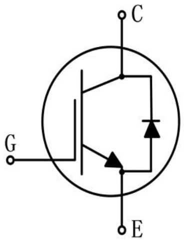
凌讯
— LX MICRO —

LGT15N65P/T

N-Channel Enhancement Mode Power IGBT

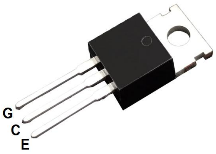
MAIN CHARACTERISTICS

$I_{C\ @TC=100℃}$	15A
V_{CE}	650V
VCE(sat)-typ	1.6V

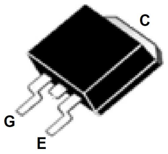


FEATURES

- High ruggedness performance
- 10μs short circuit capability
- Positive VCE (sat) temperature coefficient
- High efficiency for motor control
- Excellent current sharing in parallel operation



TO-220C



TO-263C

APPLICATIONS

- Home appliances
- Motor drives
- General inverter

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℃ maximum,10s per JESD 22-B106

Product specification classification

Part Number	Package	Mode Name	Pack
LGT15N65P	TO-220C	LGT15N65P	Tube
LGT15N65T	TO-263C	LGT15N65T	Tube

Maximum Ratings

Characteristics	Symbol	Value	Unit
		220C/263C	
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	±20	V
Continuous collector current (TC=25℃)	I_C	30	A
Continuous collector current (TC=100℃)		15	A
Pulsed collector current, tp limited by Tvjmax	I_{CM}	60	A
Diode continuous forward current (TC=100℃)	I_F	15	A
Diode maximum current, tp limited by Tvjmax	I_{FM}	60	A
Power dissipation (TC=25℃)	P_{tot}	150	W
Power dissipation (TC=100℃)		75	W
Operating junction temperature range	T_{vj}	-40 to +175	°C
Storage temperature range	T_{stg}	-55 to +150	°C

Thermal characteristics

Characteristics	Symbol	Values		Unit
		Typ	Max.	
Thermal resistance, junction to case for IGBT	$R_{th(j-c)}$	-	1	K/ W
Thermal resistance, junction to case for Diode	$R_{th(j-c)}$	-	1.50	K/ W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	-	40	K/ W

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

Electrical characteristics of IGBT at Tvj=25℃ unless otherwise specified

Static characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{GE}=0V, I_C=250μA	BV_{CES}	650	-	-	V
Collector-emitter leakage current	V_{CE}=650V, V_{GE}=0V	I_{CES}	-	-	50	μA
Gate leakage current, forward	V_{GE}=±20V, V_{CE}=0V	I_{GES}	-	-	±100	nA
Gate-emitter threshold voltage	V_{GE}=VCE, I_C=1mA	$V_{GE(th)}$	5.4	5.6	5.9	V
Collector-emitter saturation voltage	V_{GE}=15 V, I_C=15A	$V_{CE(sat)}$	-	1.6	1.8	V
	V_{GE}=15V, I_C=15A, T_{vj}=150℃		-	1.9	-	V

Dynamic characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Input capacitance	V_{CE}=30V V_{GE}=0V f =1MHz	C_{ies}	-	1055	-	pF
Output capacitance		C_{oes}	-	57	-	pF
Reverse transfer capacitance		C_{res}	-	15	-	pF
Total gate charge	V_{CC}=520V V_{GE}=15V I_C=15A	Q_g	-	55	-	nC

Electrical characteristics of IGBT at Tvj=25℃ unless otherwise specified

Switching characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Turn-on delay time	V_{CC}=400V V_{GE}=15V I_C=15A R_G=10Ω Inductive load	td(on)	-	17	-	ns
Rise time		tr	-	14	-	ns
Turn-off delay time		td(off)	-	104	-	ns
Fall time		tf	-	46	-	ns
Turn-on energy		Eon	-	0.3	-	mJ
Turn-off energy		Eoff	-	0.27	-	mJ
Total switching energy		Ets	-	0.57	-	mJ
Turn-on delay time	V_{CC}=400V VGE=15V I_C=15A R_G=10Ω Inductive load Tvj =150℃	td(on)	-	16	-	ns
Rise time		tr	-	15	-	ns
Turn-off delay time		td(off)	-	119	-	ns
Fall time		tf	-	81	-	ns
Turn-on energy		Eon	-	0.38	-	mJ
Turn-off energy		Eoff	-	0.4	-	mJ
Total switching energy		Ets	-	0.78	-	mJ

