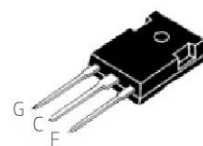
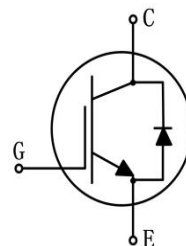


MAIN CHARACTERISTICS

I_C @TC=100°C	40A
V_{CE}	1200V
$V_{CE(sat)}$ -typ	1.7V



TO-247

FEATURES

- Positive temperature coefficient
- High speed switching
- Low collector to emitter saturation voltage
- Easy parallel switching capability
- Short circuit withstands time 10μs
- High ruggedness performance

APPLICATIONS

- Portable power station
- Motor driver

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106

Product specification classification

Part Number	Package	Mode Name	Pack
LGT40N120B	TO-247	LGT40N120B	Tube

Maximum Ratings

Characteristics	Symbol	Value	Unit
		247	
Collector-emitter voltage	V_{CES}	1200	V
Gate-emitter voltage	V_{GES}	± 30	V
Continuous collector current (TC=25°C)	I_C	80	A
Continuous collector current (TC=100°C)		40	A
Pulsed collector current, tp limited by Tvjmax	I_{CM}	160	A
Diode continuous forward current (TC=100°C)	I_F	40	A
Diode maximum current, tp limited by Tvjmax	I_{FM}	160	A
Power dissipation (TC=25°C)	P_{tot}	625	W
Operating junction temperature range	T_{vj}	-45 to +175	°C
Storage temperature range	T_{stg}	-55 to +175	°C

Thermal characteristics

Characteristics	Symbol	Values		Unit
		Typ	Max.	
Thermal resistance, junction to case for IGBT	$R_{th(j-c)}$	-	0.34	K/ W
Thermal resistance, junction to case for Diode	$R_{th(j-c)}$	-	0.80	K/ W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	-	40	K/ W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Electrical characteristics of IGBT at Tvj=25°C unless otherwise specified

Static characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	BV_{CES}	1200	-	-	V
Collector-emitter leakage current	$V_{CE}=1200V, V_{GE}=0V$	I_{CES}	-	-	10	μA
Gate leakage current, forward	$V_{GE}=\pm 20V, V_{CE}=0V$	I_{GES}	-	-	± 200	nA
Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	$V_{GE(th)}$	4.3	5.3	6.3	V
Collector-emitter saturation voltage	$V_{GE}=15V, I_C=40A$	$V_{CE(sat)}$	-	1.7	2	V
	$V_{GE}=15V, I_C=40A, T_{vj}=175^\circ C$		-	2.2	-	V

Dynamic characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Input capacitance	$V_{CE}=25V$ $V_{GE}=0V$ $f=1MHz$	C_{ies}	-	3980	-	pF
Output capacitance		C_{oes}	-	157	-	pF
Reverse transfer capacitance		C_{res}	-	93	-	pF
Total gate charge	$V_{CC}=960V, V_{GE}=15V, I_C=40A$	Q_g	-	346	-	nC
Gate- Emitter Charge		Q_{ge}		2.4		nC
Gate- Collector Charge		Q_{gc}		238		nC

Electrical characteristics of IGBT at $T_{vj}=25^{\circ}\text{C}$ unless otherwise specified

Switching characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Turn-on delay time	$V_{CC}=600\text{V}$ $V_{GE}=15\text{V}$ $I_C=40\text{A}$ $R_G=5\Omega$ Inductive load	td(on)	-	25	-	ns
Rise time		tr	-	28	-	ns
Turn-off delay time		td(off)	-	262	-	ns
Fall time		tf	-	149	-	ns
Turn-on energy		Eon	-	1.3	-	mJ
Turn-off energy		Eoff	-	2.3	-	mJ
Total switching energy		Ets	-	3.6	-	mJ
Turn-on delay time	$V_{CC}=600\text{V}$ $V_{GE}=15\text{V}$ $I_C=40\text{A}$ $R_G=5\Omega$ Inductive load $T_{vj}=175^{\circ}\text{C}$	td(on)	-	26	-	ns
Rise time		tr	-	35	-	ns
Turn-off delay time		td(off)	-	331	-	ns
Fall time		tf	-	224	-	ns
Turn-on energy		Eon	-	2.2	-	mJ
Turn-off energy		Eoff	-	3.7	-	mJ
Total switching energy		Ets	-	5.9	-	mJ
Short circuit collector current Max.1000 short circuits, times between short circuits: $\geq 1.0\text{s}$	$V_{GE}=15\text{V}$, $V_{CC}\leq 600\text{V}$ $T_J\leq 175^{\circ}\text{C}$	t(SC)	-	13	-	us

