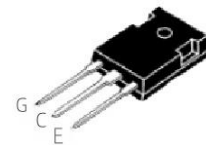
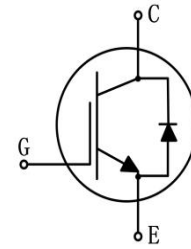


MAIN CHARACTERISTICS

I_C @TC=100°C	50A
V_{CE}	650V
$V_{CE(sat)}$ -typ	1.8V



TO-247

FEATURES

- Trench and field-stop technology
- Easy parallel switching capability

APPLICATIONS

- PFC applications
- Uninterruptible power supplies
- Solar inverters

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
LGT50N65HB	TO-247	LGT50N65HB	Tube

Maximum Ratings

Characteristics	Symbol	Value	Unit
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	± 20	V
Continuous collector current (TC=25°C)	I_C	100	A
Continuous collector current (TC=100°C)		50	A
Pulsed collector current, tp limited by Tvjmax	I_{CM}	200	A
Diode continuous forward current (TC=25°C)	I_F	100	A
Diode continuous forward current (TC=100°C)		50	A
Diode maximum current, tp limited by Tvjmax	I_{FM}	200	A
Power dissipation (TC=25°C)	P_{tot}	535	W
Power dissipation (TC=100°C)		267	W
Operating junction temperature range	T_{vj}	-40 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	$R_{th(j-c)}$	-	0.28	K/ W
Thermal resistance, junction to case for Diode	$R_{th(j-c)}$	-	0.42	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 $T_{vj}=25^\circ\text{C}$ 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}	650	-	-	V
Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	I_{CES}	-	-	50	μA
Gate leakage current, forward	$V_{GE}=\pm 20V, V_{CE}=0V$	I_{GES}	-	-	± 100	nA
Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	$V_{GE(th)}$	5	5.4	5.6	V
Collector-emitter saturation voltage	$V_{GE}=15V, I_C=50A$	$V_{CE(sat)}$	-	1.8	-	V
	$V_{GE}=15V, I_C=50A, T_{vj}=175^\circ\text{C}$		-	2.3	-	V

Dynamic characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Input capacitance	$V_{CE}=30V$ $V_{GE}=0V$ $f=1MHz$	C_{ies}	-	4820	-	pF
Output capacitance		C_{oes}	-	170	-	pF
Reverse transfer capacitance		C_{res}	-	37	-	pF
Total gate charge	$V_{CC}=520V, V_{GE}=15V, I_C=50A$	Q_g	-	158	-	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	$V_{CC}=400\text{V}$ $V_{GE}=15\text{V}$ $I_C=50\text{A}$ $R_G=10\Omega$ Inductive load	td(on)	-	52	-	ns
Rise time		tr	-	82	-	ns
Turn-off delay time		td(off)	-	193	-	ns
Fall time		tf	-	61	-	ns
Turn-on energy		Eon	-	1.7	-	mJ
Turn-off energy		Eoff	-	1	-	mJ
Total switching energy		Ets	-	2.7	-	mJ
Turn-on delay time	$V_{CC}=400\text{V}$ $V_{GE}=15\text{V}$ $I_C=50\text{A}$ $R_G=10\Omega$ Inductive load $T_{vj}=175^{\circ}\text{C}$	td(on)	-	49	-	ns
Rise time		tr	-	85	-	ns
Turn-off delay time		td(off)	-	210	-	ns
Fall time		tf	-	68	-	ns
Turn-on energy		Eon	-	2.5	-	mJ
Turn-off energy		Eoff	-	1	-	mJ
Total switching energy		Ets	-	3.5	-	mJ

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

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Diode forward voltage	$I_F=50\text{A}$	VF	-	1.8	-	V
	$I_F=50\text{A}$ $T_{vj}=175^{\circ}\text{C}$		-	1.4	-	V
Diode reverse recovery time	$V_R=400\text{V}$	trr	-	82	-	ns
Diode peak reverse recovery current	$I_F=50\text{A}$	Qrr	-	698	-	nC
Diode reverse recovery charge	$diF/dt=-800\text{A}/\mu\text{s}$	Irrm	-	15	-	A
Diode reverse recovery time	$V_R=400\text{V}$	trr	-	132	-	ns
Diode peak reverse recovery current	$I_F=50\text{A}$	Qrr	-	2194	-	nC
Diode reverse recovery charge	$diF/dt=-800\text{A}/\mu\text{s}$ $T_{vj}=175^{\circ}\text{C}$	Irrm	-	26	-	A