Electrical characteristics of Diode at Tvj=25℃ unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Diode forward voltage	I_F=15A	VF	-	1.4	1.8	V
	I_F=15A,Tvj=150℃		-	1.2	-	V
Diode reverse recovery time	V_R=400V I_F=15A diF/dt=-600A/μs	trr	-	55	-	ns
Diode peak reverse recovery current		Irrm	-	9.5	-	A
Diode reverse recovery charge		Qrr	-	220	-	nC
Diode reverse recovery time	V_R=400V I_F=15A diF/dt=-600A/μs Tvj=150℃	trr	-	75	-	ns
Diode peak reverse recovery current		Irrm	-	15	-	A
Diode reverse recovery charge		Qrr	-	450	-	nC

RATINGS AND CHARACTERISTIC CURVES

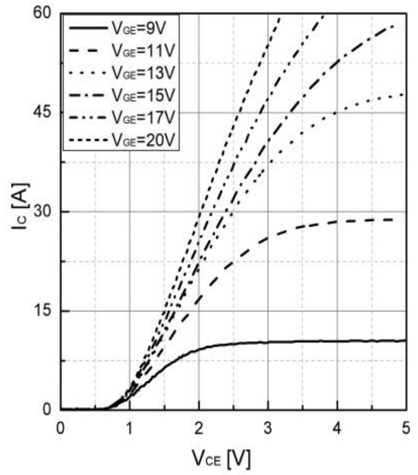


Fig 1. Typical output characteristic (T_{vj}=25℃)

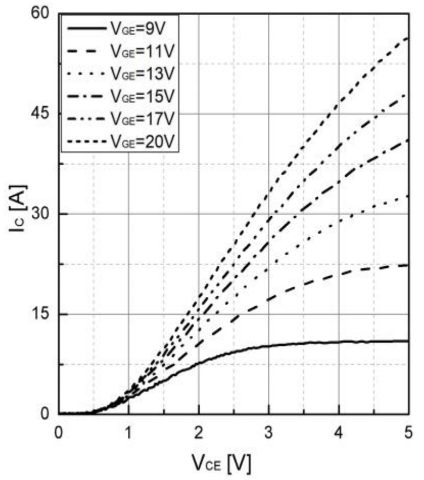


Fig 2. Typical output characteristic(T_{vj}=175℃)