Diode forward voltage	$I_F=40\text{A}$	VF	-	1.6	1.9	V
Diode reverse recovery time	$V_R=600\text{V}$	trr	-	94	-	ns
Diode peak reverse recovery current	$I_F=40\text{A}$	Irrm	-	9.7	-	A
Diode reverse recovery charge	$diF/dt=-200\text{A}/\mu\text{s}$	Qrr	-	225	-	nC

Diode forward voltage	$I_F=40\text{A}$ $T_J=175^{\circ}\text{C}$	VF	-	1.5	-	V
Diode reverse recovery time	$V_R=600\text{V}$	trr	-	125	-	ns
Diode peak reverse recovery current	$I_F=40\text{A}$	Irrm	-	11.2	-	A
Diode reverse recovery charge	$diF/dt=-200\text{A}/\mu\text{s}$ $T_J=175^{\circ}\text{C}$	Qrr	-	277	-	nC

RATINGS AND CHARACTERISTIC CURVES

Figure 1: Power Dissipation

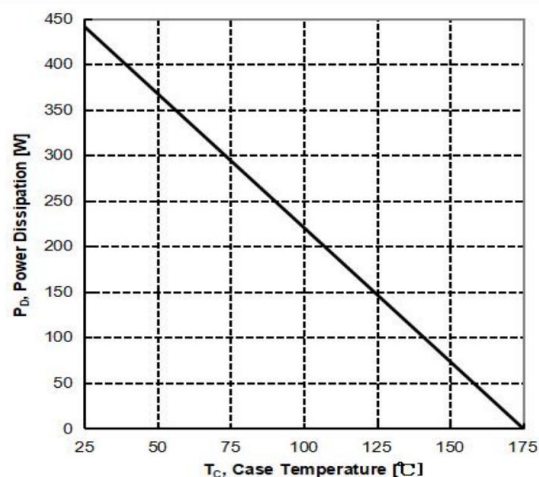


Figure 2: Collector Current vs. Case Temperature

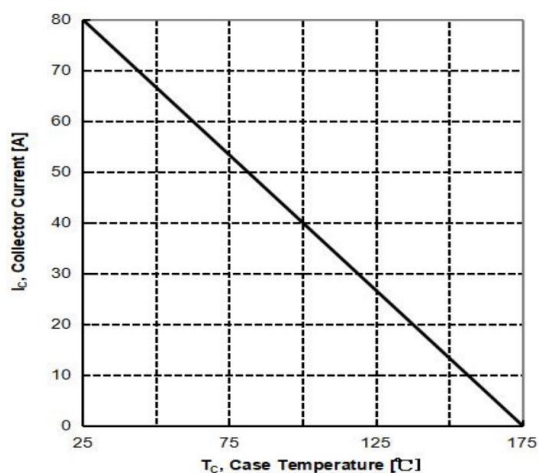


Figure 3: Safe Operation Area

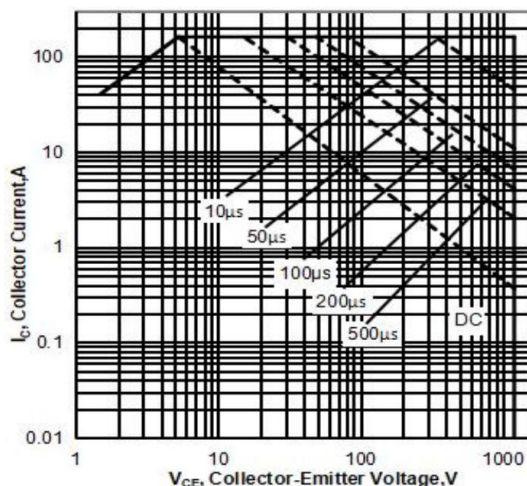


Figure 4: Typical Transfer Characteristics

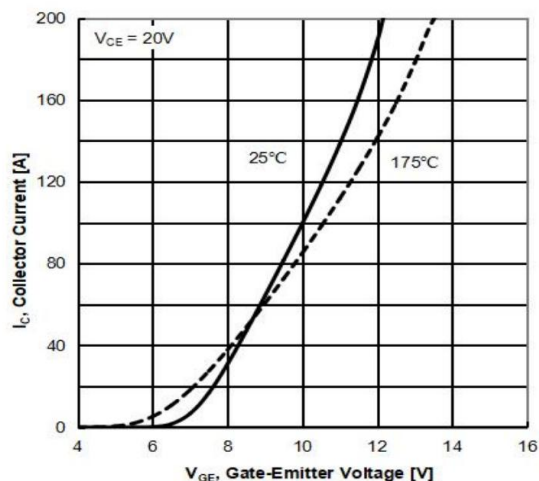


Figure 5: Output Characteristics

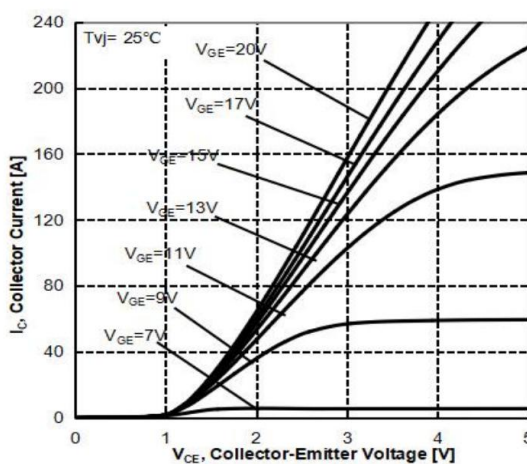


Figure 6: Output Characteristics

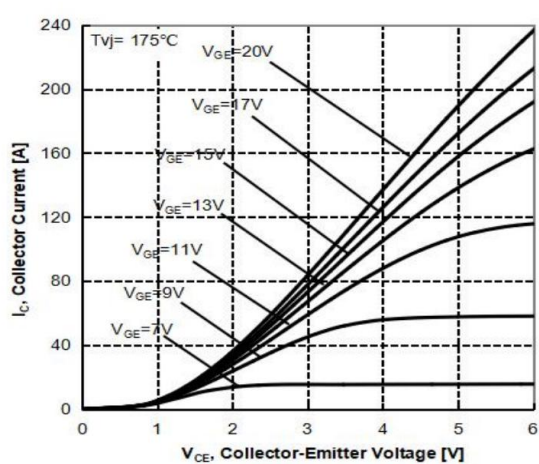


Figure 7: Typical Collector-Emitter Saturation Voltage vs. Junction Temperature

