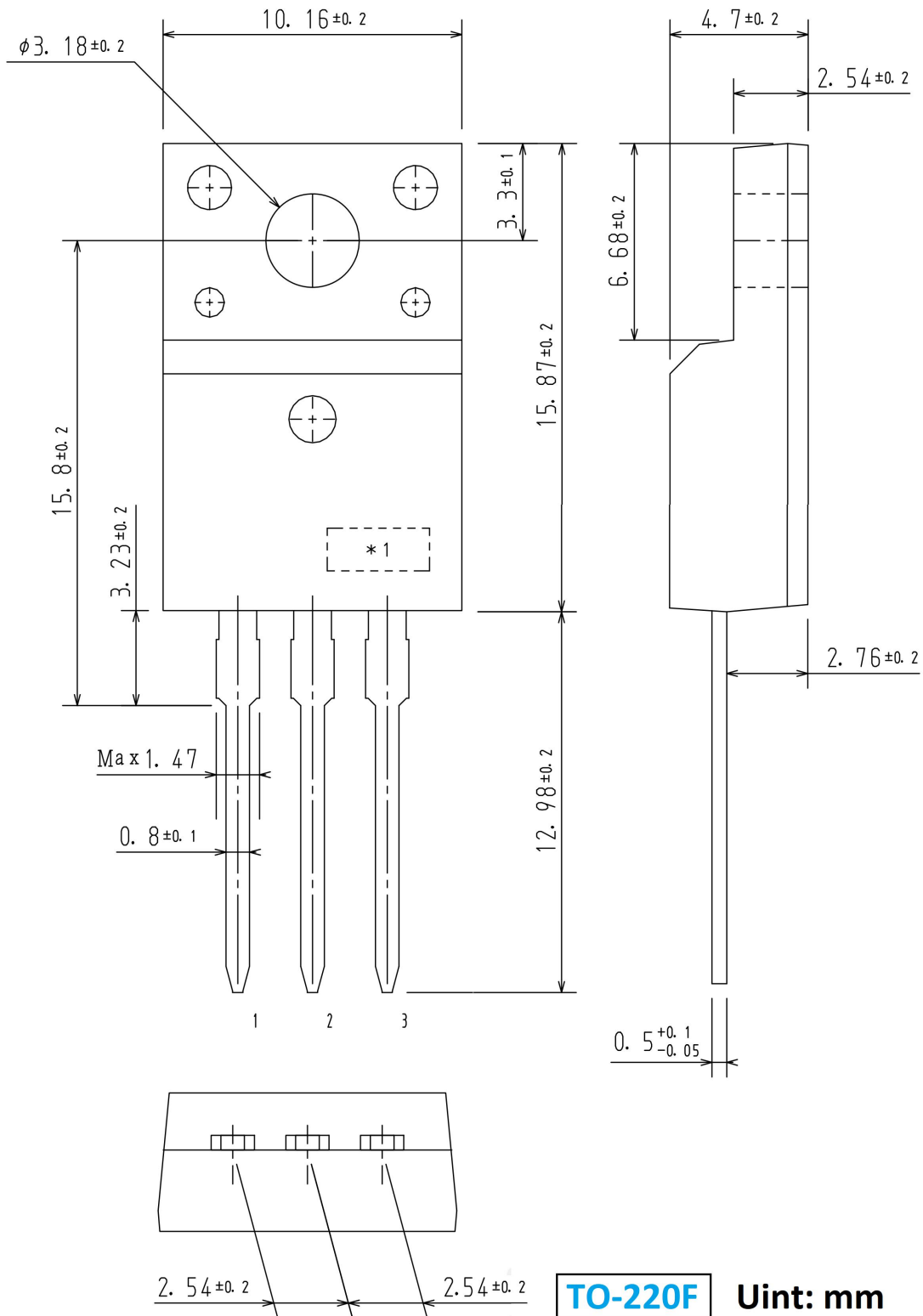


Normalized Maximum Transient Thermal Impedance for IGBT(TO-247)



Package Mechanical DATA





TO-220F

Unit: mm

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