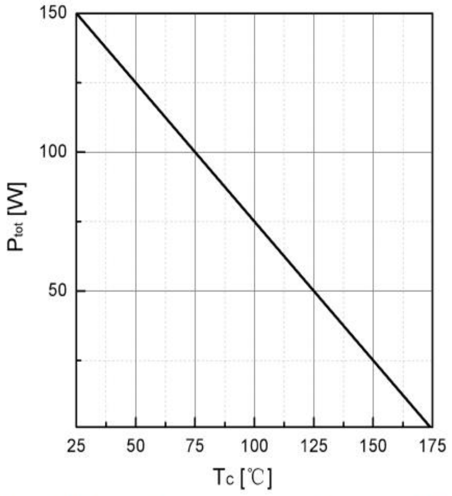


Fig 3. Power dissipation as a function of T_C

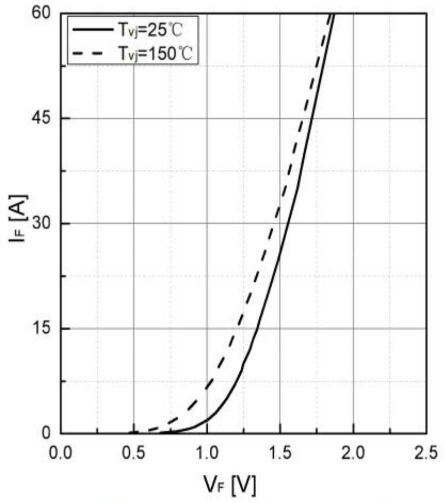


Fig 4. Typical I_F as a function of V_F

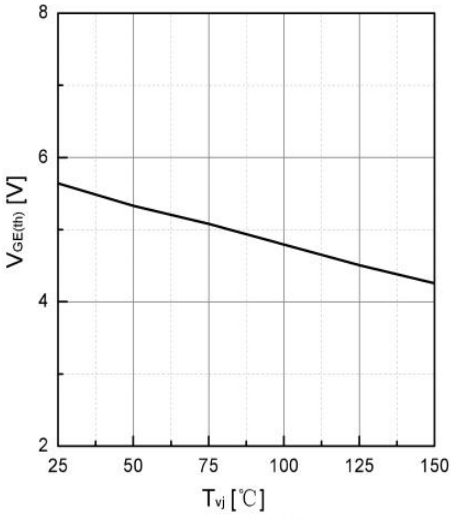


Fig 5. Typical $V_{GE(th)}$ as a function of T_{vj}
(I_C=1mA)

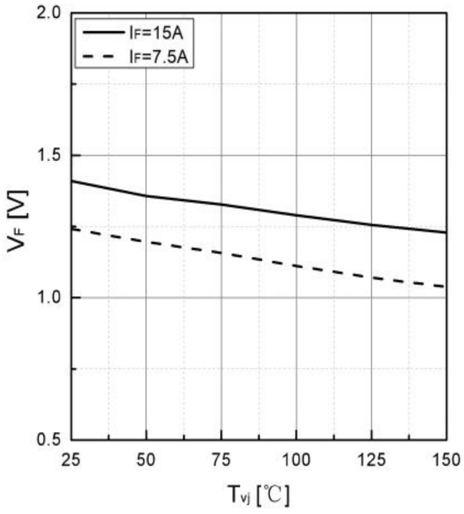


Fig 6. Typical V_F as a function of T_{vj}

RATINGS AND CHARACTERISTIC CURVES

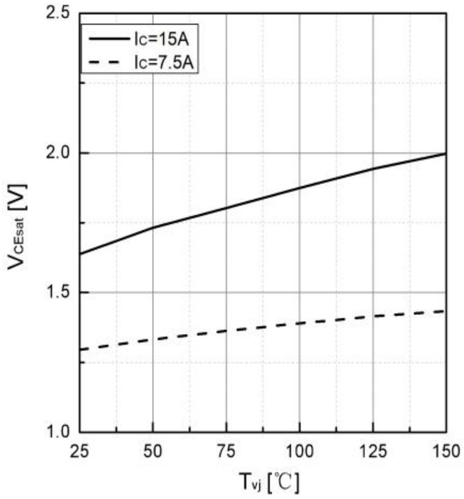


Fig 7. Typical V_{CEsat} as a function of T_{vj}

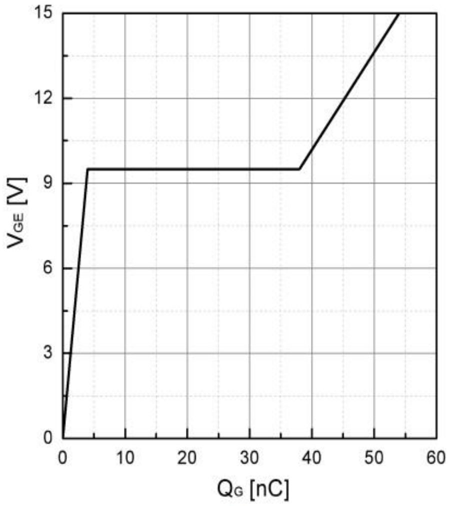


Fig 8. Typical Gate charge

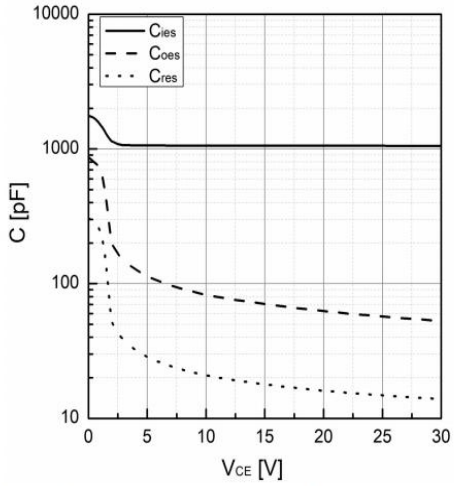


Fig 9. Typical capacitance as a function of V_{CE}

(f=1Mhz, V_{GE}=0V)