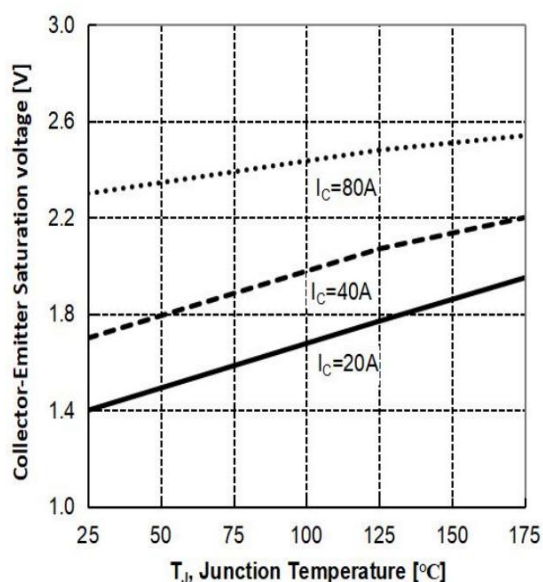


Figure 8: Typical Gate-Emitter Threshold Voltage vs. Junction Temperature

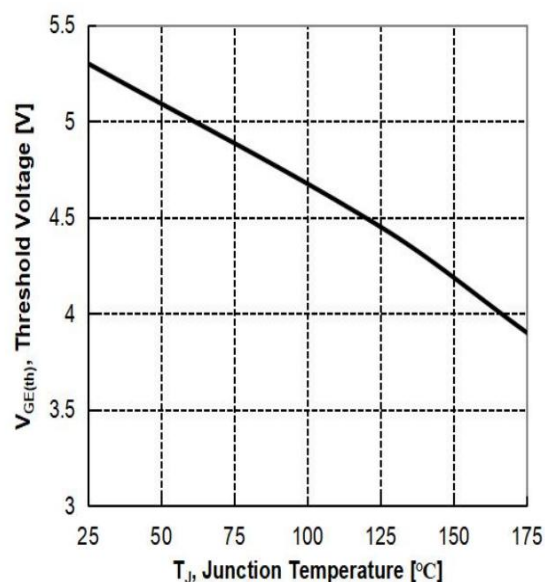


Figure 9: Typical Switching Times vs. Gate Resistor (T_J=25°C, V_{CE}=600V V_{GE}=15/0V, I_C=40A)

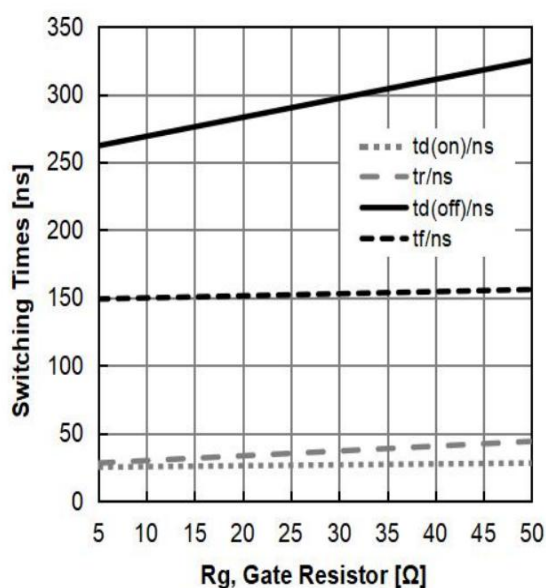


Figure 10: Typical Switching Energy vs. Gate Resistor (T_J=25°C, V_{CE}=600V V_{GE}=15/0V, I_C=40A)

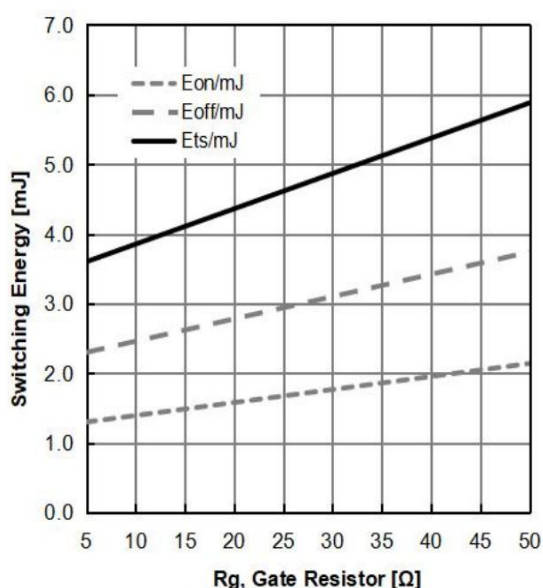


Figure 11: Typical Switching Times vs. Junction Temperature ($V_{CE}=600V$, $V_{GE}=15/0V$, $I_C=40A$)