RATINGS AND CHARACTERISTIC CURVES

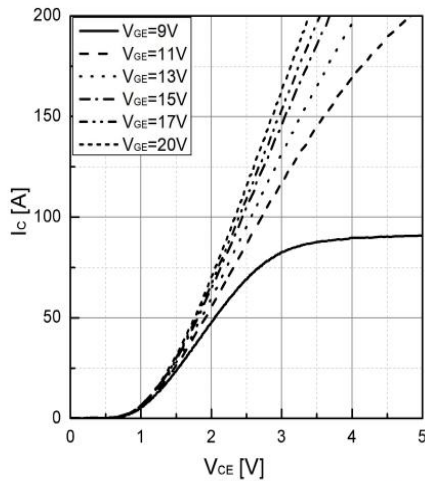


Fig 1. Typical output characteristic ($T_{vj}=25^{\circ}\text{C}$)

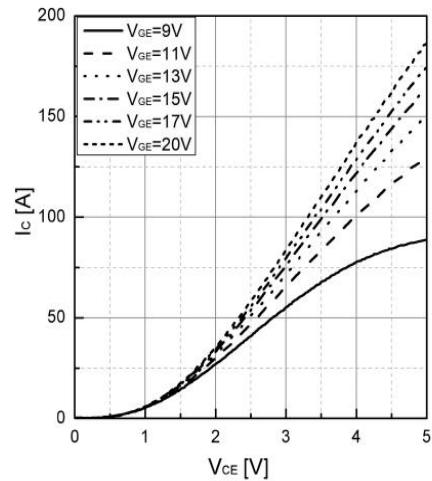


Fig 2. Typical output characteristic ($T_{vj}=175^{\circ}\text{C}$)

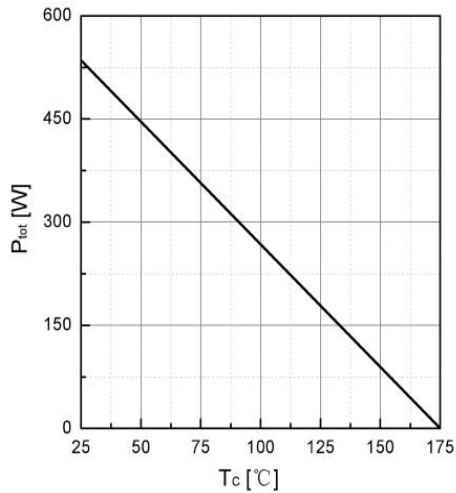


Fig 3. Power dissipation as a function of T_c

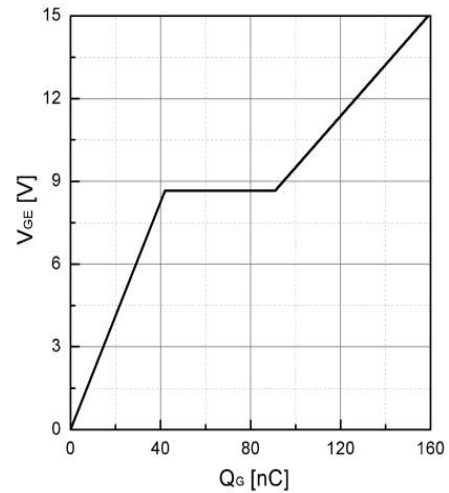


Fig 4. Typical Gate charge

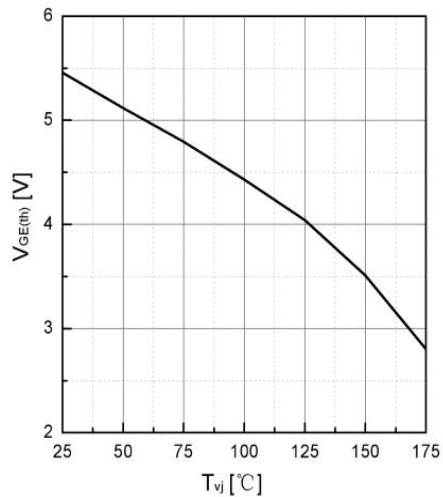


Fig 5. Typical $V_{GE(th)}$ as a function of T_{vj}
($I_C=1\text{mA}$)