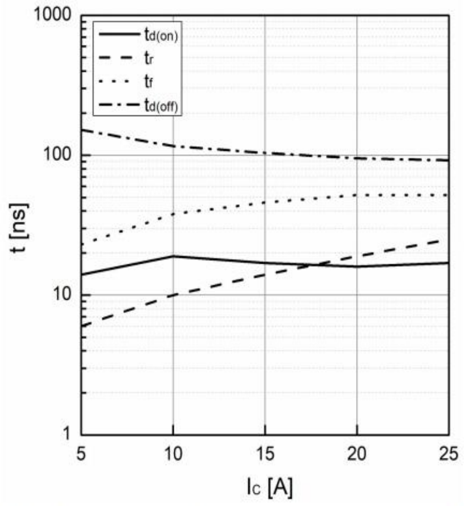


Fig 10. Typical switching times as a function of I_C

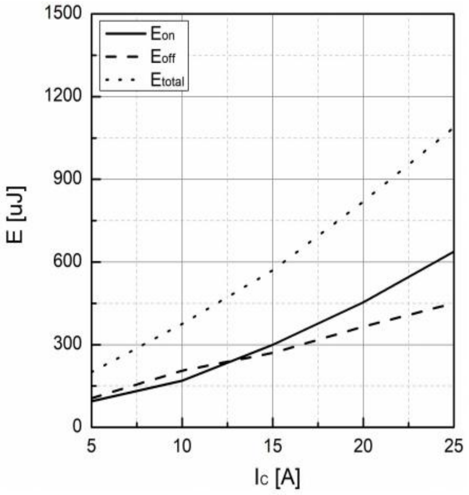


Fig 11. Typical switching energy losses as a function of I_C

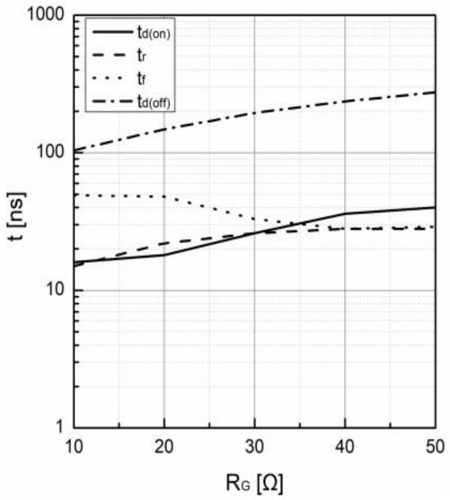


Fig 12. Typical switching times as a function of R_G

RATINGS AND CHARACTERISTIC CURVES

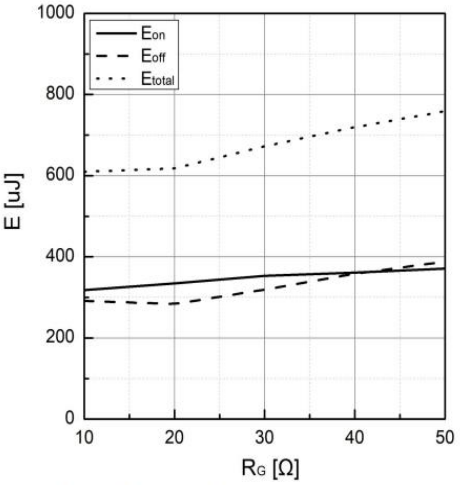


Fig 13. Typical switching energy losses as a function of R_G

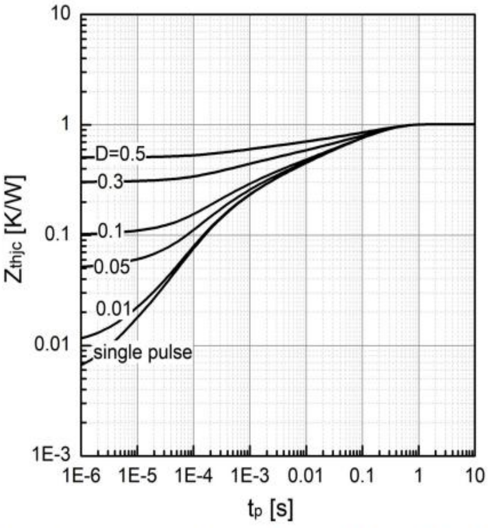
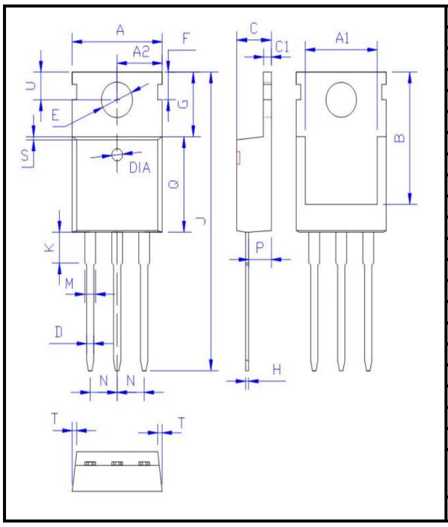