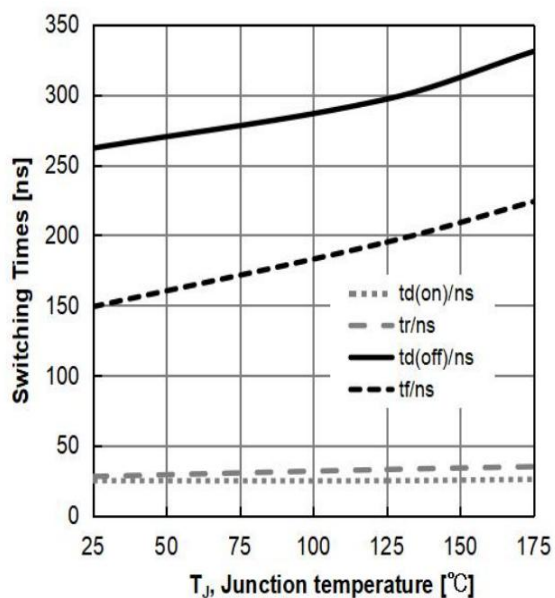


Figure 12: Typical Switching Energy vs. Junction Temperature ($V_{CE}=600V$, $V_{GE}=15/0V$, $I_C=40A$)

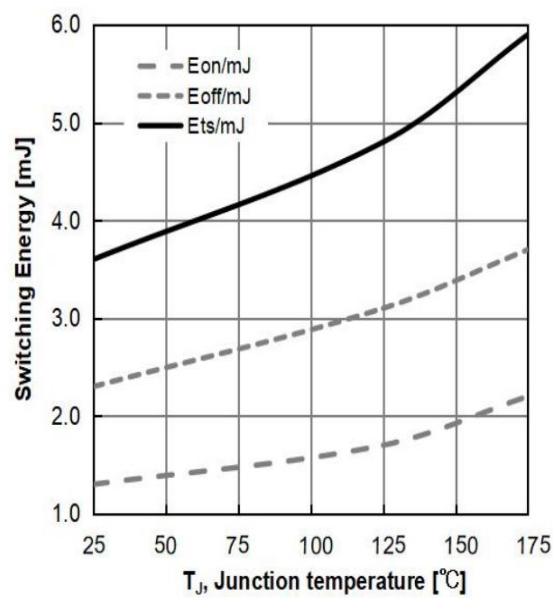


Figure 13: Typical Switching Times vs. Collector Current ($T_J=25^\circ C$, $V_{CE}=600V$, $V_{GE}=15/0V$)

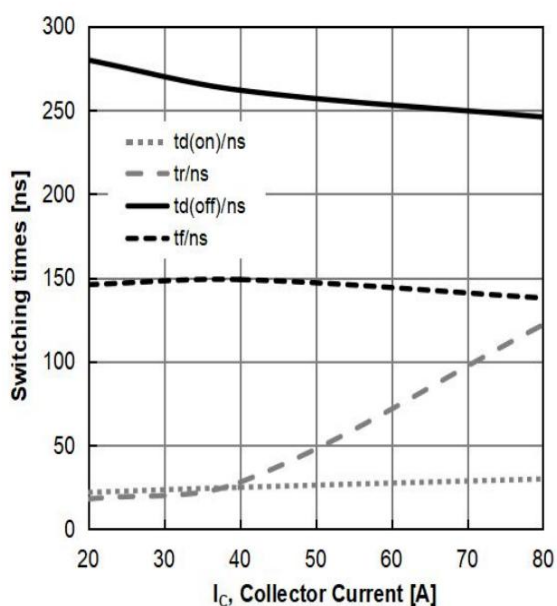


Figure 14: Typical Switching Energy vs. Collector Current ($T_J=25^\circ C$, $V_{CE}=600V$, $V_{GE}=15/0V$)