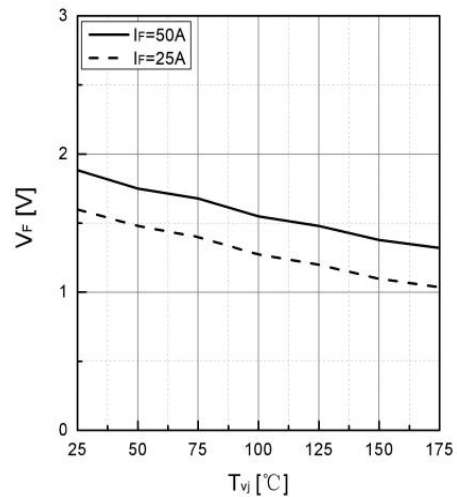


Fig 6. Typical V_F as a function of T_{vj}

RATINGS AND CHARACTERISTIC CURVES

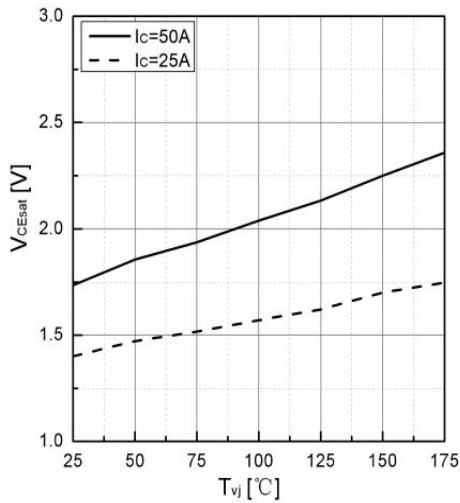


Fig 7. Typical V_{CEsat} as a function of T_{vj}

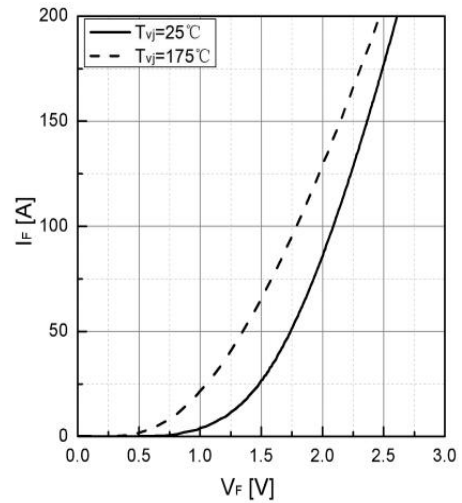


Fig 8. Typical I_F as a function of V_F

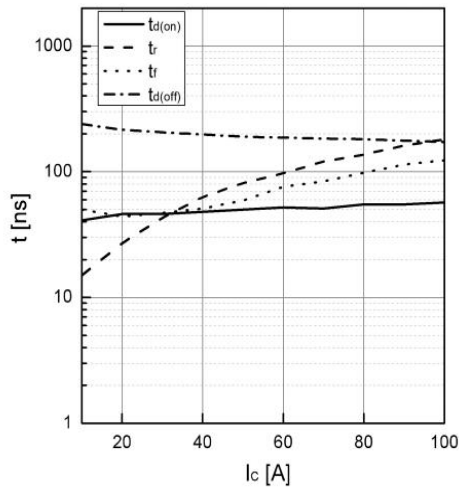


Fig 9. Typical switching time as a function of I_c

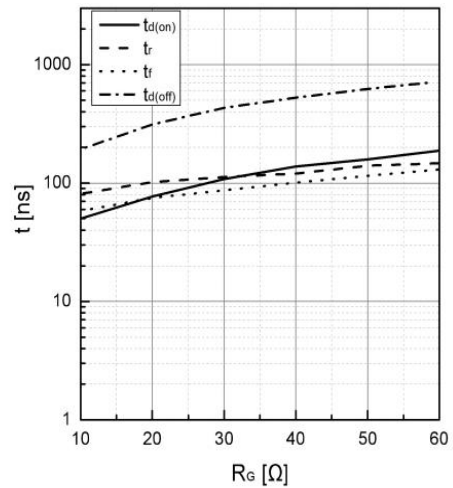