Fig 14. Transient thermal impedance, IGBT

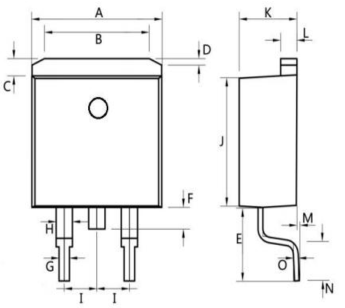
Package Outline Dimensions millimeters

TO-220C



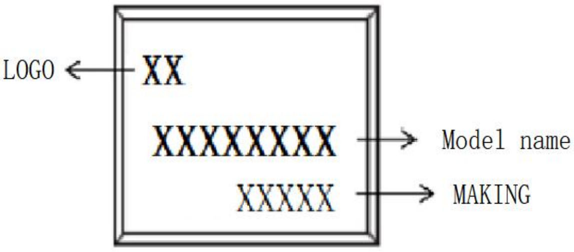
Dim.	Min.	Max.
A	9.8	10.2
A1	7.8	8.2
A2	4.8	5.2
B	13	13.4
C	4.35	4.65
C1	1.15	1.45
D	0.65	0.95
E	3.45	3.75
F	2.85	3.15
G	6.4	6.8
H	0.35	0.65
J	28.68	29.08
K	2.8	3.2
M	1.15	1.45
N	Typ2.54	
P	2.2	2.6
Q	9	9.4
S	0.15	0.35
T	0.15	0.35
U	2.65	2.95
DIA	直径1.5±0.1 深MAX0.5	
All Dimensions in millimeter		

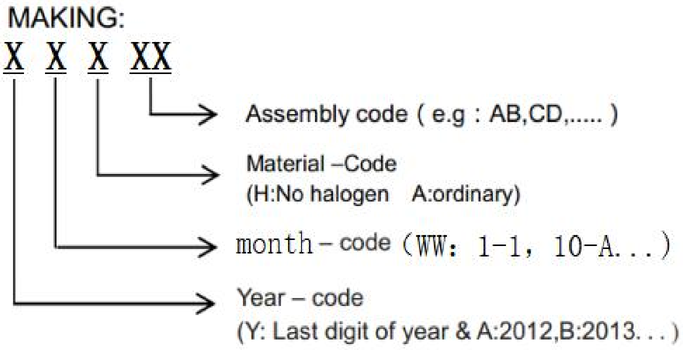
TO-263C



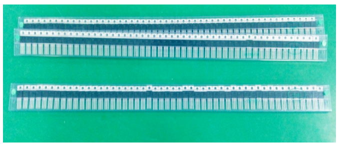
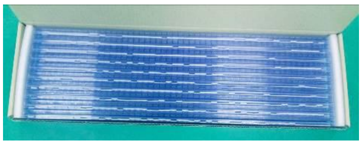
Dim.	Min.	Max.
A	9.8	10.2
B	6.1	6.7
C	1.1	1.4
D	0.5	1.0
E	4.6	5.0
F	1.4	1.6
G	0.7	0.9
H	1.17	1.37
I	Typ2.54	
J	9	9.2
K	4.3	4.7
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.45	0.55
All Dimensions in millimeter		

Marking on the body





packing instruction

PKG	最小包装	内盒	外箱
TO-220C TO-263C			
	50PCS/管	1000pcs/盒	5000pcs/箱
TO-263C			
	800pcs/盘	1600pcs/盒	8000pcs/箱

Notice

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

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying poer exceeding poer; 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 t