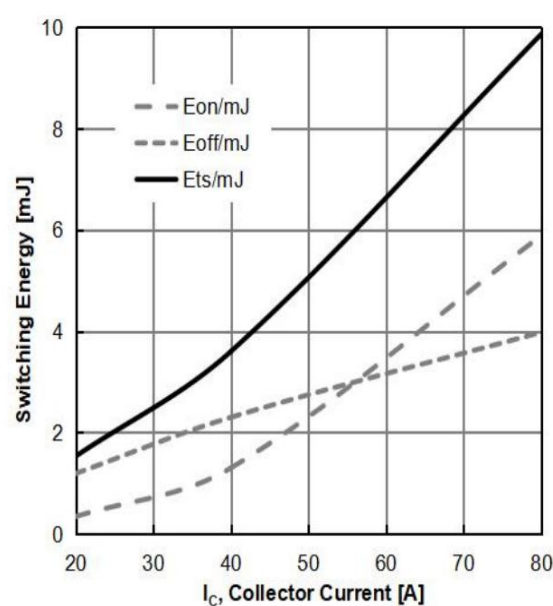


Figure 15: Typical Switching Times vs. VCE ($T_J=25^{\circ}\text{C}$, $V_{GE}=15/0\text{V}$, $I_C=40\text{A}$)

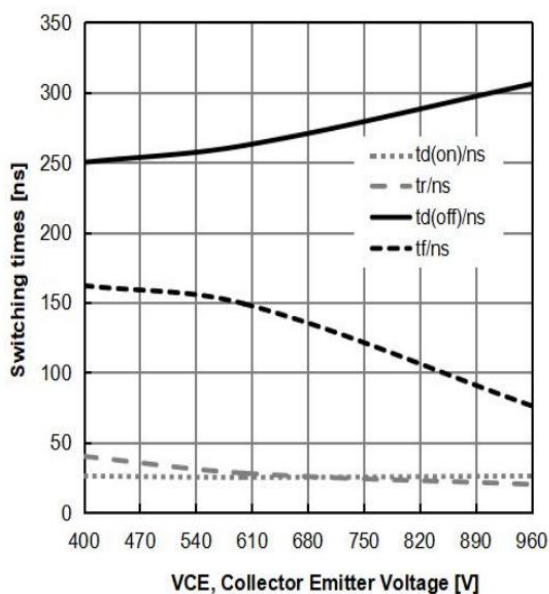


Figure 16: Typical Switching Energy vs. VCE ($T_J=25^{\circ}\text{C}$, $V_{GE}=15/0\text{V}$, $I_C=40\text{A}$)