Fig 10. Typical switching times as a function of R_G

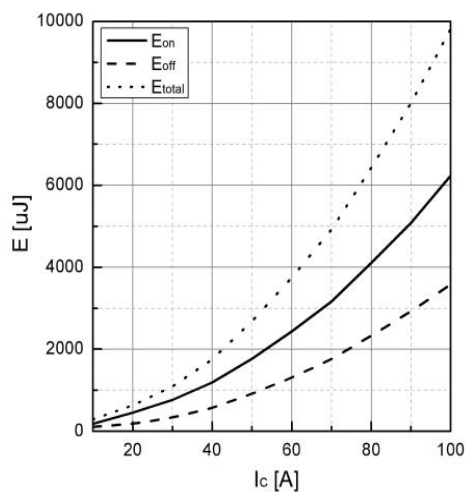


Fig 11. Typical switching energy losses as a function of I_c

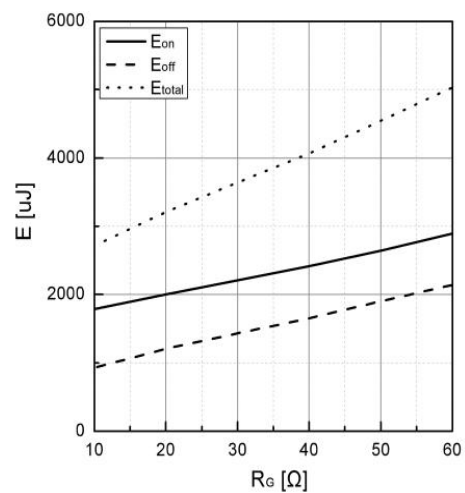


Fig 12. Typical switching energy losses as a function of R_G

RATINGS AND CHARACTERISTIC CURVES

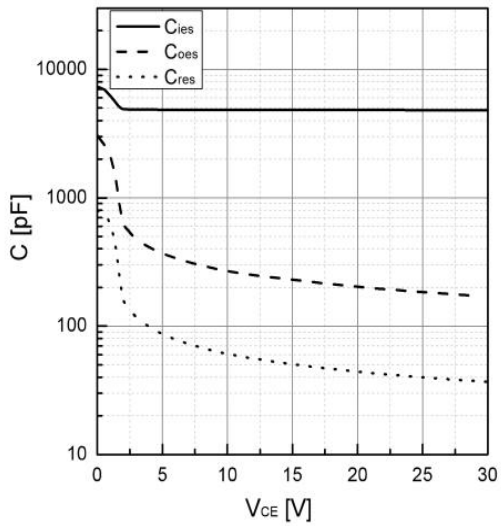


Fig 13. Typical capacitance as a function of V_{CE}
($f=1\text{MHz}$, $V_{GE}=0\text{V}$)