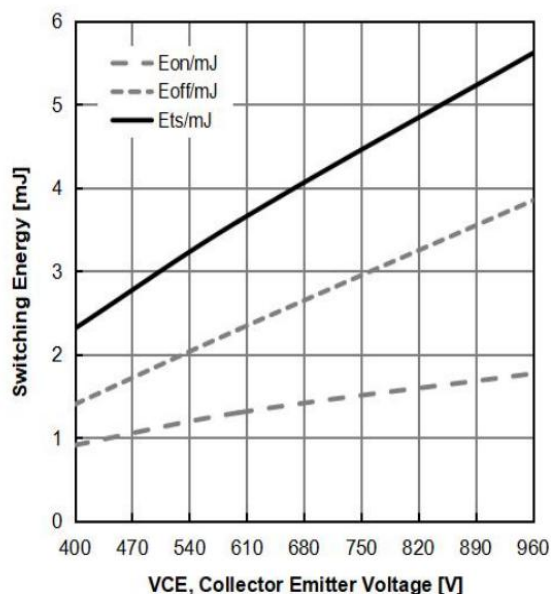


Figure 17: Typical Gate Charge

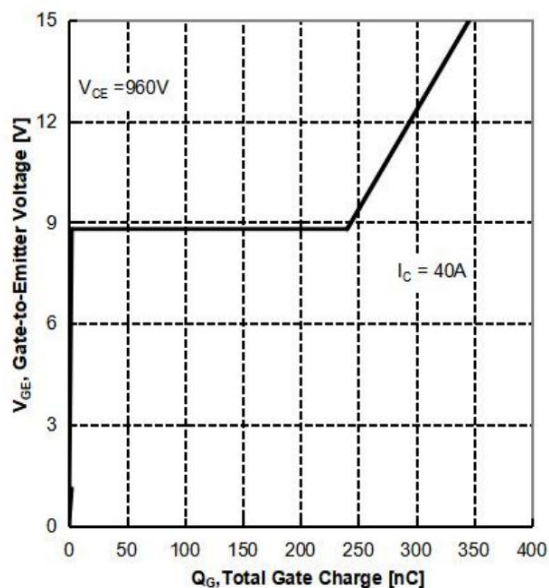


Figure 18: Typical Capacitance vs. Collector- Emitter Voltage

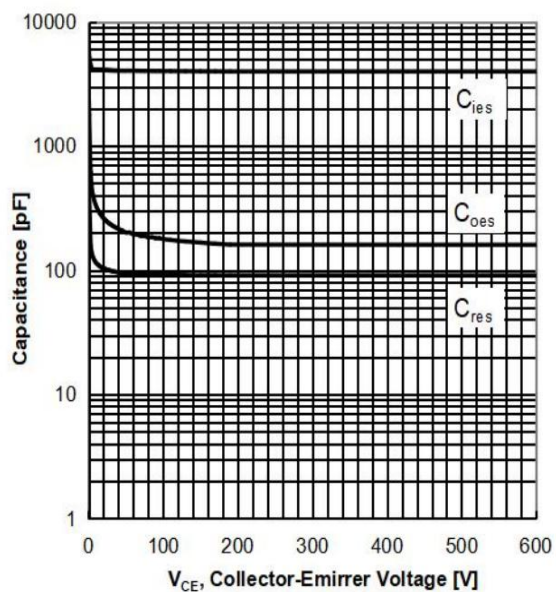


Figure 19: IGBT Transient Thermal Impedance vs. Pulse Width

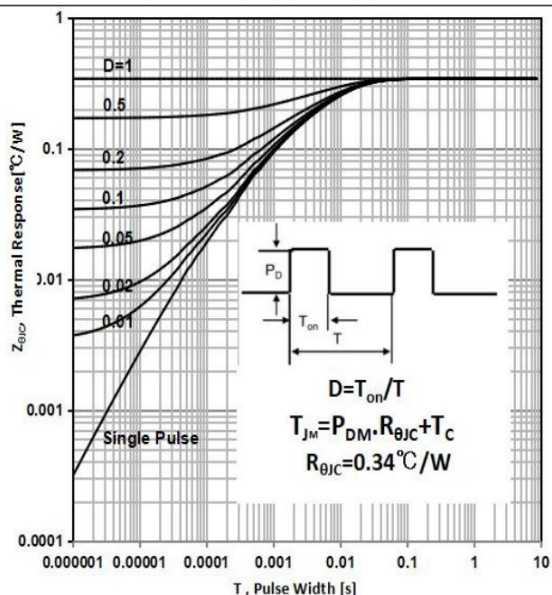


Figure 20: Diode Transient Thermal Impedance vs. Pulse Width

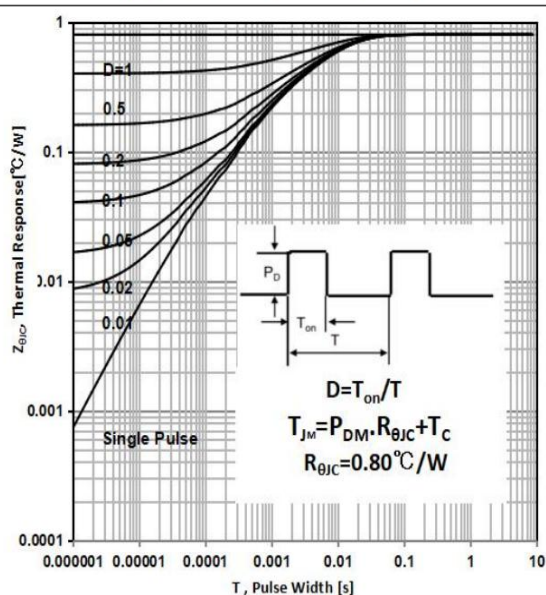
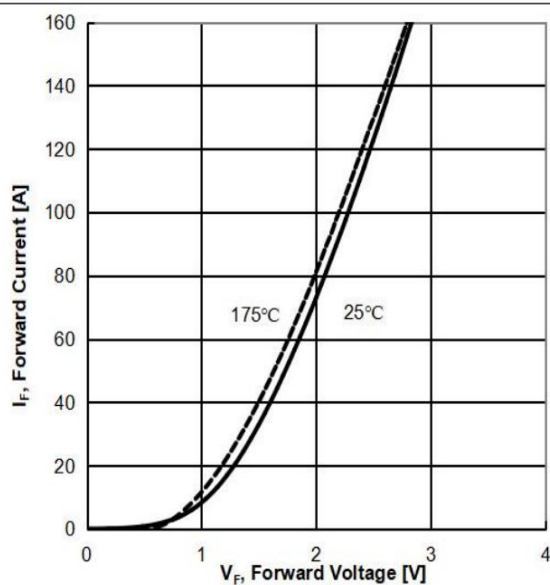
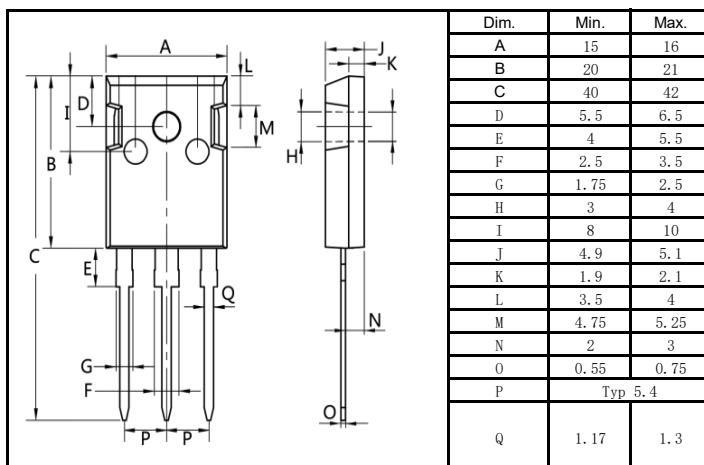


Figure 21: Typical Diode Forward Current vs. Forward Voltage

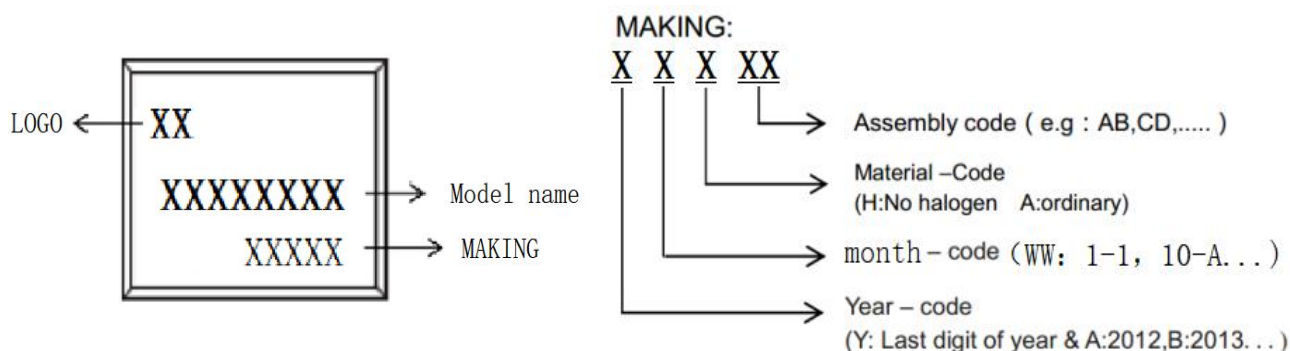


Package Outline Dimensions millimeters

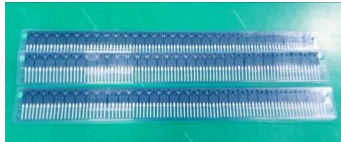
T0-247



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-247			
	30PCS/管	600pcs/盒	3000pcs/箱

Notice

All product,product specifications and data are subject to change without notice to improve.The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying poer exceeding normal ratedpoer; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this documentpoer; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.