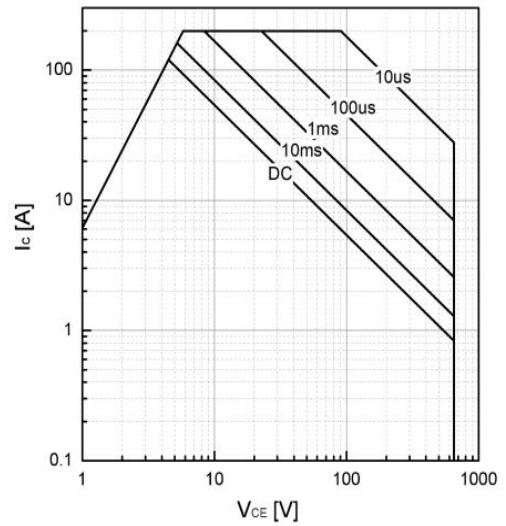


Fig 14. Safe operating area

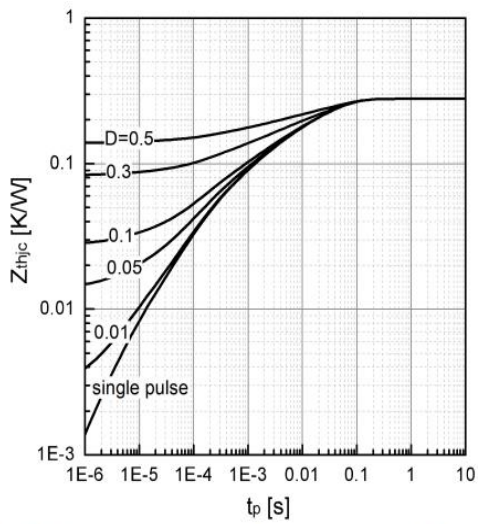
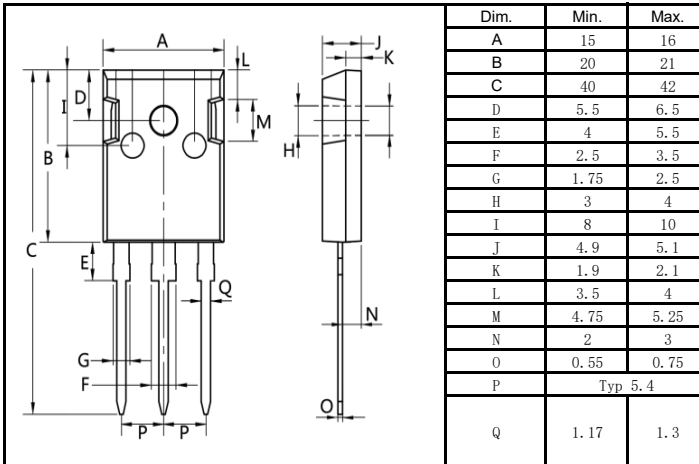


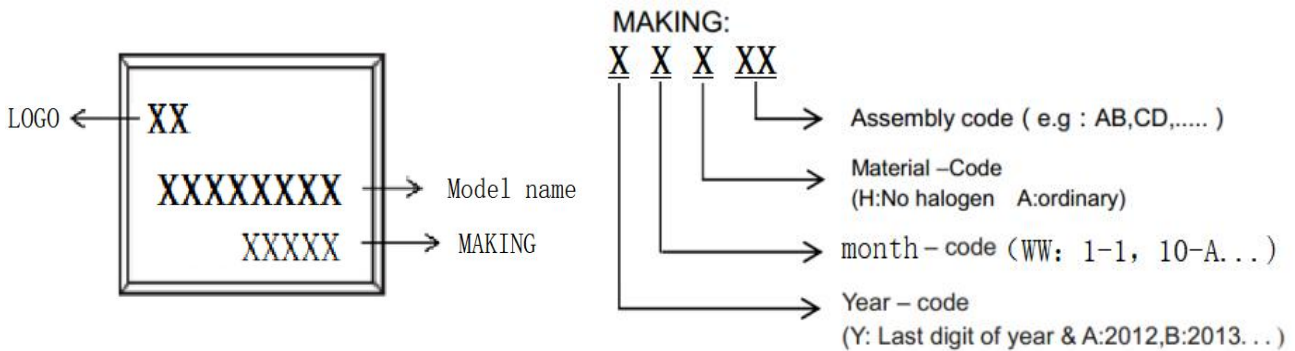
Fig 15. Transient thermal impedance of IGBT

Package Outline Dimensions millimeters

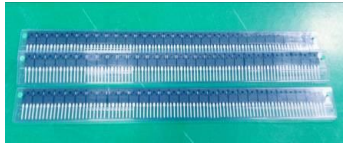


T0-247



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 power exceeding normal rated power; 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 document; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.